

Mixed Parents, Mixed Results: Testing the Effects of Cross-Nativity Partnership on Children's Educational Attainment

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ABSTRACT

In this paper, we have used panel data from the Children of Immigrants Longitudinal Survey (N=3,337) to test several mechanisms (English proficiency, friends with native parents, parental SES, educational attitudes, bilingualism and family stability) by which mixed parents (one native, one foreign-born) affect their children's educational attainment differently from immigrant parents (both foreign-born), using a multiple mediator model. We found that children from mixed parents benefitted from higher parental human capital and a higher English proficiency and were set back by lower educational attitudes and less stable family situation. However, bilingualism offered no significant advantages or disadvantages for children of mixed parents. Having more friends from native-born parents had a surprising negative effect. The total indirect effect was slightly negative and a substantial negative direct effect of growing up with mixed parents on educational attainment remains. Some of the effects depend on the sex of the native partner. Implications and limitations are discussed.

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1. Introduction

While many immigrants marry within their own ethnic group, mixed marriages and cohabitations are becoming more common in the United States and an increasing proportion of interethnic partnerships involve immigrants and their children (Morgan 2007). Indeed, according to the latest Pew Research Center report, even though there is plenty of variation between ethnic and racial groups and trends are less pronounced for immigrant than for native-born Americans, there has been a steady growth of inter-ethnic unions over the last few decades (Wang, 2012). The trends in and determinants of mixed marriages have been extensively studied (Qian and Lichter 2001 and 2007; Kalmijn 1998; Hwang, Saenz and Aguirre 1997), but the effects of intermarriage on the life courses of their children, especially on structural outcomes such as educational attainment, earnings and occupational status, remain largely unknown.

Previous research on the effects of mixed marriage among immigrants has closely examined the impact intermarriage has on, among others, psychological adaptation, linguistic acculturation and racial identification of dual heritage children (e.g. Lee and Bean 2004; Saenz et al. 1995; Ward 2006; Xie and Goyette 1997; Edwards et al., 2012) as well as emotional and behavioral problems and risks of growing up in a workless or single parent family (Platt, 2012). However, so far, only a handful of studies have investigated the effect of mixed marriage on the educational outcomes of immigrant children (Furtado 2009; Becker 2010; Van Ours and Veenman 2010; Muttarak 2010).

Intermarriage is often assumed to have positive effects on acculturation and assimilation outcomes of both parents and children and has even been included as an important step in the integration of immigrants in classical assimilation theories (Gordon 1964; Qian and Lichter

2001), although the evidence, for example on labor market outcomes, is not always clear-cut (Furtado and Trejo 2012). However, it is questionable whether this per definition means intermarriage will have a positive influence on the acculturation and assimilation patterns of the next generation.

Mixed unions (also termed ‘mixed parents’, ‘mixed partnerships’ or ‘co-nativity partnerships’, and only referred to as ‘intermarriage’, ‘inter-ethnic marriage’ or ‘mixed marriage’ when discussing literature that specifically considers marriages), meaning in this study a union between a native and a foreign-born partner, may offer both advantages and disadvantages for children, compared to growing up with two immigrant/foreign-born parents.¹ On the one hand, mixed couples, on average, have higher parental human capital and host language proficiency than co-ethnic immigrant parents (Duncan and Trejo 2007) and can provide and stimulate the formation of more cross-ethnic social ties (Kalmijn 2010), all of which are likely to benefit children in their educational pursuits.

On the other hand, mixed partnerships are less stable (Zhang and Van Hook 2009; Heaton 2002; Bratter and King 2008), children from mixed marriages are less likely than those with two immigrant parents to be fluently bilingual (Ramakrishnan 2004) and the ‘immigrant optimism’ effect on educational expectations and aspirations of parents and their children (Golash-Boza 2005; Kao and Tienda 1995) likely favors immigrant over co-nativity unions.

Limited sample sizes, the inability to match parent and child information when using census data and problems with testing mechanisms using cross-sectional data are among the limitations of previous research, leading Furtado to conclude that this is still “an area ripe for future research” (2009:26). In this paper, we aim to answer this call and improve on previous research in several ways. Most importantly, we want to go beyond the question of *whether* mixed marriage influences educational outcomes of immigrant children and examine, both

theoretically and empirically, *how* mixed partnership affects educational outcomes through various, possibly compensatory, mechanisms. Also, while the studies on the effects of mixed partnership on the educational success of children so far have focused on the influence of parental characteristics, we will directly measure and test the ways in which mixed parents affect educational outcomes via key characteristics of the children themselves.

The Children of Immigrants Longitudinal Study (CILS) panel data, the most comprehensive study on the new second generation in the San Diego and Miami areas, documenting the development of adolescents with at least one foreign-born parent in three waves (1991, 1995 and 2001), enable us to study the educational success of the children of immigrants in the US over time. We will do so by looking at their educational achievement in 2001, when most are around 24 years old, comparing offspring from immigrant (i.e. two foreign-born parents) and mixed parents. We can test causal mechanisms which are not and can hardly be analyzed with cross-sectional data by ascertaining that children's social and linguistic capital *as adolescents* influences their later educational outcomes and not the other way around. Moreover, by using a multiple mediator model, we can estimate the unique contribution of each of our indirect paths to the explanation of the effect of mixed parents on educational attainment.

2. Background and hypotheses

The importance of studying the integration and adaptation of the children of non-European immigrants has become widely recognized (Portes and Rumbaut 2005; Ramakrishnan 2004).

The larger share of minority populations among youth, continuing ethnic and racial inequalities and growing importance of school achievements for mobility chances on the labor market have sparked a special interest in the educational attainment of the second generation immigrants (Kao and Thompson 2003; Abada and Tenkorang 2009).

Consideration of children of mixed parents as a separate group of interest has largely been absent from this vast body of literature, but it has been a central concern in several recent articles.² Becker (2010) studied 3-year old children of Turkish origin in Germany regarding cognitive skills and German language skills, finding that children from mixed marriages score better on both tests than children with two Turkish parents. She also concluded that their advantage is explained away largely by parental human capital with a particularly large effect of parental language proficiency and use. Van Ours and Veenman (2010) examined the educational attainment of children from Moluccan parents in the Netherlands and conclude that children from mixed parents score better than those with co-ethnic parents, but only if the mother is native. In the British literature, Tikly et al. (2004) find differences between White-Asian, White-African and White-Caribbean pupils' achievement and their gaps with single-race comparison groups in primary schools, and conclude that they persist after extensive controls. The qualitative part of their research suggests that the low achievement of White-Black Caribbean students may be due to negative stereotyping by peers and teachers, low teacher expectations and school policy factors. Unfortunately, as for socio-economic factors, they only control for eligibility for free school meals. Muttarak (2010) offers better measurements of ancestry and socio-economic background and, using 1991 Census data on 12 to 18 year olds and 2001 Census data on their educational attainment (grouped quite coarsely into low, middle and high), finds that the outcomes of most mixed groups converge to that of the White group and are lower than that of their single-race minority peers, although this differs considerably between various mixed groups.

For the US case, Furtado (2009) shows lower dropout rates for children with mixed parents, but only if the father is native and finds that, when controlled for parental human capital, children from mixed parents are at a *disadvantage* compared to children from co-ethnic immigrant parents. Harris and Thomas (2002) show that educational differences between

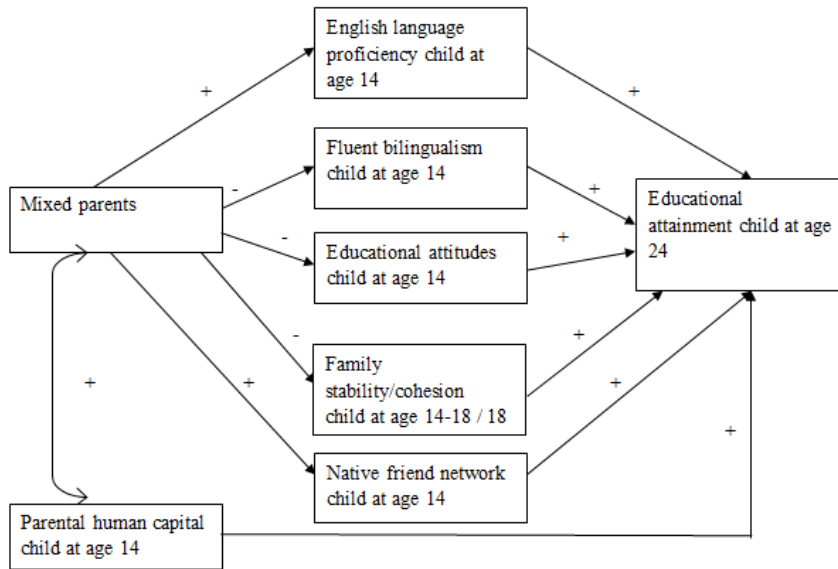
mixed and single-race pupils depend on the outcome measure (retention, vocabulary test and GPA) and do not show a consistent pattern of achievements in between those of the white and single-race other racial group, as the marginal man hypothesis would suggest. However, they use measures of ethnic self-identification, running the risk that the more successful mixed race pupils will be more assimilationist and identify as White.

Limited sample sizes,³ the inability to match parent and child information when using census data and problems with testing mechanisms using cross-sectional data are among the limitations of previous research. Moreover, we think that this literature could benefit from a better theoretical embedding into the wider research area of ethnic and racial inequalities in educational outcomes.

Dominant theoretical frameworks in this literature, either focusing on structural characteristics (e.g. parents' human capital and host language use) or cultural mechanisms (e.g. educational aspirations and heritage language use) (Heath and Brinbaum 2007), offer possibilities to formulate concrete predictions about the influence of growing up with mixed compared to immigrant parents. As a first step towards understanding the various ways through which growing up with mixed parents may influence children's educational attainment, we will propose six mechanisms. Our theoretical model is graphically presented in figure 1.

Figure 1:

Theoretical model



2.1. Structural characteristics

There is a long tradition of research on intergenerational social mobility that testifies to the relevance of parental human capital in explaining educational and occupational outcomes and indeed, parental social class nearly always is the most powerful factor explaining ethnic differences in the educational achievements of children (Heath and Brinbaum 2007). Native parents generally have higher educational attainment, occupational status and socio-economic status (SES) than immigrants and a selection effect of cross-nativity marriages with higher human capital levels of the immigrant predicting marriage to a native spouse is commonly found (Ramakrishnan 2004, Duncan and Trejo 2007). Furthermore, foreign spouses of native partners can more easily obtain US citizenship, which in turn increases labor market opportunities (Bratsberg, Ragan and Nasir 2002). In these regards, children from mixed partnerships are likely to enjoy advantages compared to children from immigrant marriages which may help them reach a higher educational level.

H1 Children from mixed parents enjoy the advantages of higher parental human capital, positively affecting their educational attainment⁴

In mixed partnerships, there are good reasons to expect higher parental English proficiency, since the native parent will generally have higher host language proficiency and cultural knowledge than immigrant parents, and the foreign-born spouse, both by selection and incentives, is likely to be relatively proficient in the host language (Chiswick, Lee and Miller 2005). This may in turn lead to a higher host language proficiency and more frequent English language use among the children of mixed parents and indeed, various studies have found higher rates of English language use and proficiency compared to children from immigrant parents (Ramakrishnan 2004; Becker 2010). In turn, host language use in the home and host language proficiency may facilitate a better understanding of learning materials and enable the child to formulate answers, express ideas and communicate with the teacher and with classmates on a higher level. Indeed, children's English language proficiency is consistently found to be positively related to educational achievement and attainment (Zhou et al. 2008; Portes and Rumbaut 2001; Bleakley and Chin 2008; Santos and Wolff 2011).

H2 Children from mixed parents are more proficient in the host language and use it more often, positively affecting their educational attainment

Previous research also shows that children from mixed partnerships have more cross-ethnic ties than children from immigrant parents (Kalmijn 2010; Gilardoni 2010) and there are indications that these ties confer educational advantages (Hallinan and Williams 1990). Indeed, ethnic intermarriage is often understood as both the outcome and harbinger of social openness (Kalmijn 1998; Qian and Lichter 2007) and may lead to a social network containing more native contacts via preferences, opportunities and more openness of natives towards mixed than towards immigrant couples. The children from mixed couples can benefit from the social capital of their parents and are also likely to have the openness and resources (a.o. their knowledge of the host culture and language) to establish a social network with ethnically

cross-cutting ties themselves. It has been suggested that native-born friends can help diffusing norms of acceptable behavior (Coleman et al. 1966), give access to social and economic resources, and offer the cultural resources that provide means of self-presentation and patterns of communication that are valued in the majority context of the school (Goza and Ryabov 2009; Ward, Bochner and Furnham 2001). In addition, native-born friends can act as role models within the school context, increasing motivation and school adjustment (Harris 2010; Ryan 2010). Therefore, we expect ties to children with native-born parents to offer educational benefits.

H3 Children from mixed parents will have a higher proportion of friends with native-born parents, positively affecting their educational attainment

2.2. Cultural characteristics

However, there are also reasons to expect educational disadvantages for children from mixed partnerships compared to children with two foreign-born parents. Previous literature shows that educational aspirations and expectations⁵ are, ceteris paribus, higher among immigrant than among native parents and their children (Kao and Tienda 1995). The drive and ambition to do well at school and the belief that it is realistic to expect good results could motivate students to get the most out of themselves and perform better at school. Indeed, previous studies find that educational aspirations and expectations positively affect educational attainment (Kao and Thompson 2003; Rumbaut 2005; Zhou et al. 2008).

H4 Children from mixed couples will have lower educational expectation and aspirations, negatively affecting their educational attainment

Also, we know that cross-nativity marriages on average run a higher risk of parental conflicts and divorce (Zhang and Van Hook 2009; Heaton 2002; Bratter and King 2008). More

generally, family cohesion, i.e. the emotional bonds within the family, is expected to be more strained on average in mixed partnerships as a consequence of value differences between parents, a more individualistic orientation (Portes and Rumbaut 2001) and more family conflict. The positive effect of growing up in a stable family on educational outcomes is well-established (Portes, Fernández-Kelly and Haller 2009). Internecine family conflict, family disruption and loss of parental resources due to a divorce may put children at a serious educational disadvantage and if children from immigrant parents more often grow up in stable families, this would benefit them. Previous research also finds positive effects of family cohesion and associated measures of family closeness on educational outcomes (Spera 2005).

H5 Children from mixed couples will less often grow up in stable and cohesive families, negatively affecting their educational attainment

The effects of heritage language proficiency and use are less clear than those of host language proficiency and use, but there are indications that, while ethnic monolinguals face disadvantages, fluent bilingualism has a positive influence on educational attainment (Golash-Boza 2005; Portes and Hao 2002). Indeed, fluent bilingualism may offer various benefits by facilitating communication between parents and children, mitigating internecine family conflict, offering access to more diverse social and ethnic networks and improving cognitive flexibility and personal adjustment through frame switching skills (Portes and Hao 2002; Golash-Boza 2005; Mouw and Xie 1999). Since children from immigrant families are more often fluently bilingual than children from mixed parents (Furtado 2009; Ramakrishnan 2004), we expect a more positive educational outcome for children from immigrant parents.

H6 Children from mixed couples are less likely to be fluently bilingual, negatively affecting their educational attainment

3. Data and methods

We will test these predictions using data from the Children of Immigrants Longitudinal Survey (CILS), a panel study on the acculturation and assimilation of second generation immigrant children in the San Diego and Miami/Ft. Lauderdale regions (see Portes and Rumbaut 2005 for a detailed data description). Only children who had at least one foreign-born parent and who had resided in the US for at least 5 years or were born in the US were eligible for the interviews. In the baseline survey in 1991, a large variety of schools were selected and information on children in the 8th and 9th grade (average age 14) was collected through self-administered surveys, leading to a dataset with over 5,000 students from 77 nationalities, roughly representative of the ethnic minority population distribution in the surveyed areas.

In 1995, when children were 18 years of age on average, a follow-up (wave 2) survey was administered, reaching 81.5 percent of the original respondents and having no serious non-response biases (Portes and Rumbaut 2005:25-31). Finally, in 2001, when the children had reached an average age of 24, another (wave 3) survey was administered, focusing on outcomes such as educational attainment, dropout and incarceration. Over 80 percent of the 1995 sample and almost 70 percent of the original 1991 sample was reached, leading to more than 3,500 cases, 3,337 of which remain for our final analyses.⁶ Intact families with better performing children are overrepresented, but analyses on the data so far show that these biases are rarely consequential (Portes and Rumbaut 2005).

3.1. Dependent variable

In the third wave of CILS, highest completed education is measured with ten categories, in the following order: (1) some high school (grades 9-12, no diploma), (2) graduated from high school, (3) 1 or 2 years of post-high school vocational training, (4) graduated 2 year college or

vocational school, (5) 3 or more years of college (no degree yet), (6) graduated from 4/5-year college (e.g. bachelor's degree), (7) Some graduate school (no degree yet), (8) master's degree, (9) professional or doctoral degree, and (10) Other. Categories 8 and 9 (master degree and doctoral degree) were merged due to low cell counts and the 'other' category was deleted (N=32). For practical purposes, and since subsequent categories are roughly equally spaced in terms of years of education, we treat this measure as a continuous variable.

3.2. Independent variable

Intermarriage is measured at the first time point, categorizing children with one US-born parent and one foreign-born biological parent as children from mixed descent. A total of 446 (13.5%) cases with mixed parents were identified and assigned a 1 (children with two foreign-born parents were assigned score 0). Of those with two foreign-born parents, 87% had parents from the same country and a substantial part of the remaining 13% has parents from the same geographical region. Unfortunately, we have no good way to distinguish between US-born parents of different racial and ethnic backgrounds. We do have information on how the children think their parents self-identify ethnically and racially, but only for parents who are born abroad. The parental survey contains a question on racial identification, but only 50% of the cases were sampled for this survey and US citizens and stable families are overrepresented (Portes and Rumbaut 2005). Moreover, ethnic or racial identification and objective measures of national ancestry can diverge (Duncan and Trejo 2009). For example, Latinos who have resided longer in the United States and have a more assimilationist attitude are likely to identify disproportionately as 'American' (see also Qian and Corbas 2004).

Moreover, we expect that the causal mechanisms we have specified are generally applicable to mixed partnerships. Even if the native-born parent would be a third generation co-ethnic of the immigrant spouse, it is likely that he or she speaks English better than the average first

generation immigrant, has more natives in his or her social network and is closer to natives culturally (e.g. in educational attitudes) than a first generation immigrant. Table 1 gives an overview of the mixed couples in the data, categorized by the gender and country of origin of the immigrant spouse and the region of residence (including Ft. Lauderdale with Miami).

Table 1

Mixed marriages by origin country of foreign spouse and region (N=446).

Country of origin immigrant spouse	Mother		San Diego		Father		San Diego	
	Miami/Ft. Lauderdale				Miami/Ft. Lauderdale			
Mexico	0	(0%)	42	(26.4%)	1	(.8%)	35	(55.6%)
Cuba	33	(31.7%)	1	(.6%)	40	(33.3%)	1	(1.6%)
Philippines	2	(1.9%)	82	(51.6%)	1	(.8%)	12	(19.1%)
Other Latin	41	(39.4%)	7	(4.4%)	53	(44.2%)	8	(12.7%)
Other Asian	4	(3.8%)	27	(17.0%)	4	(3.3%)	5	(7.9%)
Rest	24	(23.1%)	0	(0%)	21	(17.5%)	2	(3.2%)
Total	104		159		120		63	

3.3. Mediators

English language skills were measured in the first wave with four questions, on speaking, understanding, reading and writing proficiency. The answer categories ranged from *not at all* (recoded to 0) to *very well* (3), the mean of which was computed to indicate overall English language mastery (α is .92, missing score on one item was allowed, N=14 lost).⁷ The same questions were asked about the respondent's second language, again scaling well ($\alpha=.87$) and losing very few cases with the constraint of maximum 1 missing (additional N=14 lost). Less than 10% of the original sample indicated that they spoke no second language and they were assigned the lowest score on the foreign language proficiency scale.

The bilingualism hypothesis will be tested by assigning score 0 for those scoring below the top quartile in both scales (i.e. English 3, foreign language 2.5 or higher, both on a scale of 0 to 3) and with a product score between the two scales for the fluent bilinguals.⁸ According to this definition, 17.8% of our respondents are fluently bilingual.

Educational attitudes were measured with standard items on educational expectations and aspirations (one question on what the student realistically expects to achieve, another on what he would like to achieve) with five answer categories ranging from 1 = *less than high school* to 5 = *finish a graduate degree*. Since we have the same predictions for both expectations and aspirations and the two items scale well ($\alpha=.80$), we take the mean score on the two items as indicator for educational attitudes (missing on one item was allowed).

Family stability is often measured by looking at whether both biological parents are present at home (e.g. Portes and Fernández-Kelly 2008). In the CILS data, this is measured in both wave 1 and wave 2, so we can construct a dummy measure for having lived with both biological parents through adolescence. Alternative family compositions are not necessarily dysfunctional and to measure cohesion and atmosphere of love and care provided by the family environment, we use three items on family cohesion (statements on family togetherness, feeling close to each other and like to spend time with family, see Portes and Rumbaut 2001:200-202), answered on a 1 to 5 (*never to always*) scale (and recoded to 0-4) and forming a reliable construct with $\alpha=.85$.⁹

Inter-ethnic social network was operationalized as the proportion of close friends with foreign-born parents, which was asked directly with answer categories *none* (0), *some* (1) and *many or most* (2). Scores were reversed so a higher score means more friends of native-born parents.

3.4. Controls

Parental human capital¹⁰ was measured in the baseline survey with a composite measure in order to limit the number of predictors in our model and have a comprehensive variable to account for the various socio-economic resources of the mother and father. We followed Portes and Rumbaut (2001) by using a pre-constructed measure of parental SES, calculated by taking the standardized sum of the educational and occupational attainment of both parents plus homeownership for cases with a valid response on at least three of the underlying items.

Gender was recoded to a dummy with *female* = 1 and age was included as an additional control variable, deleting those who were 17 or older in 1991. A dummy was constructed to distinguish between children born abroad (1.5th generation = 1) and born in the US (2nd generation = 0) and US citizenship (dummy) and time of stay in the US (less than 5, 5-9, 10 or more, all life) were added as additional controls.¹¹ Also, a dummy was included for region of residence in 1991 (Miami/Ft. Lauderdale with reference category San Diego). The descriptive statistics of all variables are shown in Table 2.

3.5. Missing values

As mentioned in the previous paragraphs, we have deleted some cases due to missing values on multiple items of a scale. The proportion of missings on most of our variables is negligible, but the family cohesion scale has 10% missing values. The ice package for Stata (Royston, 2004) was used to create five imputed data sets based on the information of our main variables plus a number of auxiliary variables to improve the precision and power and reduce bias (see Graham, 2003). These added variables are language use with parents (dummy with English=1), number of siblings (trimmed at 8 or more) and whether one lived with both biological parents, stepparents or in other living situations (mostly single parent). Ordinal or multinomial logistic regression predictions were specified where appropriate and missing values on our scale constructs were imputed through mean matching to ensure that the

imputed values would fall into the range of the scales. Heritage language proficiency was imputed conditional on the respondent having indicated that he/she speaks a foreign language.

3.6. Methods

After data manipulation and imputation in Stata, the data were exported to MPlus 6.0 (Muthén and Muthén 2010) to run a multiple mediation model,¹² estimating the effect of mixed parents on educational attainment of children at age 24 through multiple mediators. Simply put, a multiple mediation model is a path model with more than one mediating variable. It combines regression models of the outcome variable on the mediators, predictor and control variables with regressions of the mediators on the predictor and control variables to compute direct and indirect effects. Using a SEM program to test this model offers many advantages over more traditional econometric techniques, especially in the estimation of indirect effects. In the recent literature on mediation analysis, the causal step approach (Baron and Kenny 1986) has been criticized for, among other things, its wrong assumptions, low power and failure to directly test indirect effects (Hayes 2009). While many alternatives are available (MacKinnon et al. 2002), with new techniques for use in SAS or SPSS recently added to the repertoire (e.g. Preacher and Hayes 2008; Hayes, 2013), testing mediations in MPlus offers additional advantages. These include the relative robustness of the multivariate delta method compared to the Sobel test in computing indirect effects,¹³ the ability to test equality of specific indirect effects and the possibility to put constraints on effects, variances and other parameters in order to test and improve model properties, all in a flexible and comprehensive modelling framework.¹⁴

Table 2:

Descriptive statistics of variables used in the analyses, prior to multiple imputation.

Variable	N	Range	Mean^a	SD	α
<i>Dependent Variable</i>					
Educational attainment	3174	1/8	4.15 [4.12]	1.72	
<i>Independent Variable</i>					
Mixed parents	3225	0/1	.14 [.13]		
<i>Mediating Variables</i>					
English language proficiency	3225	0/3	2.77 [2.77]	.42	.92
Bilingualism	3214	0/9	1.71 [1.71]	3.22	
Educational attitudes	3223	1/5	4.39 [4.38]	.75	.80
Family stability	2986	0/1	.66 [.64]		
Family cohesion	2959	0/4	2.60 [2.60]	.99	.85
Friends with native parents	3159	0/2	.40 [.40]	.57	
<i>Control Variables</i>					
Female	3225	0/1	.55 [.54]		
Age	3225	12/16	14.1 [14.2]	.83	
Parental human capital	3225	-1.66/2.09	.03 [.02]	.75	
Born in the US	3224	0/1	.54 [.53]		
Time of stay in US	3337	0/3	2.20 [2.21]	.91	
Miami/Ft. Lauderdale	3225	0/1	.55 [.55]		
US citizenship	3025	0/1	.72 [.70]		

^a Means after imputation shown in brackets. *N* after imputation is 3,337.

4. Results

4.1. Main results

Educational attainment is regressed on the mediators English language proficiency, fluent bilingualism, educational aspirations and expectations, family stability, family cohesion and proportion of friends from native-born parents and in addition on intermarriage and our control variables. All the mediators are regressed on intermarriage and again on our set of controls. All endogenous variables (i.e. the mediators and educational attainment) are specified as continuous.¹⁵ Covariances between the residuals of the mediators are set free.

The key results of the analysis of the full model are shown in table 3 and graphically represented in figure 2. Parental human capital, which is positively associated with mixed marriage, has a substantially beneficial influence on educational attainment. For each standard deviation increase in SES, predicted educational attainment is augmented by almost .60 points on a scale of 1 to 8. Taking into account parental human capital increases the negative direct (-.20 to -.29) and total effect (-.28 to -.42) of mixed parents on educational attainment. This confirms the first hypothesis.

Intermarriage has a significantly negative effect on educational outcomes, but, as expected, the indirect influences through language proficiency, bilingualism, educational attitudes, family cohesion and friends show both positive and negative mechanisms. The mediation through English language proficiency is significant and positive, meaning that the children of mixed parents benefit from their relatively high proficiency in their educational outcomes, confirming our second hypothesis.

Children from mixed parents, like we proposed, associate more with the children of the native born than children of co-ethnic parents do. However, since the proportion of friends without foreign-born parents has a *negative* effect on educational attainment, this constitutes a negative instead of the hypothesized positive indirect effect. Examination of contrasts between the three categories of the friends variable¹⁶ showed that having an ethnically diverse

network (e.g. having some friends without foreign background), while not different significantly from the other categories, also does not increase educational attainment, which means we find no support for our third hypothesis.

Educational attitudes, consistent with our fourth hypothesis, are less positive among children from mixed parents and have a positive impact on educational achievement, making it a negative indirect effect of intermarriage on educational attainment. Interestingly, a model without control for parental SES (also shown in table 3) shows no significant indirect effects through educational attitudes and further inspection suggests that the positive effect of parental human capital on educational expectations and aspirations is responsible for this.

We found mixed support for our fifth hypothesis. Family stability has a strong positive effect on educational attainment and mixed parents are significantly less likely to provide a stable family environment for their children. Indeed, the mediation through family stability is negative and highly significant, meaning that the educational attainment of children of mixed parents is negatively affected by their less stable family environment. Family cohesion has a significantly positive direct effect on educational attainment. However, counter to our expectation, children of mixed parents don't report significantly lower family cohesion and indeed, cohesion does not significantly mediate the influence of mixed marriage on educational attainment. The exclusion of our measure of family stability does not change the (mediating) effect of family cohesion and vice versa.

While, as expected, children of mixed parents are less likely to be fluently bilingual, bilingualism does not seem to offer substantial educational benefits, reflected in the insignificant direct effect and mediation, refuting our sixth hypothesis.

The sum of the indirect effects is slightly negative, although the positive and negative indirect effects largely cancel each other out. However, there is still a strong direct effect of mixed

parents on educational attainment and it is negative. On average, children from mixed parents, controlled for the other variables in the model, score around .4 points lower on an educational attainment scale from 1 to 8. This means that, although we have identified various significant mechanisms through which mixed parents influence children’s educational attainment, some of the effect is not yet accounted for.

Table 3:

Unstandardized regression coefficients and standard errors full model. N=3337

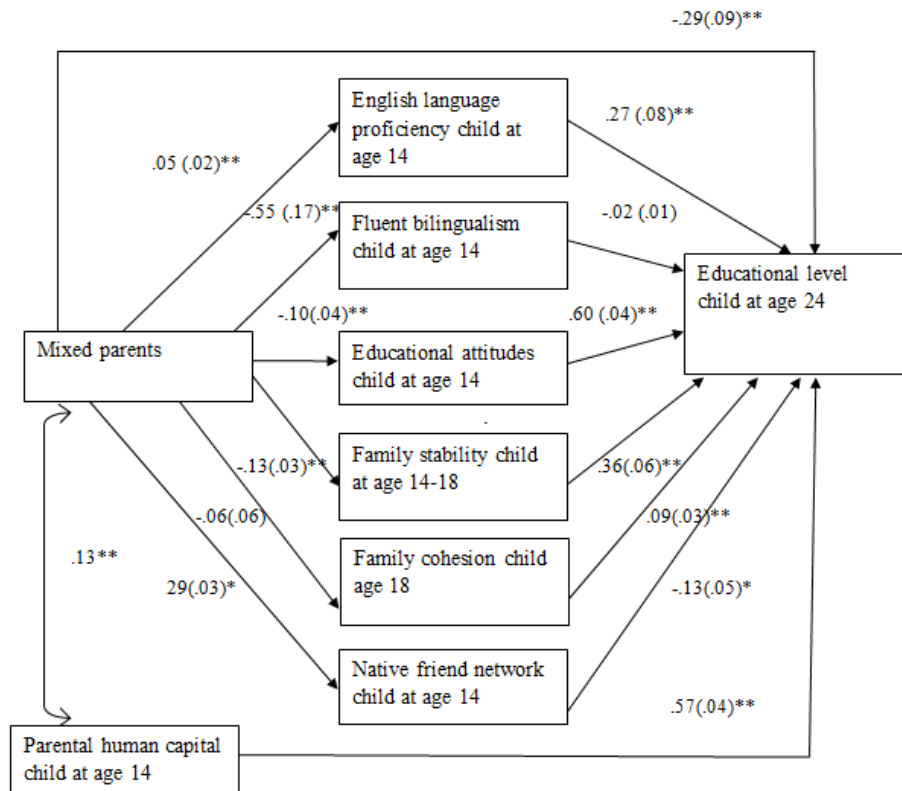
	Model 1: No control for Parental SES		Model 2: Parental SES	
Direct effects	beta	S.E.	beta	S.E.
Mixed parents	-.20*	.09	-.29**	.09
English language proficiency	.47**	.08	.27**	.08
Fluent bilingualism	-.03**	.01	-.02	.01
Educational attitudes	.74**	.04	.60**	.04
Family cohesion	.10**	.03	.09**	.03
Family stability	.46**	.06	.36**	.06
Friends with native parents	-.13*	.05	-.13*	.05
Parental SES	-	-	.57**	.04
Age	-.12**	.03	-.09**	.03
Female	.12	.06	.20**	.06
Born in the US	.21*	.10	.14	.09
US citizenship	-.03	.09	-.19*	.09
Time of stay	-.07	.05	-.01	.05
Indirect effects mixed parents				
English language proficiency	.031**	.011	.012*	.006
Fluent bilingualism	.015*	.007	.009	.006
Educational attitudes	-.035	.029	-.061**	.023

Family stability	-.05**	.013	-.045**	.012
Family cohesion	-.005	.006	-.005	.005
Friends with native parents	-.037*	.016	-.037*	.015
Total Indirect	-.08*	.04	-.13**	.03
Total effect mixed parents	-.28**	.09	-.42**	.09

Note: * $p < .05$. ** $p < .01$ one-sided for hypothesized effects, two-sided otherwise.

Figure 2:

Unstandardized regression coefficients and standard errors full model.



Note: * $p < .05$. ** $p < .01$ one-sided. Only hypothesized paths are shown. Indirect effects and the effects of control variables are shown in table 3.

4.2. Subgroup analyses and robustness checks¹⁷

A first logical question to ask is whether our results hold equally for parents of different national backgrounds. Sensitivity analyses which left out respondents who had parents from

or were themselves born in Mexico (possibly different effects, because of the long history and the high degree of migration, including many seasonal migrants), Cuba (very specific reception in the US due to US-Cuba political relations, and unusually high average human capital compared to other Latin-American migrant groups) and the Philippines (special relationship to the US as former colony, likely more proficient in English than most other Asian migrant groups) respectively, did not affect our results much; for the model without the Cubans, the mediation through native friends was not significantly negative. The negative direct effect of mixed parents, the positive direct and indirect effect of English language proficiency, the negative mediation through family stability and the non-significance of the family cohesion mediator were common to all models. The one exception to the negative indirect effect through educational attitudes was the model without Filipinos, where the coefficient was negative as expected, but not significant. Adding dummies for the country of birth of the foreign-born parent (with country of birth of mother prioritized when it is not equal to the country of birth of the father and both are foreign-born) also did not change our main results. Overall, this bolsters our confidence in the proposed mechanisms and effects as relatively robust and non-specific to certain ethnic groups.

However, two further subgroup analyses did show some interesting differences in model parameters. First, we ran the model separately for children with parents with an Asian background (N=1181) and the rest (N=2156). For the latter group, the direct effect of mixed marriage is much weaker (-.21 versus -.52 for Asians) and is completely absent before controlling for SES. Family cohesion isn't a significant mediator for Asians or non-Asians (cf. the main model), but for the latter, the direct effect on educational attainment is significant and in the right direction, while it is insignificant for Asians. For Asians, neither English language proficiency nor proportion of friends with native parents acts as a significant

mediator and their direct effects are also absent. However, none of the indirect effects significantly differ in magnitude for the two groups.

Our second subgroup analyses compared children who are born in the US (N=1775) with those born abroad (N=1562). Again, none of the contrasts for specific indirect effects are significant, but there are some striking differences. There is a lot of heterogeneity in the relation between mixed parents and educational attainment for those born abroad, rendering the direct effect insignificant and also being the main cause of insignificant mediating effects.

Interestingly, the mediations through English language proficiency and inter-ethnic friends are insignificant for those born in the US as well and when we look at direct effects, a rather complex picture appears: direct effects of English and interethnic friends are much higher and only significant for those born abroad, while the effect of mixed parents on the mediators, especially in the case of English language proficiency, is higher for children born in the US. It seems that the significant effect in the main model should be interpreted with caution, since the effects of the two pathways constituting the mediator effect are not apparent in their combined form in either the subgroup of children born abroad or those born in the US.

Overall, however, the fact that none of the indirect effects significantly differ between groups in our subgroup analyses do provide support for the robustness of our main model, even if they point to the need for more research on subgroup differences.

As discussed in the first section of this paper, many authors have theorized and found differences in the effect of mixed marriage on the outcomes of children depending on whether the mother or father is of native origin, but the direction of the effect is not consistent.

Theoretically, both the differential selectivity of migrant women and men and the different way in which their economic and cultural capital and parental involvement, among other things, can influence the educational attainment of their children can produce these

differences in outcomes. With the CILS data, we only have cultural and economic capital indicators for the parents when the children are already in adolescence, so it is not possible to distinguish between pre- and post-selection effects, or to test explanations regarding early development of children. This limits the possibilities for a theoretically informed test of the gender hypothesis. However, it is of course possible and important to do a more exploratory analysis to see whether our results differ depending on the sex of the native partner in mixed unions.

We ran the analysis separately for mixed unions with native men (deleting those with native women) and with native women (deleting mixed unions with native men) and found that the direct effects on educational attainment were very similar, but the indirect effects were not. In the native male model, only the mediation through family stability and native friends remain significant and the otherwise insignificant mediation through bilingualism now becomes positive and significant, leading to the unexpected result that children with two foreign-born parents are more often fluently bilingual and therefore do *worse* educationally (see table 4). For the case of female natives in mixed unions, the proposed indirect effects through English language proficiency, educational attitudes, family stability and native friends are significant, as in our overall model. In addition, there is a weakly (only one-sided) significant mediation through family cohesion in the predicted direction.

Table 4:

Unstandardized regression coefficients and standard errors full model, only mixed parents with native male considered, N= 3067.

	Model 1: No control for Parental SES		Model 2: Parental SES	
Direct effects	beta	S.E.	beta	S.E.

Mixed marriage	-.25*	.13	-.34**	.12
English	.47**	.08	.27**	.08
Bilingual	-.03**	.01	-.02	.01
Educational attitudes	.73**	.04	.60**	.04
Family cohesion	.10**	.03	.09**	.03
Family stability	.46**	.06	.36**	.06
Friends with native parents	-.12*	.06	-.12*	.05
Parental SES	-	-	.57**	.04
Age	-.12**	.04	-.09*	.04
Female	.14*	.06	.22**	.06
Born in the US	.22*	.10	.15	.10
Miami	.02	.06	-.13*	.06
US citizenship	-.03	.09	-.19*	.09
Time of stay	-.08	.05	-.03	.05
Indirect effects mixed parents				
English	.011	.014	.001	.008
Bilingual	.019*	.01	.012	.008
Educational attitudes	-.007	.042	-.035	.033
Family stability	-.046**	.018	-.042**	.015
Family cohesion	.005	.009	.004	.007
Friends with native parents	-.033*	.016	-.034*	.016
Total Indirect	-.051	.056	-.10*	.04
Total effect mixed parents	-.298*	.134	-.43**	.13

Note: * $p < .05$. ** $p < .01$ one-sided for hypothesized effects, two-sided otherwise.

Table 5:

Unstandardized regression coefficients and standard errors full model, only mixed parents with native female considered, N= 3151.

	Model 1: No control for Parental SES		Model 2: Parental SES	
Direct effects	beta	S.E.	beta	S.E.
Mixed marriage	-.17	.11	-.26*	.11
English	.46**	.08	.27**	.08
Bilingual	-.03**	.01	-.02*	.01
Educational attitudes	.74**	.04	.61**	.04
Family cohesion	.11**	.03	.10**	.03
Family stability	.43**	.06	.33**	.06
Friends with native parents	-.12*	.05	-.11*	.05
Parental SES	-	-	.55**	.04
Age	-.11**	.04	-.08*	.04
Female	.11*	.06	.19**	.06
Born in the US	.19	.10	.12	.10
Miami	.03	.06	-.11	.06
US citizenship	-.05	.09	-.20*	.09
Time of stay	-.04	.05	.01	.05
Indirect effects mixed parents				
English	.044**	.014	.02*	.009
Bilingual	.013	.007	.008	.006
Educational attitudes	-.057	.036	-.080**	.029
Family stability	-.05**	.015	-.045**	.013
Family cohesion	-.014*	.008	-.014*	.008
Friends with native parents	-.035*	.017	-.034*	.017
Total Indirect	-.10*	.05	-.14**	.04
Total effect mixed parents	-.27*	.11	-.41**	.11

Note: * $p < .05$. ** $p < .01$ one-sided for hypothesized effects, two-sided otherwise.

In short, our theoretical model holds best for mixed unions with a female native partner.

Reasons are speculative. For example, since most studies find that mothers are most important in language skill transmission and cultural transmission more generally, children may get the largest boost to English language proficiency with a native mother. Clearly, further investigation of this issue is necessary in a future paper.

5. Conclusion and discussion

While much research has been done on intermarriage, there is a lack of research on the structural outcomes for children of mixed parents. In this paper, we have used panel data from the Children of Immigrants Longitudinal Survey (CILS, 1991-2001) to test a multiple mediator model with several possible mechanisms through which growing up with one foreign-born and one US born parent (compared to two immigrant parents) affects children's educational attainment.

We hypothesized that mixed couples would positively affect educational outcomes for children at age 24 through higher parental human capital and through children's English language proficiency and the proportion of friends with native-born parents, while lower educational expectations and aspirations, lower family stability/cohesion and less fluent bilingualism would lead to disadvantages for the children of mixed parents.

5.1. Discussion of findings

Indeed, we found that children from mixed partners benefitted from the higher educational and socio-economic resources of their parents. Also, as expected, their higher English proficiency helped them gain a higher degree, while their lower educational attitudes (at least when controlled for parental human capital) and less stable family environment put them at a disadvantage compared to children with two foreign-born parents.

However, running counter to our hypotheses, bilingualism turned out to offer no significant advantages and neither did family cohesion, except when we restrict our sample of mixed parents to the case where the mother is the native partner. A higher proportion of friends with native-born parents turned out to have a negative instead of the hypothesized positive effect on educational attainment. While we did not specify a hypothesis on the total effect of growing up with mixed parents on educational attainment in young adulthood, the significantly negative direct and total effect is striking considering the positive valuation of intermarriage in most theoretical literature on assimilation. Of course, the mechanisms we tested were not meant to be an exhaustive list and clearly, room remains for testing for other possible causal pathways that may explain the remaining negative direct effect we find.

Large-scale panel research is scarce and proper ways to test the contribution of diverse mechanisms in a multiple mediator model are of recent date and rarely used. Estimation of multiple indirect effects, certainly with multiply imputed data, is still very much a field in development, a.o. lacking good fit and effect size measures (Fairchild et al. 2009; Preacher and Kelly 2011). However, as a method to chart mediating processes and calculate the unique indirect effects of each mediator, multiple mediation analysis is far superior in power and accuracy to classical ways of testing for mediation (Preacher and Hayes 2008) and gives a more complete view of the complex ways in which various, complementary and contrasting, mechanisms can make mixed parents either a resource or a burden to educational attainment.

This is the first study on the influence of mixed couples on children's educational outcomes that has combined the strengths of longitudinal data and modern mediation analysis to test a variety of mechanisms. The positive contribution of parental human capital and the positive indirect effect of English language proficiency are in line with our expectations and confirm the importance of the availability of parental resources when growing up and the value of

mastering the dominant language in getting ahead in the host country. The negative indirect paths through educational attitudes and friends with native-born parents are important in understanding the mixed blessings offered by mixed-nativity parents. Immigrant ambition and optimism and the support offered by peers with a shared background benefit the children of two foreign-born parents. In addition, the oft-mentioned higher chances of mixed unions to break up and create an unstable family environment indeed turn out to harm the educational attainment of children.

The insignificant mediation through family cohesion and the insignificant indirect effect through bilingualism are unexpected and at odds with most of the previous literature on the subject. If fluent bilingualism indeed is more prevalent among children of foreign-born parents, but does not give strong educational advantages, this could have serious implications, since it suggests that mastering a second language does not have educational benefits additional to being proficient in the dominant language. If it is true that family cohesion has a clearly positive effect, but is not higher among children of same-nativity immigrant parents, this could mean that even though mixed marriages are more prone to lead to parental conflicts or divorce, this may in fact not automatically affect the positive emotional bond within the family negatively compared to non-mixed immigrant families.

We should note that there are surprisingly few studies on the choice and influence of peers from different ethnic backgrounds on one's school success. Goza and Ryabov (2009) found that co-ethnic friendships can be beneficial for one's academic achievement, especially for Asian-Americans, suggesting that value of co-ethnic ties is dependent on the specific ethnic group and their available resources. From a social capital viewpoint, it would be interesting to have information on the network structure and the availability and accessibility of various resources in networks with a different ethnic composition. Does the effect of friendship networks depend on the specific ethnicity of the friends or the density and trust within the

group and what benefits does it offer? From an ethnic capital viewpoint, contacts within the ethnic group may reinforce the stronger educational ambitions of most immigrant groups and León (2005) has found evidence for a more effective transmission of parental skills through ethnic peer interactions.

The counterintuitive effect of friends with US-born parents may also be due to school characteristics. Indeed, Portes and Hao (2004) and Goldstein (2004) found that Latino students perform better in schools with more co-ethnic students and teachers and Valenzuela (1999), in an ethnographic case study of an elementary school in Houston, shows that US-born friends may offer less ethnic social capital than foreign-born friends to offset the debilitating effects of a lack of care, validation of minority identities, teacher-student trust and academic climate.

One reason for the small effect of bilingualism may be that its influence is suppressed by educational attitudes and family cohesion. Bilingualism could offer advantages through improving the communication with parents and offering access to ethnic capital, resulting in more 'immigrant optimism' about educational outcomes (Zhou 1997), both of which have been added as separate mechanisms in the model we tested. Indeed, Preacher and Hayes (2008) mention suppression and multicollinearity as common problems in multiple mediator models. When leaving out possible suppressors such as friends and family cohesion, however, bilingualism remains an insignificant mediator. Another possibility may be that our results are affected by how we modelled bilingualism, departing from the categorical construct (fluently bilingual, weakly bilingual, English dominant and foreign dominant); see also note 8.

Alternatively, the effect of bilingualism may be dependent on the specific heritage language¹⁸ and the ethnic networks and resources it can offer access to (Golash-Boza 2005) as well as the family context in which linguistic acculturative consonance and generational dissonance may

lead to different outcomes (Cort 2010)¹⁹. Also, while bilingualism may give access to resources outside the school context, it may not lead to advantages, or may even lead to disadvantages, when multilingualism and hybrid identities are not supported or even actively discouraged at school (Tikly et al. 2004) or when bilingual schooling is of lower quality (see Lopez and Mora 1998).

5.2. Limitations and suggestions for further research

This brings us to a more general limitation of the present study. The rich information provided by CILS enabled us to include measures for the child on various points in time, but most of the information about parental characteristics, such as their language proficiency and their expectations and involvement in their children's education, was only available in the parental survey of 1995 which, due to sample size and sample bias, was not used. The availability of such information (ideally with information on biological parents *and* guardians) on different time points and for a larger proportion of our respondents would have opened up possibilities to directly measure how the parental characteristics of mixed and co-ethnic parents differ and how this may affect educational attainment of the children through their effects on children's characteristics.

There are other ways in which this research could be extended. As immigrants from different origin countries are likely to have different levels of human capital, have different preferences and opportunities for intermarriage with a native (as a consequence of differential sex ratios, ethnic group size, residential segregation, social distance to the native majority group etc.), offer different benefits to their children (e.g. bilingualism may give access to more 'useful' ethnic networks for children with a Cuban parent in Miami than for children of a Laotian mother or father in that area) and face different challenges in their interaction with natives (e.g. stricter endogamy norms and more effective third party control, higher cultural distance

leading to higher likelihood of parental cultural conflicts), it would be interesting to distinguish between the many possible ethnic combinations constituting mixed relationships. Both in intermarriage rates, human capital selectivity and intergenerational social mobility (for same-ethnic couples), large differences have been found between Asian-Americans and Latinos and within these racial groups a similar diversity between national origin groups exists (Hwang, Saenz and Aguirre 1997; Qian 2002; Rumbaut 2008; Kalmijn and Van Tubergen 2010). Indeed, our subgroup analyses showed suggestive differences in results for children with parents from an Asian or non-Asian background.

Related to the previous point, better measurements of mixed partnership are needed. CILS offers information on the birth country of the father and mother, but 'US-born' may include a large variety of ethnic and racial backgrounds. Morgan (2007) and Qian and Lichter (2001) report an increase of marriages between immigrants of the same race, but different ethnicity and between immigrants and natives with the same ethnic background. Their selectivity and patterns differ from intermarriages between immigrants and white natives (Qian 2002).

Further research on the effects of these different categories of mixed marriages is needed and the surprising total negative effect of growing up with mixed parents warrants closer investigation. Possibly, a less secure or socially accepted and validated ethnic identification of children of mixed parents explains part of the remaining negative effect. Also, third party sanctions on intermarriage, affecting the available social capital of children, may play a role. Perhaps, the negative effects of parental conflict and divorce are not completely tapped by our measures for family stability and cohesion.

Furthermore, it is possible that relevant processes are at least partially contingent on the gender of the native partner. Either through differential selectiveness of exogamy for men and women, or through gender differences in cultural transmission, social networks or other

important distinctions, the benefits of growing up with mixed-nativity parents may depend on whether the mother or the father is born in the US. Different authors have found such differences (Furtado 2009; Van Ours and Veenman 2010) and so did we in additional analyses that showed poor support for our model when only mixed partnerships with a native father are taken into account, but a result similar to our main model, plus the hypothesized negative mediation through family cohesion, when only mixed partnerships with native women are considered. Clearly, more work needs to be done to understand the precise backgrounds and mechanisms that account for these differences.

More generally, the issue of the selectivity of the intermarriage needs to be explored further. The possible bias caused by factors that influence both the change of intermarriage and the endogenous variables in our model looms large. In our case, we did not have enough information on the time and place of marriage and the ethnic background of the US-born parents to use commonly chosen instrumental variables such as ethnic group size and sex ratio. In the CILS data, we only have cultural and economic capital indicators for the parents when the children are already in adolescence, so it is not possible to distinguish between selection effects and differences in these variables occurring after, possibly even because of the mixed marriage. With so many mediators in addition to the outcome variable, the conditions for a strong instrument are also harder to meet. More explicit modelling of the selectivity of mixed unions, with special attention to possible differences in processes for various ethnic groups and depending on the gender of the native partner, would be a step forward.

Since educational pathways are structured by the school and classroom environment, it would also be interesting to test a multilevel multiple mediation model, taking into account important structural and compositional class and school characteristics. For example, the effect of co-ethnic or cross-ethnic friendship ties may depend on the ethnic and socio-

economic composition of the classroom and school, and if native parents can navigate their way through the American school system with more knowledge and ease than foreign-born parents, selective sorting into certain school and classroom environments for children of mixed parents may be important to study.

In any case, our finding of a significant negative effect of mixed parents on educational attainment of children has made clear that the often assumed benefits of intermarriage for the assimilation of immigrants should not be taken for granted. Moreover, we hope that our identification and empirical testing of various countervailing mechanisms will contribute to a better understanding of the structural consequences of mixed partnerships for the future of the growing 'new second generation' in the US.

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“Success Attained, Deterred, and Denied: Divergent Pathways to Social Mobility in Los Angeles’s New Second Generation.” *Annals of the American Academy of Political and Social Science* 620(1):37-61

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NOTES:

¹ Note that the comparison group is immigrant parents, *not* native parents, who are not represented in the CILS data!

² Ramakrishnan (2004), Chiswick and DebBurman (2004), Kao (1999) and Rumbaut (2005 and 2008) are among the few scholars who distinguish the children from mixed partnerships from those of co-ethnic partners in their studies of the structural integration of the new second generation in the US, but in these studies, the educational attainment of children from mixed parents is not of central importance and/or is only considered descriptively.

³ The number of children from mixed marriages in Becker (2010) is 35 and in Van Ours and Veenman (2010) the number of inter-ethnic couples is 192. Furtado (2009) has a larger sample size, but her use of census data poses problems for coupling information on parents and children and limits her analyses to children living with both biological parents.

⁴ Unless mentioned otherwise, the comparison group is the children of two foreign-born parents.

⁵ Henceforth also referred to as educational attitudes.

⁶ The loss of respondents is due to deletion of extreme cases (e.g. those who are 17 or older in the baseline survey) and the constraint of a minimum number of valid responses to items forming scales such as English language proficiency. We decided to impute the scale scores, not the item scores, since we wanted sufficient information (i.e. sufficient valid responses on scale items) for each respondent and chose to include scale rather than item scores as predictive variables to estimate imputed scores for reasons of efficiency and parsimony. The total loss of cases amounts to 276, which is 7.6% of the cases present in all three waves.

⁷ Children with two foreign-born parents and those with mixed parents both score high on average and the variance is low. Indeed, by age 18 and 24, barely any variance is left. However, cell counts in the lower categories in the wave 1 measurement are high enough (i.e. results will not be determined by a few outliers) and the difference between talking English ‘well’ and ‘very well’ as a young adolescent may indeed be a very substantial one, as all analyses of the CILS data, and other data for that matter, show. The overall high English language proficiency has the advantage of making the bilingualism mediator more clearly interpretable as the added value of foreign language proficiency in explaining the relationship between growing up with mixed parents and educational attainment.

⁸ We also tried specifying bilingualism as a general product term of the two centered language scales, giving similar results. Using a dummy is almost equivalent to the approach used here, but led to estimation problems. Note that the conventional inclusion of dummies for English dominant, foreign dominant, weak bilingual and fluent bilingual is not possible, since categorical mediators pose considerable estimation problems.

⁹ Unfortunately, these items were only present in the 1995 survey, not the baseline 1991 survey.

¹⁰ We decided to specify parental human capital as a control variable rather than a mediator, since it is not, like our other mediators, a clear causal mechanism, nor is it a characteristic of the child. Moreover, it is likely that the human capital of the parents is not only a consequence of mixed marriage, but also a predictor of it. Using it as an instrumental variable for mixed marriage, however, would not be a good option since it is also associated with our mediators and outcome variable. The instrumental variable approach would not be ideal in any case, since it would bias the regression coefficients for parental SES, which are, cf. our hypothesis, expected to at least partially reflect a selection effect.

¹¹ Entering dummies with ‘all life’ as reference category doesn’t change results.

¹² All analyses were also run without imputation, using the Full Information Maximum Likelihood estimation procedure of MPlus, with negligible changes to regression parameters and no changes to substantive conclusions.

¹³ Bootstrapping is often better than either the delta method or the Sobel test (Preacher and Hayes 2008), but this technique is not supported for multiply imputed data. Running the model on the unimputed data with full maximum likelihood estimation (losing only 5 cases due to missings on x variable) and 5000 bootstrapped standard errors and bias-corrected confidence intervals did not lead to different results.

¹⁴ Note that we do not use the latent modeling possibilities of Mplus for our language and family cohesion scales. While improving accuracy, it increases the number of parameters in the model by modeling measurement error components, effectively reducing power, especially in small samples, which is exacerbated by the z-statistic (as opposed to student’s t) used to compute standard errors (Ledgerwood 2011).

¹⁵ Modelling educational level as ordinal is problematic for the analysis of multiple mediator models, but the large sample size should make the results less sensitive to deviations from the normality assumption.

¹⁶ Dichotomous contrasts to compare indirect effects of any category compared to the rest of the categories and the results when entering the variable as continuous observed mediator give equivalent results.

¹⁷ All results are available from the authors by request. To save space, only a selection is included in this article and only the main sensitivity checks are discussed. Further robustness checks included adding additional controls (number of friends, time of stay in the US for foreign-born parents, number of siblings living at home), none of which changed the main results.

¹⁸ We have also checked whether the foreign language mentioned by the children corresponds to the heritage language we would expect based on their ethnic identification. There was a close correspondence for children who identified as Hispanic/Latino or Filipino, but children who identified as Asian (incl. specific Asian nationalities and hyphenated forms) showed a more mixed picture with many mentioning an Asian language, but a considerable group indicating Spanish as their second language.

¹⁹ Cort does not test the different effects this may have, but he finds that having mixed parents and higher parental human capital are respectively not and negatively predictive of child bilingualism, but are strongly positively related to consonant acculturation (excellent English language proficiency of parents and child) and suggests that dissonant acculturation can negatively influence socio-economic outcomes, e.g. by loss of parental control and ethnic community resources.

