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Brian Duncan
Stephen J. Trejo

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The Complexity of Immigrant Generations: Implications for Assessing the Socioeconomic Integration of Hispanics and Asians

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ABSTRACT

Because of data limitations, virtually all studies of the later-generation descendants of immigrants rely on subjective measures of ethnic self-identification rather than arguably more objective measures based on the countries of birth of the respondent and his ancestors. In this context, biases can arise from "ethnic attrition" (e.g., U.S.-born individuals who do not self-identify as Hispanic despite having ancestors who were immigrants from a Spanish-speaking country). Analyzing 2003-2013 data from the Current Population Survey (CPS), this study shows that such ethnic attrition is sizeable and selective for the second- and third-generation populations of key Hispanic and Asian national origin groups. In addition, the results indicate that ethnic attrition generates measurement biases that vary across groups in direction as well as magnitude, and that correcting for these biases is likely to raise the socioeconomic standing of the U.S.-born descendants of most Hispanic immigrants relative to their Asian counterparts.

Brian Duncan
Department of Economics
University of Colorado
Campus Box 181
Denver, CO 80217-3364
brian.duncan@ucdenver.edu

Stephen J. Trejo
Department of Economics
University of Texas at Austin
2225 Speedway Stop C3100
Austin, TX 78712
and NBER
trejo@austin.utexas.edu

Recent research emphasizes how immigrant ancestry and interethnic marriage shape racial/ethnic attachment and identification, and how "ethnic attrition" can generate potentially serious problems for tracking the socioeconomic progress of later-generation descendants of U.S. immigrant groups (Perlmann and Waters 2007; Alba and Islam 2009; Lee and Bean 2010). Our own previous work demonstrates the salience of these issues for the specific case of Mexican Americans (Duncan and Trejo 2007, 2009, 2011). Analyzing microdata from the Current Population Survey (CPS) for children living with both parents, in Duncan and Trejo (2011) we compare an objective indicator of Mexican descent (based on the countries of birth of the child, his parents, and his grandparents) with the standard subjective measure of Mexican identification (based on the response to the Hispanic origin question). We find that about 30 percent of third-generation Mexican children are *not* identified as Mexican by the Hispanic origin question in the CPS, and this ethnic attrition is highly selective. In particular, the high school dropout rate of third-generation Mexican youth (ages 16 and 17) is 25 percent higher when the sample is limited to those youth subjectively identified as Mexican. Therefore, our previous research suggests that ethnic attrition is substantial among third-generation Mexicans and could produce significant downward bias in standard measures of attainment which rely on subjective ethnic identification rather than objective indicators of Mexican descent.

Does such evidence mitigate concerns that Mexican Americans do not seem to be experiencing the same kind of socioeconomic integration enjoyed by the U.S.-born descendants of other immigrant groups, particularly Asians? Not necessarily. Given that intermarriage is a primary source of ethnic attrition, and that intermarriage rates for most groups are at least as high as those of Mexicans (Lieberson and Waters 1988; Lichter and Qian 2005), the resulting biases could be even larger for the descendants of non-Mexican immigrants. If the measurement biases

from ethnic attrition run in the same direction for all national origin groups, then correcting for these biases could ultimately produce little improvement or even a worsening in the relative standing of Mexican Americans.

Some theories of intermarriage (e.g., Furtado 2006, 2012; Kalmijn 2012), however, imply that the biases from ethnic attrition could differ across groups not only in magnitude but also in direction. For reasons explained below, such theories predict that members of low-education groups (such as some Hispanic groups) who intermarry should be positively selected in terms of education, whereas the corresponding selectivity should be less positive and perhaps even negative for intermarried members of high-education groups (such as most Asian groups). Because ethnic attrition predominately occurs among those with mixed origins (i.e., the products of interethnic marriages), differences across groups in intermarriage selectivity can generate corresponding differences in the selectivity of ethnic attrition. Therefore, it is of both theoretical and empirical interest to analyze the extent and selectivity of ethnic attrition for a variety of immigrant groups, as we do here for the first time.

Historically, much of the socioeconomic mobility achieved by U.S. immigrant families has taken place across rather than within generations (Neidert and Farley 1985; Borjas 1994; Perlmann 2005). When evaluating the long-term integration of immigrants, it is therefore important to analyze differences not just between the foreign-born and U.S-born, but also across generations of the U.S.-born (Farley and Alba 2002; Card 2005; Smith 2006). The ideal data set for such an analysis would include information about the family tree of each individual, enabling us to identify which individuals have ancestors who immigrated to the United States from a particular country and how many generations have elapsed since that immigration took place. Information of this sort would also allow us to characterize the complexity of each individual's

immigrant roots in some detail, accounting for factors such as the specific national origins of an individual's immigrant ancestors, whether the same national origins show up on both the paternal and maternal sides of the family tree, and how far removed from the current generation are the immigrant ancestors.

Unfortunately, the large, nationally-representative data sources typically employed to study U.S. immigrants and their descendants provide only very limited information pertaining to immigrant generations. Microdata sources such as the decennial U.S. Census, the American Community Survey (ACS), and the CPS report each respondent's country of birth, thereby distinguishing foreign-born individuals (i.e., the first generation) from the U.S.-born population. Only the CPS, however, currently collects information about the countries of birth of each respondent's parents, which allows the second generation (i.e., U.S.-born individuals who have at least one foreign-born parent) to be differentiated from higher generations of U.S.-born individuals. Moreover, none of these surveys provide information about the countries of birth of an adult respondent's grandparents, so studies of immigrant descendants beyond the second generation are forced to identify the population of interest using subjective measures of ethnic identification (e.g., third- and higher-generation Mexicans are U.S.-born individuals who have U.S.-born parents and who self-identify as Mexican in response to the Hispanic origin question).

In this context, measurement biases arising from selective ethnic identification could distort assessments of the socioeconomic attainment and integration of later-generation descendants of immigrants. The current paper explores this issue for a wide range of national origin groups from important Hispanic (Mexico, Puerto Rico, Cuba, El Salvador, and the Dominican Republic) and Asian (China, India, Japan, Korea, and the Philippines) source countries. Using microdata from recent years of the CPS, we delineate the strong links between

generational complexity and ethnic identification. In addition, we analyze the extent and educational selectivity of ethnic attrition among first-, second-, and third-generation members of these immigrant groups, and we provide some evidence on the consequent biases in standard measures of attainment that almost always rely on subjective ethnic identification for immigrant descendants in the third generation and beyond. We also show that the theoretical mechanism described above potentially accounts for a substantial portion of the variation across national origin groups in the educational selectivity of ethnic attrition. Finally, the appendix documents that changes to the CPS Hispanic origin and race questions adopted in 2003 had a substantial impact on ethnic attrition among Hispanics and Asians.

Data

We use microdata from the CPS for all months from January 2003 through December 2013.[1] The CPS is a monthly survey of 50,000-60,000 households that the U.S. government administers to estimate unemployment rates and other indicators of labor market activity. In addition to the detailed demographic and labor force data reported for all respondents, the CPS collects earnings information each month from one-quarter of the sample, the so-called "outgoing rotation groups." The data we analyze come from these outgoing rotation group samples. The CPS sampling scheme is such that selected residences are surveyed for four consecutive months (e.g., January through April), then leave the sample for eight months (e.g.,

[1] As described more fully in the appendix, major changes to the CPS questions regarding Hispanic origin and race were introduced in the January 2003 survey (Bowler *et al*. 2003). By asking directly about Hispanic ethnicity and by allowing multiple race responses, the CPS now elicits higher rates of subjective ethnic identification among the descendants of Hispanic and Asian immigrants. The evidence we present below, however, suggests that ethnic attrition remains a significant problem in the post-2002 CPS data collected using the improved questionnaire. Moreover, the Hispanic origin and race questions introduced in the 2003 CPS are similar to the analogous questions employed in the Census and ACS from 2000 forward, and so the issues pertaining to subjective identification and selective ethnic attrition that we explore here with CPS data will also be relevant for Census and ACS data. For these reasons, we focus on CPS data from January 2003 forward, but the appendix shows that ethnic attrition is even more prevalent in earlier CPS data.

May through December), and return for a final four months (e.g., January through April of the following year) before exiting the sample for good. The outgoing rotation groups in a given month include those residences that will rotate out of the sample in the following month, either temporarily (i.e., those residences completing their fourth month in the CPS sample) or permanently (i.e., those residences being surveyed for the eighth and final time). To avoid samples with repeated observations for a given household, we use only data from the first time a residence appears in an outgoing rotation group (i.e., we use only data from the fourth month that a residence appears in the CPS sample). By pooling together these 11 years of monthly CPS data, we substantially increase sample sizes and improve the precision of our estimates. A key feature of CPS data is their inclusion (beginning in 1994) of the information about parental countries of birth that is currently missing from the Census and ACS. As a result, the CPS is now the best large-scale, nationally-representative U.S. data set for investigating how outcomes vary by immigrant generation.

Throughout this paper, we define immigrant generations using information on the countries of birth of the respondent, his parents, and (when possible, as described below) his grandparents. The first generation consists of foreign-born individuals (excluding those born abroad of an American parent). The second generation includes U.S.-born individuals who have at least one foreign-born parent. The third generation denotes U.S.-born individuals with two U.S.-born parents but at least one foreign-born grandparent. These immigrant generations are defined with respect to the specific Hispanic and Asian source countries that we analyze here. The Hispanic source countries are Mexico, Puerto Rico, Cuba, El Salvador, and the Dominican Republic, and the Asian source countries are China, India, Japan, Korea, and the Philippines.[2]

[2] These particular countries were chosen because they are important sources of U.S. immigration and they yield CPS samples of reasonable size for all three generations. Based on 2000 Census data, these five Hispanic national origin groups

So, for example, a first-generation Cuban is someone who was born in Cuba and immigrated to the United States, and a second-generation Japanese is a U.S.-born individual whose father and/or mother were born in Japan.

The approach described above assigns national origins using the specific countries of birth of the respondent and his ancestors. In contrast, data limitations commonly force researchers to adopt an alternative approach whereby self-reported race/ethnicity is used to approximate the national origins of immigrant groups, especially for individuals beyond the first generation (e.g., in Census or ACS data, second- and higher-generation Asians are U.S.-born individuals who subjectively identify as Asian in response to the race question). A central aim of the current paper is to investigate the accuracy of these approximations. For this purpose, we examine the subjective racial/ethnic identification of individuals whose immigrant generation and national origins can be determined from the information available in the CPS regarding the countries of birth of themselves and their ancestors. For individuals linked to Hispanic source countries, we examine whether they subjectively identify as Hispanic in response to the Hispanic origin question in the CPS.[3] For individuals linked to Asian source countries, we examine

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account for over three-quarters of the U.S. Hispanic population (Guzman 2001), and the analogous statement also holds for the five Asian national origin groups that we study (Barnes and Bennett 2002). Persons born in Puerto Rico are U.S. citizens and enjoy unfettered mobility between the island and the U.S. mainland, and therefore Puerto Ricans are not, strictly speaking, a U.S. "immigrant" group. Nonetheless, island-born Puerto-Ricans who move to the United States and their U.S.-born descendants encounter many of the same adjustment issues as conventional immigrant groups. Accordingly, the socioeconomic mobility of Puerto Ricans is often analyzed using models and methods developed to study U.S. immigrant groups (e.g., Feliciano 2001; Hirschman 2001).

[3] Since January 2003, the CPS has collected information about Hispanic origin as follows. Respondents are asked whether they are "Spanish, Hispanic, or Latino," and those who answer affirmatively are then asked to designate a specific Hispanic national origin group (Mexican, Puerto Rican, Cuban, Central/South American, or Other Spanish). The Hispanic origin question in the 2000 Census is similar (Grieco and Cassidy 2001). In this paper, we employ the broad indicator of "Hispanic" ethnic identification that potentially applies to all of the Hispanic national origin groups. In previous work that focused on Mexicans (Duncan and Trejo 2007, 2009, 2011), we employed the specific indicator for "Mexican" ethnic identification. In CPS data, the "Hispanic" indicator captures all those who designate a specific national origin (such as Mexican, Puerto Rican, or Cuban) as well those who identify as Hispanic but fail to indicate a specific national origin. Therefore, the results reported here may understate the amount of ethnic attrition that would be relevant when a particular Hispanic national origin group is the focus of analysis.

whether they subjectively identify as Asian in response to the race question in the CPS.[4]

To improve the reliability of our measures of subjective racial/ethnic identification, we exclude individuals with imputed information regarding Hispanic origin (for analyses of Hispanic source countries) or race (for analyses of Asian source countries). By doing so, we avoid confounding true ethnic attrition with errors generated by the CPS imputation process. To more accurately assign immigrant generations, we exclude individuals with missing or imputed information regarding the country of birth of themselves or any relevant ancestors. In particular, we exclude all individuals with missing or imputed information regarding their own country of birth. When constructing samples for the second and third generations, we also exclude individuals with missing or imputed information regarding the country of birth of either parent, and when defining the third generation, we further exclude individuals with missing or imputed information regarding the country of birth of any grandparent.

Our samples of first- and second-generation adults ages 25-59 are constructed using the information collected in the CPS regarding the countries of birth of each respondent and of each respondent's father and mother. By matching second-generation individuals in the CPS with their spouses and children, we can push this analysis one step further and learn something about ethnic attrition in the third generation. For children living with both parents, the survey data collected from the parents reveal the countries of birth of each child's grandparents. With this information, we can now formulate a more precise definition of the third generation, as opposed to the standard definition that relies on subjective racial/ethnic identification and does not

[4] Unlike the Census and ACS, the CPS race question does not identify specific Asian national origin groups (e.g., Chinese, Japanese, Korean, etc.). Prior to 2003, the relevant race category in the CPS was "Asian or Pacific Islander." Starting in January 2003, "Asian" and "Hawaiian/Pacific Islander" become separate categories, and respondents can identify with more than one race category (Bowler *et al.* 2003). For the sake of comparability with earlier data, from 2003 on we consider individuals to identify as Asian if they respond to the CPS race question with "Asian" or "Hawaiian/Pacific Islander" (or both), even if they also give other (i.e., non-Asian) race responses. Treating multiple race responses in this way will produce conservative estimates of ethnic attrition. In the appendix, we discuss how the 2003 changes in the CPS questionnaire affected Hispanic and Asian identification.

distinguish the true third generation from higher generations. Our third-generation samples include U.S.-born children ages 17 and below who live in intact families and have two U.S.-born parents (ages 18 and above) but at least one grandparent born in a relevant source country.[5] We limit the third-generation samples to children in married, intact families because complete information regarding grandparents' countries of birth is available only for children living in the same household as both of their parents.

At the outset, let us acknowledge some important limitations of our analysis of third-generation children. First, because we must restrict attention to children in married, intact families, these samples are not representative of all third-generation children. Available evidence suggests that endogamy is more prevalent in marriage than in cohabitation or out-of-wedlock childbearing, so restricting our samples to married, intact families is likely to understate the extent of ethnic attrition.[6]

Second, the analyses we report do not distinguish children with step or adoptive parents from those with biological parents. Not until 2007 does the CPS collect the information necessary to make such distinctions. Using only the data from 2007 forward, we find that around 10 percent of the third-generation children in our samples have at least one non-biological parent. When we limit our analyses to children with two biological parents, rates of Hispanic and Asian identification rise, but only modestly (i.e., by a couple of percentage points, at most), and the educational selectivity of ethnic attrition does not change.

Third, we base our measures of subjective ethnic identification for third-generation

[5] Our samples of third-generation children include siblings from the same set of parents. When we avoid repeated observations within families by retaining only the youngest child from each family, sample sizes fall by roughly half, but the results remain very similar to those reported below using the full samples.

[6] After reviewing the relevant literature, Perlmann and Waters (2004, p. 275) conclude that "formal marriage and the children born in wedlock provide us with a conservative view of the degree of intermixing—both in terms of interethnic couples and in terms of the production of mixed-ancestry children."

children on their responses to the CPS Hispanic origin and race questions, but these responses primarily represent a parent or other adult member of the household answering for the child. A critical issue is whether these children will give similar responses when they become adults and answer for themselves.[7] Fourth, because the CPS does not provide informative measures of attainment for children, we analyze the selectivity of ethnic attrition among third-generation children somewhat indirectly, by examining the education levels of their parents. Finally, for some of the national origin groups, the samples of third-generation children are small (see the appendix). Note that none of these limitations apply to our analysis of ethnic attrition among second-generation adults. Individuals with a foreign-born parent retain relatively strong ethnic attachments, however, so if we restrict our analysis to the second generation we would miss the more extensive ethnic attrition that occurs in later generations. Therefore, despite its limitations, we believe our analysis of ethnic attrition in the third generation provides a useful empirical glimpse into a potentially significant topic about which little is currently known.

Basic Patterns

As a simple way of summarizing our findings and highlighting some of the potential implications, Tables 1 and 2 show the basic patterns that emerge when our source country samples are pooled into pan-ethnic aggregates for Hispanics and for Asians.[8] For the individuals we can objectively assign as first-, second-, or third-generation members of a relevant Hispanic

[7] See Portes and Rumbaut (2001, chapter 7) for a discussion of parental and other influences on the evolving ethnic identities of second-generation adolescents.

[8] Our samples of second-generation adults and third-generation children include a small amount of overlap across source countries, due to individuals with mixed origins (e.g., a third-generation child with one grandparent born in Puerto Rico and another grandparent born in the Dominican Republic). The aggregated, pan-ethnic samples of Hispanics count each individual only once, and so do the pan-ethnic samples of Asians, but there remains a tiny amount of overlap between the Hispanic and Asian samples, because of a few individuals with both Hispanic and Asian ancestry. We do not employ the CPS sampling weights in any of the calculations we report in this paper, because these weights are constructed using the information on subjective racial/ethnic identification that we treat as endogenous (U.S. Bureau of the Census 2006). Nevertheless, weighted calculations produce similar results.

or Asian national origin group, Table 1 reports the percentage who subjectively identify in the expected way. Among Hispanics, these ethnic identification rates fall from 99 percent for first-generation adults to 93 percent for second-generation adults to 82 percent for third-generation children. Ethnic attrition is more prevalent and the generational gradient is steeper for Asians, with ethnic identification rates of 96 percent for the first generation, 79 percent for the second generation, and 58 percent for the third generation.

Analyzing data from the 2000 Census, Rumbaut (2006, Table 2-3) reports a strong correspondence between country of birth and subjective ethnic identification for Hispanic immigrants. Our CPS samples confirm this finding and reveal a similar pattern for Asian immigrants. We did not expect to find much ethnic attrition in the first generation, so we are not surprised by the very high rates of Hispanic and Asian identification among foreign-born adults from the relevant source countries. Ethnic identification rates for the first generation do provide an important baseline, however, for measuring ethnic attrition in the second and third generations. The fact that immigrants from these Hispanic and Asian countries consistently choose the expected response suggests that they understand the CPS Hispanic origin and race questions and do not have difficulty locating where they fit within the implied racial/ethnic configuration. This finding for the first generation implies that the significant decline in subjective identification observed for later generations represents true ethnic attrition rather than confusion with the CPS questionnaire or unfamiliarity with the U.S. racial/ethnic structure.

Table 1 demonstrates that, despite nearly perfect rates of ethnic identification for first-generation adults, Hispanics and Asians exhibit substantial amounts of ethnic attrition in the second and third generations. For ethnic attrition to distort standard measures of generational progress for immigrant groups, however, it is not enough that such attrition be sizeable; the

attrition must also be selective on socioeconomic attainment. To provide some initial evidence on the selectivity of ethnic attrition, Table 2 reports average completed years of schooling by ethnic identification for second-generation adults and third-generation children.[9] For third-generation children, the education measure represents the average of father's and mother's years of schooling. We focus on educational attainment because it is a fundamental determinant of economic success, social status, health, family stability, and life opportunities (Oreopoulos and Salvanes 2011; Hout 2012), and schooling data are available for all adult respondents in the CPS.

Table 2 succinctly illustrates a key finding of our paper: with regard to educational attainment, ethnic attrition among the U.S.-born descendants of immigrants tends to be positively selected for Hispanics and negatively selected for Asians. For example, second-generation Hispanics who fail to identify as Hispanic average three-quarters of a year *more* education than their counterparts who do so identify, whereas the analogous comparison among second-generation Asians yields a *deficit* of three-fifths of a year for those who fail to identify as Asian. The pattern is similar among third-generation children: those of Hispanic descent who are not identified as Hispanic enjoy advantaged backgrounds (i.e., fathers and mothers with more schooling, on average) compared to their peers who are identified as Hispanic, and this selectivity runs in the opposite direction for children of Asian descent. In particular, average parental education is more than four-fifths of a year higher for third-generation Hispanic children not identified as Hispanic compared to those who are identified as Hispanic. In contrast, average parental education is over two-thirds of a year lower for third-generation Asian children not identified as Asian compared to those who are identified as Asian.

[9] For comparison purposes, Table 2 also reports average completed years of schooling for first-generation adults. Given the negligible amount of ethnic attrition observed in the first generation, however, we do not distinguish this generation by ethnic identification. We follow Jaeger's (1997) recommendations for how to construct a completed years of schooling variable from the CPS information collected about postsecondary degrees obtained.

Our previous research for Mexicans (Duncan and Trejo 2007, 2011) suggests that selective ethnic attrition causes most analyses to understate the socioeconomic attainment of the U.S.-born descendants of Mexican immigrants, because this population usually must be identified by their subjective responses to questions about ethnic origins. Table 2 indicates that a similar conclusion holds for Hispanics more broadly, at least in terms of education. On the other hand, Table 2 reveals the reverse bias for Asians, which suggests that ethnic attrition inflates observed schooling levels for the U.S.-born descendants of Asian immigrants. The analyses that follow explore in greater detail the patterns of ethnic identification and education selectivity highlighted in Tables 1 and 2 and assess a possible theoretical explanation for why the direction of selectivity differs for Hispanics and Asians.

Ethnic Identification

In this section, we investigate the determinants of subjective ethnic identification among second- and third-generation Hispanics and Asians. Table 3 reveals that there exists substantial variation in the structure of ethnic origins and that Hispanic and Asian identification rises with the strength of the relevant ethnic attachments. For our samples of second-generation adults, the upper part of Table 3 indicates that only about three-fifths of Hispanics and half of Asians are from families in which both parents were born in a relevant source country. The remaining second-generation adults have weaker ethnic attachments in the sense that one of their parents is either U.S.-born or originated in a country other than one of the five main Hispanic (or Asian) source countries considered here. Ethnic identification rates are very high for second-generation adults when both of their parents were born in a relevant source country (97 percent for Hispanics and 95 percent for Asians). Identification rates decline significantly, however, for

those second-generation adults with only one parent born in a relevant source country (i.e., reductions of 10 percentage points for Hispanics and 30 percentage points for Asians). Interestingly, among second-generation Hispanics with only one parent born in a relevant source country, ethnic identification rates are similar regardless of whether that parent is the father or the mother. Among Asians, however, ethnic identification rate are five percentage points higher for those second-generation adults whose father rather than mother was born in a relevant country.

For our samples of third-generation children, the lower part of Table 3 reports similar information pertaining to generational complexity and its relationship to subjective ethnic identification. First, we show the percentage distribution of third-generation children by how many of their grandparents were born in a relevant source country, and below that we indicate how ethnic identification rates vary with this indicator of the strength of ethnic origins. Note that the vast majority of third-generation children (75 percent of Hispanics and 90 percent of Asians) have only one or two grandparents who were born in a relevant source country, rather than three or four. This complexity of grandparents' origins has two sources: interethnic marriage, and marriage between different generations of the same ethnicity.[10] The only way that a third-generation Hispanic child can have three or four of his grandparents born in Hispanic source countries, for example, is if both parents are second-generation Hispanics (i.e., the mother and father are both the U.S.-born children of Hispanic immigrants). By contrast, if a second-generation Hispanic marries either a non-Hispanic or a later-generation Hispanic (i.e., an Hispanic from the third generation or beyond), then the children resulting from such a marriage can have at most two grandparents born in Hispanic source countries.

[10] Lichter, Carmalt, and Qian (2011) discuss the prevalence and implications of cross-generational marriage among Hispanics. Min and Kim (2009) do the same for Asians.

Table 3 shows that this generational complexity is closely related to third-generation children's subjective ethnic identification. Children with three or four grandparents born in a relevant source country are very likely to report the corresponding ethnic identification (at rates of 97 percent for Hispanics and 90 percent for Asians), but identification rates are much lower for the bulk of third-generation children who have only one or two immigrant grandparents and therefore weaker ethnic ties. Indeed, for both Hispanics and Asians, the largest segment of the third generation has just one grandparent born in a relevant source country (40 percent of Hispanics and 59 percent of Asians), and ethnic identification rates for this segment fall to 69 percent for Hispanics and 42 percent for Asians.

In the preceding discussion, heterogeneity among third-generation children is measured by how many of their grandparents were born in a relevant source country. The bottom part of Table 3 provides a somewhat different perspective on generational complexity by distinguishing third-generation children according to whether their ethnicity derives from both the paternal and maternal sides of their family rather than just from one side. For example, we define a third-generation Hispanic child to have Hispanic ethnicity on his father's side of the family if at least one of the following two things is true: (1) the child has a paternal grandparent who was born in an Hispanic source country, or (2) the child's father self-identifies as Hispanic in response to the Hispanic origin question. In an analogous fashion, the countries of birth of the maternal grandparents and the mother's subjective ethnic identification determine whether a third-generation Hispanic child has Hispanic ethnicity on his mother's side of the family. By construction, all of the children in our third-generation samples have at least one grandparent born in a relevant source country, so they all have Hispanic (or Asian) ethnicity on at least one side of their family. The issue is whether the CPS data give any indication that a child also has

this ethnicity on the *other* side of his family. In this way, we distinguish third-generation children by whether they are the products of ethnic in-marriage (i.e., children with the relevant ethnicity on both sides of their family) or ethnic intermarriage (i.e., children with the relevant ethnicity on only one side of their family).

Table 3 shows that mixed ethnic origins are widespread among third-generation Hispanic and Asian children. For nearly half of Hispanic children, this ethnicity originates on only one side of their family, and the corresponding share approaches three-quarters for Asian children. Table 3 also indicates that ethnic intermarriage is a fundamental source of ethnic attrition in the third generation. Among third-generation children with the relevant ethnicity on both sides of their family, ethnic identification rates are 98 percent for Hispanics and 93 percent for Asians. Identification rates are markedly lower, however, for children whose ethnicity originates from just one side of their family: 65 percent for Hispanics and 45 percent for Asians. Clearly, the sizeable amount of ethnic attrition observed in our third-generation samples is concentrated among children who are the products of interethnic marriages. Among such children, for Hispanics there is now some indication of greater ethnic identification when the source of this ethnicity is paternal rather than maternal, whereas Asians display the reverse pattern.

Next, we investigate whether the relationship between ethnic origins and ethnic identification changes upon controlling for other variables, and we also show how this relationship varies across national origin groups. Tables 4 (for Hispanics) and 5 (for Asians) report estimates from least squares regressions for our samples of second-generation adults and third-generation children in which the dependent variable is a dummy indicating whether the respondent subjectively identifies as a member of the relevant ethnic group.[11] Specification (1)

[11] Although the dependent variable in these regressions is dichotomous, we choose to report least squares estimates (i.e., linear probability models) because the coefficients are easier to interpret. Probit estimates, however, imply similar marginal

includes as independent variables only an intercept and a set of dummy variables distinguishing whether the respondent's ethnicity derives from both sides of their family (the reference group), only their father's side, or only their mother's side.[12] These estimates simply reproduce, for comparison purposes, the unadjusted differences in ethnic identification rates implicit in Table 3. For example, the specification (1) estimates for third-generation Hispanics in Table 4 indicate that the ethnic identification rate is 97.7 percent (the estimated intercept) for children with Hispanic ethnicity on both sides of their family, whereas the rate is 30.5 percentage points lower (or 67.2 percent) for those with Hispanic ethnicity on only their father's side and is 35.1 percentage points lower (or 62.6 percent) for those with Hispanic ethnicity on only their mother's side.

The specification (2) regressions add a number of control variables, including indicators for gender, geographic location, survey month, and survey year.[13] For second-generation adults, the control variables also include indicators for the respondent's age and whether he was the household member who completed the survey. For third-generation children, the additional control variables include the ages of the child and of his father and mother, and indicators for whom in the household completed the survey (a parent with the relevant ethnicity, a parent without the relevant ethnicity, or another household member).

By comparing the estimates in specifications (1) and (2), we see that adding the control

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effects. In order to account for the heteroskedasticity that arises with linear probability models (or for other reasons), we report robust standard errors (White 1980) in parentheses for all regressions.

[12] To be precise, this is how the dummy variables are defined for third-generation children, and it is the same categorization employed for third-generation children in the bottom part of Table 3. For second-generation adults, the dummy variables instead distinguish between respondents with both parents born in a relevant source country (the reference group), those with only their father born in a relevant source country, and those with only their mother born in a relevant source country. This is the same breakdown of second-generation adults used in the top part of Table 3. Limitations of CPS data necessitate the different classification schemes for second-generation adults and third-generation children. For second-generation adults, country of birth is the only thing we know about the parents, whereas we have much more parental information for our samples of third-generation children living with both parents, including race and Hispanic origin.

[13] The controls for geographic location are dummy variables identifying the nine Census divisions.

variables does not change the conclusion that the source of ethnic origins (i.e., both sides of family versus father's side only versus mother's side only) is a primary determinant of ethnic identification. The relevant coefficients change very little for second-generation adults and attenuate somewhat (by about 10 percent for Hispanics and 20 percent for Asians) for third-generation children. Moreover, direct effects of the control variables on ethnic identification (not reported in the tables) are generally quite modest. Gender differences in ethnic identification are small and not statistically significant, but identification does tend to decline with the respondent's age and increase with calendar year, and there exists significant regional variation. For second-generation adults, identification rates are not affected by whether the survey questions were answered by the respondent himself rather than by another household member. For third-generation children, it does not matter whether the parent who completed the survey shares the child's ethnicity, but identification rates are somewhat higher when the survey was completed by some other (i.e., non-parent) household member.

Finally, specification (3) adds source country main effects and interactions that allow ethnic identification rates and the impacts of ethnic origins to vary by national origin. The reference countries are Mexico for Hispanics and China for Asians.[14] For second-generation Hispanics in Table 4, for example, the estimated main effect for Cuba indicates that, among those with both parents born in an Hispanic country, ethnic identification rates are two percentage points lower for Cubans than for Mexicans (the reference group). The corresponding interaction terms imply that, compared to second-generation Cubans with both parents born in Cuba, identification rates are 21.6 percentage points lower for those with only a Cuban-born

[14] Strictly speaking, the source country dummy variables included in the specification (3) regressions are not mutually exclusive, but they are close to being so. As noted earlier, respondents with mixed origins create a small amount of overlap across these dummies (e.g., a third-generation child with one grandparent born in Puerto Rico and another grandparent born in the Dominican Republic would be assigned a value of "1" for the dummy variables pertaining to both of these countries).

father and 25.9 percentage points lower for those with only a Cuban-born mother.

For the most part, source country main effects in the specification (3) regressions are small and not statistically significant, indicating that ethnic identification rates are similar across national origin groups for respondents with the relevant ethnicity on both sides of their family.[15] Third-generation Asians in Table 5 are an exception to this pattern, with identification rates among those with the relevant ethnicity on both sides of their family that exceed the reference group (Chinese) by 9 percentage points for Koreans, 10 percentage points for Japanese, and 15 percentage points for Filipinos. There seems to be greater variation across national origin groups, however, in the impact of mixed origins on ethnic identification (i.e., the estimated coefficients on the interaction terms between source country dummies and the variables indicating whether the relevant ethnicity originates only on the father's side or only on the mother's side). Among Hispanics, being from mixed origins produces the smallest reduction in ethnic identification for Mexicans and the largest reduction in identification for Salvadorans. Among Asians, being from mixed origins has a relatively small impact on identification for Chinese and a relatively large impact for Indians.[16]

Educational Selectivity of Ethnic Identification

We now turn to a more detailed analysis of the educational selectivity of ethnic identification that was previewed earlier in Table 2. Tables 6 (for Hispanics) and 7 (for Asians)

[15] This statement compares national origin groups *within* Hispanics and *within* Asians. As shown in Table 3, however, ethnic identification rates overall are a few percentage points higher for Hispanics than for Asians among second-generation adults and third-generation children with the relevant ethnicity on both sides of their family.

[16] For second-generation adults, CPS data provide the country of birth for each respondent's father and mother, but it is not known whether a foreign-born parent was born abroad of an American parent, as might be the case for children of U.S. military personnel stationed abroad. Similarly, for third-generation children, we do not know whether a foreign-born grandparent was born abroad of an American parent. Therefore, for source countries like Japan and Korea that host significant numbers of U.S. military personnel and American workers on foreign assignments, ethnic attrition rates for the second and third generations could be overstated because country of birth may not accurately signal ethnicity for ancestors born abroad of an American parent.

report estimates from least squares regressions in which the dependent variable is completed years of education.[17] In specification (1), the only independent variables are an intercept and a dummy variable indicating those respondents who do *not* subjectively identify with the relevant ethnic group (Hispanic or Asian). Therefore, these results restate the unadjusted differences in average education associated with ethnic attrition that were presented earlier in Table 2. For example, the specification (1) estimates for second-generation Hispanics in Table 6 indicate that average schooling is 12.88 years (the estimated intercept) for those who subjectively identify as Hispanic, but average educational attainment is higher by .76 years for second-generation adults who do not identify as Hispanic. As discussed earlier, for both second-generation adults and third-generation children, these raw averages reveal that ethnic attrition attracts Hispanics with about three-quarters of a year *more* education than their peers who continue to identify as Hispanic, whereas analogous comparisons for Asians imply an educational *deficit* for ethnic attriters of roughly two-thirds of a year. The specification (2) regressions demonstrate that the pattern is similar when controls are added for age, gender, geographic location, survey month, and survey year.

In broad terms, this educational selectivity of ethnic attrition has two possible sources. First, because ethnic attrition predominately occurs among those with mixed origins (i.e., second- and third-generation individuals who are the products of interethnic marriages), the educational selectivity of intermarriage is a potential source of schooling differences between respondents who do and do not provide the expected subjective identification. Second, within the subsample of those with mixed origins, ethnic identification might be selective on education. In order to shed light on the separate roles played by these two sources of selectivity, the

[17] For second-generation adults, the dependent variable is the respondent's educational attainment; for third-generation children, it is the average of father's and mother's education.

specification (3) regressions add interaction terms that allow the effect of subjective ethnic identification to vary with the source of ethnic origins (i.e., both sides of family versus father's side only versus mother's side only). The first source of selectivity, intermarriage selectivity, represents education differences between respondents with the relevant ethnicity on only one side of their family and those with the relevant ethnicity on both sides of their family. The second source, selective ethnic identification among those with mixed origins, shows up in how education varies with subjective ethnic identification for respondents with the relevant ethnicity on just one side of their family.

For second-generation Hispanics and Asians, the specification (3) estimates imply that both potential sources of the educational selectivity of ethnic attrition are important.[18] Intermarriage selectivity arises because respondents with the relevant ethnicity on only one side of their family have significantly different educational levels, on average, than those with the relevant ethnicity on both sides of their family (the reference group). For Hispanics, respondents with mixed origins tend to have higher educational attainment, whereas for Asians mixed origins are associated with lower educational attainment. Selective ethnic identification is also evident, however, because among those with mixed origins, the education patterns noted above are stronger for those who do *not* subjectively identify with the relevant ethnicity. For example, the schooling advantage (relative to the reference group) for second-generation Hispanics with a mother (but not a father) born in an Hispanic source country is .65 years for those who identify as Hispanic and 1.38 years for those who do *not* identify as Hispanic. Second-generation Asians

[18] The reference group in specification (3) consists of those with the relevant ethnicity on both sides of their family who also subjectively identify with the expected ethnic group. To simplify our discussion of these estimates, we will take this reference group as representing *all* of those with the relevant ethnicity on both sides of their family, in effect ignoring the estimated education differences for those with the relevant ethnicity on both sides of their family who do *not* subjectively identify with the expected ethnic group. We saw earlier in Table 3, however, that ethnic identification rates are very high (93 percent and above) for those with the relevant ethnicity on both sides of their family, so the group we ignore is quite small and their education differences inconsequential.

display a similar but inverted pattern, with the relevant differentials now representing schooling *deficits* rather than advantages.

For third-generation children, in contrast, the primary source of the educational selectivity of ethnic attrition differs for Hispanics and Asians. For Hispanics, the selectivity of ethnic attrition arises principally from the first source of selectivity (intermarriage selectivity), and the second source (selective ethnic identification among those with mixed origins) is relatively unimportant. The relevant estimates in Table 6 indicate that average parental education is substantially higher for third-generation children with Hispanic ethnicity on just one side of their family than for the corresponding children with Hispanic ethnicity on both sides of their family; moreover, average parental education does not vary much with the child's ethnic identification among those third-generation children with Hispanic ethnicity on just one side of their family. For third-generation Asian children, however, it is selective ethnic identification rather than intermarriage selectivity that drives the educational selectivity of ethnic attrition. The relevant results in Table 7 imply that, within the subsamples of third-generation children with Asian ethnicity on only one side of their family, average parental education is markedly lower for children who fail to identify as Asian.

In terms of educational attainment, why is ethnic attrition positively selected for Hispanics and negatively selected for Asians? Some theories of interethnic marriage (e.g., Furtado 2006, 2012; Kalmijn 2012) predict that members of low-attainment groups (such as Hispanics) who intermarry should be positively selected in terms of attainment, whereas the corresponding selectivity should be less positive and perhaps even negative for intermarried members of high-attainment groups (such as Asians). Our findings on the educational selectivity of ethnic attrition are broadly consistent with this prediction, given that average schooling levels

are much lower for Hispanics than for Asians (see Table 2) and that intermarriage induces ethnic attrition (see Table 3).

In particular, Furtado (2006, 2012) emphasizes how the supplies of potential spouses vary with ethnic-specific schooling distributions in marriage markets where individuals hope to match on both education and ethnicity.[19] A college-educated Mexican American, for example, may choose to intermarry because of the relative scarcity of other Mexican ethnics with a college degree. The same logic applies to other Hispanic national origin groups with relatively low education levels, such as Puerto Ricans. Most Asian-American groups tend to be overrepresented on college campuses, however, so for these groups it may instead be the less-educated individuals who face a more difficult time finding co-ethnics to marry within their education group. Consequently, this model predicts that members of low-education groups who intermarry should be positively selected in terms of education, whereas the selectivity should be weaker and possibly negative for intermarried members of high-education groups.[20] Because intermarriage is a fundamental source of ethnic attrition, the differences across groups in intermarriage selectivity predicted by Furtado's model can generate corresponding differences in the selectivity of ethnic attrition.[21]

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[19] Kalmijn (2012) makes a similar argument when he discusses the "structural perspective" on intermarriage.

[20] For a number of reasons, increased education might make individuals more receptive toward interethnic marriage and/or put them in settings where they meet a more diverse pool of potential spouses (Furtado 2012; Kalmijn 2012). Such forces create a tendency for the educational selectivity of intermarriage to be positive for all groups, independent of the structural supply forces that generate different types of selection for low-education and high-education groups. On net, therefore, the educational selectivity of intermarriage could turn out to be positive or negative for high-education groups like the Chinese, but this selectivity is predicted to be positive and stronger for low-education groups like Mexicans.

[21] Furtado's model focuses on the educational selectivity of interethnic marriage; in other words, how does an individual's education level influence their chances of entering into an interethnic marriage. Interethnic marriage might also directly affect the educational attainment of any resulting children. Indeed, van Ours and Veenman (2010) provide evidence from the Netherlands that marriages between Moluccan immigrant men and Dutch women generate a positive impact on their children's education (relative to endogamous Moluccan marriages or marriages between Dutch men and Moluccan women), perhaps because native Dutch mothers have better language skills and greater knowledge of the relevant educational system than do Moluccan immigrant mothers. Because the education measures we have available for our samples of third-generation children are the schooling levels of their parents rather the schooling levels of the children themselves, these measures are not affected by any direct effects of interethnic marriage on the children.

To further assess this potential explanation for our findings, we begin by disaggregating to the level of the ten specific source countries (five Hispanic countries and five Asian countries) in our samples. For each of these national origin groups, Table 8 presents average education levels and measures of educational selectivity separately for second-generation adults and third-generation children. Our measures of the educational selectivity of ethnic attrition represent estimated differences in education, by source country, between those who do *not* identify with the relevant ethnicity and those who do so identify, after conditioning on the "other control variables" included in specification (2) of Tables 6 and 7.[22] The measures of educational selectivity of interethnic marriage represent analogous differences in education between those with the relevant ethnicity on only one side of their family (i.e., father's side *or* mother's side) and those with the relevant ethnicity on both sides of their family.[23]

Furtado's model predicts that the educational selectivity of interethnic marriage (and, by extension, ethnic attrition) should be largest (i.e., most positive) for the groups with the lowest average schooling levels and smallest (i.e., least positive or most negative) for the groups with the highest average schooling levels. A casual inspection of Table 8 appears to support this prediction, as our measures of educational selectivity tend to be most positive for the least-educated groups (Mexicans and Puerto Ricans) and most negative for the highest-educated groups (Indians and Chinese). The simple bivariate regressions reported in Table 9 confirm a negative relationship across national origin groups between the measures of educational

[22] In other words, we estimated regressions similar to specification (2) in Tables 6 and 7, but with the addition of main effects for each source country and interaction terms between the source country dummies and the indicator for respondents who do *not* subjectively identify with the relevant ethnic group (Hispanic or Asian). The estimated coefficients on these interaction terms constitute our country-specific measures of the educational selectivity of ethnic attrition.

[23] In other words, we estimated regressions similar to those described in the preceding footnote, but the indicator for *not* identifying with the relevant ethnic group was replaced with an indicator for respondents who have the relevant ethnicity on only one side of their family (i.e., father's side *or* mother's side) rather than on both sides of their family. The estimated coefficients on the interaction terms between this indicator and the source country dummies constitute our country-specific measures of the educational selectivity of interethnic marriage.

selectivity and average schooling levels. In each regression, a measure of educational selectivity is regressed on average completed years of education, and the ten observations consist of the ten source countries. Separate regressions are run for second-generation adults and for third-generation children. Regressions shown in the odd-numbered columns are unweighted, whereas regressions in the even-numbered columns are weighted by the inverse of the standard errors of the dependent variables.[24]

All of the regressions exhibit a statistically significant negative relationship between educational selectivity and a group's average schooling level, and in every case this relationship accounts for a substantial portion of the variation across groups in educational selectivity, as indicated by R-squared statistics ranging from .28 to .90. Our finding of such a relationship for the educational selectivity of interethnic marriage echoes previous results reported by Furtado and Theodoropoulos (2011), Furtado (2012) and Kalmijn (2012). Because Furtado's theoretical prediction pertains most directly to the selectivity of interethnic marriage, however, it is somewhat surprising that the relationship seems to be even stronger for the selectivity of ethnic attrition (i.e., higher R-squared statistics, as well as slope coefficients that are larger in absolute value and more precisely estimated). Figure 1 presents graphs of the data points and estimated regression lines from the unweighted specifications in Table 9, and these graphs visually confirm the tighter fit and steeper slope of the relationship for ethnic attrition than for intermarriage. Recall that the selectivity of ethnic attrition derives from both intermarriage selectivity and selective ethnic identification. Evidently, a negative relationship between identification selectivity and a group's average schooling level reinforces the corresponding relationship for intermarriage selectivity to produce an even stronger negative relationship between the

[24] Table 8 shows all of the data used in these regressions.

educational selectivity of ethnic attrition and average schooling. These simple correlations across ten national origin groups are meant only to be suggestive, but they do support a potential mechanism for our finding that the educational selectivity of ethnic attrition tends to be positive for Hispanics and negative for Asians.

Conclusion

Because of data limitations, research on the U.S.-born descendants of Hispanic and Asian immigrants often must identify the populations of interest using subjective measures of racial/ethnic identification (Sakamoto, Wu, and Tzeng 2000; Snipp and Hirschman 2004; Zeng and Xie 2004; Saenz 2005; Duncan, Hotz, and Trejo 2006). In particular, this approach is typically the only feasible option for studies that seek to examine long-term integration by distinguishing immigrant descendants in the third and higher generations (Rong and Grant 1992; Borjas 1994; Trejo 1997, 2003; Goyette and Xie 1999; Farley and Alba 2002; Grogger and Trejo 2002; Yang 2004; Smith 2006; Blau and Kahn 2007). A potential problem with this approach is that assimilation and intermarriage can cause ethnic attachments to fade across generations (Alba 1990; Waters; 1990; Perlmann and Waters 2007), and therefore subjective measures of racial/ethnic identification might miss a significant portion of the later-generation descendants of immigrants. Furthermore, if such ethnic attrition is selective on socioeconomic attainment, then it can distort assessments of integration and generational progress.

Using 2003-2013 CPS data, we explore this issue for a wide range of national origin groups from important Hispanic (Mexico, Puerto Rico, Cuba, El Salvador, and the Dominican Republic) and Asian (China, India, Japan, Korea, and the Philippines) source countries. We measure ethnic attrition by analyzing the subjective racial/ethnic identification of individuals

whose immigrant generation and national origins can be determined from the information available in the CPS regarding the countries of birth of themselves and their ancestors. For individuals linked to Hispanic source countries, we examine whether they subjectively identify as Hispanic in response to the Hispanic origin question, and for individuals linked to Asian source countries, we examine whether they subjectively identify as Asian in response to the race question. We conduct this analysis for three immigrant generations: first-generation adults (i.e., U.S. immigrants ages 25-59 who were born in a relevant source country), second-generation adults (i.e., U.S.-born individuals ages 25-59 who have at least one parent born in a relevant source country), and third-generation children (i.e., U.S.-born children ages 17 and below who live in intact families and have two U.S.-born parents but at least one grandparent born in a relevant source country).[25] So, for example, the ethnic attrition rate for second-generation Cubans represents the percentage who do *not* subjectively identify as Hispanic within our sample of U.S.-born adults with a parent born in Cuba.

We find little ethnic attrition in the first generation, which indicates that immigrants from these Hispanic and Asian countries generally understand the CPS Hispanic origin and race questions and consistently provide the expected responses. By the second generation, however, non-negligible rates of ethnic attrition emerge (7 percent for Hispanics and 21 percent for Asians), with particularly high rates for Salvadorans (28 percent), Indians (24 percent), and Japanese (32 percent). Attrition rates are much higher for third-generation children (18 for Hispanics and 42 percent for Asians), with rates for specific national origin groups ranging from 12 percent for Mexicans, 19 percent for Dominicans, and 24 percent for Puerto Ricans to 35 percent or more for the remaining groups (including rates exceeding 50 percent for Salvadorans

[25] In CPS data, complete information regarding grandparents' countries of birth is available only for children living in the same household as both of their parents, which is why our third-generation samples are limited to children in married, intact families.

and Japanese and well over 60 percent for Indians). Consequently, standard analyses that must rely on subjective racial/ethnic identification to detect the later-generation descendants of immigrants may miss large segments of the target populations. We also find that mixed ethnic origins are common among third-generation Hispanic and Asian children, and we demonstrate that ethnic attrition predominately occurs in children with mixed parental origins. Among third-generation children with the relevant ethnicity on both the paternal and maternal sides of their family, ethnic attrition rates are low (2 percent for Hispanics and 7 percent for Asians), but these rates are dramatically higher among children whose ethnicity originates from only one side of their family (35 percent for Hispanics and 55 percent for Asians).

In addition, we analyze the educational selectivity of ethnic attrition and uncover important differences between Hispanics and Asians. [26] For both second-generation adults and third-generation children, the educational selectivity of ethnic attrition is positive for Hispanics and negative for Asians (i.e., average parental education is higher for third-generation children of Hispanic descent who do *not* subjectively identify as Hispanic, whereas this pattern is reversed for children of Asian descent). Moreover, the source of the selectivity differs across groups, especially for the third generation. For third-generation Hispanics, the positive selectivity arises primarily because Hispanics who marry non-Hispanics tend to have higher education levels than Hispanics who marry endogamously. For Asians, in contrast, the principal source of the negative selectivity is that, within intermarried families, average parental education is lower for children who fail to identify as Asian. In other words, third-generation Asian children with better-educated parents appear to retain stronger ethnic ties.

The overall pattern that the educational selectivity of ethnic attrition tends to be positive

[26] The CPS does not provide informative measures of attainment for children, so we analyze the selectivity of ethnic attrition among third-generation children by examining the education levels of their parents.

for low-education Hispanic groups and negative for high-education Asian groups is consistent with Furtado's (2006, 2011) model of interethnic marriage. By analyzing variation in educational selectivity and average education levels across the ten specific source countries (five Hispanic countries and five Asian countries) in our samples, we provide further evidence in support of Furtado's model and show that the mechanism proposed by this model potentially accounts for a substantial portion of the variation across national origin groups in educational selectivity. Regardless of the theoretical explanation, our empirical findings indicate that ethnic attrition generates measurement biases that vary across national origin groups in direction as well as magnitude, and that correcting for these biases is likely to raise the socioeconomic standing of the U.S.-born descendants of Hispanic immigrants relative to their Asian counterparts. Our results, however, shed more light on the direction rather than the ultimate magnitude of these measurement biases, and so at this point we cannot say whether correcting for selective ethnic attrition would produce a small or large improvement in the relative attainment of later-generation Hispanics.

The data analyzed in the main body of the paper come from after the major changes to the CPS Hispanic origin and race questions that were adopted in 2003. In the appendix, we show that these survey changes have substantially lowered rates of ethnic attrition for second- and third-generation Hispanics and Asians. By asking directly about Hispanic ethnicity and by allowing multiple race responses, the CPS now elicits higher rates of subjective ethnic identification among the descendants of Hispanic and Asian immigrants. Ethnic attrition remains a significant problem, however, even in CPS data collected using the improved questionnaire. Because the Hispanic origin and race questions introduced in the 2003 CPS are similar to the analogous questions employed in the Census and ACS from 2000 forward, the

issues pertaining to subjective identification and selective ethnic attrition that we have explored here with CPS data are also relevant for Census and ACS data. Unfortunately, the lack of information about parental countries of birth makes these issues difficult to study or address in the Census and ACS.

Appendix

In this appendix, we describe major changes to the CPS questions regarding Hispanic origin and race that were introduced in the January 2003 survey (Bowler *et al*. 2003), and we also compare data from before and after these changes in order to assess their potential impact on ethnic identification by the descendants of U.S. immigrants from key Hispanic and Asian source countries. These modifications of the survey questionnaire had large effects on subjective measures of ethnic identification.

Prior to 2003, the CPS collected information on Hispanic origin in a rather indirect fashion. Respondents were asked to choose their "origin or descent" from a flash card listing about 20 options. Just over half of these options represented European ancestries (such as "German" or "Swedish"), another option was "Afro-American," and there was a residual category for "another group not listed." The remaining options were meant to capture Hispanics. Three separate options were available for those of Mexican descent ("Mexican-American," "Chicano," and "Mexican"), and the options for non-Mexican Hispanics included "Puerto Rican," "Cuban," "Central or South American (Hispanic Countries)," and "Other Hispanic." For our purposes, it is important to note that "Salvadoran" and "Dominican" were not listed explicitly as options. Presumably, Salvadorans were expected to choose the "Central or South American" option, and Dominicans were expected to choose "Other Hispanic." Starting in 2003, the CPS Hispanic origin question was changed to a format similar to that introduced in the 2000 U.S. Census and also adopted by the ACS. Respondents are now asked directly whether they are "Spanish, Hispanic, or Latino," and those who answer affirmatively are then given the opportunity to designate a specific national origin group (Mexican, Puerto Rican, Cuban, Central/South American, or Other Spanish).

Beginning in January 2003, the CPS race question also was revised to be similar to the 2000 Census race question. The most significant change is that respondents can now choose more than one race, whereas previously only a single race response was allowed.[27] In addition, the ordering of the Hispanic origin and race items on the questionnaire was switched. Prior to the 2003 CPS (or the 2000 Census), the race question preceded the Hispanic origin question. Now, the Hispanic origin question precedes the race question.[28]

We anticipate that these changes to the CPS questionnaire will increase ethnic identification (and thereby reduce ethnic attrition) for our samples of Hispanic and Asian national origin groups. The revised Hispanic origin question now directly asks about "Spanish, Hispanic, or Latino" ethnicity, which could improve identification for all Hispanic national origin groups, because the pre-2003 version of this question was not clear about its intent to identify Hispanics. We might expect to see the largest jumps in Hispanic identification for groups such as Salvadorans and Dominicans that were not listed explicitly as options in the previous version of the Hispanic origin question. The revised race question allows for multiple responses, which could increase Asian identification among multiracial Asians who previously may have given a non-Asian response when they were forced select a single race. Because Asians have relatively high rates of multiracial identification (Jones and Symens Smith 2001), their answers to the race question might be particularly sensitive to permitting multiple responses.[29]

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[27] In contrast, the Hispanic origin question continues to permit only a single response. For example, respondents are not allowed to indicate that they are both "Mexican" and "Puerto Rican".

[28] To a large extent, the 2003 changes to both the race and Hispanic origin questions in the CPS echo the revisions that had been made to the corresponding questions in the 2000 Census. See Grieco and Cassidy (2001) for a discussion of the race and Hispanic origin questions in the 2000 Census.

[29] Using the CPS data from 2003-2013, we can calculate the percentage of individuals who answer the race question with multiple responses that include both Asian and non-Asian responses. This measure of the multiracial Asian population provides an indication of the extent to which Asians in our samples might have been affected by the pre-2003 requirement to

For three groups with large enough samples to produce reasonably precise estimates by CPS survey year, Figure A.1 illustrates the noticeable impact of the 2003 questionnaire changes on ethnic attrition. For each group, Figure A.1 plots ethnic attrition rates calculated separately by survey year, with these annual rates displayed as dots.[30] The dashed vertical line distinguishes rates from before and after the CPS questionnaire changes that were introduced at the start of 2003, and the solid horizontal lines represent average ethnic attrition rates for the relevant "pre" (1994-2002) and "post" (2003-2013) regimes.

The top panel of Figure A.1 shows ethnic attrition rates for first-generation Dominican adults. Under the pre-2003 version of the CPS Hispanic origin question, annual rates of ethnic attrition for Dominican immigrants range from 12 to 30 percent, with an average of about 18 percent. After the 2003 changes to the Hispanic origin question, however, the corresponding annual rates never exceed 4 percent, and the average ethnic attrition rate drops to 2 percent. Evidently, the questionnaire changes have raised Hispanic identification and lowered ethnic attrition among first-generation Dominicans, and by a substantial amount. Under the revised Hispanic origin question, ethnic attrition becomes negligible for U.S. immigrants from the Dominican Republic, notwithstanding factors (e.g., phenotype and home country conceptions of race/ethnicity quite different from those in the United States) that might complicate ethnic identification for Dominicans (Bailey 2001; Itzigsohn, Giorguli, and Vazquez 2005).[31] Among

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select a single race. For second-generation adults from Asian source countries, the proportion identifying as multiracial Asians is 13 percent for the overall sample, with country-specific rates ranging from 5 percent for Indians and 7 percent for Chinese to just over 20 percent for Japanese and Koreans. For third-generation children, the corresponding rates are substantially higher, with an overall rate of 34 percent and country-specific rates ranging from 26 percent for Indians to 40 percent for Koreans.

[30] The ethnic attrition rate represents the percentage of individuals who do *not* subjectively identify as Hispanic or Asian (whichever would be expected for their national origin group). As such, the ethnic *attrition* rates displayed in Figure A.1 are complements of the corresponding ethnic *identification* rates reported earlier in Tables 1 and 3 and reported below in Tables A.1, A.2, and A.3 (i.e., the ethnic attrition rate equals 100 minus the ethnic identification rate).

[31] Our findings for Dominican immigrants corroborate the corresponding results in del Pinal and Schmidley (2005), who matched respondents from the 2000 CPS (for the months of February through May) with the information that these same individuals provided in the 2000 Census (conducted in April). With their matched sample, del Pinal and Schmidley can compare

first-generation adults, Dominicans are the only national origin group to exhibit such a dramatic shift in ethnic identification before and after the 2003 changes in the CPS questionnaire. Only two other first-generation groups show statistically significant movement in the average rate of ethnic attrition before and after the questionnaire changes, and for these groups the declines in ethnic attrition are more modest (for Salvadorans, the rate of ethnic attrition falls from 5 percent before 2003 to 1 percent afterward, and the corresponding reduction for Indians is from 11 to 6 percent).

The middle panel of Figure A.1 displays a similar graph for second-generation Puerto Rican adults who have only one of their parents (rather than both) born in Puerto Rico. Because the rate of ethnic attrition is only about 5 percent (see Table A.2 below) among second-generation adults with both parents born in Puerto Rico, we choose to focus here on those with mixed parental origins for whom ethnic attrition is more prevalent. Once again, we see a discernible reduction in ethnic attrition after the CPS questionnaire changes are introduced in 2003. From 1994-2002, the annual rates of ethnic attrition for second-generation adults with just one parent born in Puerto Rico vary between 28-39 percent, whereas from 2003-2013 the comparable range is 11-26 percent. The average rate of ethnic attrition is cut in half, falling from 34 percent before 2003 to 17 percent from 2003 forward.

The bottom panel of Figure A.1 tells a similar story for third-generation Mexican children with Hispanic ethnicity on just one side of their family.[32] The average rate of ethnic attrition plunges from 61 percent during 1994-2002 down to 28 percent in the 2003-2013 data, with

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how these individuals answered the Hispanic origin and race questions in both the 2000 CPS (which employed the earlier version of these questions) and the 2000 Census (which introduced the significant changes to these questions described above). Among those born in the Dominican Republic, the rate of Hispanic identification was much higher when responding to the 2000 Census (94 percent) than to the 2000 CPS (79 percent).

[32] Third-generation Mexican children with Hispanic ethnicity on both sides of their family have an ethnic attrition rate of only 2 percent (see Table A.3 below), and this rate is very similar before and after the 2003 changes in the CPS questionnaire.

annual rates that do not stray too far from the relevant average in each time period. Indeed, the *lowest* annual rate of ethnic attrition observed in the pre-2003 period (55 percent in 1998) far exceeds the *highest* annual rate observed afterward (35 percent in 2011). The middle and bottom panels of Figure A.1 indicate that, even for groups such as Puerto Ricans and Mexicans that were listed explicitly as options in the pre-2003 CPS Hispanic origin question, the more direct version of this question adopted in 2003 dramatically reduced ethnic attrition among second- and third-generation individuals with mixed parental origins.

The other groups of second- and third-generation individuals with mixed parental origins also experienced increases in ethnic identification (i.e., declines in ethnic attrition) following the 2003 questionnaire changes, but smaller sample sizes make the annual estimates rather noisy for most of these groups. To provide an informative picture of the overall patterns, Tables A.1 (for first-generation adults), A.2 (for second-generation adults), and A.3 (for third-generation children) report rates of ethnic identification before (1994-2002) and after (2003-2013) the CPS revision, separately by source country and for relevant subgroups (e.g., third-generation children with the relevant ethnicity on only one side of their family). These tables make clear that the 2003 changes to the CPS Hispanic origin and race questions had pervasive impacts on Hispanic and Asian identification. For U.S.-born individuals with mixed parental origins from almost every one of our source country samples, the 2003 questionnaire changes increased ethnic identification.[33] Among second-generation adults with only one parent born in a relevant source country, these increases are particularly large for Salvadorans and Indians, the two groups with the lowest pre-2003 rates of ethnic identification. Among third-generation children of mixed origins, ethnic identification rises by a substantial amount for every source country, with the

[33] The lone exception is second-generation Japanese whose father but not mother was born in Japan.

biggest increases occurring for Hispanic national origin groups.

The preceding discussion has focused on individuals with mixed parental origins, because ethnic attrition predominately occurs in this population. For most national origin groups, ethnic identification rates are close to perfect (i.e., 100 percent) for second-generation adults with both parents born in the relevant country (see Table A.2) and for third-generation children with the relevant ethnicity on both sides of their family (see Table A.3), and so for these groups there is not much scope for the CPS questionnaire changes to increase identification. For those groups, however, with sizeable attrition even among individuals whose ethnicity originates from both parents, the 2003 questionnaire changes did raise identification and reduce ethnic attrition. For example, among second-generation adults with both parents born in the relevant country, ethnic identification rates rose for Salvadorans (from 49 to 95 percent), Dominicans (from 79 to 96 percent), and Indians (from 80 to 89 percent).[34] Similarly, among third-generation children with Hispanic ethnicity on both sides of their family, identification rates increased for Puerto Ricans (from 89 to 96 percent), Salvadorans (from 58 to 100 percent), and Dominicans (from 83 to 99 percent).[35]

As mentioned previously, the most straightforward explanation for why the revised CPS race question increases Asian identification is that, by recording multiple responses, the revised question picks up some multiracial Asians who previously gave a non-Asian response when they were forced to select a single race. If this were the only way that the revised race question affected Asian identification, then the size of the multiracial Asian population provides a rough upper bound on how much the revised question can raise ethnic identification among Asians. Using CPS data for 2003-2013, we can measure the prevalence of multiracial responses for each

[34] See Table A.2.

[35] See Table A.3.

of our Asian groups (see footnote 29), and these measurements generally are consistent with the observed changes in ethnic identification. For example, 22 percent of second-generation Korean adults give both Asian and non-Asian responses to the race question in the 2003-2013 CPS data, and this prevalence of multiracial Asian identification is high enough to potentially account for the 8 percentage point increase in the overall ethnic identification rate for second-generation Koreans (from 74 percent in 1994-2002 to 82 percent in 2003-2013) following the CPS questionnaire changes. The only Asian national origin group to go against form is Indians. The rate of multiracial identification for second-generation Indian adults (5 percent) is too low to explain the corresponding increase (of 28 percentage points) in overall ethnic identification observed following the questionnaire changes. This finding suggests that aspects of the CPS questionnaire changes besides allowing multiple race responses may have had an impact on the propensity for Indians to identify as Asian.

In this appendix, we have shown that the 2003 changes to the CPS Hispanic origin and race questions have produced substantially higher rates of ethnic identification for second- and third-generation Hispanics and Asians.[36] By asking directly about Hispanic ethnicity and by allowing multiple race responses, the CPS now elicits higher rates of subjective ethnic identification among the descendants of Hispanic and Asian immigrants. Ethnic attrition remains a significant problem, however, even in the 2003-2013 CPS data derived from the improved questionnaire. In these more recent data, overall rates of ethnic identification remain well below 100 percent for second-generation members of some Hispanics groups (84 percent for Cubans and 72 percent for Salvadorans) and all Asian groups (below 84 percent for Chinese,

[36] In calculations not reported here, we also investigated whether these changes to the CPS questionnaire altered the educational selectivity of ethnic attrition. In general, the patterns of selectivity are similar before and after the questionnaire changes.

Koreans, and Filipinos, 76 percent for Indians, and 68 percent for Japanese).[37] For third-generation children, the corresponding rates vary from 88 percent for Mexicans to 36 percent for Indians, with Cubans, Salvadorans, and the remaining Asian groups all in the 48-66 percent range.[38]

[37] See Table A.2.

[38] See Table A.3.

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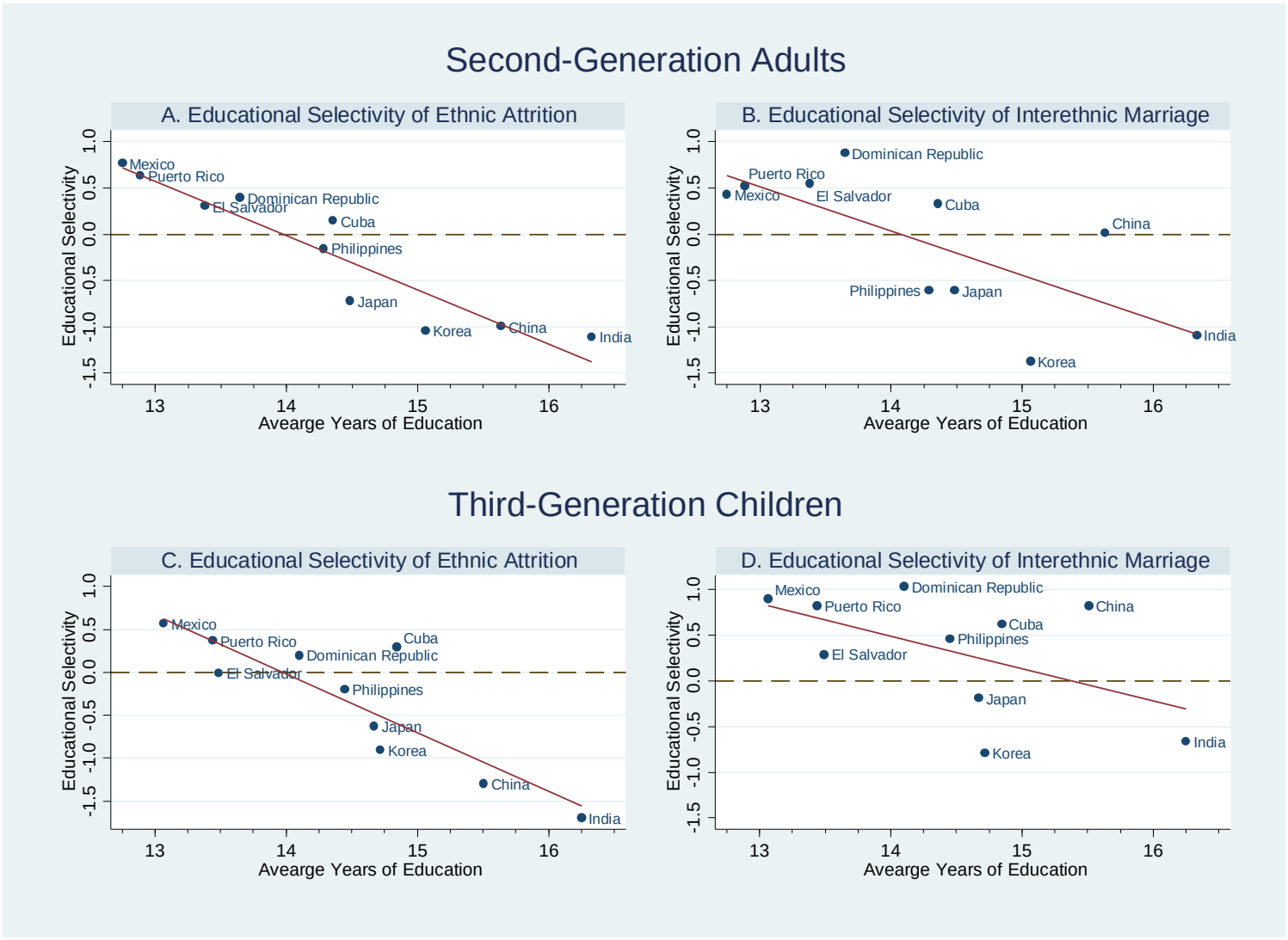
Figure 1: Education Selectivity of Ethnic Attrition and Interethnic Marriage



Source: 2003-2013 CPS data.

Notes: See Table 1 and the text for further information about the samples. The measures of educational selectivity of ethnic attrition represent estimated differences in education, by source country, between those who do not identify with the relevant ethnicity and those who do so identify, after conditioning on the "other control variables" included in specification (2) of Tables 6 and 7. The measures of educational selectivity of interethnic marriage represent analogous differences in education between those with the relevant ethnicity on only one side of their family (i.e., father's side or mother's side) and those with the relevant ethnicity on both sides of their family. The regression lines shown above correspond to the estimates reported in columns (1) and (3) of Table 9.

Table 1: Rates of Ethnic Identification (%)

	Source Countries	
	Hispanic	Asian
First-Generation Adults	98.6	96.3
	(.05)	(.1)
	[62,165]	[24,663]
Second-Generation Adults	93.1	79.1
	(.2)	(.5)
	[18,189]	[5,731]
Third-Generation Children	81.7	57.5
	(.5)	(1.0)
	[7,297]	[2,396]

Source: 2003-2013 CPS data.
Notes: The reported figures are the percentage of individuals who identify as members of the relevant ethnic group (Hispanic or Asian). Standard errors are shown in parentheses, and sample sizes are shown in brackets. The Hispanic source countries are Mexico, Puerto Rico, Cuba, El Salvador, and the Dominican Republic, and the Asian source countries are China, India, Japan, Korea, and the Philippines. First-generation adults are individuals ages 25-59 who were born in a relevant source country (excluding those born abroad of an American parent). Second-generation adults are U.S.-born individuals ages 25-59 who have at least one parent born in a relevant source country. Third-generation children are U.S.-born individuals ages 17 and below who live in intact families and have two U.S.-born parents but at least one grandparent born in a relevant source country.

Table 2: Educational Selectivity of Ethnic Identification

	Source Countries	
	Hispanic	Asian
First-Generation Adults		
Average education	9.91	14.96
	(.02)	(.02)
Second-Generation Adults		
Average education:		
Identified as ethnic group member	12.88	15.05
	(.02)	(.03)
Not identified as ethnic group member	13.64	14.43
	(.07)	(.07)
All	12.93	14.92
	(.02)	(.03)
Third-Generation Children		
Average parental education:		
Child identified as ethnic group member	13.17	15.15
	(.03)	(.06)
Child *not* identified as ethnic group member	14.00	14.45
	(.06)	(.07)
All	13.32	14.85
	(.02)	(.04)

Source: 2003-2013 CPS data.
Notes: The reported figures are average completed years of education; for third-generation children, this measure represents the average of father's and mother's education. Standard errors are shown in parentheses. See Table 1 and the text for further information about the samples.

Table 3: Ethnic Identification and the Source of Ethnic Ties

	Source Countries	
	Hispanic	Asian
Second-Generation Adults		
Percent with:		
Both parents born in a relevant source country	61.7	48.5
Father only born in a relevant source country	22.6	20.0
Mother only born in a relevant source country	15.7	31.6
Total	100.0	100.0
Percent identified as ethnic group member:		
Both parents born in a relevant source country	97.0	94.6
	(.2)	(.4)
Father only born in a relevant source country	87.4	67.6
	(.5)	(1.3)
Mother only born in a relevant source country	86.1	62.5
	(.6)	(1.1)
Third-Generation Children		
Percent with:		
3 or 4 grandparents born in a relevant source country	24.8	9.7
2 grandparents born in a relevant source country	35.5	31.0
1 grandparent born in a relevant source country	39.6	59.4
Total	100.0	100.0
Percent identified as ethnic group member:		
3 or 4 grandparents born in a relevant source country	96.5	89.7
	(.4)	(2.0)
2 grandparents born in a relevant source country	85.8	76.3
	(.7)	(1.6)
1 grandparent born in a relevant source country	68.8	42.4
	(.9)	(1.3)
Percent with:		
Relevant ethnicity on both sides of family	51.2	26.5
Relevant ethnicity on father's side only	25.2	32.5
Relevant ethnicity on mother's side only	23.6	41.0
Total	100.0	100.0
Percent identified as ethnic group member:		
Relevant ethnicity on both sides of family	97.7	92.8
	(.2)	(1.0)
Relevant ethnicity on father's side only	67.2	40.0
	(1.1)	(1.8)
Relevant ethnicity on mother's side only	62.6	48.5
	(1.2)	(1.6)

Source: 2003-2013 CPS data.
Notes: Standard errors are shown in parentheses. See Table 1 and the text for further information about the samples.

Table 4: Ethnic Identification Regressions for Hispanic Source Countries

	Second-Generation Adults			Third-Generation Children		
Regressor	(1)	(2)	(3)	(1)	(2)	(3)
Intercept	.970	.965	.968	.977	1.051	1.058
	(.002)	(.011)	(.010)	(.002)	(.028)	(.028)
Source of Hispanic ethnicity:						
Both sides of family (reference group)						
Father's side only	-.096	-.096		-.305	-.272	
	(.005)	(.005)		(.011)	(.015)	
Mother's side only	-.110	-.110		-.351	-.316	
	(.007)	(.007)		(.012)	(.014)	
Hispanic source country:						
Mexico (reference group)						
Mexico × (Father's side only)			-.033			-.195
			(.005)			(.017)
Mexico × (Mother's side only)			-.054			-.237
			(.007)			(.017)
Puerto Rico			.006			.030
			(.008)			(.016)
Puerto Rico × (Father's side only)			-.136			-.257
			(.013)			(.024)
Puerto Rico × (Mother's side only)			-.165			-.314
			(.018)			(.025)
Cuba			-.020			-.003
			(.011)			(.022)
Cuba × (Father's side only)			-.216			-.376
			(.030)			(.040)
Cuba × (Mother's side only)			-.259			-.347
			(.031)			(.042)
El Salvador			-.028			.008
			(.012)			(.008)
El Salvador × (Father's side only)			-.609			-.610
			(.038)			(.048)
El Salvador × (Mother's side only)			-.275			-.703
			(.046)			(.048)
Dominican Republic			-.011			.042
			(.011)			(.019)
Dominican Republic × (Father's side only)			-.243			-.235
			(.053)			(.069)
Dominican Republic × (Mother's side only)			-.216			-.216
			(.049)			(.072)
Other control variables	No	Yes	Yes	No	Yes	Yes
R^2	.039	.065	.133	.181	.200	.227

Source: 2003-2013 CPS data.

Notes: The reported figures are estimates from least squares regressions in which the dependent variable is a dummy indicating whether the individual identifies as Hispanic in response to the CPS Hispanic origin question. Heteroskedasticity-robust standard errors are shown in parentheses. The sample sizes are 18,189 for second-generation adults and 7,297 for third-generation children. See Table 1 and the text for further information about the samples. The "other control variables" in specifications (2) and (3) include indicators for gender, geographic location, survey month, and survey year. For second-generation adults, the "other control variables" also include indicators for the respondent's age and whether he was the household member who completed the survey. For third-generation children, these additional variables include the ages of the child and of his father and mother, and indicators for who in the household completed the survey.

Table 5: Ethnic Identification Regressions for Asian Source Countries

	Second-Generation Adults			Third-Generation Children		
Regressor	(1)	(2)	(3)	(1)	(2)	(3)
Intercept	.946	1.023	1.038	.928	.622	.515
	(.004)	(.028)	(.030)	(.010)	(.068)	(.075)
Source of Asian ethnicity:						
Both sides of family (reference group)						
Father's side only	-.270	-.260		-.528	-.420	
	(.014)	(.015)		(.020)	(.028)	
Mother's side only	-.321	-.291		-.443	-.344	
	(.012)	(.012)		(.019)	(.024)	
Asian source country:						
China (reference group)						
China × (Father's side only)			-.181			-.261
			(.026)			(.052)
China × (Mother's side only)			-.303			-.112
			(.032)			(.054)
India			-.027			.046
			(.019)			(.073)
India × (Father's side only)			-.438			-.461
			(.046)			(.088)
India × (Mother's side only)			-.578			-.373
			(.062)			(.084)
Japan			-.031			.101
			(.019)			(.034)
Japan × (Father's side only)			-.318			-.471
			(.038)			(.048)
Japan × (Mother's side only)			-.261			-.428
			(.024)			(.043)
Korea			.015			.086
			(.015)			(.046)
Korea × (Father's side only)			-.309			-.361
			(.074)			(.062)
Korea × (Mother's side only)			-.228			-.241
			(.027)			(.058)
Philippines			-.026			.148
			(.013)			(.031)
Philippines × (Father's side only)			-.231			-.445
			(.021)			(.037)
Philippines × (Mother's side only)			-.333			-.372
			(.023)			(.031)
Other control variables	No	Yes	Yes	No	Yes	Yes
R^2	.139	.178	.198	.190	.250	.262

Source: 2003-2013 CPS data.

Notes: The reported figures are estimates from least squares regressions in which the dependent variable is a dummy indicating whether the individual identifies as Asian in response to the CPS race question. Heteroskedasticity-robust standard errors are shown in parentheses. The sample sizes are 5,731 for second-generation adults and 2,396 for third-generation children. See Table 1 and the text for further information about the samples. The "other control variables" in specifications (2) and (3) include indicators for gender, geographic location, survey month, and survey year. For second-generation adults, the "other control variables" also include indicators for the respondent's age and whether he was the household member who completed the survey. For third-generation children, these additional variables include the ages of the child and of his father and mother, and indicators for who in the household completed the survey.

Table 6: Education Regressions for Hispanic Source Countries

	Second-Generation Adults			Third-Generation Children		
Regressor	(1)	(2)	(3)	(1)	(2)	(3)
Intercept	12.88	12.44	12.34	13.17	10.44	10.53
	(.02)	(.10)	(.10)	(.03)	(.17)	(.16)
Ethnic identification:						
Identified as Hispanic (reference group)						
Not identified as Hispanic	.76	.71		.82	.52	
	(.07)	(.07)		(.06)	(.06)	
Ethnic identification by source of ethnicity						
Hispanic on both sides of family:						
Identified as Hispanic (reference group)						
Not identified as Hispanic			.36			-.24
			(.13)			(.21)
Hispanic on father's side only:						
Identified as Hispanic			.23			.74
			(.05)			(.06)
Not identified as Hispanic			.77			.93
			(.10)			(.09)
Hispanic on mother's side only:						
Identified as Hispanic			.65			.99
			(.05)			(.06)
Not identified as Hispanic			1.38			1.11
			(.12)			(.08)
Other control variables	No	Yes	Yes	No	Yes	Yes
R^2	.01	.03	.04	.03	.16	.19

Source: 2003-2013 CPS data.
Notes: The reported figures are estimates from least squares regressions in which the dependent variable is completed years of education; for third-generation children, this measure represents the average of father's and mother's education. Heteroskedasticity-robust standard errors are shown in parentheses. The sample sizes are 18,189 for second-generation adults and 7,297 for third-generation children. See Table 1 and the text for further information about the samples. The "other control variables" in specifications (2) and (3) include indicators for gender, geographic location, survey month, and survey year. For second-generation adults, the "other control variables" also include indicators for the respondent's age. For third-generation children, these additional variables include the ages of the child and of his father and mother.

Table 7: Education Regressions for Asian Source Countries

	Second-Generation Adults			Third-Generation Children		
Regressor	(1)	(2)	(3)	(1)	(2)	(3)
Intercept	15.05	14.35	14.57	15.15	10.77	10.74
	(.03)	(.16)	(.16)	(.06)	(.30)	(.29)
Ethnic identification:						
Identified as Asian (reference group)						
Not identified as Asian	-.62	-.74		-.70	-.72	
	(.07)	(.08)		(.09)	(.08)	
Ethnic identification by source of ethnicity						
Asian on both sides of family:						
Identified as Asian (reference group)						
Not identified as Asian			-.51			-3.06
			(.22)			(.44)
Asian on father's side only:						
Identified as Asian			-.54			.04
			(.09)			(.14)
Not identified as Asian			-.76			-.36
			(.13)			(.12)
Asian on mother's side only:						
Identified as Asian			-.60			.39
			(.08)			(.12)
Not identified as Asian			-1.25			-.42
			(.10)			(.12)
Other control variables	No	Yes	Yes	No	Yes	Yes
R^2	.01	.08	.10	.03	.25	.28

Source: 2003-2013 CPS data.
Notes: The reported figures are estimates from least squares regressions in which the dependent variable is completed years of education; for third-generation children, this measure represents the average of father's and mother's education. Heteroskedasticity-robust standard errors are shown in parentheses. The sample sizes are 5,731 for second-generation adults and 2,396 for third-generation children. See Table 1 and the text for further information about the samples. The "other control variables" in specifications (2) and (3) include indicators for gender, geographic location, survey month, and survey year. For second-generation adults, the "other control variables" also include indicators for the respondent's age. For third-generation children, these additional variables include the ages of the child and of his father and mother.

Table 8: Education and Selective Ethnic Identification, by Source Country

	Second-Generation Adults			Third-Generation Children		
		Educational Selectivity of:			Educational Selectivity of:	
	Average Education	Ethnic Attrition	Interethnic Marriage	Average Parental Education	Ethnic Attrition	Interethnic Marriage
Hispanic source country:						
Mexico	12.75	.76	.43	13.07	.57	.90
	(.02)	(.11)	(.05)	(.03)	(.08)	(.06)
Puerto Rico	12.88	.63	.52	13.44	.37	.82
	(.03)	(.13)	(.07)	(.04)	(.11)	(.09)
Cuba	14.36	.15	.33	14.84	.30	.62
	(.07)	(.18)	(.14)	(.08)	(.16)	(.17)
El Salvador	13.38	.30	.55	13.49	-.01	.29
	(.10)	(.20)	(.19)	(.10)	(.19)	(.19)
Dominican Republic	13.65	.40	.88	14.10	.20	1.03
	(.10)	(.27)	(.23)	(.14)	(.40)	(.26)
Asian source country:						
China	15.64	-1.00	.02	15.51	-1.30	.82
	(.07)	(.22)	(.13)	(.11)	(.23)	(.22)
India	16.33	-1.11	-1.09	16.25	-1.70	-.66
	(.08)	(.20)	(.18)	(.14)	(.24)	(.37)
Japan	14.49	-.72	-.61	14.67	-.63	-.19
	(.07)	(.15)	(.20)	(.10)	(.18)	(.26)
Korea	15.06	-1.04	-1.37	14.72	-.90	-.79
	(.08)	(.22)	(.15)	(.11)	(.18)	(.25)
Philippines	14.29	-.15	-.61	14.45	-.20	.46
	(.05)	(.12)	(.09)	(.06)	(.11)	(.13)

Source: 2003-2013 CPS data.

Notes: Standard errors are shown in parentheses. See Table 1 and the text for further information about the samples. The measures of educational selectivity of ethnic attrition represent estimated differences in education, by source country, between those who do *not* identify with the relevant ethnicity and those who do so identify, after conditioning on the "other control variables" included in specification (2) of Tables 6 and 7. The measures of educational selectivity of interethnic marriage represent analogous differences in education between those with the relevant ethnicity on only one side of their family (i.e., father's side *or* mother's side) and those with the relevant ethnicity on both sides of their family.

Table 9: Regressions for Education Selectivity of Ethnic Attrition and Interethnic Marriage

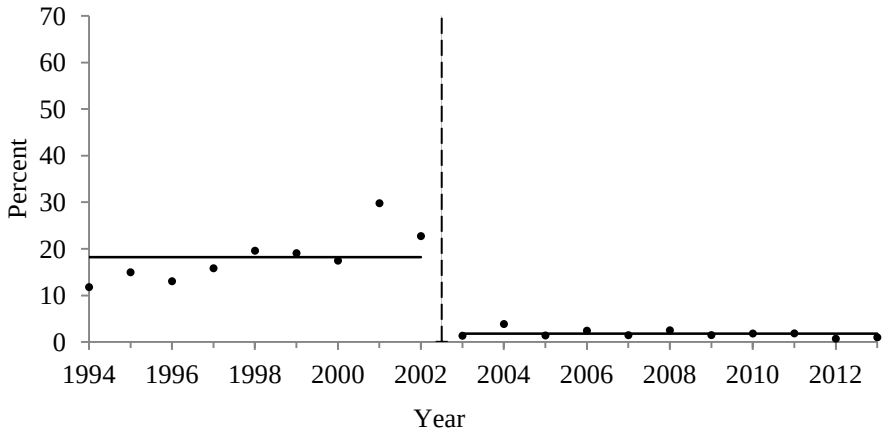
	Second-Generation Adults				Third-Generation Children			
	Dependent Variable: Educational Selectivity of:				Dependent Variable: Educational Selectivity of:			
	Ethnic Attrition		Interethnic Marriage		Ethnic Attrition		Interethnic Marriage	
Regressor	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Intercept	8.18	8.29	6.72	5.73	9.57	8.76	5.46	4.96
	(.82)	(.76)	(1.72)	(1.64)	(1.12)	(1.39)	(2.25)	(1.66)
Average education	-.59	-.59	-.48	-.41	-.69	-.63	-.36	-.31
	(.06)	(.06)	(.13)	(.13)	(.08)	(.11)	(.16)	(.13)
Weighted regression	No	Yes	No	Yes	No	Yes	No	Yes
R^2	.87	.90	.52	.60	.76	.78	.28	.40

Source: 2003-2013 CPS data.

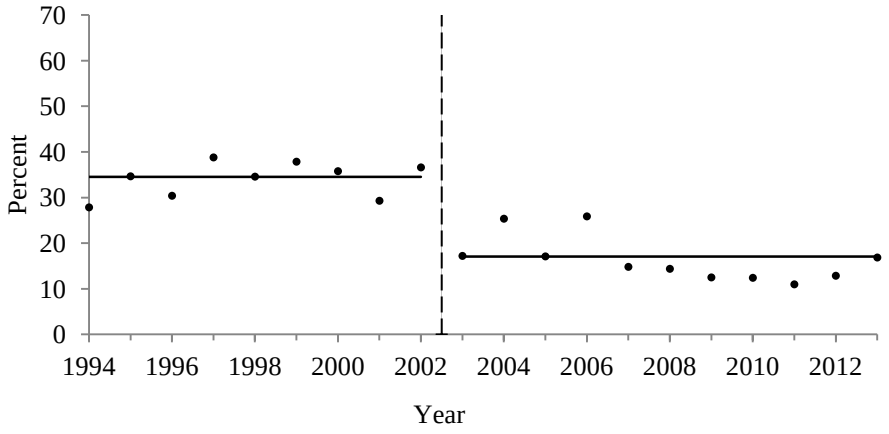
Notes: The reported figures are estimates from least squares regressions in which the dependent variables are the measures of educational selectivity of ethnic attrition and interethnic marriage shown in Table 8. Heteroskedasticity-robust standard errors are shown in parentheses. The sample size for each regression is 10 observations, with the source country as the unit of analysis. Regressions in the even-numbered columns are weighted by the inverse of the standard errors of the dependent variables.

Appendix Figure A.1: Ethnic Attrition Rates by Survey Year for Selected Groups

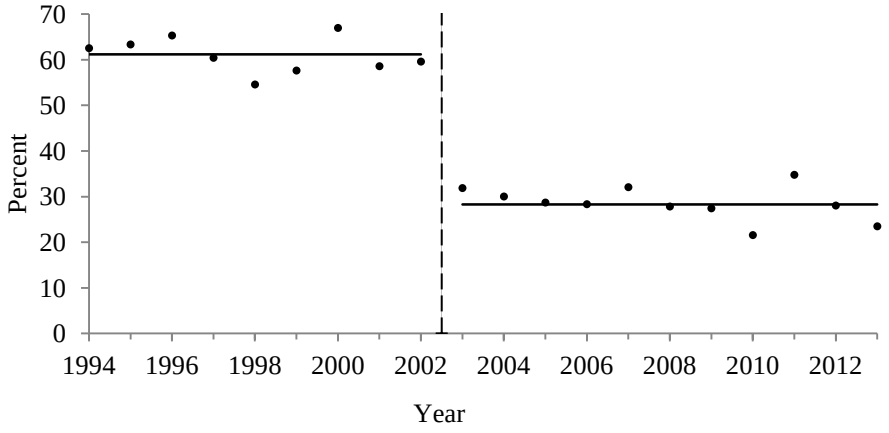
A. First-Generation Dominicans



B. Second-Generation Puerto Ricans with Only One Parent Born in an Hispanic Country



C. Third-Generation Mexicans with Hispanic Ethnicity on Only One Side of Their Family



Source: 1994-2013 CPS data.

Notes: See Appendix Tables A.1-A.3 and the text for further information about the samples. The reported ethnic attrition rates represent the percentage of individuals who are *not* identified as Hispanic.

Appendix Table A.1: Ethnic Identification of First-Generation Adults, by Survey Year

A. Hispanic Source Countries	Mexico		Puerto Rico		Cuba		El Salvador		Dominican Republic	
	1994-2002	2003-2013	1994-2002	2003-2013	1994-2002	2003-2013	1994-2002	2003-2013	1994-2002	2003-2013
Percent identified as Hispanic	98.9 (0.1)	98.8 (0.1)	95.9 (0.3)	96.7 (0.2)	97.7 (0.3)	98.1 (0.2)	94.7 (0.4)	98.7 (0.2)	81.8 (0.8)	98.2 (0.2)
Sample size	23,655	45,212	4,325	5,062	2,511	3,151	2,805	5,431	2,367	3,309
B. Asian Source Countries	China		India		Japan		Korea		Philippines	
	1994-2002	2003-2013	1994-2002	2003-2013	1994-2002	2003-2013	1994-2002	2003-2013	1994-2002	2003-2013
Percent identified as Asian	98.3 (0.2)	98.1 (0.2)	88.6 (0.6)	93.9 (0.3)	96.8 (0.5)	96.7 (0.5)	98.0 (0.3)	98.4 (0.2)	95.9 (0.3)	96.0 (0.2)
Sample size	3,188	5,257	3,207	6,803	1,216	1,314	2,505	3,727	5,088	7,562

Source: 1994-2013 CPS data.

Notes: Standard errors are shown in parentheses. The samples include individuals ages 25-59 born in the relevant source country (excluding those born abroad of an American parent).

Appendix Table A.2: Ethnic Identification of Second-Generation Adults, by Survey Year

A. Hispanic Source Countries

	Mexico		Puerto Rico		Cuba		El Salvador		Dominican Republic	
	1994-2002	2003-2013	1994-2002	2003-2013	1994-2002	2003-2013	1994-2002	2003-2013	1994-2002	2003-2013
Percent identified as Hispanic:										
Both parents born in an Hispanic country	97.8	97.9	94.8	96.4	95.8	93.8	48.8	94.9	78.6	96.1
	(0.3)	(0.2)	(0.5)	(0.3)	(1.0)	(1.0)	(5.6)	(1.4)	(3.3)	(1.0)
Father only born in an Hispanic country	89.7	93.9	65.6	84.3	61.4	77.3	6.4	41.0	74.0	82.9
	(0.7)	(0.5)	(2.0)	(1.2)	(3.3)	(2.3)	(1.2)	(3.6)	(5.2)	(3.4)
Mother only born in an Hispanic country	88.0	91.8	65.5	82.9	64.5	71.1	7.7	74.0	63.6	82.8
	(0.9)	(0.6)	(2.4)	(1.5)	(3.9)	(2.7)	(1.1)	(3.6)	(6.0)	(3.1)
All	93.2	95.9	85.8	91.8	79.8	84.4	10.1	71.8	74.2	90.4
	(0.3)	(0.2)	(0.6)	(0.4)	(1.4)	(1.0)	(0.9)	(1.9)	(2.5)	(1.2)
Sample size	6,241	11,547	3,126	4,528	773	1,257	1,143	575	298	625

B. Asian Source Countries

	China		India		Japan		Korea		Philippines	
	1994-2002	2003-2013	1994-2002	2003-2013	1994-2002	2003-2013	1994-2002	2003-2013	1994-2002	2003-2013
Percent identified as Asian:										
Both parents born in an Asian country	97.0	94.2	80.2	89.2	97.7	97.5	100.0	96.7	93.8	96.2
	(0.8)	(0.9)	(3.8)	(1.4)	(1.3)	(1.4)	(0.0)	(1.0)	(1.1)	(0.5)
Father only born in an Asian country	66.8	76.9	14.5	47.8	81.4	62.0	46.7	68.6	66.7	70.8
	(3.3)	(2.4)	(4.5)	(4.3)	(3.0)	(3.6)	(13.3)	(6.6)	(2.3)	(2.0)
Mother only born in an Asian country	50.8	64.0	7.9	32.8	52.7	64.5	55.6	71.6	39.9	58.3
	(4.4)	(3.1)	(4.4)	(6.1)	(2.4)	(1.8)	(5.6)	(2.4)	(3.3)	(2.2)
All	80.7	83.6	47.9	75.5	66.8	68.0	73.8	82.1	73.7	81.9
	(1.5)	(1.1)	(3.4)	(1.7)	(1.7)	(1.5)	(3.4)	(1.4)	(1.3)	(0.8)
Sample size	734	1,202	211	662	747	1,007	168	717	1,142	2,187

Source: 1994-2013 CPS data.

Notes: Standard errors are shown in parentheses. The samples include U.S.-born individuals ages 25-59 who have at least one parent born in the relevant source country.

Appendix Table A.3: Ethnic Identification of Third-Generation Children, by Survey Year

A. Hispanic Source Countries

	Mexico		Puerto Rico		Cuba		El Salvador		Dominican Republic	
	1994-2002	2003-2013	1994-2002	2003-2013	1994-2002	2003-2013	1994-2002	2003-2013	1994-2002	2003-2013
Percent identified as Hispanic:										
Hispanic on both sides of family	98.0	98.2	88.7	96.0	91.3	93.2	57.6	100.0	83.0	98.6
	(0.3)	(0.2)	(1.4)	(0.8)	(2.8)	(1.8)	(6.1)	(0.0)	(5.5)	(1.4)
Hispanic on one side of family only	38.8	71.7	23.4	64.5	21.8	52.6	1.1	24.6	20.0	68.6
	(1.3)	(1.0)	(1.5)	(1.5)	(2.4)	(2.5)	(0.4)	(3.2)	(6.0)	(4.6)
All	74.0	88.0	49.7	75.7	39.2	65.4	5.3	49.5	52.2	80.9
	(0.8)	(0.5)	(1.4)	(1.1)	(2.4)	(1.9)	(0.8)	(3.0)	(5.2)	(3.0)
Sample size	3,363	4,922	1,341	1,610	411	601	883	279	92	173

B. Asian Source Countries

	China		India		Japan		Korea		Philippines	
	1994-2002	2003-2013	1994-2002	2003-2013	1994-2002	2003-2013	1994-2002	2003-2013	1994-2002	2003-2013
Percent identified as Asian:										
Asian on both sides of family	97.4	87.2	NA	84.4	99.0	97.6	100.0	100.0	98.5	96.1
	(1.8)	(2.6)		(6.5)	(1.0)	(1.7)	(0.0)	(0.0)	(1.1)	(1.1)
Asian on one side of family only	34.5	53.3	12.0	35.8	18.2	36.8	18.4	47.3	22.6	46.8
	(3.1)	(2.9)	(4.6)	(3.7)	(2.2)	(2.5)	(5.6)	(3.0)	(2.2)	(1.9)
All	50.3	65.5	12.0	35.8	38.1	47.8	29.8	55.4	42.8	62.9
	(2.9)	(2.2)	(4.6)	(3.7)	(2.4)	(2.3)	(6.1)	(2.8)	(2.2)	(1.5)
Sample size	306	455	50	197	409	462	57	327	502	1,009

Source: 1994-2013 CPS data.

Notes: Standard errors are shown in parentheses. The samples include U.S.-born individuals ages 17 and below who live in intact families and have two U.S.-born parents but at least one grandparent born in the relevant source country. For Indians, the sample for the years 1994-2002 contains no observations with Asian ethnicity on both sides of the family.