Online Appendix

May 2007

Bleakley, Hoyt, and Aimee Chin. 2008. "What Holds Back the Second Generation? The

Intergenerational Transmission of Language Human Capital Among Immigrants."

Journal of Human Resources. Forthcoming.

I.   Classification of English- and Non-English-Speaking Countries

Table A1 shows the decomposition of the sample by parents' country of birth, and also

presents our classification of countries by English-speaking status.

II.   Alternative Formulations of the Identifying Instrument

The main analysis uses as instruments a dummy for each parental age at arrival (age at

arrival 0 is omitted) interacted with parent being born in a non-English-speaking country. Table

A2 presents 2SLS estimates of the effect of parental English using alternative formulations of the

instrument. In particular, we use formulations that use different parameterizations of parental

age at arrival interacted with parent being born in a non-English-speaking country.

III.   Analysis using the NELS

We have explored a richer set of child educational outcomes using data from the National

Education Longitudinal Study of 1988 (NELS) (U.S. Department of Education (2000, 2002)).

This is a nationally representative sample of 8th graders in 1988, and we use the subsample

consisting of U.S.-born children of immigrants. Since we cannot replicate our instrumental-

variables strategy with the NELS—parental age at arrival is measured in very broad categories and moreover there are too few observations—estimates using these data must be viewed with caution. Mitigating some concerns, however, is that the comprehensiveness of the NELS enables us to control for family and school characteristics that could potentially cause omitted variables bias. The NELS data affords us the opportunity to analyze some outcomes that are not available in the Census, such as children's educational outcomes as adults (since children are observed irrespective of whether they reside with their parents), and to analyze some of the same outcomes as the Census as a robustness check.

We present the results estimated using the NELS in Table A3. Note that the ordinal measure of English-speaking ability has five categories (coded 0 to 4) rather than four, thus the scale of the coefficients will be less since a one-unit increase in parental English corresponds to less improvement now. Panel A contains outcomes measured from surveys and tests administered when the child is an eighth grader in 1988. Rows A1-A4 pertain to participation in pre-first-grade programs. Consistent with Table 3 results, the probability that a child attends nursery school or preschool significantly increases with parental English proficiency (Row A1). Also, the probability that a child has attended kindergarten significantly increases (Row A4).[1] However, there is no effect on participation in daycare and Head Start. Rows A7-A9 pertain to promotion and grade-for-age. The negative sign of the coefficients in Rows A7 and A9 corroborate with the finding in Tables 3 and 4 that children with more English-proficient parents enter school sooner or are less likely to be held back. Rows A5 and A6 provide evidence that the reading and math test scores are better for children with parents with better English-language

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1. The NELS:88 birth cohorts would have attended kindergarten at the end of the 1970s, when fewer states had mandatory kindergarten. This would explain why there might be a significant effect on kindergarten attendance using the NELS data but not a larger effect on 6-year-olds attending kindergarten or higher using Census data.

skills, consistent with what was suggested by the NLSY results—children with less English-proficient parents continue to have worse English-language skills.

Panel B contains outcomes measured in a follow-up survey in 2000. This enables us to examine such outcomes as eventual high school completion and college-going rates, although it should be noted that only about half the observations in the base year sample remain twelve years later.[2] Mirroring the high school dropout results using Census data, we find that children with more English-proficient parents are more likely to get a high school diploma or GED (see rows B1 and B2). Additionally, children with more English-proficient parents are more likely to receive any post-secondary education (see row B3). They are more likely to be pursuing academic degree programs (e.g., associate's or bachelor's degree) and less likely to pursue vocational tracks (leading to a license or certificate). This is consistent with children with less English-proficient parents having weaker English-language skills, which makes post-secondary academic degree programs difficult (either to get into or to learn from).

We re-estimated all the models using only the Hispanic children of immigrants in the NELS, and the results are displayed on the right side of Table A3. In general, the sensitivity to parental English is greater for Hispanics. For them, the effect on test scores, high school diploma and receiving at least an associate degree is significant even after controlling for family and school-level characteristics.

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2. For example, the outcomes in Panel A contain as much as 1657 observations (for the outcome in Row A9, with other outcomes having slightly fewer observations due to missing values) while the outcomes in Panel B contain as much as 800 (for high school completion status).
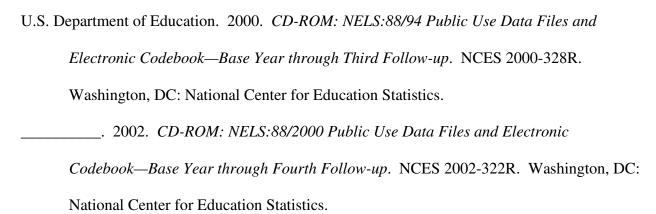
References

U.S. Department of Education. 2000. *CD-ROM: NELS:88/94 Public Use Data Files and Electronic Codebook—Base Year through Third Follow-up*. NCES 2000-328R. Washington, DC: National Center for Education Statistics.

_____. 2002. *CD-ROM: NELS:88/2000 Public Use Data Files and Electronic Codebook—Base Year through Fourth Follow-up*. NCES 2002-322R. Washington, DC: National Center for Education Statistics.

Table A1. Children in the Sample by Parental Country of Birth

Panel A. English-speaking countries (=Control Group)

Rank by N	Country	N	% of group
1	Canada	5,521	33.4%
2	England	3,594	21.8%
3	Jamaica	2,363	14.3%
4	Trinidad & Tobago	849	5.1%
5	Guyana/British Guiana	702	4.2%
6	United Kingdom, ns	604	3.7%
7	Scotland	437	2.6%
8	Ireland	383	2.3%
9	Belize/British Honduras	295	1.8%
10	Barbados	239	1.4%
11	Australia	234	1.4%
12	Bahamas	201	1.2%
13	Bermuda	188	1.1%
14	U.S. Virgin Islands	174	1.1%
15	South Africa (Union of)	161	1.0%
16	Antigua-Barbuda	85	0.5%
17	New Zealand	79	0.5%
18	Grenada	79	0.5%
19	St. Vincent	70	0.4%
20	Liberia	68	0.4%
21	St. Kitts-Nevis	63	0.4%
22	Northern Ireland	37	0.2%
23	St. Lucia	36	0.2%
24	Zimbabwe	31	0.2%
25	Wales	26	0.2%
26	Anguilla	1	0.0%
	Total English-spking obs	*16,520*	100.0%

Panel B. Non-English-speaking countries (=Treatment Group)

Rank by N	Country	N	% of group
1	Mexico	67,512	45.6%
2	Germany	11,270	7.6%
3	Puerto Rico	8,863	6.0%
4	Cuba	6,088	4.1%
5	Italy	3,963	2.7%
6	El Salvador	3,959	2.7%
7	Dominican Republic	3,342	2.3%
8	Japan	3,338	2.3%
9	Vietnam	3,158	2.1%
10	Guatemala	1,803	1.2%
11	Laos	1,790	1.2%
12	Portugal	1,790	1.2%
13	Korea	1,776	1.2%
14	Colombia	1,751	1.2%
15	France	1,691	1.1%
16	Haiti	1,366	0.9%
17	Ecuador	1,200	0.8%
18	Greece	1,150	0.8%
19	Poland	1,033	0.7%
20	Nicaragua	1,004	0.7%
21	China	983	0.7%
22	Iran	968	0.7%
23	Israel/Palestine	902	0.6%
24	Cambodia (Kampuchea)	882	0.6%
25	Panama	882	0.6%
26	Honduras	810	0.5%
27	Spain	691	0.5%
28	Taiwan	648	0.4%
29	Netherlands	645	0.4%
30	Peru	636	0.4%
31	Argentina	631	0.4%
32	Lebanon	514	0.3%
33	Brazil	507	0.3%
34	South Korea	461	0.3%
35	Africa, ns/nec	442	0.3%
36	Venezuela	440	0.3%
37	Thailand	440	0.3%
38	Yugoslavia	436	0.3%
39	Iraq	373	0.3%
40	Turkey	367	0.2%
41	Azores	366	0.2%
42	Hungary	360	0.2%
43	Egypt/United Arab Rep.	359	0.2%
44	Costa Rica	356	0.2%
45	Jordan	342	0.2%
46	Austria	338	0.2%
47	Chile	331	0.2%
48	Indochina, ns	268	0.2%
49	Romania	242	0.2%
	subtotal, top 49 countries	143,467	96.9%
	subtotal, other (84) countries	4,572	3.1%
	Total non-Eng-spking obs	*148,039*	100.0%

Notes: The sample is as described in Table 1 notes. Information on each country's official languages is from the World Almanac. Recent adult immigrants from the 1980 IPUMS were used to divide English-official countries into English-speaking (at least 50% of recent adult immigrants did not speak a language other than English at home) or Other. The countries in the "Other" category are the Philippines, Hong Kong, India, Guam, Pakistan, American Samoa, Nigeria, Tonga, Fiji, Ghana, Dominica, Kenya, Singapore, Tanzania, Uganda, Sierra Leone, Senegal, Malta, Micronesia, Marshall Islands, Zambia and Papua New Guinea; people from these countries have been dropped from the empirical analysis.

Table A2. 2SLS Estimates of the Effect of Parental English on Child's Outcomes, Alternative Instruments

	English, children 5-11 (1)	Attends school, children 3-4 (2)	6-yr-old attends K+ or 7-yr-old attends 1st+ (3)	Below age-appropriate grade, children age 15-17 (4)	Dropped out of h.s., children age 15-17 (5)
A. Base (dummies for each parental age at arrival interacted with dummy for being born in non-English-speaking country)	0.2387 *** (0.0184)	0.0939 ** (0.0384)	0.0193 ** (0.0079)	-0.0432 *** (0.0159)	-0.0177 *** (0.0058)
B. Max (0, parent's age at arrival - 7)× parent from non-English-speaking country of birth	0.2389 *** (0.0184)	0.0946 ** (0.0392)	0.0180 ** (0.0090)	-0.0430 *** (0.0166)	-0.0161 *** (0.0056)
C. Max (0, parent's age at arrival - 8)× parent from non-English-speaking country of birth	0.2346 *** (0.0185)	0.0953 ** (0.0404)	0.0191 ** (0.0084)	-0.0429 ** (0.0168)	-0.0169 *** (0.0059)
D. Max (0, parent's age at arrival - 9)× parent from non-English-speaking country of birth	0.2313 *** (0.0187)	0.0942 ** (0.0412)	0.0206 *** (0.0077)	-0.0429 *** (0.0165)	-0.0188 *** (0.0066)
E. Max (0, parent's age at arrival - 10)× parent from non-English-speaking country of birth	0.2285 *** (0.0190)	0.0962 ** (0.0411)	0.0226 *** (0.0079)	-0.0440 *** (0.0166)	-0.0203 *** (0.0077)
F. Max (0, parent's age at arrival - 11)× parent from non-English-speaking country of birth	0.2265 *** (0.0194)	0.0958 ** (0.0414)	0.0248 *** (0.0083)	-0.0461 *** (0.0173)	-0.0206 ** (0.0085)
G. Max (0, parent's age at arrival - 12)× parent from non-English-speaking country of birth	0.2235 *** (0.0208)	0.0914 ** (0.0397)	0.0261 *** (0.0091)	-0.0491 *** (0.0176)	-0.0216 ** (0.0100)
H. Dummies for each parental age at arrival past 9 interacted with dummy for being born in non-English -speaking country	0.2346 *** (0.0182)	0.0898 ** (0.0400)	0.0192 ** (0.0076)	-0.0420 *** (0.0160)	-0.0181 *** (0.0060)
I. Parent arrived young (aged 0 to 9) × parent from non-English-speaking country of birth	0.2483 *** (0.0182)	0.0824 * (0.0484)	0.0086 (0.0113)	-0.0369 * (0.0205)	-0.0100 * (0.0059)

Notes: Each cell is from a separate regression that is weighted by child-level IPUMS weights and contains dummies for the country of birth, age at arrival, age, sex, race and Hispanic status of the parent who is the childhood immigrant, and dummies for age and sex of the child. The leftmost column names the identifying instruments used in the regressions in that row. Robust standard errors adjusted for clustering by parental country of birth are shown in parentheses. Asterisks denote significance levels (*=.10, **=.05, ***=.01).

**Table A3. OLS Estimates of the Effect of Parental English
on Child's Educational Outcomes, NELS:88 Data**

	US-born children with an immigrant parent			US-born children with a Hispanic immigrant parent		
Dependent variable	base specification (1)	(1) + family controls (2)	(2) + school controls (3)	base specification (4)	(4) + family controls (5)	(5) + school controls (6)
	Panel A. 8th graders in 1988 observed in the base year (1988)					
A1. Before 1st grade, attended daycare program	0.0237 (0.0146)	0.0092 (0.0145)	0.0139 (0.0148)	0.0247 (0.0162)	0.0074 (0.0168)	0.0189 (0.0173)
A2. Before 1st grade, attended nursery or pre-school	0.0779 *** (0.0150)	0.0522 *** (0.0153)	0.0428 *** (0.0154)	0.0755 *** (0.0172)	0.0508 *** (0.0174)	0.0426 ** (0.0181)
A3. Before 1st grade, attended Head Start	-0.0092 (0.0173)	-0.0057 (0.0172)	-0.0064 (0.0166)	-0.0010 (0.0190)	0.0036 (0.0200)	0.0104 (0.0193)
A4. Before 1st grade, attended kindergarten	0.0548 *** (0.0119)	0.0491 *** (0.0132)	0.0448 *** (0.0138)	0.0672 *** (0.0140)	0.0589 *** (0.0160)	0.0535 *** (0.0175)
A5. Standardized score on 8th grade reading test	0.7662 *** (0.2665)	0.1768 (0.2691)	0.1794 (0.2501)	0.9738 *** (0.2796)	0.5530 * (0.2917)	0.4421 (0.2844)
A6. Standardized score on 8th grade math test	0.8576 *** (0.2498)	0.2730 (0.2667)	0.2602 (0.2581)	1.1083 *** (0.2702)	0.6665 ** (0.2933)	0.5778 * (0.2991)
A7. Through 8th grade, ever held back a grade	-0.0247 ** (0.0115)	-0.0087 (0.0119)	-0.0034 (0.0115)	-0.0355 *** (0.0135)	-0.0118 (0.0148)	-0.0140 (0.0150)
A8. Through 8th grade, ever skipped a grade	0.0052 (0.0056)	0.0082 (0.0059)	0.0091 (0.0066)	0.0026 (0.0066)	0.0056 (0.0071)	0.0069 (0.0084)
A9. Born before July 1, 1973	-0.0331 *** (0.0096)	-0.0174 * (0.0106)	-0.0153 (0.0100)	-0.0396 *** (0.0115)	-0.0204 (0.0134)	-0.0185 (0.0129)
	Panel B. 8th graders in 1988 observed 12 years later (2000)					
B1. Received at least a high school diploma	0.0220 (0.0215)	0.0192 (0.0186)	0.0069 (0.0170)	0.0328 (0.0261)	0.0180 (0.0216)	-0.0032 (0.0244)
B2. Received at least a h.s. diploma or GED	0.0319 * (0.0192)	0.0402 ** (0.0155)	0.0269 ** (0.0132)	0.0463 * (0.0241)	0.0400 ** (0.0180)	0.0348 * (0.0198)
B3. Received any post-secondary education (pse)	0.0358 * (0.0208)	0.0402 ** (0.0193)	0.0299 * (0.0171)	0.0477 * (0.0276)	0.0489 ** (0.0224)	0.0368 (0.0252)
B4. Received some pse, but no license/cert. or degree	0.0062 (0.0265)	0.0174 (0.0236)	0.0104 (0.0217)	-0.0039 (0.0331)	0.0112 (0.0302)	0.0252 (0.0314)
B5. Educational attainment is license/certificate	-0.0416 ** (0.0190)	-0.0163 (0.0159)	-0.0120 (0.0149)	-0.0287 (0.0186)	-0.0277 (0.0187)	-0.0354 * (0.0184)
B6. Educational attainment is associate degree	0.0126 * (0.0075)	0.0124 (0.0096)	0.0146 (0.0105)	0.0151 ** (0.0076)	0.0233 ** (0.0104)	0.0223 * (0.0127)
B7. Educational attainment is bachelor's degree	0.0493 ** (0.0202)	0.0276 (0.0185)	0.0234 (0.0184)	0.0540 *** (0.0207)	0.0344 * (0.0194)	0.0235 (0.0210)
B8. Educational attainment is graduate school	0.0094 (0.0074)	-0.0010 (0.0097)	-0.0065 (0.0093)	0.0112 (0.0075)	0.0076 (0.0077)	0.0012 (0.0073)
B9. Received an assoc. degree or higher (sum B6-B8)	0.0712 *** (0.0210)	0.0391 * (0.0204)	0.0315 (0.0202)	0.0803 *** (0.0226)	0.0653 *** (0.0216)	0.0470 * (0.0245)

Notes: The sample consists of 8th graders in 1988 from the NELS:88 data set who are born in the U.S. and for whom the respondent to the parent questionnaire is an immigrant. Panel A uses data collected in the base year only; regressions are weighted by the base year weights (byqwt). Panel B uses data collected in both the base year and fourth follow-up in 2000; regressions are weighted by the base year-fourth year follow-up panel weights (f4bypnwt). The table reports the coefficient for parental English, with each coefficient coming from a separate regression. The base specification controls for child female dummy and dummies for the following parental characteristics: female, year of birth and race/ethnicity (including detailed Hispanic and Asian and Pacific Islander categories). The family controls specification adds dummies for whether child's parents are married, family size, family income category, and each parent's educational attainment. The school controls specification adds variables describing the school where the child attended 8th grade: dummies for total school enrollment, school control (public/Catholic/other religious private/other private), urbanicity (urban/suburban/rural), region (Northeast/North Central/South/West), percent of school's students receiving free lunch, percent of school's 8th grade students who are Hispanic, percent of school's 8th grade students who are Hispanic and number of full-time teachers. The measure of parental language ranges from 0 to 4 as follows: 0 = speaks English not at all well, 1 = not very well, 2 = well, 3 = pretty well and 4 = very well. Robust standard errors are shown in parentheses. Asterisks denote significance levels (*=.10, **=.05, ***=.01).