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School Readiness among Children of Immigrants in the US: Evidence from a Large National Birth Cohort Study

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Abstract

Using the Early Childhood Longitudinal Study-Birth Cohort ($n \approx 6,800$), we examined the factors explaining variation in school readiness in a large and nationally representative sample of children in immigrant and non-immigrant families. In OLS regression models with rich controls to account for selection, we found that language background was a key factor in explaining children of immigrants' expressive language and early reading at kindergarten, whereas both socioeconomic status and language background helped explain their performance in math.

Keywords

ECLS-B; English proficiency; Family SES; Foreign-born; Immigrants; School readiness

By 2040, the U.S. Census projects that children with foreign-born parents will comprise about 50% of America's youth, and the majority of these will be Hispanic and Asian (Hernandez, forthcoming). This is all more the reason for us to ask: how well-prepared is this next generation to succeed in school and later life? Evidence has shown that children of immigrants, particularly those of Latin American origin, *generally* perform lower academically, *on average*, than their native-born non-Hispanic White peers, but what this evidence also shows is that this is not true for all children of immigrants (Crosnoe, 2006; Suárez-Orozco & Suárez-Orozco, 2001).

In this paper, we used a large contemporary and nationally representative cohort of children born in 2001 to examine factors that explain the school readiness of children of immigrants. Scholars widely agree that two types of factors are particularly important to young children's development – family resources and family process (Gershoff, Aber, Raver, & Lennon, 2007; Milligan & Stabile, 2008; Morris, Duncan, & Rodrigues, 2004; Yeung, Linver, & Brooks-Gunn, 2002). Family resources include, in particular, family socioeconomic status, which is related to family income, parental education, and parental occupation. Family

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process includes parenting behaviors as well as parental decisions about employment and child care. Research on immigrant families suggests that language background is also extremely important (Hernandez, Takanishi, & Marotz, 2009; Keels & Raver, 2009). We therefore bring in to our analysis factors related to language including parental English proficiency and the language spoken at home. Both measures are considered as resources (although we acknowledge that language spoken at home could be considered as a part of family process as well).

While there is considerable heterogeneity among immigrants, on average children of immigrants are more likely to live in low-income families, with parents who have had little if any formal education, speak little or no English, and may be unfamiliar with the American school system (Hernandez, forthcoming). With regard to family process (e.g., parental decisions about employment and child care), while immigrant parents have high rates of employment, children of immigrants, particularly those from Mexico, tend to have very low rates of enrollment in center-based child care and early education (Magnuson, Lahaie, & Waldfogel, 2006; Magnuson, Ruhm, & Waldfogel, 2007), which raises concerns because center-based care has been found to benefit children's cognitive and academic development (Magnuson & Waldfogel, 2005; Magnuson et al., 2006; NICHD ECCRN, 2002).

However, over the past decade we have also observed a growing number of children of immigrants whose parents are highly educated (with 16 or more years of education), have middle to high incomes, and have good English proficiency (Hernandez, Denton, Macartney, & Blanchard, 2011; Passel, 2007; Reed, Hill, Jepsen, & Jhonson, 2005), and this is particularly true for those from East Asian regions. From the family resources perspective, we might then expect these children to perform as well as, if not better than, their native-born non-Hispanic White peers.

Overall, then, as immigrant families become increasingly diverse, with parents arriving from different regions of the world, and bringing cultural traditions and attitudes that vary both among current immigrants and between current immigrants and earlier cohorts, what we understood from research about immigrants several decades ago does not necessarily render us a thorough understanding of the current cohort of children of immigrants. In particular, the changing and varied selection into immigration, and the extent to which immigrant families are advantaged or disadvantaged relative to families with native-born parents, must be taken into account.

In this paper, we provide a profile of the school readiness of contemporary children of immigrants, drawing on data from the first large and nationally representative birth cohort study of children in the United States. We pay particular attention to the extent to which factors related to family resources (family socioeconomic status and language background) and family process (parenting behaviors, parental employment, and child care arrangements) help explain variation in children's school readiness, analyzing differences among children of immigrants as well as differences between them and children of native-born parents.

Factors That Are Important To School Readiness

Prior research on both child development and immigrants helps inform our understanding of the contributing factors to school readiness among children of immigrants. Both family resources (family socioeconomic status and language) and family process (in particular, families' use of preschool or center-based child care) have been cited as major reasons for differential school readiness for children in immigrant families (Alexander & Entwisle, 1988; Brooks-Gunn & Markman, 2005; Dawson & Williams, 2008; De Feyter & Winsler, 2009; Magnuson & Waldfogel, 2005; Magnuson et al., 2006; Magnuson et al., 2007; Neidell & Waldfogel, 2009; Sirin, 2005).

Family socioeconomic status (SES), often proxied by family income, parental education and occupation, is a key factor in child development (Crosnoe, 2007). We therefore expect that SES would play an important role in nurturing children's school readiness in general and in immigrant families in particular. Research on children of immigrants has found that differences in SES helped explain the academic success of immigrant populations from Europe or Asia and the academic struggles experienced by immigrant populations from Latin America (Fuligni & Yoshikawa, 2004). This is because average parental educational achievements and income are as high or higher for foreign-born parents from Europe or Asia than for the native-born population, whereas they tend to be lower for foreign-born parents from Latin America (Hernandez, forthcoming). Nonetheless, even when studies control for SES, a significant association between immigrant status and academic performance is still observed (Fuligni, 1997; Kao & Tienda, 1995; Reardon & Galindo, 2009; Rumbaut, 1997; Sirin, 2005). This result suggests that family SES alone is not sufficient to explain the variation in academic performance among children of immigrants.

One key factor in addition to family SES is parental or child English proficiency. Hart and Risley's seminal work (Hart & Risley, 1995; Walker, Greenwood, Hart, & Carta, 1994) has provided powerful evidence that the amount parents speak to their young children, and in particular their use of vocabulary, can have long-lasting impact. Furthermore, research on immigrants has consistently shown that English proficiency is strongly associated with better academic outcomes for children and adolescents (Glick, Bates, & Yabiku, 2009; Greenman & Xie, 2008; Portes & Rumbaut, 2006; Suárez-Orozco, Suárez-Orozco, & Todorova, 2008; Waters & Jimenez, 2005). Parents with proficient English are more likely to be familiar with American school systems and social institutions and thus may be better equipped to help children get ready for school. They are also more likely to expose their children to an English-speaking environment, which would predict higher test scores given that most academic tests are administered in English.

At the same time, however, research on bilingualism (Golash-Boza, 2005; Portes & Hao, 1998, 2002, 2004) has suggested that there may be advantages to speaking two languages. Children exposed to a bilingual home environment may benefit through greater cognitive flexibility and abstract thinking skills (Bialystok, 1988; Willig, 1985) as well as access to positive cultural capital in their families and ethnic communities (Bankston & Zhou, 1995; Portes & Rumbaut, 2006; Portes & Zhou, 1993; Rumberger & Larson, 1998; Stanton-Salazar & Dornbusch, 1995). It is therefore not clear how differences in primary home language might relate to differences in school readiness for children of immigrants; on the one hand, children of immigrants may benefit if they are immersed in both English (e.g., parents proficient in English) and another language (e.g., primary home language is non-English), but on the other hand, may be disadvantaged if they are in a non-English-speaking environment (e.g., primary home language is non-English) and with little exposure to English (e.g., parents not proficient in English).

While family SES and English proficiency are likely to be important factors accounting for variation in children's school readiness in immigrant families, they do not fully explain it (see e.g., Crosnoe, 2007; Sirin, 2005). Studies have examined family process factors such as parenting behavior, parental employment, and child care arrangements to see if any of the remaining differences between children of immigrants and native-borns can be explained, but with mixed results (Glick et al., 2009; Crosnoe, 2007; Turney & Kao, 2009).

The role of differences in parenting behavior in explaining variation in school readiness among children of immigrants is unclear. Warm and responsive parenting (referred to as authoritative parenting) has typically been found to be positively associated with school readiness and academic outcomes, while authoritarian parenting, involving less warmth, has

been found to be less beneficial (Linver, Brooks-Gunn, & Kohen, 2002; Yeung et al., 2002). Researchers, however, have questioned the applicability of Western-ideological parenting typologies to immigrant families (Chao & Tseng, 2002). In particular, in studies of children of Asian origins, authoritative parenting practices have been found to be positively associated with high academic performance (Chao, 1994, 2000, 2001; Chao & Tseng, 2002).

With regard to parental employment, aside from research finding a negative association between first-year maternal employment and child outcomes, studies have generally found a positive association between parental employment and children's school readiness (Brooks-Gunn, Han, & Waldfogel, 2010); this is particularly true when parental employment is associated with good job conditions (e.g., job-related benefits; Parcel & Menaghan, 1994). It is not clear how differences in parental employment might relate to variation in school readiness for children of immigrants; on the one hand, immigrant parents tend to have high employment rates, but on the other hand, they may more often be employed in jobs with poor working conditions (Hernandez & Drake, 1999; Shields & Behrman, 2004).

Center-based child care and early education has been found to be associated with better school readiness and may be particularly important for children of immigrants because it allows them to acquire necessary English proficiency before starting school (Magnuson & Waldfogel, 2005; Magnuson et al., 2006; Magnuson et al., 2007). To the extent that children of immigrants are less likely to be enrolled in center-based care, we would expect that this factor would help explain lower school readiness, but prior studies have not found this to be a major cause (Crosnoe, 2007).

In this paper, we built upon and extended this prior research in our analysis of school readiness among contemporary children of immigrants in the United States. Taking advantage of the rich information collected by the Early Childhood Longitudinal Study-Birth Cohort (ECLS-B), the U.S.'s first nationally representative birth cohort study, we provided a contemporary profile of four major groups of children of immigrants – children of Chinese, other Asian, Mexican, and other Latino immigrant parents – and examined to what extent family SES, language background, parenting behaviors, parental employment, and child care arrangements help explain the variation in their school readiness.

DATA AND METHODS

We used data from the Early Childhood Longitudinal Study – Birth Cohort (ECLS-B), a longitudinal study that tracks a nationally representative sample of 10,700 children born in the U.S. in 2001 from birth to kindergarten (Nord et al., 2004). All sample sizes reported in this analysis are rounded to the nearest 50 in accordance with IES reporting rules. Data were collected at 9 months after birth, 24 months, preschool, and kindergarten. The present study used information from all four waves of the survey. Only 85% of the preschool sample (72% of the original sample) was surveyed at kindergarten waves (2006 and 2007) due to budget constraints. Of the selected 7,700 cases, about 7,000 parents completed the parent interviews and about 6,900 children took part in the assessments. Approximately 75% of the children entered kindergarten in fall 2006 and were eligible for the 2006 assessment; the remaining children who entered kindergarten in 2007 were surveyed in 2007. We combined the 2006 and 2007 surveys to measure children's outcomes at kindergarten year. We excluded some children out of 7,000 from the analysis for the following reasons: approximately 100 children (1.20% of the kindergarten sample and 0.79% of the whole sample) whose mothers did not report their place of birth, another 50 children (0.53% of the kindergarten sample and 0.35% of the whole sample) without mother/female guardians or father/male guardians at the 9-month survey, and very few children (<0.05%) who had missing values on their developmental outcomes at kindergarten. The analytic sample of the present study thus

consisted of approximately 6,800 children for cognitive outcomes and parental-reported socioemotional outcomes and about 5,000 for teacher-reported socio-emotional outcomes.

Dummy variables indicating missing values for the explanatory variables were included in all of the analyses. In all analyses, we also considered father's information as missing if fathers were not living with the child. All analyses were conducted using the provided sampling weights (WK1R0) to adjust for the different probabilities of sample selection resulting from the complex stratified random sampling design.

Outcome Measures

The ECLS-B used an extensive array of child assessment instruments specifically designed to measure early child development. As detailed below, most measures were commonly used assessment instruments, but some were specifically developed for the ECLS-B. The present study examined cognitive and socioemotional outcomes that were assessed at the kindergarten wave as detailed below. All of the outcome variables were standardized to have a mean of 0 and a standard deviation of 1 for easy interpretation in relation to effect size. Note that the mean and standard deviation in our analytic sample are not necessarily 0 and 1 because scores were standardized over the full ECLS-B sample. Each of the four socioemotional outcomes was reported by both the parent and the teacher and we examined each of these variables separately.

Expressive language—This cognitive outcome was measured using *The Let's Tell Stories* subset of PreLAS (Preschool Language Assessment Scales; Duncan & De Avila, 1998). The field interviewer read two stories to the child, recorded the child's response, and scored the response with a range from 0 ("no response") to 5 ("articulate, detailed sentences, vivid vocabulary, and complex constructions") (Snow et al., 2009). We used the average score across both stories. Higher scores indicate higher levels of expressive language.

Early reading—This cognitive outcome was measured by an instrument developed by ECLS-B, which included items related to receptive language and literacy such as conventions of print, letter recognition, understanding of letter-sound relationships, phonological awareness, sight word recognition, and understanding words in the context of simple sentences (Snow et al., 2009). Higher scores reflect higher levels of early reading.

Mathematics—This measure was also developed for ECLS-B and was composed of the following content areas: counting, number sense, properties, and operations; data analysis, statistics, and probability; geometry and spatial sense; and patterns, algebra, and functions (Snow et al., 2009). Higher scores indicate higher levels of math performance.

Conduct problems—Two measures of behavior problems were used in the ECLS-B, one reported by the parent and the other by the teacher. A parental-report conduct problems score was constructed (following Bradbury, Corak, Waldfogel, & Washbrook, 2011) by taking the sum of the following 5 items: temper tantrum, aggressive, annoying, destructive, and angry behaviors. Each item was rated on a 5-point Likert scale (1 = "never" to 5 = "very often"). A composite score was created by summing the items and then standardized with a mean of 0 and a standard deviation of 1 ($\alpha = .78$). Items similar to parental report excluding angry behavior were asked of teachers and a teacher-report conduct problems score was constructed in a similar manner ($\alpha = .87$). Higher scores reflect higher levels of conduct problems.

Internalizing behavior problems—The following two questions were asked of both the parent and the teacher: "child worry about things" and "child seem unhappy" with responses

ranging from 1 ("never") to 5 ("very often"). We summed these two answers and then standardized the total score separately for the parental- ($\alpha = .35$) and teacher-report score ($\alpha = .68$). Higher scores indicate more internalizing behaviors.

Hyperactivity/Inattention—The following four behaviors were asked of the parent and the teacher: "child act impulsively without thinking", "child keep working until finished" (reverse coded), "child pay attention well" (reverse coded), and "child overly active" with a 5-point Likert scale (1 = "never" to 5 = "very often"). Two additional questions were asked of the teacher – "child had difficulty concentrating or staying on task" and "child is restless and fidgety." We summed these answers and then standardized the total score separately for parent- ($\alpha = .64$) and teacher-report ($\alpha = .92$). Higher scores indicate more problem behaviors.

Pro-social behavior—Fourteen and ten items reported by the parent and the teacher, respectively, with a 5-point Likert scale (1 = "never" to 5 = "very often") were used. The questions include such as "child invited by other children to play", "child show eagerness to learn new things", "child accepted and liked by other children", "child comfort other children who are upset", and "child appropriately use a variety of words to describe feelings". We summed the scores of these items and then standardized the total score separately for parent- ($\alpha = .86$) and teacher-report ($\alpha = .87$). Higher scores reflect higher levels of pro-social behavior.

Explanatory Variables

Race/ethnicity and nativity—We used information reported by mothers at the 9-month wave about their race/ethnicity as well as their nativity (i.e. whether born in the US, and if not, their country of origin) to construct a set of dummy variables, including native-born non-Hispanic White (reference group), native-born non-Hispanic Black, native-born Hispanic, native-born Others, foreign-born non-Hispanic European, foreign-born non-Hispanic Black, foreign-born Chinese, foreign-born other Asian, foreign-born Mexican, foreign-born other Latinos, and foreign-born Others. For simplicity, hereafter, we use NB representing native-born, FB representing foreign-born, and NH representing non-Hispanic. We distinguished FB Chinese and FB Mexicans from FB other Asians and FB other Latinos because there is substantial heterogeneity between these groups and because the samples sizes were large enough to permit us to do so. For brevity, we presented results only for FB Chinese, FB other Asians, FB Mexicans, FB other Latinos along with NB-NH Whites in all of our tables, but we note that in all of our analysis, we controlled for all racial/ethnic and nativity groups as indicated above so that NB-NH White was the reference group.

Family socioeconomic status—We used three variables to proxy family socioeconomic status (SES): family income, parental education, and parental occupation. Family income was measured in the ECLS-B with four dummy variables: '\$0–\$20,000', '\$20,001–\$35,000 (the reference group)', '\$35,001–\$50,000', and '\$50,001+'. We categorized parental education by whichever parent has the highest education degree, using four dummy variables: below high school (0–11 years of education), high school (the reference group, 12 years of education), some college (13–15 years of education), and above college (16 or more years of education). Parental occupation was measured by the prestige score provided by the ECLS-B separately for the mother and the father; we used whichever parent had the highest prestige score. To allow the coefficient to be readable, we divided the parental occupation prestige score by 10.

Language background—Two variables were used to represent parents' and child's language background. The first is parental English proficiency. In the ECLS-B data, both the

mother's and the father's English proficiency were measured at the 9-month survey with four questions asking how well they speak, read, write, and understand English with a 4-point Likert scale (0 = "not well at all" to 3 = "very well"). We summed the four questions separately for the mother and the father to create the total scores for each parent with values ranging from 0 to 12; the higher the score, the more proficient in English. NB parents who did not provide answers for these four questions were considered to be the most proficient with a score of 12. The second is the primary language at home which was a binary variable with a value of 1 if English is the primary language at home at any of the four assessment points and 0 otherwise.

Child care arrangements—We created four sets of dummy variables to assess child care arrangements at the 9-month, 2-year, preschool, and kindergarten waves.¹ We defined parental care (reference group) as exclusively cared for by the mother or the father; relative care as cared for by sibling, grandparent, or other relatives either at home or in other's home; non-relative care as cared for by someone other than relatives either at home or in other's home; and center-based care as day-care center, group care center, nursery school, or preschool. For the preschool year, in addition to the above four types, Head Start program was also defined as another separate category.

Parental employment—We included four sets of dummy variables to assess parental employment at 9-month, 2-year, preschool, and kindergarten waves: not working (the reference group), working full-time (≥ 35 hours per week), or working part-time (< 35 hours per week). We examined maternal and paternal employment separately.

Parenting behavior—We used ten measures available in the ECLS-B to proxy for parenting behaviors. The first is the Knowledge of Infant Development Inventory (KIDI) (MacPhee, 1981), available only at the 9-month wave, asking the parent 11 items about their knowledge about child developmental process and norms of behaviors such as the timing for children to learn right from wrong, to typically say their first word, and so forth (1 = "agree/disagree" and 0 otherwise). The total score ranged from 0 to 11 with higher scores indicating greater knowledge of childhood developmental milestones and child-rearing behaviors. The second is the widely used Home Observation for Measurement on the Environment (HOME) (Bradley & Caldwell, 1980) for which the ECLS-B collected six sub-items at the 9-month and 24-month waves asking the parent about various activities such as spontaneously talking to the child, reacting verbally to the child's speech, and expressing physical affection (1 = "yes" and 0 otherwise). We summed up these 6 items with the total score ranging from 0 to 6 (higher scores indicating more stimulating home environment). The third and the fourth were cognitively stimulating activities, based on questions asked of both the mother and the father about the frequency of reading books, telling stories, and singing songs (1 = "not at all" to 4 = "every day"). We summed these three items separately for the mother and the father to obtain the total scores for each parent ranging from 3 to 12 with higher scores indicating more cognitively stimulating activities. Mother's information was available for all four waves whereas father's information was only available for the 9-month, 2-year, and preschool surveys. The next two were mothers' and fathers' spanking behavior measured as a binary variable with a value of 1 if parents never spank their children and 0 otherwise. Mothers' spanking behavior was available at the 2-year, preschool, and kindergarten waves, whereas fathers' spanking behavior was available at the 2-year and preschool waves. The seventh is family routines, based on asking the mother if she had a regular routine for bed time (1 = "yes" and 0 = "no") and the frequency of eating dinner

¹We conducted additional analyses using measures that indicate the number of times in different care arrangements from the 9-month wave to the kindergarten wave. This alternative specification did not lead to any changes in our results.

together per week (ranged from 0 to 7); both variables were available for 2-year, preschool, and kindergarten waves. The eighth is paternal involvement measured by the frequency with which fathers reported having watched their infants for their spouse during the last month (1 = "never" to 5 = "every day or almost every day") at 9-month, 2-year, and preschool surveys. The ninth is father's physical play with the child measured by the following four items at the 2-year wave: playing chasing games, giving the child a ride on his shoulders, playing games indoors, and going outside to walk or play with six responses (1 = "not at all" to 6 = "more than once a day"). We summed these four items to obtain the total scores of the father's physical play with the child ranging from 4 to 24; the higher the score, the more physical play with the child. The tenth is a composite father involvement score, created by taking the sum of seven items to measure father's basic care at the 2-year wave: preparing meals, changing diapers/helping the child use the toilet, helping the child go to bed, bathing, getting the child dressed, assisting the child with eating, and helping the child brush teeth. Each item was rated on a 6-point Likert scale (1 = "not at all" to 6 = "more than once a day"). The total score ranges from 7 to 42 with higher scores indicating more father involvement in basic care.

Additional covariates—Our regression analyses controlled for a host of child, parental, and family characteristics. For child's characteristics, we included child's assessment age, gender (boy=1), prematurity (gestation weeks <37), low birth weight (<2.5kg), breast-feeding, and number of siblings. To account for the age differences in taking the assessment, we also controlled for a set of age-in-month dummy variables with 60 months as the reference group; children's age in months at the kindergarten wave ranged from 57 to 84 months. For parental characteristics, we included mother's age at the child's birth, father's age at birth, whether mother lived with bio-mother and bio-father until 16 years old, and mother's marital status at birth.

Analytic Approach

We begin by presenting descriptive data on children in the various immigrant groups. We then estimate multivariate models to understand what factors help explain differences in school readiness across the groups. Ordinary Least Square (OLS) regression analysis was used for all of the outcome measures. We first estimated a series of increasingly controlled models to evaluate the importance of family SES and language background to children's school readiness. In all of the models, we controlled for age-in-month dummies indicating the age at which the child was assessed and a dummy variable indicating whether kindergarten information was collected in 2006 (vs. 2007). In Model 1, we controlled for only children's race/ethnicity and nativity background. Model 2 is the same as Model 1 but with Model 2a further adds family socioeconomic status and Model 2b further adds language background (i.e., parental English proficiency and primary home language is non-English) into the analysis. Model 3 is the same as Model 1 but adds both family socioeconomic status and language background into the analysis. Model 4 is the same as Model 3 but adds demographic covariates, parenting behavior, parental employment, and child care arrangements into the analysis.²

RESULTS

A Different Starting Point

Table 1 presents the raw data on children's cognitive and socioemotional outcomes at kindergarten entry by race/ethnicity and nativity group, with NB-NH White children as the

²We experimented with adding each set of these variables one at a time into the analysis, but did not find that the coefficients for the four focal racial/ethnic and nativity groups changed in any notable manner.

reference group. Not surprisingly, all children with FB parents had significantly lower scores on Expressive Language. On the contrary, children of FB Chinese and Asians had similar, but often times better, scores than NB-NH White peers on Early Reading and Math, whereas children of FB Mexicans and Latinos had significantly lower Early Reading and Math scores than NB-NH White peers. Children with FB parents tended to have similar or sometimes lower levels of behavior problems but also lower levels of pro-social behaviors (reported by the parent) than NB-NH White peers.

Children's family characteristics presented in Panel A of the Appendix Table provide some clues as to the outcomes we observed in Table 1. Whereas children of FB Asians and FB Latinos had distinct advantages and disadvantages on a number of socioeconomic and demographic variables, differences between children of FB Chinese and those of FB Mexican parents are particularly striking. Children of FB Chinese parents tended to have the most advantaged backgrounds: these children had the lowest rate of prematurity and low-birth weight, and a high rate of breast-feeding and for long duration; almost all their parents were married at birth and had children at an older age; almost 90% of their families had income greater than \$35000 and had parents with college and beyond education; and their parents held the highest score for occupation prestige and had the most fluent English proficiency (just a bit lower than FB Asians) among all immigrant groups. Notably, however, barely 15% of them had English as their children's primary language at home and 77% of the parents immigrated to the U.S. after they turned 18 years of age.

In contrast, children of FB Mexican parents tended to have the opposite. Children of FB Mexicans had mothers who gave birth at younger ages and were less likely to be married at birth (although not the least likely); the overwhelming majority were living in families with income less than \$35000 and with parents having high school or less education (with over 75% of them having income less than \$20000 or having less than high school degree). Not surprisingly, their parents held occupations with the lowest prestige scores. Their parents' English proficiency was the lowest among foreign-born groups and less than 10% had English as their primary language at home. About half of their parents moved to the U.S. during their adulthood with another third having moved to the U.S. during their adolescent years. We note however that children of FB Mexican parents also were more likely to be breast-fed and for longer duration compared to NB-NH White peers.

Given this descriptive picture, it should not be surprising to find that children of FB Chinese parents had the highest cognitive scores at kindergarten whereas children of FB Mexican parents had the lowest (with children of FB other Asians and other Latinos somewhere in between). The descriptive statistics indicate that this contemporary cohort of children of FB Chinese parents were positively selected on many of socioeconomic and demographic variables that are also positively correlated with cognitive outcomes, while the opposite is true for children of FB Mexicans.

Panel B of the Appendix Table presents the descriptive statistics for child care arrangements and parental employment. One striking result is that children of FB Chinese tend to be more likely to be enrolled in center-based care from the age of two, whereas children of FB Mexicans were the least likely to be in center-based care throughout their first five years (although a quarter of them were attending Head Start at age four). Similarly, with regard to parental employment, children of FB Chinese were the most likely among all groups to have mothers working and working full-time throughout the first five years of life, whereas children of FB Mexicans were the least likely to have mothers working. These patterns hold true for paternal employment.

Panel C of the Appendix Table presents descriptive statistics for parenting behaviors. The general picture is that immigrant groups tended to score lower on parenting behaviors that are considered to be conducive to children's well-being. The few notable differences are that children of FB Chinese were more likely to eat dinner at a regular time, and their fathers were the most likely to be involved in care responsibility every day or almost everyday (but also never). Children of FB Mexicans were the least likely to have sleep routines. Children of FB Mexicans and other Latinos were the least likely to be spanked by both their mothers and fathers, whereas NB-NH White children were the most likely to be spanked.

So far, these descriptive data provide some clues as to the divergent school readiness we observed in Table 1 and the role that might be played by family resources, as well as parenting behaviors, parental employment, and child care arrangements. We now turn to multivariate OLS regression models with rich controls to examine the extent to which any or all of these factors help explain variation in children's school readiness in immigrant families.

OLS with Rich Controls

Tables 2, 3, and 4 present results for each of the cognitive outcomes – Expressive Language, Early Reading, and Math at kindergarten entry, respectively, with Models 1–4 as specified above.

Turning first to Table 2 for Expressive Language, Model 1 presents the coefficients for the four focal foreign-born groups compared to NB-NH Whites (the reference group) from a model without any controls (other than race/ethnicity and nativity); thus, Model 1 presents information similar to that provided in Table 1 and shows children of immigrants lagging behind their NB-NH White peers. Model 2a adds controls for family SES; results suggest differences in SES explain some of the significant negative coefficients in Model 1 (for children of FB Mexicans and other Latinos, but not for those of FB Chinese and other Asian parents). Model 2b instead includes controls for parental English proficiency and primary home language; results indicate that all of the statistically significant differences disappear for all groups of children (and children of FB other Latinos now had significantly higher Expressive Language than their NB-NH White peers). Model 3 controls for both family SES and language background, with results very similar to those in Model 2b. Model 4 controls for all of the socioeconomic and demographic variables from Model 3 along with parenting behaviors, parental employment, and child care arrangements, and again results were very similar to those in Model 2b. Specifically, compared to children with NB-NH White parents, children with FB Chinese, other Asian, and Mexican parents did not show significant differences in Expressive Language scores, whereas children with FB other Latino parents had significantly higher scores (0.23 *SDs*, $p < 0.01$). Therefore, it seems to be the case that parental English proficiency and primary home language matter a lot and perhaps even more than family SES in explaining differences in Expressive Language at kindergarten among children of immigrants as compared to children NB-NH Whites. Child care arrangements and parenting behaviors, but not parental employment (detailed results not shown), also account for some of the variation, but not much.

Table 3 presents results on Early Reading. Here we found that both family SES and language background mattered, so much so that after controlling for these variables, children of FB Mexicans did not have statistically significantly different Early Reading scores, and children of FB Chinese, other Asians, and other Latinos had significantly higher scores (0.77 *SDs*, $p < 0.001$; 0.50 *SDs*, $p < 0.001$; and 0.20 *SDs*, $p < 0.05$, respectively), than their NB-NH White peers. Controlling for child care arrangements, parental employment, and parenting behaviors did not change the results. The changes in individual coefficients

suggest that language background mattered more than other factors in accounting for the differences in Early Reading scores between groups.

Table 4 presents results for Math. Here we found that family SES was an important factor in accounting for the differences between immigrant groups' Math scores. All statistically significant coefficients shown in Model 1 for children of foreign-born parents were attenuated (becoming less positive for FB Chinese and other Asians and less negative for FB Mexicans and other Latinos) after controlling for SES. As a matter of fact, the math scores of children of FB other Asians were not different from those of their NB-NH White peers after accounting for their family socioeconomic characteristics. In contrast, after accounting for language background the statistically significant negative difference disappeared for children of FB Mexicans and other Latinos and further became significantly positive for FB other Latinos in Model 2b, whereas statistically significant positive differences became larger for children of FB Chinese and other Asians. Controlling for both family SES and language background did not change the results from those in Model 2b except the significant positive difference disappeared for children of FB other Latinos. Accounting for child care arrangements, parental employment, and parenting behaviors, shown in Model 4, did little to alter the statistically significant positive estimates for children of FB Chinese and other Asians (0.86 *SDs*, $p < 0.001$ and 0.45 *SDs*, $p < 0.001$, respectively) compared to their NB-NH White peers. Thus, although family SES accounted for some of the differences between children of FB Mexicans and children of NB-NH White parents, parental English proficiency and primary home language completely wiped out the statistically significant differences between these two groups. Controlling for family SES and language backgrounds also accounted fully for the significant difference between children of FB other Latinos and NB-NH Whites. In contrast, family SES accounted for some of the differences between children of FB Chinese and other Asians and children of NB-NH White parents, whereas controlling for language background actually made the differences larger (i.e. more positive).

In results not shown but available on request, we also examined socioemotional development outcomes, but did not find many significant differences associated with race/ethnicity and nativity. Children with FB parents tended to be similar to those of NB-NH White parents after controlling for all of the variables. The only significant differences were that compared to NB-NH White children, children of FB other Latinos had significantly lower conduct problems reported by their parents (-0.15 *SDs*, $p < 0.05$); children of FB Mexicans and other Latinos had significantly better pro-social behavior reported by their parents (0.19 *SDs*, $p < 0.001$; and 0.19 *SDs*, $p < 0.001$, respectively); children of FB other Asians and Mexicans had significantly lower internalizing behavior problems reported by their teachers (-0.30 *SDs*, $p < 0.05$; and -0.27 *SDs*, $p < 0.05$, respectively); and, children of FB other Asians had significantly lower hyperactivity/inattention reported by their teachers (-0.22 *SDs*, $p < 0.05$).

DISCUSSION AND CONCLUSION

Taking advantage of recently available data on a contemporary cohort of children born in the U.S. in 2001, we examined children's school readiness in immigrant families and how it differed from that of children of NB-NH White parents. We built upon the literature on child development and immigrants to focus on family resources (family SES and language background), along with family process (parenting behaviors, parental employment, and child care arrangements). We approached our endeavor with regression analysis with rich controls that were afforded by the ECLS-B.

We found that for this contemporary cohort of children, FB Chinese and other Asians started with quite advantaged family backgrounds (this is particularly true for FB Chinese), and thus were outperforming their NB-NH White peers in Early Reading and Math, although not Expressive Language. This is true even after considering all of the explanatory factors. To the contrary, children of FB Mexicans started with the least advantaged family background, and their starting school readiness performance demonstrated the influence of this.

Parental English proficiency and primary home language were particularly important in accounting for the differences in Expressive Language and Early Reading between race/ethnicity and nativity groups, whereas family SES and parental English proficiency and primary home language were equally important in explaining the variation in Math between groups. These results are consistent with a large body of research in showing the importance of family SES to children's cognitive outcomes (Crosnoe, 2007; Magnuson & Waldfogel, 2005; Reardon & Galindo, 2009; Sirin, 2005) as well as research indicating the importance of language to child development (Portes & Rumbaut, 2006; Suárez-Orozco et al., 2008).

The importance of family SES in this analysis as well as in many previous studies only underscores the obvious importance of family resources for children's school readiness. But we also found an important role for language, in results for parental English proficiency and primary home language. Lower scores on Expressive Language, after considering parental English proficiency and primary home language, not only were wiped out for all children of immigrants but also became significantly positive for children of FB other Latinos. Children of FB other Asians had parents with the highest English proficiency and had the highest rate of having English as their primary home language among all immigrant groups, whereas children of FB Mexicans had the opposite. Whereas children of FB Chinese had parents with higher English proficiency than those of FB other Latinos, they both had rather low rate of having English as their primary home language. These results suggest the importance of children being exposed to an English-speaking environment before kindergarten at least with regard to their Expressive Language. On the contrary, accounting for parental English proficiency and primary home language actually enlarged the differences in Early Reading and Math between children of FB Chinese/Asians and NB-NH White children. We speculate that this result may reflect the fact that while fewer than 20% of children of FB Chinese had English as their primary home language, their parents tended to have good English proficiency. That English proficiency may benefit their children's early reading and math. These findings may also reflect the benefits of bilingualism, which previous studies have found to be positively associated with the acquisition of verbal and reading skills over the early school years (Lesaux & Siegel, 2003). We also note that parental English proficiency may confer more than just a language advantage. Proficient English may allow parents to be more ready to negotiate with American social institutions and school systems as well as being more likely to expose their children to an English-speaking environment. It is noteworthy that children of FB Chinese had the highest center-based care attendance at both preschool and kindergarten, which might be an indication of parents being ready to use American preschool systems to help their children be ready for school.

We did not find that differences in parenting behaviors, parental employment, or child care arrangements were consequential in explaining differential school readiness among children of immigrants. That result was surprising considering the large body of literature demonstrating the importance of each of these factors to child development (NICHD ECCRN, 2002; Somlensky & Gootman, 2003), although our finding of a strong explanatory role for family SES and language background, and a relatively small role for child care, is consistent with previous studies (e.g., Crosnoe, 2007). One possible explanation is that center-based care attendance is highly correlated with many of the family socioeconomic and demographic variables controlled for in our models (Liang, Fuller, & Singer, 2000). For

example, highly educated parents might be more likely to work and work full-time and to use center-based care. Therefore, once we controlled for family SES including parental education, perhaps not much variation was left to be explained by center-based care attendance. It is also possible that, to the extent that a major benefit of attending center-based care for children of immigrants is to help them develop English language skills, our controls for parental English proficiency may have already captured that. Similarly, parental education was highly correlated with parental employment; therefore, once we considered parental education (and parental occupational prestige), there was perhaps not much variation to be explained by parental employment.

The little explanatory power brought by parenting behaviors in accounting for the differences in school readiness among children with FB parents and between them and their NB-NH White peers is worth further exploring. Although we can only speculate, we would like to draw attention to the large body of literature questioning the applicability of Western-ideological parenting typologies in appropriately categorizing foreign-born parents' childrearing and parenting behaviors (Chao, 1994, 2000, 2001; Chao & Tseng, 2002). It may be the case that the information collected by the ECLS-B on parenting practices cannot adequately capture parenting behaviors among foreign-born families that matter for their children's school readiness. In particular, researchers have criticized using the distinction between authoritarian and authoritative parenting practices to categorize foreign-born parents' parenting behaviors and how those behaviors might relate to their children's school performance (Chao & Tseng, 2002). Foreign-born parents, due to differences in culture and ideology, oftentimes engage in both so-called authoritative and authoritarian behaviors (e.g., *chiao shun*) to cultivate and prepare their children to be ready for school. We therefore must recognize the possible inadequacy of ECLS-B collection efforts in measuring appropriate parenting behavior items to capture differences between and among NB-NH White and immigrant families. This suggests the need for future data collection to take into consideration cultural differences and how they might affect the way we draft our survey questions and collection efforts.

Our results indicate that differences among immigrant groups, and between immigrant families and native-born families, primarily reflect differences in family resources, rather than family process. The ECLS-B dataset has very detailed information on family process (although we note the potential limitations associated with applicability of parenting behaviors), making it unlikely that problems of measurement reduce our ability to test for the role of family process factors. Rather, it appears that family resources play a more consequential role in explaining the gaps among immigrant groups, and between immigrants and the native-born. However, the resources that matter, and how they matter, varies by group. Controlling for both family SES and language background fully accounted for the differences in school readiness between children of FB Mexicans and other Latinos and NB-NH Whites. In contrast, family SES explained only some of the differences between children of FB Chinese and other Asians, whereas controlling for language background actually made the differences larger (i.e. more positive).

In a word, our results point to a positive selection story for children of FB Chinese parents and a negative selection story for children of FB Mexicans. On average, FB Chinese parents of children in this cohort were a highly educated group and often held higher management or professional jobs; in addition, they tended to move to the U.S. during their adulthood with decent English proficiency, had children at later ages, and enrolled their children in center-based care at preschool and kindergarten years. In contrast, FB Mexican parents tended to have lowest parental education, family income, and occupational prestige; furthermore, they tended to possess poor English proficiency, had children early, and had particularly low center-based care participation for the first five years of the children's life. What this

suggests is that the unequal starting point between different immigrant groups is very much a reflection of the family resources available to prepare for their children's school readiness (Lee & Burkham, 2002). These initial differences may be magnified as children move along the school years, particularly for children with the least advantaged family backgrounds and whose English capacity is limited (Leventhal, Xue, & Brooks-Gunn, 2006). Together with the evidence from early intervention programs on the substantial benefits that early investments can bring to children's later outcomes and well-being (Heckman, 2006), the implication is that we need to pay attention to how policies and programs can enhance family resources in early childhood in order to help children of immigrants achieve their optimal potential starting from the beginning.

HIGHLIGHTS

- We provide a profile of children's school readiness in immigrant families.
- FB Chinese and other Asians outperformed their NB White peers in Reading and Math.
- FB Mexicans had the lowest starting school readiness performance.
- Language background was a key factor in explaining expressive language and reading.
- Both socioeconomic status and language background helped explain outcome in math.

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APPENDIX TABLE

Descriptive statistics by race/ethnicity and nativity

A. Demographic Characteristics	NB-NH White (n≈3,000)	FB Chinese (n≈350)	FB other Asian (n≈500)	FB Mexican (n≈450)	FB other Latinos (n≈250)
	% / <i>M (SD)</i>	% / <i>M (SD)</i>	% / <i>M (SD)</i>	% / <i>M (SD)</i>	% / <i>M (SD)</i>
Child characteristics					
Boy (%)	50.4	55.5	53.1	54.6	44.9
Premature (%)	10.8	4.5 *	9.3	11.7	12.7
Low birth weight (%)	6.9	3.3	7.2	5.5	6.2
Breast-feeding (%)					
None	27.4	17.0 **	18.0 **	19.2 *	14.7 **
<3 months	22.5	18.7	18.5	22.0	25.9
3–6 months	18.7	30.7 ***	25.0	21.4	28.3 *

A. Demographic Characteristics	NB-NH White (n≈3,000)	FB Chinese (n≈350)	FB other Asian (n≈500)	FB Mexican (n≈450)	FB other Latinos (n≈250)
	% / <i>M (SD)</i>	% / <i>M (SD)</i>	% / <i>M (SD)</i>	% / <i>M (SD)</i>	% / <i>M (SD)</i>
7 months plus	31.5	33.6	38.6	37.5	31.2
Number of siblings at 9-month (%)					
No sibling	39.8	49.3 *	47.3	35.6	51.9 *
One	36.4	42.8	34.7	26.7 **	29.4
Two or more	23.8	7.9 ***	18.0	37.7 ***	18.7
Parent characteristics					
Parents' age first moved to the U.S. (%)					
Early childhood (0–5)	n/a	4.6	13.1	8.9	12.8
Middle childhood (6–11)	n/a	5.6	9.8	11.3	11.5
Adolescence (12–17)	n/a	12.9	19.3	29.3	20.5
Adulthood (18+)	n/a	76.9	57.9	50.5	55.1
Mother's age at birth	28.5 (6.0)	32.9 (4.3) ***	29.7 (5.3) *	26.8 (5.7) ***	27.6 (5.9)
Father's age at birth	31.0 (6.3)	36.4 (5.3) ***	33.8 (6.7) ***	29.6 (6.2) **	31.2 (7.2)
Mother lived with bio-mother until 16 (%)	87.1	91.3	90.3	89.8	75.8 ***
Mother lived with bio-father until 16 (%)	67.9	88.9 ***	83.7 ***	74.9	52.8 ***
Mother was married at birth (%)	80.9	99.3 ***	92.5 ***	67.2 ***	52.0 ***
Family Socioeconomic Status					
Family income (%)					
\$0–\$20000	13.6	7.8	14.8	41.6 ***	31.8 ***
\$20001–\$35000	19.4	12.8	18.6	41.7 ***	35.7 ***
\$35001–\$50000	37.2	26.7 **	34.4	15.1 ***	23.4 **
\$50001+	29.9	52.7 ***	32.3	1.7 ***	9.0 ***
Parental education at birth (%)					
Below high school (0–11)	4.4	4.6	5.8	38.0 ***	19.5 ***
High school (12)	19.1	4.8 ***	12.1 *	36.4 ***	31.3 **
Some college (13–15)	30.3	8.8 ***	19.6 ***	18.7 ***	28.8
Above college (16+)	46.2	81.8 ***	62.5 ***	7.0 ***	20.5 ***
Parental occupational prestige	4.7 (1.1)	5.3 (1.1) ***	4.9 (1.2)	3.7 (0.7) ***	3.9 (0.8) ***
Language background					
Mother's English proficiency at 9- month	12.0 (0.1)	7.8 (3.3) ***	8.6 (3.5) ***	4.1 (3.8) ***	6.4 (3.9) ***
Father's English proficiency at 9- month	12.0 (0.4)	8.4 (2.8) ***	9.3 (2.9) ***	5.1 (3.6) ***	6.7 (3.6) ***
English is primary home language (%)					
9-month	99.6	17.9 ***	31.0 ***	8.5 ***	21.0 ***
2-year	99.6	12.8 ***	32.9 ***	6.1 ***	15.1 ***
Preschool	99.6	12.1 ***	33.6 ***	6.0 ***	15.5 ***

A. Demographic Characteristics	NB-NH White (n≈3,000)	FB Chinese (n≈350)	FB other Asian (n≈500)	FB Mexican (n≈450)	FB other Latinos (n≈250)
	% / <i>M (SD)</i>	% / <i>M (SD)</i>	% / <i>M (SD)</i>	% / <i>M (SD)</i>	% / <i>M (SD)</i>
Kindergarten	99.6	12.5 ***	33.5 ***	5.6 ***	15.1 ***
B. Child Care Arrangements and Parental Employment	NB-NH White (n≈3,000)	FB Chinese (n≈350)	FB other Asian (n≈500)	FB Mexican (n≈450)	FB other Latinos (n≈250)
Child care arrangement at 9-month (%)					
No non-parental care	50.6	38.2 **	56.0	67.6 ***	51.4
Relative care	21.3	42.8 ***	30.3 **	22.7	29.8
Non-relative care	18.5	15.5	8.1 ***	8.1 ***	15.9
Center-based care	9.6	3.6 *	3.7 **	1.6 ***	2.8 *
Child care arrangement at 2-year (%)					
No non-parental care	51.0	40.2 *	60.8 **	72.2 ***	48.1
Relative care	14.8	28.1 ***	19.8	15.8	24.9 *
Non-relative care	17.8	13.5	9.2 ***	7.5 ***	15.5
Center-based care	16.3	18.2	10.1 *	4.5 ***	11.5
Child care arrangement at preschool (%)					
No non-parental care	18.3	6.0 ***	19.8	37.2 ***	18.3
Relative care	11.8	5.2 *	18.9 **	15.6	10.0
Non-relative care	10.3	4.4 *	3.8 ***	4.3 **	7.7
Center-based care	53.0	79.5 ***	51.5	17.1 ***	40.0 **
Head Start Program	6.6	4.9	6.1	25.8 ***	24.0 ***
Child care arrangement at kindergarten (%)					
No non-parental care	61.7	42.1 ***	58.8	74.3 ***	58.6
Relative care	13.3	17.3	24.2 ***	15.1	19.3
Non-relative care	7.3	4.8	3.9	5.6	7.7
Center-based care	17.7	35.8 ***	13.1	5.1 ***	14.5
Mother's work status at 9-month (%)					
Not working	43.6	41.3	57.6 ***	66.8 ***	48.9
Full time	32.4	49.1 ***	30.2	22.3 **	35.0
Part time	24.0	9.6 ***	12.2 ***	11.0 ***	16.0
Mother's work status at 2-year (%)					
Not working	41.3	38.6	55.0 ***	66.9 ***	47.7
Full time	34.2	51.1 ***	34.1	24.2 **	38.4
Part time	24.5	10.3 ***	10.8 ***	9.0 ***	13.9 **
Mother's work status at preschool (%)					
Not working	37.7	32.4	44.7	60.8 ***	39.9
Full time	39.3	52.7 ***	40.5	31.3	43.6
Part time	23.1	14.9 *	14.8 **	7.9 ***	16.5
Mother's work status at kindergarten (%)					
Not working	34.4	27.7	41.0	57.9 ***	41.5

B. Child Care Arrangements and Parental Employment	NB-NH White (n≈3,000)	FB Chinese (n≈350)	FB other Asian (n≈500)	FB Mexican (n≈450)	FB other Latinos (n≈250)
Full time	42.3	54.2 **	43.2	30.5 ***	42.8
Part time	23.3	18.1	15.9 *	11.7 ***	15.7
Father's work status at 9-month (%)					
Not working	5.0	6.6	6.8	11.8 ***	7.4
Full time	91.3	89.0	90.4	80.4 ***	86.0
Part time	3.8	4.4	2.8	7.8 *	6.6
Father's work status at 2-year (%)					
Not working	5.5	6.4	5.8	6.4	4.8
Full time	89.2	89.9	88.9	86.3	89.0
Part time	5.3	3.7	5.3	7.3	6.2
Father's work status at preschool (%)					
Not working	5.4	4.9	5.5	4.8	7.2
Full time	90.5	91.0	89.1	90.5	87.2
Part time	4.1	4.1	5.4	4.8	5.7
Father's work status at kindergarten (%)					
Not working	5.8	2.5	5.0	6.0	3.3
Full time	89.8	93.8	90.8	88.4	87.6
Part time	4.4	3.8	4.2	5.6	9.1

C. Parenting Behavior	NB-NH White (n≈3,000)	FB Chinese (n≈350)	FB other Asian (n≈500)	FB Mexican (n≈450)	FB Other Latinos (n≈250)
KIDI at 9-month	7.7 (1.8)	5.7 (2.0) ***	5.6 (2.1) ***	4.5 (2.0) ***	5.0 (2.0) ***
HOME subscale					
9-month	5.7 (0.7)	5.5 (0.9)	5.4 (1.0) ***	5.4 (0.9) ***	5.5 (0.9)
2-year	5.8 (0.6)	5.6 (0.9) *	5.5 (0.9) ***	5.6 (0.7) **	5.4 (0.8) ***
Having sleeping routines					
2-year	90.6	85.4	81.0 ***	68.4 ***	87.3
Preschool	90.9	87.8	87.6	75.2 ***	82.6 *
Kindergarten	95.8	92.6	95.2	86.4 ***	91.1
Eating dinner at a regular time per week					
2-year	5.6 (2.0)	6.5 (1.3) ***	5.8 (1.9)	5.8 (2.1)	5.2 (2.3)
Preschool	5.0 (2.1)	6.1 (1.5) ***	5.4 (2.0)	4.6 (2.5) *	4.1 (2.6) ***
Kindergarten	5.1 (2.0)	6.1 (1.5) ***	5.5 (1.9) *	4.6 (2.4) ***	4.6 (2.4) *
Mother's cognitively stimulating activities					
9-month	9.3 (2.1)	8.4 (2.4) ***	8.5 (2.2) ***	7.7 (2.2) ***	8.3 (2.2) ***
2-year	9.8 (1.8)	9.4 (2.2) **	9.2 (2.2) ***	8.4 (2.1) ***	8.6 (1.9) ***
Preschool	9.4 (1.9)	8.8 (1.9) ***	8.9 (2.1) ***	7.9 (2.0) ***	8.2 (2.2) ***
Kindergarten	8.9 (1.8)	8.2 (1.8) ***	8.7 (2.0)	8.0 (2.0) ***	7.8 (2.0) ***
Father's cognitively stimulating activities					
9-month	7.0 (2.1)	6.5 (2.3)	7.1 (2.3)	6.8 (2.2)	6.5 (2.1)
2-year	7.6 (2.1)	7.2 (2.1)	7.2 (2.3) *	6.9 (1.8) ***	6.9 (1.7) **
Preschool	7.2 (2.0)	6.7 (2.0) **	7.0 (2.1)	7.1 (1.9)	6.6 (1.8)

C. Parenting Behavior	NB-NH White (n≈3,000)	FB Chinese (n≈350)	FB other Asian (n≈500)	FB Mexican (n≈450)	FB Other Latinos (n≈250)
Mother reported no spanking					
2-year	63.2	76.2 ***	79.1 ***	81.4 ***	82.2 ***
Preschool	57.2	70.4 **	59.2	68.1 **	65.3
Kindergarten	58.0	69.7 **	62.9	68.7 **	72.8 **
Father reported no spanking					
2-year	49.7	69.6 ***	76.9 ***	82.4 ***	79.8 ***
Preschool	53.6	76.4 ***	70.5 ***	88.3 ***	84.0 ***
Frequency of father's involvement at 9-month					
Every day or almost every day	38.5	66.0 ***	61.3 ***	60.9 ***	50.7
A few times a week	38.3	14.8 ***	22.1 ***	21.7 ***	25.9
A few times a month	16.9	8.8 *	13.9	8.9 *	15.2
Once or twice	5.6	6.2	2.0	4.9	7.9
Never	0.7	4.2 ***	0.8	3.6 **	0.0
Frequency of father's involvement at 2-year					
Every day or almost every day	33.0	53.6 ***	40.7	39.6	37.0
A few times a week	39.9	23.9 ***	28.0 **	36.8	41.1
A few times a month	20.8	15.1	17.9	11.1 **	13.0
Once or twice	5.4	4.1	9.4	11.3 *	6.6
Never	0.9	3.3 *	4.1 ***	1.2	2.4
Frequency of father's involvement at preschool					
Every day or almost every day	33.1	43.4 *	45.8 **	41.7	39.2
A few times a week	42.4	30.7 *	31.2 **	33.8	36.7
A few times a month	18.5	16.7	15.5	16.3	12.4
Once or twice	4.8	7.2	5.9	7.0	11.6
Never	1.2	2.0	1.6	1.2	0.0
Father's basic care at 2	30.2 (5.9)	28.4 (7.1) **	29.2 (7.3)	29.6 (6.8)	29.9 (7.4)
Father's physical play at 2	18.0 (3.1)	16.2 (3.6) ***	17.5 (3.5)	18.7 (3.4) *	17.7 (3.3)

Note: n/a: not applicable. Sample sizes were rounded to the nearest 50 given IES reporting rules. All numbers were weighted using 'W1R0' for the 9 month wave, 'W2R0' for the 2 year wave, 'W3R0' for the preschool wave, and 'WK1R0' for the kindergarten wave.

* $p < 0.05$.

** $p < 0.01$.

*** $p < 0.001$.

TABLE 1
Children's cognitive and socio-emotional outcomes by race/ethnicity and nativity

	NB-NH White (n≈3,000)		FB Chinese (n≈350)		FB Other Asian (n≈500)		FB Mexican (n≈450)		FB Other Latino (n≈250)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Cognitive outcomes										
Expressive Language	0.28	(0.79)	-0.15***	(1.15)	-0.16***	(1.07)	-0.94***	(1.42)	-0.33***	(1.16)
Early reading	0.16	(0.91)	0.84***	(1.01)	0.42***	(1.00)	-0.55***	(0.94)	-0.13**	(0.92)
Mathematics	0.26	(0.90)	0.96***	(0.84)	0.36	(0.94)	-0.53***	(0.87)	-0.16***	(0.92)
Socio-Emotional outcomes reported by the parent										
Conduct problems	-0.03	(0.68)	-0.06	(0.66)	-0.20***	(0.72)	-0.05	(0.70)	-0.14	(0.77)
Internalizing problems	0.04	(0.69)	0.13	(0.82)	0.07	(0.81)	0.08	(0.82)	0.05	(0.75)
Hyperactivity/Inattention	-0.02	(0.68)	-0.10	(0.67)	-0.17**	(0.69)	-0.01	(0.64)	-0.01	(0.71)
Pro-social behavior	0.10	(0.54)	-0.25***	(0.57)	-0.05***	(0.58)	-0.16***	(0.65)	-0.06**	(0.58)
Socio-Emotional outcomes reported by the teacher										
Conduct problems	0.00	(0.83)	-0.12	(0.69)	-0.26***	(0.63)	-0.14	(0.79)	-0.06	(0.81)
Internalizing problems	0.04	(0.89)	-0.10	(0.78)	-0.21***	(0.83)	-0.20**	(0.79)	-0.01	(0.89)
Hyperactivity/Inattention	-0.05	(0.83)	-0.23	(0.72)	-0.22*	(0.73)	-0.09	(0.84)	-0.04	(0.89)
Pro-social behavior	0.10	(0.68)	-0.02	(0.66)	0.00	(0.65)	0.00	(0.67)	-0.01	(0.70)

Note: Sample sizes based on the total sample for the cognitive outcomes were rounded to the nearest 50, due to IES reporting rules. All numbers were weighted by using 'WK IRO'. Significance tests were conducted to compare each of the racial/ethnic and nativity groups with the NB-NH White.

* $p < 0.05$.

** $p < 0.01$.

*** $p < 0.001$.

TABLE 2

Regression estimates on children's expressive language at kindergarten

	Model 1	Model 2a	Model 2b	Model 3	Model 4
Race/Ethnicity and Nativity					
Foreign-born Chinese	-0.39 (0.15) **	-0.49 (0.14) ***	0.30 (0.16)	0.13 (0.16)	0.18 (0.16)
Foreign-born Asian	-0.44 (0.08) ***	-0.46 (0.07) ***	0.17 (0.10)	0.07 (0.10)	0.15 (0.10)
Foreign-born Mexican	-1.22 (0.04) ***	-1.02 (0.04) ***	-0.12 (0.09)	-0.09 (0.09)	-0.07 (0.09)
Foreign-born Latino	-0.61 (0.06) ***	-0.49 (0.06) ***	0.24 (0.10) **	0.23 (0.09) **	0.23 (0.10) **
Family Socioeconomic Status					
Family income					
\$0-\$20000		0.03 (0.03)		0.04 (0.03)	0.05 (0.03)
\$35001-\$50000		0.15 (0.03) ***		0.13 (0.03) ***	0.12 (0.03) ***
\$50001+		0.17 (0.04) ***		0.14 (0.04) ***	0.11 (0.04) **
Parent's education					
Below high school (0-11)		-0.14 (0.04) ***		-0.06 (0.04)	-0.04 (0.04)
Some college (13-15)		-0.01 (0.03)		0.01 (0.03)	0.03 (0.03)
Above college (16+)		0.16 (0.03) ***		0.17 (0.03) ***	0.12 (0.03) ***
Parent's occupational prestige		0.02 (0.01)		0.01 (0.01)	0.00 (0.01)
Parental English proficiency					
Mother			0.09 (0.01) ***	0.08 (0.01) ***	0.07 (0.01) ***
Father			0.06 (0.01) ***	0.06 (0.01) ***	0.05 (0.01) ***
Primary home language is Non-English			-0.14 (0.06) **	-0.12 (0.06) **	-0.07 (0.06)
Controls for Demographic variables	No	No	No	No	Yes
Controls for Child Care	No	No	No	No	Yes
Controls for Parental Employment	No	No	No	No	Yes
Controls for Parenting Behavior	No	No	No	No	Yes
Constant	0.39 (0.13) ***	0.08 (0.14)	-1.38 (0.17) ***	-1.47 (0.18) ***	-2.55 (0.28) ***
Adjusted R ²	0.15	0.17	0.18	0.20	0.23

Note: Reference group is NB-NH White. All models controlled for dummy variables for NB-NH Black, NB Hispanic, NB-NH Asian, NB Others, FB-NH White, FB-NH Black, and FB Others, age-in-month dummies, and year dummy for 2006 (vs. 2007). Demographic variables include child's assessment age, boy, prematurity (gestation weeks <37), low birth weight (<2.5kg), breast-feeding, and number

of siblings; mother's age at birth, father's age at birth, whether mother lived with bio-mother until 16 years old, whether mother lived with bio-father until 16 years old, mother's marital status at birth, and mother's education at birth. Reference group for family income is \$20001–\$35000 and for parental education is high school degree. All models were weighted using 'WKIR0'.

* $p < 0.05$.

** $p < 0.01$.

*** $p < 0.001$.

TABLE 3

Regression estimates on children's early reading ability at kindergarten

	Model 1	Model 2a	Model 2b	Model 3	Model 4
<i>Race/Ethnicity and Nativity</i>					
Foreign-born Chinese	0.79 (0.14) ***	0.59 (0.13) ***	1.24 (0.16) ***	0.81 (0.15) ***	0.77 (0.15) ***
Foreign-born Asian	0.30 (0.07) ***	0.26 (0.07) ***	0.75 (0.10) ***	0.49 (0.10) ***	0.50 (0.10) ***
Foreign-born Mexican	-0.68 (0.04) ***	-0.26 (0.04) ***	0.01 (0.09)	0.04 (0.09)	0.04 (0.09)
Foreign-born Latino	-0.28 (0.05) ***	-0.04 (0.05)	0.29 (0.09) **	0.22 (0.09) **	0.20 (0.09) *
<i>Family Socioeconomic Status</i>					
Family income					
\$0-\$20000		-0.06 (0.03) *		-0.06 (0.03)	-0.04 (0.03)
\$25001-\$50000		0.15 (0.03) ***		0.15 (0.03) ***	0.11 (0.03) ***
\$50001+		0.26 (0.04) ***		0.26 (0.04) ***	0.18 (0.04) ***
Parent's education					
Below high school (0-11)		-0.39 (0.04) ***		-0.36 (0.04) ***	-0.23 (0.04) ***
Some college (13-15)		-0.17 (0.03) ***		-0.16 (0.03) ***	-0.09 (0.03) ***
Above college (16+)		0.26 (0.03) ***		0.26 (0.03) ***	0.16 (0.03) ***
Parent's occupational prestige		0.03 (0.01) *		0.03 (0.01) *	0.01 (0.01)
<i>Parental English proficiency</i>					
Mother			0.03 (0.01) ***	0.01 (0.01)	0.00 (0.01)
Father			0.06 (0.01) ***	0.04 (0.01) ***	0.04 (0.01) ***
Primary home language is non-English			-0.06 (0.06)	0.00 (0.05)	0.00 (0.05)
Controls for Demographic variables	No	No	No	No	Yes
Controls for Child Care	No	No	No	No	Yes
Controls for Parental Employment	No	No	No	No	Yes
Controls for Parenting Behavior	No	No	No	No	Yes
Constant	-0.44 (0.13) ***	-0.85 (0.13) ***	-1.49 (0.17) ***	-1.41 (0.17) ***	-2.31 (0.26) ***
Adjusted R ²	0.16	0.26	0.17	0.26	0.30

Note: Reference group is NB-NH White. All models controlled for dummy variables for NB-NH Black, NB Hispanic, NB-NH Asian, NB Others, FB-NH White, FB-NH Black, and FB Others, age-in-month dummies, and year dummy for 2006 (vs. 2007). Demographic variables include child's assessment age, boy, prematurity (gestation weeks <37), low birth weight (<2.5kg), breast-feeding, and number of siblings; mother's age at birth, father's age at birth, whether mother lived with bio-mother until 16 years old, whether mother lived with bio-father until 16 years old, mother's marital status at birth, and mother's education at birth. Reference group for family income is \$20001–\$35000 and for parental education is high school degree. All models were weighted using 'WK1R0'.

* $p < 0.05$.

** $p < 0.01$.

*** $p < 0.001$.

TABLE 4

Regression estimates on children's math at kindergarten

	Model 1	Model 2a	Model 2b	Model 3	Model 4
<i>Race/Ethnicity and Nativity</i>					
Foreign-born Chinese	0.81 (0.14) ***	0.60 (0.13) ***	1.35 (0.15) ***	0.89 (0.14) ***	0.86 (0.14) ***
Foreign-born Asian	0.14 (0.07)	0.10 (0.07)	0.69 (0.10) ***	0.41 (0.09) ***	0.45 (0.09) ***
Foreign-born Mexican	-0.75 (0.04) ***	-0.33 (0.04) ***	-0.02 (0.09)	0.01 (0.08)	0.00 (0.09)
Foreign-born Latino	-0.41 (0.05) ***	-0.17 (0.05) ***	0.24 (0.09) **	0.16 (0.09)	0.16 (0.09)
<i>Family Socioeconomic Status</i>					
Family income					
\$0-\$20000		-0.13 (0.03) ***		-0.12 (0.03) ***	-0.11 (0.03) ***
\$25001-\$50000		0.09 (0.03) **		0.09 (0.03) ***	0.05 (0.03)
\$50001+		0.26 (0.04) ***		0.26 (0.04) ***	0.18 (0.04) ***
Parent's education					
Below high school (0-11)		-0.37 (0.04) ***		-0.35 (0.04) ***	-0.25 (0.04) ***
Some college (13-15)		-0.16 (0.03) ***		-0.16 (0.03) ***	-0.10 (0.03) ***
Above college (16+)		0.28 (0.03) ***		0.28 (0.03) ***	0.19 (0.03) ***
Parent's occupational prestige		0.03 (0.01) *		0.03 (0.01) *	0.01 (0.01)
<i>Parental English proficiency</i>					
Mother			0.02 (0.01) ***	0.00 (0.01)	-0.01 (0.01)
Father			0.05 (0.01) ***	0.03 (0.01) ***	0.03 (0.01) ***
Primary home language is non-English			-0.18 (0.06) ***	-0.12 (0.05) *	-0.10 (0.05)
Controls for Demographic variables	No	No	No	No	Yes
Controls for Child Care	No	No	No	No	Yes
Controls for Parental Employment	No	No	No	No	Yes
Controls for Parenting Behavior	No	No	No	No	Yes
Constant	-0.22 (0.12)	-0.62 (0.13) ***	-1.07 (0.17) ***	-0.96 (0.17) ***	-2.09 (0.25) ***
Adjusted R ²	0.19	0.31	0.20	0.31	0.34

Note: Reference group is NB-NH White. All models controlled for dummy variables for NB-NH Black, NB Hispanic, NB-NH Asian, NB Others, FB-NH White, FB-NH Black, and FB Others, age-in-month dummies, and year dummy for 2006 (vs. 2007). Demographic variables include child's assessment age, boy, prematurity (gestation weeks <37), low birth weight (<2.5kg), breast-feeding, and number of siblings; mother's age at birth, father's age at birth, whether mother lived with bio-mother until 16 years old, whether mother lived with bio-father until 16 years old, mother's marital status at birth, and mother's education at birth. Reference group for family income is \$20001–\$35000 and for parental education is high school degree. All models were weighted using 'WK1R0'.

* $p < 0.05$.

** $p < 0.01$.

*** $p < 0.001$.