CHILD DEVELOPMENT

Child Development, September/October 2012, Volume 83, Number 5, Pages 1591–1607

The Development of Young Children of Immigrants in Australia, Canada, the United Kingdom, and the United States

Elizabeth Washbrook
University of Bristol

Jane Waldfogel
Columbia University and London School of Economics

Bruce Bradbury
University of New South Wales

Miles Corak
University of Ottawa and IZA

Ali A. Ghanghro
University of Ottawa

In spite of important differences in some of the resources immigrant parents have to invest in their children, and in immigrant selection rules and settlement policies, there are significant similarities in the relative positions of 4- and 5-year-old children of immigrants in Australia, Canada, the United Kingdom, and the United States. Children of immigrants underperform their counterparts with native-born parents in vocabulary tests, particularly if a language other than the official language is spoken at home, but are not generally disadvantaged in nonverbal cognitive domains, nor are there notable behavioral differences. These findings suggest that the cross-country differences in cognitive outcomes during the teen years documented in the existing literature are much less evident during the early years.

Immigration is a central public policy concern in all the rich countries. These societies are dealing in different ways with two central concerns: Who is selected to come/ and How do they fare after they have arrived? The starting point of the analysis in this article is that the ultimate test of an immigrant community's success is found in the degree to which their children develop their full capacities and become active and engaged citizens in adulthood. After all, many of the most troubling examples of destructive flashpoints in recent years, whether in the suburbs of Paris, the subways of London, or on the beaches of Sydney, involved not immigrants but rather the adult children of immigrants.

The success of second-generation immigrants varies a good deal depending not only on the characteristics of their community and the outcomes being considered but also on the host country context. To narrow somewhat the influence of context, and because of the limited availability of comparable data on young children, we focus our analysis on four countries: Australia, Canada, the United Kingdom, and the United States. These countries are arguably very different, but somewhat more similar than the large number of countries compared in other recent cross-country studies (Hernandez, Macartney, & Blanchard, 2009; Organisation for Economic Co-operation and Development [OECD], 2006; Schnepf, 2004, 2008). The four countries we focus upon are distinguished in having long histories as immigrant-receiving societies, similar national identities and conceptions of

We acknowledge funding support from the Australian Research Council (DP0878643), NICHD (R01 HD047215-01), Russell Sage Foundation, and Sutton Trust, and the support of Statistics Canada in facilitating access to the Canadian data through the Carleton, Ottawa, Outaouais Local Research Data Centre at the University of Ottawa and Carleton University. The Longitudinal Study of Australian Children is conducted in partnership between the Department of Families, Housing, Community Services and Indigenous Affairs (FaHCSIA), the Australian Institute of Family Studies (AIFS), and the Australian Bureau of Statistics (ABS); the findings and views reported in this article are those of the authors and should not be attributed to FaHCSIA, AIFS, or the ABS. The feedback from participants at a seminar presentation to the Office of Population Research, Princeton University, is also acknowledged with thanks.

Correspondence concerning this article should be addressed to Jane Waldfogel, Columbia University School of Social Work, 1255 Amsterdam Avenue, New York, NY 10027. Electronic mail may be sent to jw205@columbia.edu.

 0009-3920/2012/8305-0012
DOI: 10.1111/j.1467-8624.2012.01796.x

citizenship that are relatively open and flexible, and broadly similar cultural and linguistic, labor market, and socio-demographic characteristics.

However, despite these similarities there are important differences between them concerning the way in which immigrants are selected, settlement policies, and more generally schooling, family and labor market policies. In both Australia and Canada there has been a focus on admitting higher skilled migrants, or those with the language and education skills that raise the chances of successful labor market adaptation. In the United States the pattern has been the opposite, with inflows dominated by low-skilled Spanish-speaking migrants from Latin America, many of whom are undocumented. The origins of migrants to the United Kingdom are different again, with its colonial past drawing a large proportion of migrants from the Indian subcontinent.

Given these differences in the characteristics of migrants, we might expect to see children of the relatively positively selected immigrants in Australia and Canada performing better, while the negatively selected groups in the United States (and to a lesser extent in the United Kingdom) perform relatively worse. These expectations appear confirmed by cross-country studies that focus on school-age children and adolescents, such as the careful analysis of the performance of 15-year-olds in mathematics, literacy, and science by the OECD (2006). That study shows that U.S.-born children of immigrant parents scored considerably lower in all three domains than U.S.-born children of native-born parents, while the equivalent gaps in Australia and Canada were negligible or even positive.

What cannot be inferred from studies of this type is whether the differences documented among adolescent children of immigrants primarily reflect the resources parents bring with them from their countries of origin or whether they reflect differences in host country environments that promote or hinder development after arrival. Our analysis of early childhood outcomes helps to throw light on this question by focusing on outcomes in a period prior to formal schooling when the importance of family background is relatively greater than at later ages. Using a child development perspective, we explore the extent to which development during the early years places young children of immigrants significantly behind—or, for that matter, ahead—of the starting line marked by their native counterparts. The preschool years may condition outcomes well into the future and thus be an important factor underlying both successes and challenges in later stages in life. Implicitly we are also arguing that without this perspective public policy could be misdirected, and therefore less effective.

We focus on the early cognitive and behavioral development of 4- and 5-year-old children of immigrants, all of whom were born in the host country. Many studies of older youth include children who are immigrants themselves, arriving at various ages. Our focus on second-generation children avoids the potential confounding role of differing experiences of the origin country environment and sets up a clearer comparison between studies at different points in the life cycle.

We take advantage of detailed longitudinal surveys that follow children from birth. A common challenge in comparative research is locating and accessing appropriate and comparable data. We use similar contemporary large-scale longitudinal data sets in these four countries and analyze the most comparable cognitive and social and emotional outcomes, focusing on differences between children born in the country who had at least one immigrant parent and children who in addition to being born in the country also had native-born parents.

We find that in spite of important differences in some of the measurable resources immigrant parents are able to bring to bear in investing in their children, and in immigrant selection rules and settlement policies, there are significant similarities in the relative positions of the children. First, the children of immigrant parents generally underperform their counterparts with native-born parents in vocabulary tests, and particularly so if a language other than the official language is spoken at home. Second, in spite of this, these children appear much less disadvantaged in other developmental domains, performing not only as well as their counterparts in some domains, such as externalizing behavior, but actually better in others, such as nonverbal copying skills. These findings suggest that in spite of sometimes significant differences in measurable background characteristics, the process of child development in immigrant families is such that these children receive, on average, a start in life that puts them on a par with other children. The single exception is the domain in which their early environments differ, language. This similarity across countries contrasts with evidence of large cross-national differences in the educational performance of second-generation immigrants at older ages.

Background and Literature Review

Children of immigrants are a rapidly growing share of the child population in many rich

countries, and now make up 16% of the child population in the United Kingdom, 22% in the United States, 28% in Canada, and 33% in Australia (Hernandez, McCartney, et al., 2009; Statistics Canada, 2006b). While these countries have a long history of immigration, these proportions, combined with the fact that the nature of immigration has changed, emphasize the importance of understanding of how children of immigrants are faring today.

Developmental theory teaches us that child development is to be understood as a process with factors at the child, family, and community levels all playing a role in influencing outcomes. There is specificity with regard to factors promoting positive or negative outcomes in particular domains: A given factor might be linked to better outcomes in one domain but worse in another. Thus, to the extent children of immigrants have different characteristics or resources than children of the native-born, these differences might be associated with improvements in some outcomes as well as difficulties in others. Developmental theory also stresses the importance of race, ethnicity, and culture (Boyce & Fuligni, 2007; Garcia Coll et al., 1996; Quintana et al., 2006).

One factor that is relevant in understanding why children of immigrants might have different outcomes from children of the native-born, and why such differences might not be constant across countries, is the level and type of resources that immigrant families bring with them. Particularly critical is home language. Other human capital and demographic characteristics, including family income, parental education, and family size and structure, are also consequential. Within-country studies show that these factors vary considerably across children of immigrants and children of the native-born. Accordingly, in our empirical analyses we distinguish between children whose parents speak the dominant language of the country at home and those whose parents do not. We explore the consequences of controlling for an extensive set of other child and socioeconomic and demographic characteristics.

The vast majority of studies of children of immigrants have focused on school-age children and adolescents (see review by Crosnoe & Turley, 2011). These studies offer many insights that can inform our analysis of young children of immigrants. Particularly important is the finding of substantial heterogeneity of outcomes among immigrants and the so-called immigrant paradox: the finding that children of immigrants often fare better than children of natives, even when they appear to face some disadvantages.

Cross-country research on school-age children and adolescents has been possible because of the development of high-quality, comparable, and accessible data, such as the Programme for International Student Assessment, which offers test score outcomes for representative samples of 15-year-olds in many OECD countries. As mentioned, the analysis of second-generation 15-year-old children by OECD (2006) found significant variation in immigrant performance in math, reading, and science across 14 rich countries. In Australia and Canada, math outcomes for children born abroad, children born in the host country of immigrant parents, and children born to parents native to the host country were not significantly different; indeed, in Canada the Canadian-born children of immigrants performed, if anything, slightly better. At the other extreme, in the United States, native-born children of immigrant parents scored considerably lower in all three domains than native-born children of native-born parents, and not much better than children who were not born in the country. These gaps were in large measure explained by the education level of the parents, and by language spoken at home. (The United Kingdom was not part of this study, but Schnepf, 2004, documents the fact that second-generation British children have test score outcomes more like Australia and Canada than the United States.)

Also relevant to our work are studies that compare outcomes for children of immigrants using data on reading, math, and science achievement from the Trends in International Mathematics and Science Study and Progress in International Reading Literacy Study, assessing children in fourth grade, eighth grade, and at age 15. Comparing children of immigrants and children of native-born parents in 10 countries, Schnepf (2004) found that while children of immigrants tend to score lower on average than children of native-born parents, the size of the gaps varied considerably across countries. In general, gaps were largest in Switzerland, Germany, and the Netherlands; moderately large in France, the United States, and the United Kingdom; and smallest (or non-existent) in Canada, Australia, and New Zealand. As in OECD (2006), language spoken in the home was an important factor explaining the lower performance of children of immigrants, particularly in the United States and the United Kingdom.

Studies of school-age children and adolescents cannot, however, tell us the extent to which the differences in outcomes are already present in early childhood. The shortfall in studies of young children of immigrants has started to be addressed (U.S.-based studies include: Brandon, 2004; Cabrera,

West, Shannon, & Brooks-Gunn, 2006; Capps, Fix, Ost, Reardon-Anderson, & Passell, 2004; Crosnoe, 2007; Crosnoe & Turley, 2011; De Feyter & Winsler, 2009; Fuller et al., 2010; Glick, Bates, & Yabiku, 2009; Hernandez & Charney, 1998; Hernandez, Takanishi, & Marotz, 2009; Keels & Raver, 2009; Lahaie, 2008; Liang, Fuller, & Singer, 2000; Magnuson, Lahaie, & Waldfogel, 2006; Mistry, Biesanz, Chien, Howes, & Brenner, 2008; Takanishi, 2004; Turney & Kao, 2009). Particularly relevant is the examination of young children of immigrants in eight rich countries by Hernandez, Takanishi, et al. (2009), which finds substantial variation. For example, while in the United Kingdom, United States, Italy, and Netherlands a majority of children of immigrants have parents from low- or middle-income countries (and thus have fewer resources than native-born families), this is not the case in Australia, France, Germany, or Switzerland. However, we are aware of no prior study that has compared outcomes for young children of immigrants across a set of major immigrant-receiving countries.

Research addressing other group differences in educational outcomes (e.g. the Black–White achievement gap in the United States) indicates that gaps exist at school entry and widen thereafter, but this pattern may not apply to children of immigrants (Crosnoe & Turley, 2011). In fact, studies that follow children of immigrants from early childhood or school entry through the school years suggests that patterns are different (Crosnoe, 2005; Glick & Marriott, 2007; Han, 2006; Han & Bridglall, 2009; Leventhal, Xue, & Brooks-Gunn, 2006; Suarez-Orozco et al., 2010). A common, although by no means universal, finding is that groups starting with deficits relative to children of the native-born catch up fairly rapidly during elementary school. Han (2008) finds this pattern of catch-up for Latin-American-origin children in the United States (although not for children of East Asian or Indian origin). Worswick (2004) shows evidence of catch-up among children of immigrants in Canada, particularly among those whose parents do not speak one of the official languages (English or French).

Institutional Context, Child Resources, and Expected Outcomes

Our focus on Australia, Canada, the United Kingdom, and the United States was motivated in equal measure by the availability of potentially comparable data and the similarity in cultural context. However, there are also important differences that we hypothesize will be reflected in differences in the relative outcomes of children of immigrants. First, while all of these countries are immigrant-receiving countries with relatively large stocks of immigrants in the population, rates of immigration have varied significantly, being highest in Australia and Canada. Moreover, there are important differences in selection and settlement policies that may play a role in determining the capacities of parents and society to invest in children. Family reunification is a major underpinning of American policy, with about 70% of documented immigrants arriving in 2002 coming under this category. In Canada this proportion is also significant, but it is substantially lower at only 35% in Australia (OECD, 2006). Fully 55% of long-term immigrant flows to Australia in this year were under the worker category, contrasting only 18% in the United States. There has also been a focus on admitting higher skilled migrants in Canada. The United States stands out in that a large portion of immigrants are undocumented, which poses severe barriers in terms of their ability to integrate into the labor market and society (Capps et al., 2004; Yoshikawa, 2011). While the nature of immigrant flows has changed importantly in the United Kingdom with the expansion of the European Union, our analysis is based on the period just before this, with the inflow dominated by migrants from Commonwealth countries, such as Australia, South Africa, and New Zealand, but also India and Pakistan (SOPEMI, 2001).

These differences in histories and selection rules are reflected in the origin countries of the parents making up our analytical samples. Our data show that in the United States the inflow is dominated by those of Mexican (48%) and Latin American (21%) origin. This is in contrast with the other countries, particularly Australia and the United Kingdom where the groups dominating the inflow are more similar to the mainstream (43% have at least one parent from other Anglo-American countries in Australia; 43% categorized as White in United Kingdom). Differences in parental origins are mirrored by differences in the proportion raised in homes in which a foreign language is commonly spoken. This group makes up 46.2% of all immigrant children in the Australian sample, 38.8% in Canada, 34.7% in the United Kingdom, but fully 74% in the United States.

On this basis we expect the familial resources available to children of immigrants to vary significantly across our countries, with children raised in Australia and Canada more likely to be in households with higher parental education, exposure to the official language, more successful labor market

experience, and better access to high-quality social supports; followed by those in United Kingdom; and with those in the United States most likely to have the lowest endowment of these resources. Accordingly, to the extent that these measurable resources are important in influencing the environment children face in their early years we also expect variation in child cognitive and socioemotional outcomes by the age of four and five across these countries. As noted, the cross-national evidence on the outcomes of children of immigrants in adolescence provides a further reason for the expected ordering of countries.

We also expect that language spoken in the home is strongly related to cognitive and, particularly, vocabulary development. Hence, we hypothesize that child outcomes of those in foreign-language speaking homes will be poorer than those in immigrant official-language-speaking homes in all countries and that these differences will be more marked for verbal than nonverbal cognitive or socioemotional outcomes.

To the extent that we find cross-national differences in the outcomes of children of immigrants relative to those of native parents, it is natural to explore whether these can be explained by differences in the types of immigrants who settle in each country. Immigration selection rules, at least in some of our countries, are strongly focused on educational and demographic characteristics that relate to successful labor market adaptation, and hence lead to systematic differences between immigrant groups along these dimensions. We hypothesize that gaps in the outcomes of children of immigrants and natives will become markedly more similar across countries when we control for differences in levels of parental income, education, and family structure. The degree to which national differences remain conditional on these variables provides suggestive evidence of the importance of nonmeasurable resources potentially related to the policy environment of the host countries, or to cultural differences in parenting behaviors between immigrant groups. If the remaining differences are large, for example, it points to substantial unmeasured differences between immigrant groups that we might expect to influence child development into adolescence and beyond.

Method

Nature of the Data and the Outcome Measures

An important challenge in comparative research concerns the availability of appropriate and comparable data. We are fortunate to be able to take advantage of similar contemporary large-scale longitudinal data sets: the Longitudinal Study of Australian Children (LSAC); the National Longitudinal Survey of Children and Youth (NLSCY), for Canada; the Millennium Cohort Study (MCS), for the United Kingdom; and the Early Childhood Longitudinal Study–Birth Cohort (ECLS–B) for the United States. The latter two are surveys of a single birth cohort, and we utilize both in their entirety. The Australian and Canadian surveys contain multiple birth cohorts from which we select the subsets most comparable in time with the U.K. and U.S. data. We use information on more than 40,000 children across the four countries born in the first 4 years of the 2000s. All these children were ages 4 to 5 when their outcomes were assessed.

Table 1 provides an overview of some of the key features of the four surveys. Each contains three waves: Wave 1 when the children were newborns or 1 year of age, Wave 2 when they were 2 or 3 years old, and Wave 3 when they were 4 or 5. When properly weighted the samples are representative of all children born in the country in the relevant time window, and who remained resident until that date. (The NLSCY ''tops up'' the Wave 3 samples with some children who were not surveyed at Wave 1. Among these, 140 children were reported to have been born outside Canada and were excluded from the sample.) Our analytical samples vary from a low of about 5,100 (in Australia) to a high of 19,500 (in the United Kingdom).

Most of our variables are derived from information provided at Wave 3. A parent interview completed by the most knowledgeable parent or caregiver—the child's biological mother in the overwhelming majority of cases—provides information on the family's socioeconomic and demographic circumstances, the early care environment, and parent reports of child behavior. Our cognitive outcome measures are taken from direct assessments at Wave 3 based on well-known psychometric instruments, as detailed next.

Two outcomes—vocabulary scores from the cognitive domain, and externalizing behavior scores from the socioemotional domain—are fully comparable across the four countries. Other nonverbal cognitive outcomes and tests of number and letter skills differ somewhat between countries but provide an indication of the extent to which conclusions based on the analysis of verbal skills can be generalized to other aspects of cognitive ability.

Outcome measures. The cognitive outcome we focus upon is picture vocabulary test scores. Children's

Table 1
Overview of the Nature of the Data and Sample Selection Rules

Sample characteristic	Australia	Canada	United Kingdom	United States
Study name	Longitudinal Study of Australian Children Birth Cohort	National Longitudinal Survey of Children and Youth	Millennium Cohort Study	Early Childhood Longitudinal Study Birth Cohort (ECLS–B)
Child's birth date	March 2003 to February 2004	January 2000 to December 2002	September 2000 to January 2002	January 2001 to December 2001
Exclusions from eligible birth cohort	Nonpermanent residents; children with the same name as deceased children; only one child sampled per household	Children living on reserves or Crown lands, residents of institutions, full-time members of the Canadian Armed Forces, and residents of some remote regions	Families ineligible for Child Benefit	Children born to mothers < 15 years old; children adopted before 9 months old
Sampling frame	Medicare Australia database, clustered by postal area	Labour Force Survey using the 1994 and 2004 design	Child benefit records, clustered by electoral ward. Oversamples: 3 smaller counties in UK; areas > 30% Black/Asian; areas with Child Poverty Index > 75th percentile	Registered births in the vital statistics system. Oversamples: twins; low and very low birth weight babies; American Indians; Chinese; Other Asian/Pacific Islanders
Children ever participated	5,107	8,522	19,517	10,700[a]
Children observed in Wave 3	4,386 (85.9%)	7,147 (83.9%)	15,460 (79.2%)	8,950[a] (83.7%)
Average age in months, Wave 3 (*SD*)	57.7(2.9)	58.6(6.7)	62.1(3.0)	53.0 (4.2)

Note. For further details see Australian Institute of Family Studies (2010), Hansen (2010), and Snow et al. (2007).
[a]ECLS–B frequencies rounded to the nearest 50 in accordance with NCES reporting rules.

receptive vocabulary is measured in the Australian, Canadian, and U.S. data with items from the Peabody Picture Vocabulary Test (PPVT), in which the child is shown pictures on an easel and asked to identify the picture that best represents the meaning of the word read by the interviewer. (Different items and versions of the PPVT were used in each country. The LSAC used a short version of the Third Edition of the PPVT [PPVT–III], adapted specifically for the survey and containing 40 items—20 core, 10 basal [to which children performing poorly on the core items were routed], and 10 ceiling items [for children scoring highly on the core items]. The NLSCY administered the PPVT Revised Version in full [PPVT–R; the prior version to the PPVT–III], with a French adaptation [EVIP] available for French speakers. The ECLS–B, like the LSAC, used only selected items from the PPVT–III, but in this case only 15 items were selected.) The U.K. picture vocabulary assessment—the British Ability Scales Naming Vocabulary (BAS–NV) test—differs slightly by requiring the child to name out loud the object shown in a single picture. Although this assesses expressive rather than receptive vocabulary, both the BAS–NV and the PPVT are well-known assessments of verbal ability and tap very similar, if not identical, abilities. For all picture vocabulary tests the sequence of items administered is routed according to the child's responses, and Item Response Theory (IRT) techniques are used to score the final pattern of responses on a single ''difficulty scale.'' It is important to note that the assessment of children's vocabulary, as well as the other cognitive outcomes considered, was conducted in the official language of the country only. For Australia, the United Kingdom, and the United States, this means children were assessed in English; for Canada, children were assessed in either French or English. (The ECLS–B assessed a small number of children in Spanish, but because the number of such children was small, the data on those assessment scores have not been released.)

Nonverbal skills are based upon assessments of copying skills. These are available in all countries except the United Kingdom. The tasks assess the ability to conceptualize and reconstruct a geometrical shape and provide a nonverbal test of cognitive ability. Research indicates copying skills are strongly associated with subsequent school achievement, are valid across different cultural groups, and provide a reliable measure of development (De Lemos, 2002). In all three countries the child recorded responses in a booklet, which were then scored centrally by trained researchers. The Australian and Canadian studies used the same instrument: the Copying scale of the Who Am I (WAI) assessment, which requires children to copy five shapes (circle, triangle, cross, square, and diamond) with each response assessed on a four-point scale. In the United States, the child was asked to copy seven shapes (vertical line, horizontal line, circle, square, cross, triangle, and asterisk) with each item scored 1 (pass) or 0 (fail).

For Canada and Australia, the Symbols subscale of the WAI assessment, composed of a set of five writing tasks (printing their name, printing some letters, numbers, words and a sentence), assesses the ability of the child to understand and use symbolic representations such as numbers, letters, and words. (A sixth Symbols item was administered in the LSAC only.) As with the WAI Copying subscale, responses were scored centrally by trained researchers using a 4-point scale.

Tests of copying and symbols were not administered in the MCS. We present results from two alternative assessments of nonverbal abilities. The BAS Picture Similarities task assesses children's nonverbal reasoning ability, by asking them to identify which one of four pictures shares a similar concept or element with a fifth response card. The Pattern Construction task, designed to assess nonverbal reasoning and spatial visualization, requires children to replicate patterns using colored foam squares or blocks. Items in both scales increase in complexity as the assessment progresses and a child's progression through the assessment is dependent on the responses he or she gives. IRT techniques were used to code the responses onto a single difficulty scale.

Number and math skills were assessed only in the Canadian and U.S. surveys. The Canadian Number Knowledge assessment is a mental arithmetic test designed to measure children's comprehension of the system of whole numbers. The ECLS–B Mathematics assessment was designed specifically for the U.S. survey and included questions on number sense, geometry, counting, operations, and patterns. The U.S. study was the only one of the four countries to include a literacy assessment. This test assesses content related to emergent literacy: letter recognition (both receptive and expressive), letter sounds, early reading, phonological awareness, knowledge of print conventions, and matching words. Both the U.S. assessments use IRT scoring techniques while the NLSCY Number Knowledge score is simply the total number of correct answers.

Finally, our sole measure of socioemotional development captures two types of behavior problems: hyperactivity and inattention, and conduct problems. For all countries we derive a total externalizing behavior score that is the sum of 10 items (5 per type of behavior), each scored 0, 1, or 2 by the parent respondent. The instruments used in the Australian and U.K. studies are identical: the combined Hyperactivity and Conduct problems subscales from the parent-report Strengths and Difficulties Questionnaire (Goodman, 1997). The Canadian and U.S. studies use parent-report behavior items that, although not drawn from a single behavioral scale, are very similar to the items selected for Australia and the United Kingdom. (The item details are described in the online supporting information Table S1.)

Outcomes analysis. Because the cognitive outcome variables are measured in units that are not comparable across countries, and moreover have no natural interpretation, all outcomes are standardized with mean 0 and standard deviation 1 (using survey weights). Raw outcome variables are adjusted for the child's age at assessment (taking the residuals from a regression of the outcome score on a polynomial of age) before standardization. Although all the raw behavior measures are constructed such that higher scores indicate more behavior problems, we reverse the signs of the standardized variables in our analysis for consistency with the cognitive outcomes, so that higher scores in our analysis refer to better functioning.

It is important to note that we are unable to say anything about *absolute* differences in skills and abilities across countries, either in terms of levels (between groups of immigrant children) or gaps (between children of immigrants and children of natives). Instead we use the standardized outcomes of children of natives in each country as a reference category, and explore the performance of children of immigrants relative to this benchmark. Sample sizes vary somewhat by assessment, as some children are missing data on particular assessments.

We use the largest possible sample for each assessment and display sample sizes for each analysis in the tables.

Parental characteristics and resources. Our definition of parental immigration status is derived from questions on whether the parent was born in the survey country or a foreign country. We classify children with at least one foreign-born parent coresident at Wave 3 as children of immigrants, leaving the reference group as children who live only with native-born parents at that date. Note that we make no distinction between biological and social parents, and the nativity of parents not resident at ages 4 to 5 is not considered.

Given the importance of language for children's school readiness, we combine information about parents' immigration status with information about the language spoken in the home. Questions on language differ somewhat across surveys, but we define variables as comparably as possible. In the United Kingdom the survey asks, ''Is English the language usually spoken at home?'' Responses of *yes* or *mostly* are coded as ''speaking the official language'' while responses of *about half*, *sometimes*, or *no* are coded as not. The U.S. variable distinguishes English from any other language as the (single) ''primary'' language spoken in the home. The Canadian variable is similar, distinguishing English or French from other languages spoken ''most often'' at home. The Australian definition is the widest. Respondents are asked if each person speaks a language other than English at home; if either the respondent or their partner answers *yes*, they are coded as not speaking the official language.

We use information on parents' place of birth and language in the home to categorize children at Wave 3 into one of four categories: (a) all coresident parents native-born and the family speaks the official language at home, (b) at least one coresident parent was born in a foreign country and the family speaks the official language at home, (c) at least one coresident parent is foreign-born and the family primarily speaks a foreign language at home, and (d) a ''catch-all'' group of children with missing data on either parental nativity or language in the home. This last group is much larger in the U.K. and U.S. samples than in the other two countries because resident spouse's place of birth was not collected from the main respondent but instead as part of the spouse's questionnaire, which had high rates of nonresponse (13% and 15% of two-parent families respectively). In the United States 90% of the catch-all group consists of children in two-parent families where the mother is native-born, the family is English speaking, but the place of birth of the father is not known. The U.K. catch-all group is somewhat different with, for example, 44% missing place of birth for a resident father and 49% for any parent. Sixty percent of the Canadian catch-all group is children for whom no parent's place of birth is known, while almost all the rest are unclassified due to missing information on language. Given that spousal response is likely driven by unobservable factors (and moreover factors that are likely to differ between surveys) we considered the missing at random assumption required by multiple imputation to be inappropriate. We retain the unclassified observations in our regression analysis in order to maximize the precision of the estimates, but include them as a separate group.

Table 2 shows the distribution of these groups for the total Wave 3 samples. The share of children with at least one immigrant parent ranges from 12.4% in the United Kingdom to 22.5% in the United States and 22.7% in Canada, up to 32.4% in Australia. In Australia, Canada, and the United Kingdom the majority of immigrant parents speak the official language, but the reverse is true for the United States.

Our analysis begins by documenting the raw association between parental immigration and language status and child outcomes in each country. As discussed, different selection rules and policy environments are likely to generate substantial differences in the relative composition of the immigrant population across countries. To test the importance of these compositional differences we add controls for the key socioeconomic and demographic characteristics that might account for the associations observed.

Two indicators are used to capture socioeconomic status: education and income. Education is captured by the highest educational qualification of the primary caregiver or partner coresident at Wave 3. Using UNESCO's International Standard Classification of Education (ISCED), a scale explicitly designed to enable cross-national comparisons, we create four categories: Level 2 (equivalent to less than high school in the United States), Level 3/4 (high school), level 5B (some college), and Level 5A/6 (bachelor's degree or higher). Income is the log of average gross household income, equivalized for family size (using the square root of household size). We derive a measure of gross nominal household income at each of the three waves, deflate to 2006 values using national price indices, convert the amounts to U.S. dollars using OECD

Table 2
Distribution of Parental Immigration Status and Language in the Home

Parental immigration and language status		Australia	Canada	United Kingdom	United States
		Number (column %)			
1	Only native-born parents, official language spoken in home	2,931 (63.9)	4,943 (70.6)	10,012 (69.0)	5,250 (62.1)
2	At least one foreign-born parent, official language spoken in home	822 (17.4)	973 (13.9)	1,270 (8.1)	700 (5.8)
3	At least one foreign-born parent, foreign language spoken in home	485 (15.0)	616 (8.8)	952 (4.3)	1,650 (16.7)
4	All others	148 (3.7)	469 (6.7)	3,227 (18.6)	1,350 (15.4)
Total in Wave 3 sample		4,386	7,002	15,461	8,950[a]

Note. Sample sizes are unweighted, with the exception of Canada, as Statistics Canada only release weighted frequencies. Weighted percentages for all surveys in parentheses. Category 4 includes families where the immigration status of one parent is unknown as well as native-born families who do not speak the official language in the home.
[a]Early Childhood Longitudinal Study–Birth Cohort frequencies rounded to the nearest 50 in accordance with NCES reporting rules.

purchasing power parity indices, and then average over the three waves. We use measures from one or two waves if information from all three waves is not available and take account of the fact that the precision of income questions differs across countries (see the Appendix to Bradbury, Corak, Waldfogel, & Washbrook, 2010).

Additionally we include a set of demographic characteristics with common definitions across the four countries: child's gender, single-parent household at Wave 3, number of children (age under 18) in the household at Wave 3, mother's age at the birth of the child, and a dummy variable indicating whether the child was low birth weight (< 2500 g).

In general, rates of missing data are low (under 5%, except for the father's nativity as discussed earlier). Missing values of all control variables are replaced with the mean (for continuous variables such as income) or 0 (for discrete variables such as low birth weight), and a dummy indicating a missing value on that variable is added to the model. All regressions use survey weights to adjust for attrition and nonrandom sampling.

Results

Descriptive Statistics

Table 3 offers descriptive statistics on the variables used in our regression analysis to capture various aspects of parental resources. We distinguish three groups, the children of native-born parents, and the children of foreign- and official-language-speaking immigrants, and do not show statistics for the catch-all group (i.e., native-born parents who do not speak the official language, and families where the nativity of one parent is unknown). The extent to which language status is a marker for other sociodemographic characteristics is clearly illustrated in the table. In all four countries immigrant parents speaking the official language tend to have *positive* characteristics relative to native-born parents: They have higher educational qualifications, and similar or even higher average incomes. They are much less likely to be single parents and mothers tend to be older at the birth of the study child. The overall patterns in many variables for this group are similar across countries, with differences only noticeable in family size (official-language-speaking immigrant parents tend to have smaller families than native-born parents in Australia and the United States, but larger families in Canada and the United Kingdom), and in the prevalence of low birth weight (lower among the immigrant group in Australia and Canada, but little different in the United Kingdom and United States).

The patterns are markedly different for children born to immigrant parents who do not speak the official language. In Australia and Canada the proportion of this group with a highly educated parent is again greater than for children of native parents, but their average incomes are 15% lower than the native reference group in Australia and 25% lower in Canada. The average resources of foreign-language-speaking parents in the United Kingdom and the United States are very different, with smaller fractions holding a degree than the native-born, fully 30% having no qualifications at all, and average incomes 40% lower than the native reference group in both countries. The sharp socioeconomic differences between these groups in Australia and

Table 3
Descriptive Statistics on Parental Background of 4- to 5-Year-Old Children in Australia, Canada, United Kingdom, and United States

Child characteristics	Australia	Canada	United Kingdom	United States
Socioeconomic characteristics				
Highest education level (%)				
Native-born parents, official language	34.3	52.8	35.0	35.4
Foreign-born parent, official language	46.6	53.9	50.9	45.7
Foreign-born parent, foreign language	44.3	55.5	25.4	21.1
Lowest education level (%)				
Native-born parents, official language	9.1	6.2	10.3	6.8
Foreign-born parent, official language	4.0	5.1	7.6	3.7
Foreign-born parent, foreign language	9.7	5.4	29.5	29.5
Gross household income ($ PPP adjusted)				
Native-born parents, official language	24,863	30,029	28,020	30,250
Foreign-born parent, official language	31,426	29,870	32,359	36,495
Foreign-born parent, foreign language	21,404	22,521	16,868	18,383
Demographic characteristics				
Single parent household (%)				
Native-born parents, official language	18.0	17.5	21.8	30.2
Foreign-born parent, official language	8.1	12.0	10.7	12.9
Foreign-born parent, foreign language	8.6	4.5	12.2	12.6
Mother's age at the child's birth (years)				
Native-born parents, official language	29.6	29.0	28.9	27.2
Foreign-born parent, official language	32.0	31.2	30.8	28.7
Foreign-born parent, foreign language	30.5	30.2	28.1	27.6
Children under 16 in household (number)				
Native-born parents, official language	2.52	2.22	2.33	2.40
Foreign-born parent, official language	2.42	2.43	2.45	2.36
Foreign-born parent, foreign language	2.62	2.43	3.00	2.52
Child low birth weight (%)				
Native-born parents, official language	5.9	5.3	6.8	7.7
Foreign-born parent, official language	4.3	3.7	7.0	7.7
Foreign-born parent, foreign language	7.8	11.5	9.8	6.3

Note. Highest educational level is International Standard Classification of Education (ISCED) 5A/6, equivalent to a U.S. bachelor's degree or higher. Lowest education level is ISCED 2, equivalent to less than U.S. high school. Low birth weight is defined as < 2500 g.

Canada on the one hand, and the United Kingdom and the United States on the other hand, are more muted when we consider demographic characteristics. In all four countries, children raised in foreign-language-speaking homes are much less likely to experience single parenthood than children of the native-born, and the average age of mothers is very similar. In the United States alone, low birth weight is less common among the foreign language group than the rest of the population. Set against this, family sizes are larger everywhere, but particularly in the United Kingdom, and low birth weight is more common in all countries apart from the United States.

In summary, we find some support for our hypothesis that immigrant parents are more positively selected in Australia and Canada than in the United Kingdom and the United States, but also evidence of a more nuanced picture. First, the distinction between language groups seems crucial, with official-language-speaking immigrants showing high levels of parental resources that differ little across countries. It seems likely then that any cross-national differences in relative child outcomes will show up more among the foreign language group, where socioeconomic resources differ systematically between the two sets of countries. Second, however, there is variation across countries in the degree of which children of immigrants experience other advantages (such as lower single parenthood) and disadvantages (such as low birth weight) that does not necessarily map closely to these socioeconomic patterns. We turn to our analysis of developmental outcomes to understand the overall importance of these different combinations of circumstances for the well-being of children of immigrants.

Least Squares Regression Results

Our regression analysis begins with unconditional estimates of the mean standardized outcome scores of the two groups of children of immigrants, relative to the omitted reference category of children of native-born official-language-speaking parents (Model 1). We then add controls for socioeconomic and demographic characteristics to test whether cross-country differences in the estimated gaps can be explained by these factors (Model 2). For each model we provide a set of pairwise *t* tests that assess whether the key coefficient is statistically different for each pair of countries. A positive (negative) *t* statistic indicates the performance of children of immigrants is relatively better (worse) in the specified country than in the reference country. The restricted nature of access to the U.S. and Canadian data (and the complex survey designs) prevents us from pooling the data and testing the significance of interaction terms on country and immigrant status. However, the separate regressions are closely equivalent to a single model in which country is interacted with all covariates, and since the samples are independent the pairwise *t* tests shown here are equivalent to tests of the significance of the interaction terms.

Table 4 presents the results for the vocabulary test scores. As expected, children in foreign-language-speaking homes perform more poorly on verbal assessments than reference children in native official-language-speaking homes. Gaps for the foreign language group are more than 1 *SD* in three of the countries and just under eight tenths of a standard deviation in the fourth (Australia). This result is both significant in a statistical and substantive sense in all four countries. It contrasts strongly with the results for children of official-language-speaking immigrants, where the gaps vary in sign and significance and are all much smaller in magnitude. This group performs slightly better than the native reference category in Australia, not significantly different in the United States, and slightly worse in Canada and the United Kingdom (with an effect size around −0.2 in each case).

The regularity of the patterns for foreign-language- versus official-language-speaking immigrants across all four countries is striking, but what of the cross-country differences? The *t* tests associated with Model 1 show that, as expected, the relative outcomes of children of foreign-language-speaking immigrants are significantly better in Australia than in the United Kingdom or the United States (*t* statistics = 5.8 and 4.1), and also better in Canada than in the United Kingdom (*t* statistic

Table 4
Regression Results for Vocabulary Scores of Children of Immigrants Relative to Children on Natives, by Language Spoken in the Home

	Model 1 no controls				Model 2 with controls			
		Pairwise *t* tests: Ref country				Pairwise *t* tests: Ref country		
Country and language group	Coef [*SE*]	Canada	UK	US	Coef [*SE*]	Canada	UK	US
Australia								
Foreign-born and official language in home	0.132** [0.039]	4.4**	5.7**	2.6**	0.003 [0.036]	3.0**	5.1**	2.8**
Foreign-born and foreign language in home	−0.783** [0.070]	2.2*	5.8**	4.1**	−0.795** [0.067]	1.6	2.8**	2.3*
Canada								
Foreign-born and official language in home	−0.192** [0.062]		0.0	−1.8†	−0.211** [0.061]		0.8	−0.6
Foreign-born and foreign language in home	−1.032** [0.092]		2.5*	0.8	−0.984** [0.096]		0.3	−0.1
United Kingdom								
Foreign-born and official language in home	−0.192** [0.041]			−2.2*	−0.266** [0.038]			−1.6
Foreign-born and foreign language in home	−1.309** [0.059]			−2.8**	−1.020** [0.046]			−0.7
United States								
Foreign-born and official language in home	−0.043 [0.055]				−0.166** [0.049]			
Foreign-born and foreign language in home	−1.111** [0.040]				−0.976** [0.039]			

Note. Standard errors taking account of survey design in brackets. Omitted group in all regressions is native-born parents who speak the official language of the country at home. Sample sizes are: Australia, 4,266; Canada, 6,201; United Kingdom, 15,168; and United States, 8,450 (rounded to nearest 50). Controls. Log average income; highest parental qualification (4 groups); single parent at W3; # under 18 in home at W3; mother's age at birth of child; child's gender; child birth weight < 2.5 kg.
†$p < .10$. *$p < .05$. **$p < .01$.

= 2.5). It is perhaps surprising, given our earlier discussion, that there is little difference in the relative performance of this group in Canada and the United States (t statistic = 0.8). The advantage of children of Australian immigrants over those in the United Kingdom and United States is also found among the official-language-speaking group (t statistics = 5.7 and 2.6), but there is no Canadian advantage for the official language group, and indeed their relative performance is slightly poorer than the equivalent group in the United States. Within the ''pairs'' of countries—Australia and Canada on the one hand, the United Kingdom and the United States on the other—there is also evidence of significant differences, with both groups of immigrant children performing significantly better in Australia than Canada, and better in the United States than in the United Kingdom.

Model 2 explores the impact of controlling for the major observed socioeconomic and demographic characteristics that may differ across the countries because of differences in immigrant selection rules. The contrast of results for Models 1 and 2 reveals how far the raw differences between children of immigrant and native parents reflect systematic differences in average family characteristics between the groups. In general, although some change in the coefficients is discernible, the effect of these controls is quite small. Controlling for these characteristics generally reduces the gaps for the foreign language speakers, indicating that on average they are somewhat more likely to have characteristics adversely associated with children's verbal development than native-born parents. The exception is Australia, where the virtually unchanged coefficient reveals no negative selection (at least in terms of these characteristics) of even the foreign language immigrant group of parents relative to the native-born. As hypothesized, differences in these characteristics can explain many of the cross-national differences in the relative performance of children of foreign-language-speaking immigrants. The advantages of Australia over Canada, of Canada over the United Kingdom, and of the United States over the United Kingdom shown in Model 1 for the foreign language group all become statistically insignificant. The advantages of Australia over the United Kingdom and the United States, however, although reduced in magnitude by the controls remain statistically significant, indicating other influences not captured by the selected characteristics.

In contrast to the pattern for the foreign language group, adding the controls tends to increase gaps (or erase advantages) for the official language speakers, implying these groups are relatively more advantaged than the groups of native-born parents. Adjusting for these characteristics thus narrows the within-country disparities between the two immigrant groups, particularly so for Australia. Again, some cross-country differences are eliminated by the controls—the poorer performance of children in official-language-speaking immigrant families in Canada and the United Kingdom relative to the United States, for example. However, the higher relative scores of Australian children in this group, although reduced, again remain significant.

Perhaps the most striking feature of the results from Model 2 is the overall similarity of results across countries, and particularly between Canada, the United Kingdom, and the United States. Children of immigrants score significantly worse on vocabulary tests in these three countries, with gaps of around −0.2 *SD* for those in official-language-speaking homes and of around 1 SD for those in foreign-language-speaking homes. The within-country coefficients for Australia are also around 0.8 *SD* apart, although shifted upward by 0.2 *SD* relative to the other countries. Cross-country differences in the raw estimates are of a second order of magnitude and are mostly eliminated by a fairly limited set of controls. It is noticeable, however, that these controls do not eliminate the disparities between children of immigrants and children of the native-born in general. Parental language proficiency appears to have important implications for scores on vocabulary tests even among families with similar socioeconomic resources.

In an attempt to understand the higher relative scores of children of immigrants in Australia compared to the other countries, we estimated additional models with controls for maternal employment status, preschool attendance, maternal depression scores and several aspects of parenting behavior (available on request). All coefficients remained virtually unchanged in magnitude and significance compared to Model 2, and the relevant t tests did not change in significance. Most of these additional controls were strongly associated with vocabulary outcomes in general but do not appear to differ systematically between children of immigrants and native-born parents, either within or across countries in ways that can explain the observed patterns. We return to this issue in the discussion.

Table 5 offers the results for other cognitive outcomes. As noted in the Data section assessments of these outcomes are not fully comparable across all four countries, so we note the significance of

Table 5
Regression Results for Other Cognitive Scores of Children of Immigrants Relative to Children on Natives, by Language Spoken in the Home

Outcome, country, and language group	No controls	With controls	No controls	With controls
	Copying (N = 4,228)		Symbols (N = 4,228)	
Australia				
Foreign-born and official language in home	0.191** [0.035]	0.122** [0.034]	0.207** [0.038]	0.117** [0.035]
Foreign-born and foreign language in home	0.230** [0.054]	0.216** [0.052]	0.201** [0.058]	0.176** [0.055]
Canada	(N = 5,795)		(N = 5,795)	
Foreign-born and official language in home	0.121† [0.069]	0.106 [0.069]	0.179* [0.074]	0.178* [0.070]
Foreign-born and foreign language in home	0.156 [0.100]	0.184† [0.105]	0.367** [0.098]	0.412** [0.104]
United States	(N = 8,000)			
Foreign-born and official language in home	0.244** [0.059]	0.158** [0.058]		
Foreign-born and foreign language in home	0.066 [0.044]	0.185** [0.044]		
United Kingdom	Pattern construction (N = 15,110)		Picture similarities (N = 15,188)	
Foreign-born and official language in home	0.038 [0.037]	−0.008 [0.035]	0.083* [0.039]	0.038 [0.038]
Foreign-born and foreign language in home	−0.314** [0.048]	−0.134* [0.053]	−0.204** [0.055]	−0.061 [0.050]
Canada	Math/number knowledge (N = 6,198)		Literacy	
Foreign-born and official language in home	−0.076 [0.069]	−0.079 [0.064]		
Foreign-born and foreign language in home	−0.136 [0.084]	−0.084 [0.090]		
United States	(N = 8,300)		(N = 8,250)	
Foreign-born and official language in home	0.200** [0.061]	0.052 [0.054]	0.229** [0.062]	0.089 [0.056]
Foreign-born and foreign language in home	−0.311** [0.044]	−0.130** [0.042]	−0.352** [0.044]	−0.178** [0.041]

Note. See Table 4 for model definitions. Standard errors taking account of survey design in brackets. Pairwise t tests for significant cross-country differences are as follows (only differences significant at the 10% level are reported): Copying outcome, Foreign-born and foreign language in the home, Model 1 (Australia vs. United States 2.4); Symbols outcome, Foreign-born and foreign language in the home, Model 2 (Australia vs. Canada −2.0); Math/number skills, Foreign-born and official language in the home, Model 1 (Canada vs. United States −3.0); Math/number skills, Foreign-born and foreign language in the home, Model 1 (Canada vs. United States 1.9).
$^{\dagger}p < .10$. *$p < .05$. **$p < .01$.

cross-country t tests where this is possible rather than presenting them in the table. It is immediately apparent that there are no gaps in these outcomes anywhere near the standard deviation shortfall in vocabulary scores found for the foreign-language-speaking groups. Differences between children of official- and foreign-language-speaking immigrants are much less marked, and the results point to much smaller disparities relative to children of native-born parents, and in some cases even to immigrant advantages. On the nonverbal copying and symbols assessments all the coefficients for the two immigrant groups in the available countries are positive and generally similar in magnitude (although in the baseline Model 1 these are insignificant for the foreign language groups in Canada and the United States). The only significant cross-country difference is found for the better copying scores of children of foreign-language-speaking immigrants in Australia relative to those in the United States. The addition of controls in Model 2 tends to reduce the advantages documented for Australian children of immigrants, and for the official-language-speaking group in Canada and the United States, implying the measured characteristics of these groups are relatively more conducive to the development of children's nonverbal skills than the characteristics of the native-born parents. The reverse is true for the foreign language groups in Canada and the United States where the inclusion of controls strengthens the positive coefficients in size and significance. Hence it appears that in the United States in particular, the relatively adverse characteristics of foreign-language-speaking immigrant families disguise a systematic advantage in copying skills. Conditional on controls we find no evidence of better performance among children of immigrants on the nonverbal assessments in Australia or Canada than in the United States, nor in Australia relative to Canada.

As mentioned, the U.K. Pattern Construction and Picture Similarities scores are not directly comparable, and we note that differences between the two immigrant groups are more marked here than in

the copying and symbols outcomes. Small negative gaps relative to children of native-born parents are found only among foreign-language-speaking immigrants and these are reduced further by the addition of controls. A divergence in outcomes between the two types of immigrant group is also found in the United States on assessments of math and literacy. Significant negative coefficients for the foreign-language-speaking group are attenuated but not eliminated by the addition of controls, while small positive coefficients among the official-language-speaking group disappear as soon as their more advantageous socioeconomic characteristics are controlled. This pattern is not apparent in the only other test of letter or number skills available—the Number Knowledge test in Canada—where all coefficients are small, negative, and insignificant. The different nature of these tests makes it difficult to draw comparisons with the results for outcomes in other countries, but it is clear that the large and significant negative coefficients found for the vocabulary assessment are not mirrored here in a range of alternative cognitive outcomes.

Finally the results for externalizing behavior are summarized in Table 6 and show a different set of patterns once again to the previous two tables. Here there are very few significant differences in outcomes between children of immigrants and children of the native-born. This holds for both subgroups of official- and foreign-language-speaking parents. Children of immigrants who speak an official language exhibit behavior that is no different, or marginally better, than children of native-born parents in all four countries, and any advantages are fully explained by the addition of controls. Coefficients for the foreign-language-speaking group are either 0 or slightly negative. No statistically significant cross-country differences in the behavior gaps were found in the unconditional models. The addition of controls affects the estimates very little, with the exception that in contrast to the vocabulary results, foreign-language-speaking immigrants in Australia are the only group to record significantly poorer behavioral outcomes than the equivalent in any other country.

Discussion

The objective of this article was to incorporate the role of early child development in comparative analyses of immigrant integration. It is clear that the resources available to young children of immigrants, as reflected in the socioeconomic background and demographic and labor market characteristics of their households, vary significantly across the countries we examine. To some important degree, these differences in measurable

Table 6
Regression Results for Externalizing Behavior Scores of Children of Immigrants Relative to Children on Natives, by Language Spoken in the Home

	Model 1 no controls				Model 2 with controls			
		Pairwise *t* tests: Ref country				Pairwise *t* tests: Ref country		
Country and language group	Coef [*SE*]	Canada	UK	US	Coef [*SE*]	Canada	UK	US
Australia								
Foreign-born and official language in home	0.109** [0.039]	1.3	0.8	0.0	0.001 [0.038]	0.0	0.7	−0.3
Foreign-born and foreign language in home	−0.080 [0.058]	−0.8	−0.5	0.4	−0.132* [0.055]	−1.6	−2.7**	−2.2*
Canada								
Foreign-born and official language in home	0.011 [0.067]		−0.6	−1.1	0.001 [0.065]		0.5	−0.2
Foreign-born and foreign language in home	0.002 [0.081]		0.4	1.2	0.026 [0.082]		−0.5	0.1
United Kingdom								
Foreign-born and official language in home	0.059 [0.045]			−0.7	−0.035 [0.039]			−0.8
Foreign-born and foreign language in home	−0.040 [0.062]			0.9	0.075 [0.055]			0.9
United States								
Foreign-born and official language in home	0.109† [0.060]				0.020 [0.059]			
Foreign-born and foreign language in home	−0.108** [0.037]				0.017 [0.040]			

Note. See Table 4 for model definitions. Standard errors taking account of survey design in brackets. Higher scores indicate more favorable outcomes. Sample sizes are: Australia, 3,823; Canada, 6,889; United Kingdom, 13,474; and United States, 8,900 (rounded to nearest 50).
†$p < .10$. *$p < .05$. **$p < .01$.

characteristics reflect differences in the immigration selection policy rules and other societal factors in Australia, Canada, the United Kingdom, and the United States. Selection, however, is made on the basis of labor market rather than parenting skills and so the precise links between parental selection and child outcomes are not yet clear from this research.

The existing literature on the children of immigrants focuses to an important degree on outcomes during older phases of the life cycle, reflecting the availability of test score data across immigrant-receiving countries. This literature finds differences in immigrant outcomes across countries that align with the selection policy rules in the countries under study. Theories of child development have taught us that the early years are an important precursor of these longer term outcomes, and we therefore take advantage of newly available comparable data from recent surveys of 4- and 5-year-olds in four important immigrant destination countries to assess the extent to which the significant variation in test score outcomes during the school-age and teen years is also present in the early years.

We hypothesized that the relative outcomes of children of immigrants in the raw data would be poorer in the United Kingdom and the United States than in Australia and Canada, and that these differences would be explained, at least in part, by the inclusion of sociodemographic controls capturing variation in the labor market skills of migrant inflows. We also expected that children raised in foreign-language-speaking homes would have poorer outcomes than those in official-language-speaking families, with a relatively greater shortfall in verbal than nonverbal and socioemotional outcomes. The results provide qualified support for only some of these hypotheses.

First, we find stronger differences in the estimates between domains of child outcomes than we do for sets of outcomes across countries. Children of immigrants generally perform more poorly than children of natives on verbal tests (and, as expected, particularly so if their family speaks another language at home), but differ hardly at all on measures of behavioral outcomes, and actually perform better on nonverbal tests of copying skills. These patterns cut across all four countries. The cross-country comparisons provide some evidence of the expected associations: Children of immigrants in Australia perform better on vocabulary tests than those in the United Kingdom or the United States; children in the foreign language group have better copying skills in Australia than in the United States, and better verbal skills in Canada than in the United Kingdom; and finally they also have better number skills in Canada than in the United States. However, we find no evidence of poorer relative verbal skills among the foreign language children in the United States than in either Canada or the United Kingdom.

Second, we find evidence of poorer outcomes among children of immigrants on nonverbal assessments in the United Kingdom, and on math and literacy assessments in the United States. Unfortunately, lack of comparable tests in the other countries makes it difficult to infer whether these primarily reflect variation at the level of the country or the developmental domain. Perhaps the strongest conclusion we can draw is that the very large shortfalls found for vocabulary outcomes are not replicated for any other cognitive outcomes.

The discrepancy between the performance of children of immigrants on vocabulary tests and their performance on other measures of development has important implications. First, it suggests that studies that rely exclusively or mainly on measures of vocabulary will present a distorted picture of the relative abilities or school readiness of children of immigrants, which ideally should take into account the full array of skills (both cognitive and behavioral) with which children enter school. Second, it suggests a need for future data collection efforts to place more emphasis on assessing children in their home language, if it is not the official country language. Our understanding of young children's cognitive abilities would be enhanced if we had assessments both in their home language and in the official language. Third, comparison of results across developmental domains is hampered by a lack of truly comparable outcome measures in areas other than vocabulary and externalizing behavior. We believe the data we use are the best currently available, but greater coordination of data collection efforts across countries would allow for much stronger conclusions on this issue.

Another finding of this article is that including controls for sociodemographic characteristics eliminates some of the relatively minor cross-country differences, and explains why children in the foreign language group do relatively better on vocabulary in Canada than in the United Kingdom, or better on copying in Australia than in the United States. The most sizable observed cross-country difference however—the Australian advantage in vocabulary—cannot be explained by these variables, or by a set of additional controls for parental behaviors and preschool attendance. Two potential

explanations not ruled out by our analysis relate to country-of-origin differences and public policy differences. Understanding which, if either, of these accounts for the Australian advantage is an important topic of future research, particularly when the implications of early vocabulary problems for later outcomes are considered.

We began by noting the substantial variation across countries in the outcomes of adolescent children of immigrants, and in particular the poor relative performance of this group in the United States compared to their equivalents in Australia and Canada. We find little evidence that this difference exists prior to school entry (particularly with respect to Canada), but instead that children of foreign-language-speaking immigrants have similar difficulties with early language skills in all four countries. For some reason difficulties in this one domain appear associated with a widening of disadvantage in literacy, math, and science in the United States, but not in Canada or Australia.

One possibility is that the different trajectories of children of immigrants have a good deal to do with the extent to which public policy, the education system, and other integration policies fail or succeed in addressing this shortfall. In Australia, for example, there has been an increasing emphasis on the development of appropriate language skills before arrival, coupled with a policy of fast-tracking foreign university students through the immigration process. Canada has long held a multicultural policy that supports a positive sense of identity, along with language and work support policies. In the United States there is a dominance of Spanish-speaking migrants, many lacking documentation, who may have less of a tendency to learn English, and more difficulties integrating into schools (OECD, 2006). Another possibility is that unobservable differences between immigrant groups in cultures and countries of origin affect children more strongly as they age. Although our sample sizes are relatively large, we lack the power (and in the U.K. and U.S. cases the required data) to distinguish immigrant parents by their countries of origin. The contribution of our research is to provide evidence against substantially different patterns of school readiness of children of immigrants across countries, despite differences in countries of origin and selection policies. Although not our focus here, the results clearly raise the question for future research of what happens to children of immigrants during the school years that results in such different outcomes in these countries.

References

Australian Institute of Family Studies. (2010). *Longitudinal Study of Australian Children data user guide*. Melbourne, Australia: Author.

Boyce, C. A., & Fuligni, A. J. (2007). Issues for developmental research among racial/ethnic minority and immigrant families. *Research in Human Development*, *4*, 1–17.

Bradbury, B., Corak, M., Waldfogel, J., & Washbrook, E. (2010, May). *Inequality during the early years: Child outcomes and readiness to learn in Australia, Canada, United Kingdom, and United States*. Paper presented at the Conference on Cross-National Research on the Intergenerational Transmission of Advantage, London.

Brandon, P. D. (2004). The child care arrangements of preschool-age children in immigrant families in the United States. *International Migration*, *42*, 65–87.

Cabrera, N. J., West, J., Shannon, J. D., & Brooks-Gunn, J. (2006). Parental interactions with Latino infants: Variation by country of origin and English proficiency. *Child Development*, *77*, 1190–1207.

Capps, R., Fix, M. E., Ost, J., Reardon-Anderson, J., & Passell, J. S. (2004). *The health and well-being of young children of immigrants*. Retrieved October 4, 2010, from http://www.urban.org/url.cfm?ID=311139

Crosnoe, R. (2005). Double disadvantage or signs of resilience? The elementary school contexts of children from Mexican immigrant families. *American Educational Research Journal*, *42*, 269–303.

Crosnoe, R. (2007). Early child care and the school readiness of children from Mexican immigrant families. *International Migration Review*, *41*, 152–181.

Crosnoe, R., & Turley, R. N. L. (2011). K–12 educational outcomes of immigrant youth. *The Future of Children*, *21*, 129–152.

De Feyter, J. J., & Winsler, A. (2009). The early developmental competencies and school readiness of low-income, immigrant children: Influences of generation, race/ethnicity, and national origins. *Early Childhood Research Quarterly*, *24*, 411–431.

De Lemos, M. (2002). *Patterns of young children's development: An international comparison of development as assessed by Who am I?* Retrieved March 10, 2011, from http://www.hrsdc.gc.ca/eng/cs/sp/sdc/pkrf/publications/research/2002-002358/page00.shtml

Fuller, B., Bein, E., Bridges, M., Halfon, N., Jung, S., Rabe-Hesketh, S., et al. (2010). Maternal practices that influence Hispanic infants' health and cognitive growth. *Pediatrics*, *125*, e324–e332.

Garcia Coll, C., Lamberty, G., Jenkins, R., McAdoo, H. P., Crnic, K., Wasik, B. H., et al. (1996). An integrative model for the study of developmental competencies in minority children. *Child Development*, *67*, 1891–1914.

Glick, J. E., Bates, L., & Yabiku, S. T. (2009). Mother's age of arrival in the United States and early cognitive development. *Early Childhood Research Quarterly*, *24*, 367–380.

Glick, J., & Marriott, B. H. (2007). Academic performance of young children in immigrant families: The significance

of race, ethnicity, and national origin. *International Migration Review*, *41*, 371–402.
Goodman, R. (1997). The Strengths and Difficulties Questionnaire: A research note. *Journal of Child Psychology and Psychiatry*, *38*, 581–586.
Han, W.-J. (2006). Academic achievements of children in immigrant families. *Educational Research and Review*, *1*, 286–318.
Han, W.-J. (2008). The academic trajectories of children of immigrants and their school environment. *Developmental Psychology*, *44*, 1572–1590.
Han, W.-J., & Bridglall, B. L. (2009). Assessing school supports for ELL students using the ECLS-K. *Early Childhood Research Quarterly*, *24*, 445–462.
Hansen, K. (2010). *Millennium Cohort Study: A guide to the datasets*. Retrieved March 10, 2011, from http://www.esds.ac.uk/longitudinal/access/mcs/l33359.asp
Hernandez, D. J., & Charney, E. (Eds.). (1998). *From generation to generation: The health and well-being of children in immigrant families*. Washington, DC: National Academy Press.
Hernandez, D. J., Macartney, S., & Blanchard, V. L. (2009). *Children in immigrant families in eight affluent contries: Their family, national and international context*. Florence, Italy: UNICEF Innocenti Research Centre.
Hernandez, D. J., Takanishi, R., & Marotz, K. G. (2009). Life circumstances and public policies for young children in immigrant families. *Early Childhood Research Quarterly*, *24*, 487–501.
Keels, M., & Raver, C. C. (2009). Early learning experiences and outcomes for children of U.S. immigrant families: Introduction to the special issue. *Early Childhood Research Quarterly*, *24*, 363–366.
Lahaie, C. (2008). School readiness of children of immigrants: Does parental involvement play a role? *Social Science Quarterly*, *89*, 684.
Leventhal, T., Xue, Y., & Brooks-Gunn, J. (2006). Immigrant differences in school-age children's verbal trajectories: A look at four racial/ethnic groups. *Child Development*, *77*, 1359–1374.
Liang, X., Fuller, B., & Singer, J. D. (2000). Ethnic differences in child care selection: The influence of family structure, parental practices, and home language. *Early Childhood Research Quarterly*, *15*, 357–384.
Magnuson, K., Lahaie, C., & Waldfogel, J. (2006). Preschool and school readiness of children of immigrants. *Social Science Quarterly*, *87*, 1241–1262.
Mistry, R. S., Biesanz, J. C., Chien, N., Howes, C., & Brenner, A. D. (2008). Socioeconomic status, parental investments, and the cognitive and behavioral outcomes of low-income children from immigrant and native households. *Early Childhood Research Quarterly*, *23*, 193–212.
Organisation for Economic Co-operation and Development. (2006). *Where immigrant students succeed: A comparative review of performance and engagement in PISA 2003*. Paris: Author.
Quintana, S. M., Chao, R. K., Cross, W. E., Hughes, D., Nelson-Le Gall, S., Aboud, F. E., et al. (2006). Race, ethnicity, and culture in child development: Contemporary research and future directions. *Child Development*, *77*, 1129–1141.
Schnepf, S. V. (2004). *How different are immigrants? A cross-country and cross-survey analysis of educational achievement*. (IZA Discussion Paper No. 1398) Retrieved March 10, 2011, from http://ftp.iza.org/dp1398.pdf
Schnepf, S. V. (2008). *Inequality of learning amongst immigrant children in industrialized countries* (IZA Discussion Paper No. 3337). Retrieved March 5, 2011, from http://ftp.iza.org/dp3337.pdf
Snow, K., Thalji, L., Derecho, A., Wheeless, S., Lennon, J., Kinsey, S., et al. (2007). *User's manual for the ECLS-B Longitudinal 9-Month—Preschool restricted-use data file and electronic codebook*. Retrieved March 10, 2011, from http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2008024
SOPEMI. (2001). *Trends in international migration*. Paris: Organisation for Economic Co-operation and Development.
Statistics Canada. (2006a). *National Longitudinal Survey of Children and Youth—Survey overview (Cycle 6)*. Ottawa, ON: Author. Retrieved March 10, 2011, from http://www.statcan.gc.ca/imdb-bmdi/document/4450_D2_T9_V2-eng.pdf
Statistics Canada. (2006b). *SDA 3.4 (tables) Census 2006*. Using Canadian Census Analyzer, CHASS (distributor). Ottawa: Author. Retrieved March 10, 2011, from http://sda.chass.utoronto.ca.proxy.bib.uottawa.ca/cgibin/sdacensus/hsda?harcsda+cc06i
Suarez-Orozco, C., Bang, H. J., O'Connor, E., Gaytan, F. X., Pakes, J., & Rhodes, J. (2010). Academic trajectories of newcomer immigrant youth. *Developmental Psychology*, *46*, 602–618.
Takanishi, R. (2004). Leveling the playing field: Supporting immigrant children from birth to eight. *The Future of Children*, *14*, 61–80.
Turney, K., & Kao, G. (2009). Pre-kindergarten child care and behavioral outcomes among children of immigrants. *Early Childhood Research Quarterly*, *24*, 432–444.
Worswick, C. (2004). Adaptation and inequality: Children of immigrants in Canadian schools. *Canadian Journal of Economics*, *37*, 53–77.
Yoshikawa, H. (2011). *Immigrants raising citizens: Undocumented parents and their young children*. New York: Russell Sage Foundation.

Supporting Information

Additional supporting information may be found in the online version of this article:

Table S1. Externalizing Behavior Items.

Please note: Wiley-Blackwell is not responsible for the content or functionality of any supporting materials supplied by the authors. Any queries (other than missing material) should be directed to the corresponding author for the article.