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IMPACT OF PARENTAL INVOLVEMENT ON THE GAP IN KINDERGARTEN MATH SCORES BETWEEN CHILDREN OF IMMIGRANTS AND CHILDREN OF NATIVES

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ABSTRACT

Children of immigrants are the fastest growing segment of the young child population in the United States (Hernandez, 1999). This population is quite diverse and is overall performing less well than their native counterparts. (Magnuson et al., 2006, Han, 2006, Crosnoe, in press). Using the Early Childhood Longitudinal Survey - Kindergarten Cohort, this paper analyzes whether differences in parental involvement can explain part of the gap in math scores between children of immigrants and children of natives in the fall and the spring of kindergarten. Controlling for parental involvement reduces the gap for children of Mexican parents and increases the advantage of children of Chinese parents. From the fall to the spring of K, the negative impact of speaking a non-English language at home decreases and even more so with the inclusion of parental involvement variables. Finally, going to kindergarten all day instead of half day increases the math scores.

INTRODUCTION

The number of children of immigrants has been increasingly growing for the last two decades in the United-States. It constitutes already one in five children under six years old in this country (Capps et al., 2004). By 2020, chances are that 30% of all children will have at least one foreign-born parent (Capps et al., 2004). In addition, children of immigrants have very diverse ethnic backgrounds having parents coming mainly from Mexico, Asia, Central America and the Caribbean (Shields & Behrman, 2004). Their academic achievement and their success at work are crucial for the well-being of the American society. According to Chiswick and DebBurman (2006), if there is a clear public policy interest in seeing immigrant parents successfully participating in the labor force, there is also an important policy interest in the skill formation of their children. It is thus important to develop a better understanding of the different mechanisms affecting the academic achievement of children of immigrants.

Compared to other immigrant populations, the young children of immigrants have been little studied (Fuligni and Yoshikawa, 2003). The representation of young children of immigrants in the Early Childhood Longitudinal Survey - Kindergarten Cohort 1998-1999 (ECLS-K) gives the opportunity to study the educational achievement of this population. Lahaie (2006a) found that mother's and father's immigration characteristics have a strong impact on their child's cognitive outcomes. Children of immigrants who speak a non English language at home, have parents who are not U.S. citizens and/or were born in Mexico are at significant risk to perform more poorly than their native counterparts. In a following paper, looking at the impact of parental involvement on the educational achievement of children of immigrants and children of natives in the fall of

K, Lahaie (2006b) found that some parental involvement variables at home and at school significantly improve the level of English proficiency and math score for both children of immigrants and children of natives. Other findings were that parental involvement variables reduce by a third the gap in math score between children of immigrants and children of natives, while they do not change the gap in the level of English proficiency. Also using the ECLS-K, Han (2006) found that some ethnic groups perform higher (East-Asia) and lower (Mexico) than non-Hispanic white children. Crosnoe (in press) also found that young children of immigrants from Mexico have a lower level of math achievement and class preparedness than non latino/a-Whites in the fall and the spring of K.

In addition to the emergent literature on the academic achievement of young children of immigrants, another interesting source of findings are the several studies looking at the educational achievement of language minority students, representing 70% of the children of immigrants (Lahaie, 2006a). "Language minority" (LM) is defined as "individuals from homes where a language other than English is actively used, who therefore have had an opportunity to develop some level of proficiency in a language other than English. A language minority student may be of limited English proficiency, bilingual, or essentially monolingual in English" (August and Hakuta, 1997). Using the 5th grade follow up of the Early Childhood Longitudinal Study, Kindergarten Cohort, 1998-1999 (ECLS-K), the National Center on Education Statistics (2006) found that students in fifth grade whose primary home language was not English at kindergarten entry, are doing worse in overall reading, mathematics as well as science achievement compared to students whose primary home language was English. Robinson (2006) and

Panet (2006) found similar results for Hispanic students in Kindergarten and First grade who are not proficient in English. On the other hand, Panet (2006) also found that Asian students compose the majority of language minority students who are proficient in English, which is associated with high academic achievement.

From all these findings, it is clear that there are some children who are doing better than others, and that children of immigrants are not a monolithic population. Immigrant experience is unlikely to be singular (Schwartz & Steifel, 2006). More research that understands better the factors that impact on the young children of immigrants' educational achievement is needed. In identifying some initial conditions promising school success, one could look at early home environment and opportunities during the pre-school years (Chiswick and DebBurman, 2006). Like presented by Snow (1998), parental involvement, with its positive impact on children's academic achievement recognized by academics, educators, parents and policy makers as well (Fan & Chen, 2001) seems to represent an important avenue to study. From a political and practice point of view, parental involvement is present in every home and an attempt can be made to modify it when needed (Keith & Lichtman, 1994). With the 2001 No Child Left Behind Act, where family-school partnerships are promoted, it seems essential to study its relevance among children of immigrants especially.

The purpose of this study is to look at the impact of parental involvement on the gap in mathematics scores between children of immigrants and children of natives in the fall and in the spring of kindergarten. In this study, to be considered a child of immigrants, the child has to have at least one parent who was born outside of the United States. Children of immigrants will be separated into three subgroups: children of

Mexican parents (who have been found to have poor performance in math in the fall of K (Lahaie, 2006a)), children of Chinese parents (who have been found to have high performance in math in the fall of K (Lahaie, 2006a)) and other children of immigrants.

In this paper, parental involvement will be defined as all of the actions or decisions that parents make to foster the educational achievement of their child. Parental involvement variables are separated into four categories: cognitive learning at home, cognitive learning out of home, choice of school, and parental involvement at school.

This study advances the prior literature in several different ways. First, there has been a lack of datasets providing information about young children of immigrants. As a result, few studies have looked at the educational achievement of young children of immigrants and even fewer have distinguished between the different countries of origin of the parents. Second, while some studies looked at parental influences on the educational outcomes of immigrant youth (Kao, 2004; Schneider and Lee, 1990; Dornbusch, 1989), no study has looked specifically at the impact of parental involvement on the educational achievement of *young* children of immigrants *over time*. As mentioned previously, Lahaie (2006a) have found that parental involvement reduces the gap in math score between young children of immigrants and young children of natives by one third in the fall of K. This study will consider whether the effect of parental involvement on math scores goes beyond the Fall of kindergarten. Third, unlike the definitions of parental involvement that are limited to the involvement of parents in schooling, this study is using a broader definition of parental involvement. In addition to the involvement of the parents in their child's schooling, parental involvement will include all the family activities and parents' decisions addressing the educational needs of their child. This way,

chances are that we will have a better representation of the family educational context for young children of immigrants and young children of natives.

PREVIOUS RESEARCH

Children of Mexican Immigrants

Children of Mexican immigrants are especially at risk of school failure in the US (Han, 2006, Crosnoe, in press, Lahaie, 2006a). Cortina (2003) presents factors that shed some light on the high rate of failure in school among children of Mexican parents. First, families arrive in the US with only a few years of formal schooling. In addition, those who come from poor rural or urban areas in Mexico, come from extremely poor schools. Another factor mentioned by Cortina (2003) is the precarious economic situation of Mexican immigrant families, decreasing greatly the children's academic success. Mexican children come to school with many needs (educational, health, nutritional) and with a lack in literacy skills in English as well as in Spanish. Mexican parents have limited knowledge of the culture of schooling. Teachers may misinterpret the lack of participation by the parents as a lack of interest in the education of their children. Facing all these issues and representing more than 30% of the children of immigrants (Lahaie, 2006a), children of Mexican parents are crucial to study.

Children of Chinese Immigrants

On the other hand, some cultural groups outperform children of natives. We could definitely learn from them. This is the case of children of Chinese parents (Lahaie, 2006a). The following factors give some insight toward explaining this difference. Although Chinese immigrants are quite diverse, on average, children of Chinese parents come from upper middle class families and have well-educated parents. In the ECLS-K

sample, the mean income of children of Chinese parents is $63,998 compared to $57,901 among children of natives. In addition, Chinese parents tend to be educated, with 49% of mothers holding at least a college degree and 59% of fathers with at least a college degree. In the case of children of natives, only 26% of mother and fathers hold at least a college degree. Finally, it is interesting to mention that although immigrant Chinese families live in good conditions only 7 % of Chinese parents speak only English. Based on these demographic variables, we could extrapolate that a set of variables, omitted because of a lack of data or of knowledge of the culture, may impact positively on the educational achievement of the children of Chinese parents. Looking at the emerging literature on Chinese parenting style could also give some explanation on why children of Chinese parents are performing so well in math compared to children of natives. Chao (1994) found that one cultural difference between European-American and Chinese Immigrants' parenting style lies within the notions of *chiao shun* and *guan*, Chinese terms for "training". Compared to European-American mothers, Chinese mothers "endorse a high level of maternal involvement for promoting success in the child, being the sole or central caretaker of the child, and having the child physically close to the mother by sleeping with the mother". Children must "show loyalty and respect to their elders", while these latter must "responsibly teach, discipline, or govern". This "training" is viewed very positively within the Chinese culture. According to Chao (1994), while this notion of "training" is not part of the European-American culture, it may be quite important in explaining the school success of children of Chinese parents. Overall, this clearly demonstrates how involved Chinese mothers are in their children's education.

Children of Immigrants and Parental Involvement

Parental involvement has been operationally defined by researchers in many different ways such as participation in school, school-related home activities, education-relation communication with community, families' educational expectations (Schwartz & Steifel, 2006). Promoting the importance of both family and school for academic achievement, Levin and Belfield (2002) have identified three pathways through which the family influences children's academic achievement: home environment (learning, literacy, parent-child interactions), out-of-school (child care, after-school) and parental involvement with schooling (choice of school, school involvement). Epstein (1992) has outlined six levels of parental involvement: parenting (child-rearing skills, setting of home conditions to support learning at each age and grade level), communicating (communication with the teacher), volunteering (support of students and school programs), learning at home (reading, discussions with the child, informal activities, games with use of common materials at home, homework help), decision making (decisions related to school), and collaborating with the community (interaction with other agencies to strengthen school programs such as community businesses and agencies).

According to Waters (1999), some reasons why some immigrant children may succeed particularly well in the US are the positive attitudes of immigrants toward education, and the support and encouragement provided by the immigrant parents. Going in the same direction, Kao and Tienda (1995) also believe that encouragement and high expectations of immigrant parents are among the most positive influences on their children's education. However, because of limitations linked to their low level of English

proficiency, there are areas where it becomes difficult for immigrant parents to get involved especially when it is related to English literacy and involvement at school. McLleland and Chen (1997) as well as Lopez (2001), emphasize the different social, economic and linguistic barriers encountered by language minority parents when trying to get involved.

The literature on the impact of parental involvement on the educational achievement is not unanimous. According to Fan and Chen's (2001) meta-analysis grouping 25 studies, parental involvement has a positive impact on the educational achievement of children. Desimore (1999) and McNeal (1999) found that the more parents are educated and wealthy, the more they will be involved in their children's education with a higher level of effectiveness. There is also evidence that parental involvement provides the greatest benefit to children at high risk of academic failure than other children (Dearing at al, 2004). According to Henderson and Berla (1994), learning that occurs at home is as important as learning at school but sometimes it is less familiar to the teachers. What constitutes good parental involvement is defined quite differently from one cultural background to another (Dornbusch & Glasgow, 1996). This is why it is important to learn more about the type of parental involvement that is going on at home especially in areas where it has been proven that these activities have a significant positive impact on the educational achievement of children such as reading with the child, writing stories with the child, taking the child to the library, monitoring television viewing, and overseeing homework (Barton & Coley, 1992; Clark, 1993; Dauber & Epstein, 1993; Walberg, 1993). On the other hand, Borsato and Grant (2006), found that parent involvement variables explain very little of the variation in child outcomes for both

language minority student and English only students. Lareau (2000), Carvalho (2001), and Valdés (1996) even suggest that further inequality may reside in using parental involvement practices because of the linguistics and cultural barriers that the parents may encounter with the school.

Compared to other immigrant groups, the literature on young children of immigrants is small. This study adds to the recent findings about the educational achievement of young children of immigrants. First, it distinguishes between different countries of origin of the parents. Second, it is unique by looking at the impact of parental involvement on the educational achievement of young children of immigrants *over time*. Third, because good parental involvement practices may be defined differently from one culture to another, this study broadens the definition of parental involvement. In addition to schooling it includes all other activities or decisions around learning, involving the parents.

DATA

This study was conducted using a nationally representative sample of children called the Early Childhood Longitudinal Study, Kindergarten Cohort of 1998-1999 (ECLS-K). The present study focuses on the fall of 1998 and the spring of 1999 while the children were beginning and finishing kindergarten. There are 12,637 children in the sample with 18% of them being children of immigrants.

[1] Children's age ranges from 4 ½ to 6 ½ years old, with an average age of 5 ½

years old.

Descriptive demographics and other means for the full sample and by immigration status are provided in Appendix 1. While children of natives are mainly White (74.3%) and Black (14.9%), children of immigrants are 50.1% Hispanic and 17.2% Asian. In terms of income, children of immigrants mean family income is exactly $10,000 lower than that of a native family. In addition, children of immigrants' families are almost 13 percentage points more likely to be living in poverty and 7 percentage points more likely to have used WIC than children of natives' families. Compared to the mothers of children of natives, mothers of immigrant children are less active in the world of work. (full-time: 40.4vs. 45.9, part-time: 16.4%vs.23.5%, no work: 43.1%vs.30.6%). Compare to 40.2% of children of immigrants' mothers, only 24.6% of the native mothers never worked during the period between their child's birth and the beginning of kindergarten. Educational attainment differs also between native and immigrant parents. While 8% of the American born mothers do not hold a high school degree, it is a quarter of the immigrant mothers who are in this precarious situation. In the case of the fathers, while 6.4% of the native fathers do not have a high school diploma, this is true for 23.0% of immigrant fathers. There is more than a 5 percentage point difference between children of immigrants (49.4%) and children of natives (55.5%) going to Kindergarten all day. There is an average of three children in immigrant families compared to only two children in native families. Interestingly, 80% of immigrant families are composed of two biological parents while this is the case for only 68% of the American families. The majority of immigrant families live in cities (54%) compared to the majority of natives who resides in towns (39%).

(Appendix 1 About Here)

More descriptive characteristics are presented about children of immigrants only, in Appendix 2. Around 34% of the children of immigrants speak only English. This is true for only 28% of their mothers and fathers. Among the most popular regions representing the more than 200 countries where mothers and fathers were born, there are Mexico (28.7%), the Philippines (7.9%) and other countries in Asia (10.6%, excluding China and India). In addition, 16.5% of the parents of the children of immigrants are U.S. natives (because children could have one immigrant parent and one native parent). While 89.9% of children of immigrants are U.S. citizens, less than 60% of the mothers and fathers of children of immigrants are U.S. citizens.

(Appendix 2 About Here)

MEASURES

In this dataset, math is the only outcome that includes all of the Spanish-speaking children whether or not they passed the English proficiency screening test. Math is an important academic skill. It is an area where Spanish-speaking children especially, are not performing well. In the reading and general knowledge tests, 634 children of immigrants are missing because they failed the English test. This represents a 26% reduction in the total number of children of immigrants. This is why, reading and general knowledge, were not included in this study.

Math Score

A math test was administered to every child except for those who did not pass the English screener and did not speak Spanish. For the children who failed the English test but were Spanish speakers, their math test was in Spanish[2]. Through this test, children's

knowledge of numbers, geometry and spatial relations was evaluated. Following an "Item Response Theory" structure, each child was given a specific set of questions. The questions asked depended on each child's answers to a set of initial "routing" questions whose role was to assess the child's abilities in mathematics. From this result, an estimate of the number of questions that the child would have correctly answered, had the child been given all available items, was generated. These ability scores are then converted into standardized t-scores that have a mean of 50 and standard deviation of 10 (based on the full sample distribution).

Parental Involvement

Questionnaires were administered to a respondent (most often the mother), by phone, in English or in Spanish. As mentioned previously, variables related to parental involvement activities were grouped into four categories: cognitive learning at home, cognitive learning out of home, choice of private/public school and parental involvement at school. Variables from the fall and the spring were used (Appendix 3).

Cognitive Learning at Home, Fall

The first two variables are the frequency of literacy activities done by parents with their child and the frequency of other learning activities done by parents with their child. All the activities included in these two categories are significantly more frequent among children of natives than children of immigrants except for the frequency of telling stories by parents to their child. The number of children’s books in home is almost as twice as high for children of natives (84) than for children of immigrants (48). The number of music tapes, CDs, or records in home is also significantly higher among children of natives (16) than children of immigrants (12). While there is not a significant difference in the frequency of the child reading outside of school, the frequency of the child looking

at picture books is significantly higher among children of natives than children of immigrants. While 70% of children of immigrants watch Sesame Street, it is the case for 57% of the children of natives.

Cognitive Learning at Home, Spring

The first variable in this category represents three learning activities done by parents with their child. While the frequency of visiting a library and a museum are not statistically different between children of immigrants and children of natives, it is the case with going to a play, a concert and a show (children of immigrants: 34%, children of natives: 39%). Like in the fall, there is not a difference in the frequency of reading outside of school. However, children of natives look at pictures books slightly more often than children of immigrants. Computer wise, it is statistically significant that more children of natives have computer at homes that they are using than children of immigrants (60%vs.46%). They are also using them more often than children of immigrants. However, on average, they are both using their computer less than twice a week.

Cognitive learning out of home, Fall

This category includes types of care arrangements the year prior to kindergarten as well as during the time the child goes to kindergarten. All of the following variables are significantly different between children of immigrants and children of natives except for Head Start. Center-based care prior to K is attended by 63.2% of children of natives while it is only the case for 47.0% for children of immigrants. As for parental care prior to K, 28.6% of children of immigrants stay at home while it is the case for only 15.3% of the children of natives. Other types of care[3] prior to K are used 2 percentage points more by children of immigrants than by children of natives (13.1% versus 11.4%). Like it was the case for center care prior to K, children of natives (18.6%) use center care during K more

than children of immigrants (10.9%). Relative care during K is used by 19.4% of children of immigrants and by 17.6% of children of natives. Lastly, non-relative care during K is used 4 percentage points more by children of natives than by children of immigrants (11.3% versus 7.5%).

Cognitive learning out of home, Spring

In the spring the variables in this category represent classes or organized activities done outside of the home by the child. Except for participating in organized clubs, all of these activities are statistically different between children of natives and children of immigrants. Children of immigrants participate more in only one of these activities: music lessons (10%vs.8%). For all of the other activities, children of natives are participating in bigger number than children of immigrants (dance lessons: 19%vs.13%; athletic events: 52%vs.28%; organized clubs: 16%vs.6%; drama classes: 2%vs.1%; art lessons: 8%vs.6%; organized performing: 16%vs.8%; craft classes: 12%vs.6%).

Choice of School

This category relates to the choice parents make between sending their child to private or to public school. One in four children of natives attend private school, while 16.4% of children of immigrants do the same.

Parental involvement at school, Fall

This is the only variable that relates to direct parent/school relation. The variable is whether parent has already met with the teacher at least once since school started. While 98.1% of native parents have met with the teacher, it is the case for 95.7% of immigrant parents. This difference, although small, is significant.

Parental involvement at school, Spring

There is no significant difference between natives and immigrant parents when it comes to attending a PTA meeting or a parent advisory group. However, native parents participate significantly more in the following activities than immigrant parents: open house (76%vs.64%), parent-teacher conference (85%vs.81%), school event (71%vs.52%), school volunteer (54%vs.37%), fundraising (64%vs.47%).

(Appendix 3, About Here)

Parents' Country of Origin and Language

Like for parental involvement variables, questions about languages were asked to a respondent (most often the mother) by phone in English or in Spanish, in the fall of kindergarten. The respondent was asked how often the mother and the father use a language other than English to speak to their child (very often, often, sometimes, never). In the spring of first grade, the respondent was asked in which country she/he was born. The respondent was then asked in which country both the mother and the father were born in the spring of third grade. The country of origin of the mother and the father were used to identify children of immigrants whose mother and/or father were born in another country. Among children of immigrants, 71.8% of the mothers speak another language than English at least some of the time while it is the case for 74.1% of the fathers.

Covariates

Finally, an extensive list of child and family characteristics was included in the regressions. Child characteristics include: low or very low birth weight, current weight and height, age, gender, race/ethnicity, when the child goes to kindergarten (am, pm or whole day), the timing of the child's assessment (September, October, November or December for the fall then February, March, April and May for the spring). Family

characteristics contain the following measures: family structure, family size, city/rural residency, region of the country, educational attainment of each parent (less than high school; high school; vocational school and some college; college degree and advanced degree), work status for both mother and father (part-time and full-time), whether the mother worked at any point in time between childbirth and kindergarten, household income, whether the family had use of WIC (the Woman, Infants, and Children program, a supplemental nutrition program for low-income families), and whether the family is in poverty.

In cases of missing data, missing data dummy variables were used (Allison, 2001). The majority of missing data rates were less than 2% except for certain variables related to father (education: 17%, language to child: 19%, and country of origin: 32%).

METHODOLOGY

Using OLS, multiple regressions analysis are performed to estimate the impact of parental involvement on the gap in math score between children of immigrants and children of natives in the fall and the spring of K. In this dataset, the primary sampling unit was the schools. Standard errors were corrected for the non-independence of observations within schools.

Following are the regression equations:

$$O_i = Mex_i + Chi_i + I_i + Cov_{i\gamma} + \varepsilon_I \qquad \text{(Table 2)}$$

$$O_i = Mex_i + Chi_i + I_i + PI_i + Cov_{i\gamma} + \varepsilon_I \qquad \text{(Table 3)}$$

Where O_i represents the math score for child i. In all of the models in this paper, Mex_i indicates children of immigrants with at least one parent born in Mexico, Chi_i indicates children of immigrants with at least one parent born in China and I_i indicates the

remaining children of immigrants from the sample (which means that either or both the mother and the father were born outside of the United-States, and neither parent is from Mexico or China), PI_i represents parental involvement variables and $Cov_{i\gamma}$ represents other covariates. These two models are run, using Fall then Spring math scores.

Model 1 from Table 2 includes the variables Mex_i, Chi_i and I_i. Model 2 adds in the demographic variables.

Table 3 starts by repeating Model 2 from the previous table. This time however, for each model, only the coefficients for the covariates related to parents' educational attainment as well as going to school either half or whole day are presented. In Model 2, a variable for not speaking English at home is added. In Model 3, all the Fall of kindergarten parental involvement variables are added. These three models are run twice, using the math score from the fall and from the spring of kindergarten as outcomes. Finally, Model 4 adds in all the spring of kindergarten parental involvement variables using solely of course, the spring of kindergarten math score.

RESULTS

Math Scores

As demonstrated in Table 1, in the fall of kindergarten, the average math score was 48.6 points for all children of immigrants and 51.9 points for children of natives. Given the overall mean of 50 and a standard deviation of 10, this difference amounts to a third of a standard deviation. As a group, children of Mexican score only 42.2 points, which is 9.5 points lower than children of natives. This represents almost a whole standard deviation. On the other hand, children of Chinese are scoring 8.5 points higher

than children of natives. As for the remaining children of immigrants, they are performing almost at the same level as the children of natives, with a gap of fewer than 0.5 points.

In the spring of kindergarten however, the difference in math score is lesser. Children of immigrants are doing better while the children of natives' performance remains the same. Children of immigrants score an average of 49.3 points while children of natives score an average of 51.9 points. This difference represents 26% of a standard deviation. Children of Mexican parents have decreased their gap with the children of natives, but they are still performing 8.2 points lower. Children of Chinese parents, who are performing lower than in the fall, still get 7.8 points higher than children of natives. Finally, the gap between children of natives and all of the other children of immigrants is almost nonexistent, being less than 0.1 point.

(Table 1 About Here)

Fall Models

First, two basic regressions were performed, estimating the raw effects of immigration status on Mathematics, in the Fall of kindergarten (Table 2). The first regression isolated the impact of being a child of Mexican immigrants, of Chinese immigrants or of other immigrants on the academic outcome. As mentioned previously, children of Mexican immigrants are significantly more likely to perform less well in mathematics than their native peers by 9.48 points, children of Chinese immigrants are significantly more likely to perform better by 8.52 points while all the other children of immigrants do not perform significantly different than children of natives. After adding the demographic variables (model 2), the results go in the same direction, although the coefficients become much smaller: children of Mexican immigrants: -4.24 points,

children of Chinese immigrants: 6.17 points and other children of immigrants: -1.27 points (this result is now significant) different from children of natives. This suggests that immigration status alone does not totally explain the differences in achievement but that other demographic variables play an important role as well. In fact, the majority of the demographic variables, which, as shown previously, have means that are statistically different between children of immigrants and children of natives, have an impact that is statistically significant on math scores, ranging on average from + or - 0 to 3 points. Some variables particularly stand out. Children with mother who does not have a High School degree are likely to perform 3.66 points lower than children of natives. However, the negative impact of having a father with less than a highs school degree is lesser: -2.52 points. In addition, going to kindergarten in the morning compared to a whole day decrease math score by 3.65 points. As mentioned previously, there is more than a 5 percentage point difference between children of immigrants (49.4%) and children of natives (55.5%) going to kindergarten all day. The negative impact of being poor on math scores is -1.52 point, while having participated in WIC does have a more important negative impact of -2.05 points. As a reminder, 14.8% of children of natives are poor compared to 27% among children of immigrants. In addition, 48.7% of immigrant mothers are using WIC compared to 41.2% of native mothers.

(Table 2 About Here)

In table 3, when comparing Model 1 fall (which includes control for Mex_i, Chi_i and I_i, as well as the demographic variables) with Model 2 fall (which adds a variable for parents speaking a non-English language) the gap between children of Mexican immigrants and children of natives decreases by a whole point, from -4.24 to -3.24. As

for the children of Chinese parents, their gap with the children of natives increases by 1.11 point (from 6.17 to 7.28). Finally, after the inclusion of the language variable, the gap between the other children of immigrants and the children of natives is smaller (from -1.27 to -0.62).

In Model 3 fall, parental involvement variables from the fall are included into the regression. Parental involvement variables have an impact on the gap in math score in the fall between children of Mexican parents and children of natives. Compared to children of natives, children of Mexican parents are improving by 0.68 points (from -3.24 Model 2 fall to -2.56 Model 3 fall) while children of Chinese do the same by 0.69 points (from 7.28 Model 2 fall to 7.97 Model 3 fall). These coefficients are all significant. As for the other children of immigrants, their gap in math with the children of natives becomes so small that it is not statistically significant anymore (from -0.62 to -0.10). Also, with the inclusion of the fall parental involvement variables, speaking a non-English language has a lesser statistically significant negative impact on math score from -1.26 point (Model 2 fall) to -0.92 point (Model 3 fall). There are five parental involvement variables that have a statistically significant positive impact on the math score: number of children's book at home (0.01), the frequency child is reading (0.52), going to center care the year before K (1.86), going to private school (1.27) and parent who met with the teacher at least once (1.62).

For the fall of K, results suggest many factors that explain the lower performance of children of Mexican immigrants and the higher performance of children of Chinese immigrants compare to children of natives. First, demographic factors play an important role. Having a mother who does not have a high school degree, going to K in the morning

instead of a whole day, being poor and using WIC are all factors that have a strong negative impact on math and which are more prevalent among children of Mexican immigrants. Second, the negative impact of speaking a non-English language at home is important on children of immigrants' math performance in the fall. On the other hand, this negative effect is attenuated with the inclusion of parental involvement variables. Third, controlling for parental involvement variables decreases the gap in math score between children of Mexican parents and children of natives while it increases the gap in math score between children of Chinese parents and children of natives. Chinese parents having a strong positive impact on their child's math score, these results demonstrate how much more needs to be learned about Chinese parental involvement and culture.

(Table 3 About Here)

Spring Models

First , Table 2 presents two models estimating the effects of immigration status on Mathematics in the spring of kindergarten. Looking at the math scores in the spring of kindergarten (Model 1 spring), Children of Mexican parents are performing 8.24 points lower than children of natives. Children of Chinese parents on the other hand are scoring 7.81 points higher than children of natives. As for the other children of immigrants, the difference between them and the children of natives is very small (-0.13) and not significant. After adding the demographic variables, the results change while following the same trend. Compared to children of natives, children of Mexican immigrants are doing more poorly in math than children of natives by -4.00 points (Model 2 spring), children of Chinese immigrants are doing better by 5.7 points and other children of immigrants are doing -0.91 point less well (this result is now significant). Once again, this

suggests that immigration status alone does not totally explain the differences in achievement but that other demographic variables play a role as well. The majority of the demographic variables, which, as shown previously, have means that are statistically different between children of immigrants and children of natives, have an impact that is statistically significant on math scores, ranging on average from + or - 0 to 3 points. Like in the fall, some variables have a particularly significant negative impact on math scores. A child with a mother who does not have a High School degree is likely to perform 3.60 points lower in the spring compared to -3.66 in the fall. The impact of having a father with less than a highs school degree is lesser: -1.93 points compare to -2.52 points in the fall. Going to kindergarten in the morning still has a negative impact in the spring although it is a little lesser than in the fall (-2.65 in the spring compare to -3.65 in the fall). However, going to kindergarten in the afternoon compare to a whole day is now having a significant negative impact in the spring (-1.73 compare to only -0.82 in the fall). Once again, it is important to note that there is more than a 5 percentage point difference between children of immigrants (49.4%) and children of natives (55.5%) going to Kindergarten all day.

In table 3, when comparing Model 1 spring to Model 2 spring, when the variable for language is introduced, all of these groups of children of immigrants are doing better. Children of Mexican parents are reducing their gap with children of natives by 0.77 point (from -4.00 in Model 1 to -3.23 in Model 2), children of Chinese parents are increasing their gap, by 0.85 point (from 5.70 in Model 1 to 6.55 in Model 2) and the other children of immigrants reach a point where their difference with children of natives is not significant anymore (-0.40).

One objective of this analysis was to isolate the impact of the fall parental involvement variables from the spring parental involvement variables on the spring math score. To do so, parental involvement variables collected in the fall were introduced first in the regression. When controlling for fall parental involvement variables, children of Mexican parents improve their score by 0.67 point (-3.23 in Model 2 spring to -2.56 in Model 3 spring). Children of Chinese parents increase their score by a little bit less than half a point (6.55 in Model 2 spring to 6.96 in Model 3 spring) while other children of immigrants improve theirs by 0.11 point (-0.40 to 0.07). Once again, the gap other children of immigrants have with children of natives remains really small. It is still not significant but is now positive. In addition, it is interesting to note that by including fall parental involvement variables, the negative impact of parents who do not speak English at home reduces by 0.64 point (from -0.98 in Model 2 spring to -0.62 in Model 3 spring). There are four parental involvement variables which have a statistically significant positive impact on the spring math score: number of children's books at home (0.01), frequency the child is looking at picture books (0.42), attending center-based care the year before K (1.31) and going to private school (0.96). Interestingly, the variable about the frequency the child is reading, which was significant in the fall, is not significant in the spring anymore. However, the frequency the child is looking at picture books variable, which was not significant in the fall, is now significant in the spring. Both the impacts of going to center-based care the year before K and going to private school have decreased compared to the fall. Finally, the variable parent meeting with the teacher at least once is not significant anymore in the spring.

The introduction of spring parental involvement variables into the regression also has an impact on the gap in the spring math score (Model 4). The gap between children of natives and children of Mexican parents decreases by 0.35 point (from -2.56 in Model 3 spring to -2.21 Model 4) while the gap between children of natives and children of Chinese parents increases by 0.26 point (from 6.96 in Model 3 spring to 7.22 in Model 4). Once again, other children of immigrants are getting slightly better in math than children of natives but this result is still not significant (from 0.07 in Model 3 spring to 0.29 in Model 4). Although it remains statistically significant, the negative effect of speaking a non-English language continues to become smaller (from -0.62 Model 3 spring to -0.59 Model 4).

There are five parental involvement variables from the fall and eight parental involvement variables from the spring that have a statistically significant effect on the spring math score (Model 4). From the fall these are: the number of children's books at home (0.01), frequency of the child looking at picture books (0.20), center based-care the year before K (1.11) and private school (0.83). Activities at home with parents (such as singing, playing games, doing chores, etc) have a statistically significant negative impact on math score of -0.06 point. This last result was not statistically significant in the previous models. Apart from the number of children's books at home, all of the other variables have lost some of their impact compared to model 3 fall and model 3 spring.

Many parental involvement variables from the spring have a statistically significant positive impact on the math score: frequency the child is reading (1.00), out of home activities such as music or art classes (0.43), volunteering at school (0.58), fundraising at school (0.34) and attending events at school (0.75). On the other hand,

three variables have a statistically significant negative impact on math score: number of hours watching TV (-0.24), attending parent advisory meetings (-0.77) as well as parent-teacher conference (-0.54).

In the spring of K, children of Mexican immigrants are performing lower than children of natives in math, while children of Chinese immigrants are performing higher than their native counterparts. However, these differences are smaller in the spring than they were in the fall of K. Like in the fall models, results from the spring of K suggest many factors that explain these differences. First, while demographic factors play an important role, some of them stand out such as having a mother who does not have a high school degree and going to K half day instead of a whole day. Once again, these factors negatively impact the children of Mexican immigrants more than the children of natives. Second, like in the fall, the negative impact of speaking a non-English language at home is important on children of immigrants' math performance in the spring. Once again, this negative effect is attenuated with the inclusion of parental involvement variables. Third, controlling for parental involvement variables decreases the gap in math score between children of Mexican parents and children of natives while it increases the gap in math score between children of Chinese parents and children of natives like it did in the fall. Chinese parents still have a strong positive impact on their child's math score in the spring of K. These results demonstrate how much more needs to be learned in order to understand the impact Chinese parents have on their child’s math performance.

Finally, when combining the effects of both the fall and spring parental involvement variables into the regression, children of Mexican parents decrease their gap with children of natives by 1.01 point, representing a reduction of 10.6% (from model 2

spring to model 4 spring), while children of Chinese parents increase their gap with children of natives by 7.9%. The negative impact of having a parent who speaks a non-English language at home on children of immigrants' math performance is still significant in the spring (0.59 point). However, parental involvement variables play an important role in attenuating the negative impact of speaking a non-English language at home on math score by 40% (from -0.98 in model 2 spring to -0.59 point in model 4 spring).

In summary, results show that combining the effects of both fall and spring parental involvement into the regression decreases even more the gap in math score between children of Mexican parents and children of natives while it increases the gap in math score between children of Chinese parents and children of natives (from Model 2 spring to model 4 spring). Together also, fall and spring parental involvement variables attenuate even more the negative impact of speaking a non-English language at home on children of immigrants' math performance in the spring. Parental involvement has an impact on math achievement. Children of Chinese parents having particularly high math scores, we need to understand better the cultural and family factors with which the Chinese parents impact on their child's high level of math achievement.

Parents' Educational Attainment

Another very interesting finding from this research is the effect parental involvement variables have in decreasing substantially the negative impact parents' educational attainment has on their child's math score in the fall and the spring of K. For example, by including parental involvement in the regression, the negative impact of fathers with less than a high school degree on their child's math score decreases by 42%, from -1.90 point in Model 2 spring to -1.10 point in Model 4[4]. On the other hand, the

more parents have a high level of educational attainment, the more parental involvement variables decrease the positive impact parents' educational attainment has on their child's math score. As an example, the positive impact of mothers having at least a baccalaureate degree decreases by 26% (from 1.61 point in Model 2 spring to 1.19 point in Model 4). Since 25% of children of immigrants have parents with less than a high school degree, compared to 6% to 8% of the children of natives, parental involvement seems a good avenue to pursue to raise children of immigrants' math achievement.

Whole/Half Day Kindergarten

An additional finding from this research is that students who go to school for only a half-day do worse in math than children who go to school for a whole day. But even more noticeable, is the fact that from the fall to the spring, the gap in math score between the students who go to school a half-day and a whole day increases noticeably from 39% to 51% (from -0.85 Model 2 fall to -1.73 Model 2 spring, Half Day AM; from -0.84 Model 2 fall to -1.38 Model 2 spring, Half Day PM). This last result supports previous research findings. Entwisle et al. (1987), using a large representative sample of Baltimore's first graders, analyzed the impact of the students' kindergarten experience on their first-grade performance. They found that going to kindergarten longer was having early positive effects on cognitive status, more for black students than for white students. According to Puleo (1988), full- and extended-day kindergarten has positive impact on basic academic skills. As for Karweit (1988), she found that longer kindergarten day have short-term benefits, especially for disadvantaged students. All these findings demonstrate that full day kindergarten represents an important avenue to consider, especially for children of immigrants while many of them begin school at a disadvantage. It is

interesting to point out however that parental involvement attenuates these negative effects by about 21% to 23% (from -1.73 Model 2 spring to -1.50 Model 4, Half Day AM; from -1.38 Model 2 spring to -1.06 Model 4, Half Day PM).

CONCLUSION

For many years, studies have been trying to understand the long-lasting Black-White academic achievement gap (Jencks & Phillips, 1998). Today, as a consequence of globalization, researchers will also need to study the achievement gaps between children of immigrants and children of natives. So much more needs to be known about children of immigrants. Because every parent is involved in his/her child's education in one way or another, parental involvement is a potentially interesting factor to consider in studying children of immigrants' educational success compared to that of children of natives.

This paper studied the impact of parental involvement on the gap in Mathematics scores between children of immigrants and children of natives in the fall and in the spring of kindergarten.

In addition to four parental involvement categories (learning in home, learning out of home, choice of school and parental involvement at school), the role of language, parents' educational attainment, as well as half vs. whole day in K, were also analyzed. This study demonstrates that parents' involvement has a statistically significant positive impact on children's math score. Controlling for parental involvement reduces the gap between children of natives and children of Mexican parents by 10% in the spring of K. In the case of children of Chinese parents, controlling for parental involvement increases the gap with children of natives by 7.9% in the spring of K. In the spring of K, children of Chinese are scoring 7 points higher than children of natives, doing strikingly better than

their American counterparts. Speaking a non-English language at home has a negative impact on math score. However, when controlling for parental involvement variables, its negative impact decreases by a third of a point from the fall to the spring of K. The inclusion of parental involvement variables reduces the impact of the educational attainment of parents on their child's math achievement especially for fathers with less than a high school degree, where its negative impact decreases by almost a whole point. Finally, the benefits of going to school all day instead of half day are great, leading to almost one point difference in math score in the spring.

Because many variables were having a significant positive impact on the educational achievement of children of immigrants and children of natives, the impact of these variables should continue to be studied. In addition, it would be interesting to continue looking at the impact of parental involvement on attenuating the effects of parents' educational attainment. This would be especially important for the children of Mexican parents who have the largest gap in math score with the children of natives and who also have large proportion of the parents who do not have a high level of educational attainment (no HS degree: 25% Mexican parents vs 8% native parents).

One important point these results clearly demonstrate is that children of immigrants are far from having a uniform status. Some of them are performing significantly better than children of natives while others are far behind. One avenue to consider would be to try to learn more about what it is that the Mexican parents are already doing to get involved in their child's education. This knowledge could help teachers and parents working more efficiently together. Another question would be to understand what are the causes that make the children of Chinese parents perform so well

in math. Since it does not seem to be parental involvement only as defined in this paper, what is it?

As for the limitations, it is important to note that what may be seen as a causality may only be a correlation as the result of omitted variables. Second, as mentioned previously, children who failed the English proficiency test and did not speak Spanish were eliminated from the math sample. At this point, the math sample excludes all the children who have difficulties speaking English, and do not speak Spanish, which for the large majority we can assume are children of immigrants. It is important to note the ways in which this sample can be biased. The first consequence from the elimination of all these children of immigrants who are not proficient in English or Spanish could be that it created a bias toward the bottom for children of Mexican parents. It is quite possible that the children who were eliminated from the sample would have done worse than the children of Mexican parents. In other words, if these children who were not English proficient were included in the sample, chances are that they would have ended up at the lower end of the math score distribution because many of these children of immigrants would have had very little English exposure. This means that these children of immigrants may have had even more difficulties at school than children of Mexican parents. Another sample's bias comes from the fact that children, who were identified by their teacher as Spanish speaking, were tested for their proficiency in Spanish. Whatever their result, none of them were eliminated from the sample. It could be that many of these children do not know very well how to communicate in Spanish. We can think here of all these children who just arrived from a rural background in Mexico and who do not know how to speak Spanish very well. Third, another limitation is that we do not know about

actions that the children of immigrants' parents are doing that could be unknown from the main stream culture but that may have a positive impact on their child's educational outcomes. On the other hand, it is also important to outline the fact that immigrant parents' influence on their children academic performance may be hindered by low self-esteem as found by a previous study on Asian immigrant youth by Bankston III and Shou (2002). Fourth, looking only at math scores, this study has not considered the impact of parental involvement on the behavioral outcomes of young children of immigrants.

The results of this study offer many reasons to be optimistic about the math achievement of children of immigrants, leading to concrete policies and practices. First, the negative impact of having a parent who speaks a non-English language at home decreases with time. However, since it has a very big impact on the children's math score, classes, such as English as a Second Language (ESL), should be implemented and be easily accessible to parents even before their children start K. In addition, while it is difficult to improve the educational attainment of parents, parental involvement however seems successful in attenuating the impact of the low education of these parents on their child's math score. There are many aspects of parents' involvement that can be fostered at school, at home and in the community. The results of this study show that parental involvement should be promoted among children of immigrants, especially children of Mexicans. Literacy activities should be encouraged and presented as a substitute for TV. Programs to improve access to daycare centers such as more information and lower cost should also be implemented. Involvement at school could also be encouraged for the parents, such as volunteering, fundraising and attendance of school events.

Finally, increasing the number of students going to school full-day for K, especially in the case of students with parents with high risk factors such as speaking non-English at home and having low educational attainment would be a promising measure to consider in order to improve their performance in math.

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Table 1: Math Outcomes at School Entry and in the Spring of Kindergarten Sample Means

Unless specified, all the data have been collected in Fall 1998 and Spring 1999 of Kindergarten and are given in percentage of the total sample.

	All	Child of Immigrants Total	Child of Mexican	Child of Chinese	Other Child of of Immigrants	Child of Natives
Math Test Score (score)						
Fall 1998	51.3	48.6	42.4	60.4	51.4	51.9
Spring 1999	51.4	49.3	43.7	59.7	51.8	51.9

Table 2: OLS Estimates of the Effects of Child being and Immigrant and Demographics on the Gap in Math Score between Children of Immigrants and Children of Natives in the Fall and in the Spring of Kindergarten

	Fall (1)	Spring (1)	Fall (2)	Spring (2)
Child Characteristics				
Mexico	-9.48**	-8.24**	-4.24**	-4.00**
	(0.41)	(0.47)	(0.42)	(0.45)
China	8.52**	7.81**	6.19**	5.70**
	(1.26)	(1.05)	(1.08)	(1.06)
Other Children of Immigrants	-0.48	-0.13	-1.26**	-0.91**
	(0.39)	(0.38)	(0.28)	(0.27)
Boy			-0.52**	-0.15
			(0.15)	(0.15)
Age			0.59**	0.52**
			(0.02)	(0.02)
Height			2.79**	3.03**
			(0.60)	(0.62)
Weight			-0.02	-0.02
			(0.01)	(0.01)
Low weight at birth			-1.45**	-1.13**
1500-2500 grams			(0.30)	(0.31)
Very low weight at birth			-3.63**	-3.62**
<1500 grams			(0.74)	(0.84)
Black Native			-2.23**	-3.49**
			(0.31)	(0.32)
Hispanic Native			-1.82**	-1.63**
			(0.34)	(0.34)
Asian Native			0.53	-0.25
			(0.85)	(0.80)
Indian Native			-3.65**	-2.65**
			(0.84)	(0.90)
K AM			-0.84**	-1.73**
			(0.22)	(0.24)
K PM			-0.82**	-1.37**
			(0.25)	(0.28)
Assessment in September			-1.20	1.78**
			(0.64)	(0.65)
Assessment in October			-1.48**	1.15*
			(0.49)	(0.52)
Assessment in November			-0.87	0.49
			(0.48)	(0.51)
Assessment in April			1.36	0.66
			(0.80)	(0.77)
Assessment in May			1.05	1.33
			(0.81)	(0.77)
Assessment in June			0.58	1.95*
			(0.91)	(0.89)

Family Characteristics				
Number of children			-0.63**	-0.51**
			(0.07)	(0.08)
Single parent			0.19	0.40
			(0.42)	(0.45)
Blended family			-0.68*	-0.57*
			(0.29)	(0.29)
Adoptive family			-1.54**	-1.45**
			(0.51)	(0.54)
City			1.06**	0.69*
			(0.25)	(0.28)
Town			1.23**	0.88**
			(0.25)	(0.28)
North			-0.78*	-1.56**
			(0.32)	(0.35)
South			-0.52	-0.64*
			(0.29)	(0.30)
MidWest			-0.77*	-0.90**
			(0.30)	(0.31)
Father less than HS			-2.52**	-1.93**
			(0.34)	(0.35)
Father at least HS			-0.89**	-0.78**
			(0.22)	(0.22)
Father at least Baccalaureate			1.52**	1.21**
			(0.24)	(0.24)
Mother less than HS			-3.66**	-3.60**
			(0.31)	(0.32)
Mother at least HS			-1.51**	-1.37**
			(0.19)	(0.20)
Mother at least Baccalaureate			1.70**	1.59**
			(0.22)	(0.22)
Father works FT			0.75*	0.81*
			(0.33)	(0.34)
Father works PT			1.10	1.33*
			(0.60)	(0.59)
Mother works FT			-0.58**	-0.44*
			(0.19)	(0.20)
Mother works PT			0.21	0.32
			(0.21)	(0.22)
Mother worked prior to birth			-0.09	-0.17
			(0.20)	(0.20)
Income (in $10,000)			0.00**	0.00**
			(0.00)	(0.00)
Poverty Level			-1.52**	-1.48**
			(0.25)	(0.26)
WIC			-2.05**	-1.74**
			(0.20)	(0.20)
Observations	12637	12637	12637	12637
R-squared	0.06	0.05	0.34	0.30

** p<.01; *p<.05

Notes: Model 1: Immigration status only. Model 2: Adds demographic variables: Child characteristics (age, gender, birth weight, weight, height, race and ethnicity, time child goes to K, time of assessment) and Parents' characteristics (number of children in household, family structure, city vs. rural residency, region of country, mother's education, father's education, mother's employment status, father's employment status, early maternal employment, age at first birth, poverty measure, use of WIC, income).

Table 3: OLS Estimates of the Effects of Parental Involvement and Immigration Characteristics on the Gap in Math Score between Children of Immigrants and Children of Natives in the Fall and in the Spring of Kindergarten

	Fall (1)	Spring (1)	Fall (2)	Spring (2)	Fall (3)	Spring (3)	Spring (4)
Mexico	-4.24**	-4.00**	-3.24**	-3.23**	-2.56**	-2.56**	-2.21**
	(0.42)	(0.45)	(0.47)	(0.50)	(0.46)	(0.50)	(0.49)
China	6.17**	5.70**	7.28**	6.55**	7.97**	6.96**	7.22**
	(1.09)	(1.06)	(1.13)	(1.10)	(1.15)	(1.11)	(1.10)
Other Children	-1.27**	-0.91**	-0.62*	-0.40	-0.10	0.07	0.29
Of Immigrants	(0.28)	(0.27)	(0.30)	(0.30)	(0.29)	(0.30)	(0.29)
Father Less Than	-2.52**	-1.93**	-2.48**	-1.90**	-2.06**	-1.57**	-1.10**
High School	(0.34)	(0.35)	(0.34)	(0.35)	(0.34)	(0.35)	(0.34)
Father At Least	-0.89**	-0.78**	-0.88**	-0.78**	-0.70**	-0.62**	-0.43
High School	(0.22)	(0.22)	(0.22)	(0.22)	(0.22)	(0.22)	(0.22)
Father At Least	1.52**	1.21**	1.54**	1.23**	1.36**	1.08**	0.91**
Baccalaureate	(0.24)	(0.24)	(0.24)	(0.24)	(0.24)	(0.24)	(0.24)
Mother Less	-3.66**	-3.60**	-3.59**	-3.55**	-2.71**	-2.83**	-2.26**
Than High School	(0.31)	(0.32)	(0.31)	(0.32)	(0.30)	(0.31)	(0.32)
Mother At Least	-1.51**	-1.37**	-1.49**	-1.36**	-1.04**	-0.99**	-0.64**
High School	(0.19)	(0.20)	(0.19)	(0.20)	(0.19)	(0.20)	(0.20)
Mother At Least	1.70**	1.59**	1.72**	1.61**	1.40**	1.33**	1.19**
Baccalaureate	(0.22)	(0.22)	(0.22)	(0.22)	(0.21)	(0.22)	(0.21)
K in am (F)	-0.84**	-1.73**	-0.85**	-1.73**	-0.67**	-1.61**	-1.50**
	(0.22)	(0.24)	(0.22)	(0.24)	(0.21)	(0.25)	(0.24)
K in pm (F)	-0.82**	-1.37**	-0.84**	-1.38**	-0.58*	-1.21**	-1.06**
	(0.25)	(0.28)	(0.25)	(0.28)	(0.25)	(0.28)	(0.28)
Parents speak			-1.26**	-0.98**	-0.92**	-0.62*	-0.59*
Non-English			(0.29)	(0.30)	(0.28)	(0.29)	(0.29)
FALL Parent Involvement							
Literacy Activities					0.13	0.08	-0.00
At home					(0.07)	(0.07)	(0.07)
Other Activities					-0.02	-0.02	-0.06*
At Home					(0.02)	(0.02)	(0.02)
# Of Children's					0.01**	0.01**	0.01**
Books at Home					(0.00)	(0.00)	(0.00)
# of CD, Tapes					0.01	0.01	0.00
At Home					(0.00)	(0.00)	(0.00)
Child Reading					0.52**	0.18	0.09
					(0.09)	(0.11)	(0.11)
Child Looking					0.14	0.42**	0.20*
Picture Books					(0.10)	(0.10)	(0.10)
TV At Home					0.00	0.00	0.00
					(0.00)	(0.00)	(0.00)
Watch Sesame					0.10	-0.12	-0.07
Street					(0.15)	(0.15)	(0.15)
Year Before K					1.86**	1.31**	1.11**
Center Care					(0.22)	(0.22)	(0.22)
Year Before K					0.27	-0.39	-0.35
Head Start					(0.31)	(0.31)	(0.31)
Year Before K					0.52	0.28	0.29
Other Care					(0.28)	(0.29)	(0.28)

Nonrelative					0.29	0.07	-0.01
Care					(0.21)	(0.25)	(0.25)
Center Care at K					0.29	0.25	0.21
					(0.25)	(0.21)	(0.21)
Private School					1.27**	0.96**	0.83**
					(0.25)	(0.28)	(0.27)
Parent Met With					1.62**	0.91	0.53
Teacher					(0.56)	(0.56)	(0.56)
SPRING Parental Involvement							
Activities With							-0.12
Parents							(0.07)
Child Reading							1.00**
							(0.09)
Child Looking At							-0.16
Picture Books							(0.12)
# Of Hours							-0.24**
Watching TV							(0.07)
Computer At							2.23
Home							(1.71)
# Of Hours Using							0.28*
Computer							(0.13)
Out Of Home							0.43**
							(0.06)
PTA Meeting							0.27
							(0.17)
Open House At							0.32
School							(0.20)
Parent Advisory							-0.77**
							(0.24)
Volunteer							0.58**
							(0.16)
Parent-Teacher							-0.54*
Conference							(0.25)
Fundraising							0.34*
							(0.17)
Attend Events At							0.75**
School							(0.18)
Observations	12637	12637	12637	12637	12637	12637	12637
R-squared	0.30	0.30	0.30	0.30	0.37	0.31	0.34

**: p<.01; *: p<.05

Notes: Model 1: Immigration characteristics and Demographic variables: Child characteristics (age, gender, birth weight, weight, height, race and ethnicity, time child goes to K, time of assessment) and Parents' characteristics (number of children in household, family structure, city vs. rural residency, region of country, mother's education, father's education, mother's employment status, father's employment status, early maternal employment, age at first birth, poverty measure, use of WIC, income). Model 2: Model 1 and Language variables. Model 3: Model 2 and Parental Involvement Variables.

Appendix 1: Demographic and Other Sample Means

Unless specified, all the data have been collected in Fall 1998 of Kindergarten and are given in percentage of the total sample.

	All	Child of Immigrants	Child of Natives	Significance Test[5] (p-value)
Children's Characteristics				
Child age (in months)	68	67	68	0.00*
Child gender/Male	50.3	49.7	50.4	0.56
Birth weight				
<1500 grams	0.9	0.7	1.0	0.12
1500-2500 grams	6.1	6.3	6.1	0.74
Child weight (in pounds)	46.3	46.1	46.3	0.43
Child height (in inches)	3.7	3.7	3.7	0.00*
Race and ethnicity				
White	65.1	26.7	74.3	0.00*
Black	13.1	5.8	14.9	0.00*
Hispanic	16.0	50.1	7.8	0.00*
Asian	4.0	17.2	0.9	0.00*
When child goes to K				
In the morning	27.5	31.1	26.6	0.00*
In the afternoon	18.2	19.5	17.9	0.07
All day	54.3	49.4	55.5	0.00*
Timing of assessment				
September	4.2	5.2	3.9	0.00*
October	46.7	43.3	47.5	0.00*
November	44.4	45.1	44.2	0.39
December	4.8	6.3	4.4	0.00*
Timing of assessment (Spring 1999)				
March	1.0	0.6	1.1	0.01*
April	39.5	34.0	40.9	0.00*
May	53.8	55.9	53.3	0.02*
June	5.6	9.6	4.6	0.00*
Parents' Characteristics				
# of children in household (number of children)	2	3	2	0.00*
Family structure (Spring 2000 of K)				
Two biological parents	70.2	79.7	68.0	0.00*
Single parent	18.7	13.8	19.9	0.00*
Blended family	7.6	4.8	8.3	0.00*
Adopted or foster parents	3.4	1.7	3.8	0.00*
City vs. rural residency				
City	38.2	53.8	34.6	0.00*
Town	39.3	38.7	39.5	0.47
Rural	22.5	7.5	26.0	0.00*
Region of country				
West	20.9	40.5	16.3	0.00*
North	19.3	19.0	19.4	0.71
South	26.8	12.8	30.2	0.00*
Midwest	32.9	27.7	34.2	0.00*

Mother's education				
Less than high school	11.4	26.6	7.7	0.00*
High School + Voc. School	34.6	27.9	36.2	0.00*
Some College	26.9	19.7	28.7	0.00*
Bachelor Degree + Advanced Degree	25.6	24.6	26.0	0.15
Missing	1.3	1.2	1.3	0.54
Father's education				
Less than high school	9.6	23.4	6.3	0.00*
High School + Voc. School	29.6	24.5	30.9	0.00*
Some College	17.5	12.5	18.7	0.00*
Bachelor Degree + Advanced Degree	25.9	26.8	25.6	0.22
Missing	17.4	12.8	18.6	0.00*
Mother's employment status				
Full-time	44.9	40.4	45.9	0.00*
Part-time	22.1	16.4	23.5	0.00*
No work	33.0	43.1	30.6	0.00*
Father's employment status				
Full-time	73.2	75.2	72.7	0.01*
Part-time	2.8	4.1	2.5	0.00*
No work	24.0	20.6	25.0	0.00*
Prior maternal employment (A point in time between childbirth and K)	72.6	60.7	75.4	0.00*
Use of Wic	42.1	48.2	40.7	0.00*
Family in poverty	16.9	26.2	14.7	0.00*
Income (in $)	55,980	47,956	57,901	0.00*

Appendix 2: Children of Immigrants' Means

Unless specified, all the data have been collected in Fall 1998 of Kindergarten and are given in percentage of the total number of children of immigrants in the sample (2441).

	Children of Immigrants
Language	
Mother speaks to Child another language than English	71.8
Father speaks to Child another language than English	74.1
Child speaks to Mother another language than English	65.8
Child speaks to Father another language than English	67.1
Country of Origin (Spring 2000)	
Mother's country to birth	
U.S. Natives	16.5
Puerto-Rico	2.3
Mexico	28.7
Caribbean	5.3
Central America	7.0
South America	5.4
Canada & Europe	8.0
China	1.5
India	3.1
Philippines	7.9
Other countries in Asia	10.6
Africa	1.7
Other countries	1.5
Missing Mother's country of birth	0.5
Father's country of birth (Spring 2002)	
U.S. Natives	13.6
Puerto-Rico	1.6
Mexico	22.9
Caribbean	2.6
Central America	4.6
South America	3.4
Canada & Europe	5.6
China	1.0
India	2.5
Philippines	5.1
Other countries in Asia	8.6
Africa	1.7
Other countries	2.0
Missing Father's country of birth	24.8
Citizenship	
Mother is a U.S. citizen (Spring 2000)	58.1
Father is a U.S. citizen (Spring 2002)	57.9
Child is a U.S. citizen (Spring 1999)	89.9

Appendix 3: Parental Involvement

Unless specified, all the data have been collected in Fall 1998 of Kindergarten and are given in percentage of the total sample.

	All	Child of Immigrants	Child of Natives	Significance Test[6] (p-value)
*Cognitive learning at home**				
Literacy activities parent with child				
Read a book to child	3.27	3.15	3.30	0.00*
Tell stories to child	2.75	2.77	2.74	0.03*
Home learning activities parent with child				
Building things	2.35	2.27	2.37	0.00*
Teaching about nature	2.22	2.05	2.26	0.00*
Playing sports	2.66	2.46	2.71	0.00*
Doing art	2.67	2.58	2.69	0.00*
Doing chores	3.27	3.04	3.32	0.00*
Singing songs	3.10	2.90	3.15	0.00*
Playing games	2.80	2.69	2.82	0.00*
# of children's books in home	76.69	47.57	83.66	0.00*
# of music tapes, CDs, or records in home	15.67	12.35	16.47	0.00*
Child reading outside of school (frequency)	2.98	2.95	2.98	0.13
Child looking at picture books (frequency)	3.31	3.17	3.35	0.00*
Watch Sesame Street	59.9	70.8	57.2	0.00*
TV at home	98.7	99.3	98.6	0.01*
Spring 1999				
Learning activities parent with child				
Visited the library	53.7	52.3	54.0	0.25
Gone to a play, concert, show	38.3	34.2	39.4	0.00*
Visited a museum	30.7	30.1	30.9	0.64
Child reading outside of school (frequency)	2.93	2.94	2.93	0.36
Child looking at picture books (frequency)	3.39	3.27	3.42	0.00*
Child watching TV (hours per day)	1.77	1.84	1.75	0.00*
Have home computer child uses	56.9	46.2	59.6	0.00*
Child using computer at home (frequency)	1.5	1.2	1.6	0.00*

*Frequency is number of times per week: 1= Not at all, 2= Once of twice a week, 3= 3-6 times, 4=Everyday

Cognitive learning out of home				
Center-Based Care PreK	60.0	48.9	62.6	0.00*
Head Start PreK	10.8	11.3	10.6	0.33
Parental Care PreK	17.4	27.0	15.1	0.00*
Other Care PreK*	11.9	12.8	11.7	0.12
*Other care is non-parental care such as a nanny, babysitter, or family day care				
Relative Now	17.9	18.9	17.6	0.12
Non relative Now	10.6	7.6	11.3	0.00*
Center Now	17.2	11.5	18.5	0.00*
Spring 1999				
Takes dance lessons	18.1	13.2	19.3	0.00*
Participate in athletic event	46.6	27.5	51.5	0.00*
Participate in organized clubs	14.0	6.0	16.0	0.00*
Take music lessons	8.0	9.7	7.5	0.00*
Take drama classes	1.6	1.2	1.7	0.12
Take art lessons	7.3	6.4	7.5	0.21
Participate in organized performing	14.4	8.7	15.8	0.00*
Take craft classes	10.7	6.2	11.9	0.00*
Choice of School				
Choice of Private/Public school	21.4	17.2	22.4	0.00*
Parental involvement at school				
Parent has already met with the teacher at least once	97.7	96.1	98.1	0.00*
Spring 1999				
Attended an open house	73.7	63.6	76.3	0.00*
Attended a PTA meeting	34.8	36.0	34.5	0.08
Attended a parent advisory group	8.9	9.1	8.8	0.64
Attended parent-teacher conference	84.1	81.0	84.9	0.00*
Attended a school event	67.2	52.4	71.0	0.00*
Acted as a school volunteer	50.1	37.0	53.5	0.00*
Participated in fundraising	60.2	47.1	64.3	0.00*