

ABSTRACT

Title of Document: THE HOME LITERACY ENVIRONMENT
AND CHILD DEVELOPMENT: ACADEMIC
ACHIEVEMENT AND SOCIAL SKILLS OF
CHILDREN IN IMMIGRANT FAMILIES.

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The home literacy environment has been shown to be crucial to young children's academic achievement and social skills. This study examines the longitudinal effects of home-based literacy related activities on children's academic achievement test scores and social skills from kindergarten up to 5th grade. To conduct this study, data from the Early Childhood Longitudinal Study – Kindergarten Class of 1998-99 (ECLS-K), provided by the U.S. Department of Education, were utilized. Children with at least one immigrant parent were categorized according to their mother's country of origin: South America, Mexico, Caribbean/Central America, East Asia, Southeast Asia, other countries, and the U.S. (with a foreign-born father). Using a latent difference score model, parental involvement and reading activity at home were linked to children's academic achievement test scores and social skills at kindergarten, along with changes in scores between each time point.

Results of analyses suggest that boys benefit more from parents' involvement at home than do girls. Both boys' and girls' independent reading appear to be strongly linked to developing strong reading and math skills. More parental involvement and

their independent reading benefited boys' self-control and interpersonal skills, but it did not have that benefit for girls. In addition, there were substantial differences in the effects of parental involvement and children's reading activity on children depending on mother's country of origin. The reading and math score of children of East Asian and Southeast Asian mothers benefited from their independent reading activity, whereas the scores of children of Latin-origin mothers benefited from both parental involvement at home and reading activity. For children of Mexican and Caribbean/Central American descent, especially, parental involvement had a continuing significant effect on math and reading scores up to 5th grade. Similarly, compared to other immigrant groups, the social skills of Latin American-origin boys were influenced more by parental involvement at home, and those of Southeast Asian-origin boys were influenced more by reading time at home.

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IMMIGRANT FAMILIES.

By

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Chapter 1: Introduction

Currently, nearly one in four U.S. children under the age of 18 is an immigrant or the child of immigrant parents (Child Trends, 2010). Thirty-six percent of immigrant children are being raised in households that use a language other than English, and 27 percent of immigrant children live in poverty (Child Trends, 2010), factors that lead to a heightened risk of being unprepared for and performing poorly in school (Fortuny, Hernandez, & Chaudry, 2010). However, these children's educational outcomes have often been observed to vary, depending on their parents' country of origin. Children of Asian immigrants appear to have better educational outcomes, for example, whereas Mexican and Caribbean immigrant children have worse educational outcomes (Harris, Jamison, & Trujillo, 2008).

In an effort to identify factors that contribute to the observed educational gaps between different immigrant groups, this study focuses on the effects of the home environment on children in immigrant families. Researchers have recognized that the home literacy environment is crucial to children's success in school (Auerbach, 1989; Lareau, 1990; Ogbu, 1983). However, there is little research on children in immigrant families, and even less that examines the effects of the home literacy environment over the course of their development. How do immigrant parents use their home environment to further their child's education? Considering the fact that not all immigrant groups value and use home resources equally, how much variation is there in the home literacy environment, and its effects on children, among different ethnic immigrant groups? In addition, is the home literacy environment less influential on children as they grow older, as seems to be the case among children of U.S.-born

parents (Davis-Kean, 2005)? Some cultures expect children to be more responsible for meeting their parents' expectations and exemplifying family values as they grow older (Markus & Kitayama, 1991; Szapocznik & Kurtines, 1993), whereas other cultures, e.g., European American, expect older children to be more independent and, therefore, demonstrate a greater respect for the child's own interests (Delgado-Gaitan, 1994; Le & Stockdale, 2005). Thus, the continuing effects of the home literacy environment on children may vary, depending on cultural affiliations. If so, does this variation help explain academic achievement gaps between different ethnic immigrant groups?

In order to answer these questions, this study uses the ecological perspective to examine the effects of the home literacy environment on children in immigrant families. Children's academic skills in language and mathematics were examined together as indicators of their achievement; children's social and emotional skills, e.g., self-control and interpersonal skills, which are important antecedents to school success (Barnett, 1995), were also examined.

Chapter 2: Theoretical Framework and Literature Review

Theoretical framework: Ecological perspective

This study adopts Bronfenbrenner's ecological perspective to understand the influence of the home literacy environment on children, possible differences in the home literacy environment across immigrants of different ethnic origin, and changes in the home literacy environment over time.

The holistic and contextual nature of the ecological perspective has provided a foundation for developing the research questions and hypotheses for this study and organizing the influencing factors pertinent to child development. Bronfenbrenner (1986) viewed behavior as a function of interactions between the person and the environment. The ecological perspective emphasizes that the social contexts in which a person is embedded make significant contributions to development, and that these influences have a persistent effect on future outcomes and development (Bronfenbrenner, 1986; Jessor, 1993).

A child's environment consists of nested systems that have bi-directional influences within and among systems. These are labeled as micro-, meso-, exo-, or macrosystem, according to their place in the hierarchy. The microsystem is a person's experience of direct activities and interactions within a particular setting, such as home or school. The mesosystem includes the interrelations between two or more microsystems – for example, the way in which school exams influence a child's study time at home. Research that examines a mesosystem-level influence provides information not only about the context in which a child is actively involved, but also about the immediate environments that impact interactions occurring within the

setting. The exosystem consists of settings that have indirect effects on a person. For example, a parent's workplace is not a setting in which a child is actively involved, but it may still affect the child indirectly, through the parent's experiences there. The macrosystem is the ideological system or set of beliefs that layers over the other three ecosystems. Gender, political ideology, religion, socioeconomic status, and ethnicity are generally regarded as macro-level influences.

The ecological perspective provides both breadth and depth of understanding when studying child development and the multiple contextual factors that affect developing children. This study examined aspects of children's microsystem that might be influenced by macrosystem-level factors. At the microsystem level, the home literacy environment was examined as a factor that has an influence on children's achievement. At the macrosystem level, how the home literacy environment differs by ethnic group and gender was examined.

Home literacy environment and culture: Macrosystem-level

Ecological theory suggests that child development is affected by the social and cultural context in which the individual is situated. Parents' socioeconomic status and cultural values regarding their children's educational environment determine their children's opportunities in daily life, including the types of activities in which they engage (Hofferth, 2010) and the quantity and quality of the educational materials available to them at home. This means that variations in learning opportunities may occur within the home setting as well as at school. The home setting provides children with various opportunities to observe, experience, and practice skills for use in the real world (Lareau, 1989). Although all parents may desire their children's

success in life, parents' behaviors and practices can differ markedly. According to Rogoff (1990), children's experiences and parent-child interactions vary depending on what activities the family considers to be culturally and socially valued. In other words, differences in children's activities reflect differences in traditions and values held by the parents. Therefore, to understand the effect of the home literacy environment, differences across cultural contexts should be considered. Okagaki and Sternberg (1993) found that parental values among the immigrant parents of first and second graders differed from those of Anglo-American parents. Parents from Cambodia, Mexico, the Philippines, and Vietnam rated developing conformity in their children as being more important than developing autonomous behaviors, whereas American-born parents most valued developing autonomy. Compared to their non-immigrant counterparts, immigrant parents gave higher ratings to non-cognitive skills (motivation, self-management, and social skills) than to cognitive skills (problem-solving, verbal skills, and creativity) when asked to rate their importance in child development. Children of immigrant parents who placed the highest value on conformity exhibited lower language, reading and math test scores.

Slaughter (1987) reviewed literature about the home environment and academic achievement of African American children and found that their parents' different viewpoints on children made for a different set of home literacy environments than those found in the White majority. Even though young African American children received much affective attention from adults, these children had little opportunity for verbal interactions with parents because of adults' point of view on child rearing: they felt that children should be seen and not heard (p. 7). Children's

entering adults' conversation was regarded as impolite, and there were fewer child-centered conversations between parents and children observed in the home. This home atmosphere appeared to be less supportive in terms of children's developing literacy and communication skills.

Schneider and Lee (1986) examined the cultural differences in the value placed on education between 46 East Asian and 49 Anglo students and the resulting effect on their academic performance. Their reason for selecting East Asian students was that the sociocultural characteristics of this group are presumably somewhat unique: as voluntary immigrants who wanted a better quality of life, East Asian parents may place a higher value on education, and this distinctive attitude may be related to higher academic achievement among their children relative to children from other ethnic groups. Using ethnographic interviews and observations of sixth- and seventh-grade students, along with information provided by their parents and teachers, these researchers found that East Asian parents did indeed place a greater value on education. But their high expectations alone did not account for their children's higher academic achievement. Rather, East Asian parents devoted more time to helping their child succeed by means of carefully structured academic-related activities at home.

According to the ecological perspective, it is a natural part of child development for children to extend their living domains as they grow older. However, the expectations and demands along this developmental path vary depending on the culture to which people belong. For example, European/American culture places a greater value on independence and self-reliance for optimal child development

(Delgado-Gaiten, 1994). Expanding the child's contacts to include not just family members but also peers is regarded as crucial for developing autonomy, self-confidence and independence (Elder, 1986). Parents expect increasing detachment and separation from family as their children mature (Le & Stockdale, 2005). This may mean that home-based activities become less important and also less beneficial for older European and American children, and that the out-of-home environment becomes a bigger, more important part of their lives. Meanwhile, parents from Latin or Asian cultures expect their children to take on more responsibilities and to develop an increased sense of familial obligation as they mature (Kim, 2005; Fuligni, Tseng, & Lam, 1999). The effects of parental expectations and the home environment often grow stronger over the course of childhood in these families. Children in Latin/Asian immigrant families also tend to interpret their parents' tight control over daily activities as warmth and acceptance (Kim, 2005; Lau & Cheung, 1987), which benefits their school performance (Chao, 2001). In these immigrant families, then, the home literacy environment may have continuing effects on children as they grow older, and this influence is expected to be positive.

In sum, previous research findings show that immigrant parents, who have different experiences and values than the general population, may hold different educational beliefs and engage in different parenting practices. And these differences are linked to aspects of the child's home environment, such as educational materials and cognitively stimulating parenting practices. In addition, depending on the culture the family holds, the effect of the home environment on children's academic achievement may be operative for a greater or shorter duration; for example, the

effects of the home literacy environment may last until late childhood in some groups, whereas it may well be observable only in younger children in other groups. In other words, distinguishing immigrant families from U.S.-born American families, and further distinguishing among different immigrant groups, is important in understanding the nature of the home literacy environment and its effect on children. It is also important to ensure that ethnic immigrant groups that share a language, have similar economic backgrounds, and hold collective cultural values on child-rearing and education are grouped together (Ogbu, 1983; Schneider & Lee, 1986). For example, Asians can be divided into East Asian and Southeast Asian groups; East Asians are generally characterized as “model minorities” and outperform Southeast Asians in academic achievement test scores (Kao, 1995). Chao and Tseng (2002) reviewed Asians' parenting practices and their effects on children, and described the main difference between these two Asian groups in terms of children's achievement: East Asian parents had higher parental expectations (e.g., disappointment over their child not getting a high grade on a test) compared to Southeast Asian parents, and these expectations were positively associated with the academic achievement of students in elementary school and middle school. In a similar vein, Mexican-origin families are distinct from other Latino immigrant groups in terms of familial background and child educational outcomes. Among racial/ethnic minority parents raising young children in America, Mexican-origin parents were less likely to be proficient in English and more likely to have low socioeconomic status than those from other Latino countries (Cabrera, Shannon, West, & Brooks-Gunn, 2006). Mexican-origin immigrant mothers were less sensitive and responsive to fostering

their young children's cognitive and socioemotional growth than were other mothers of Latin American origin, which was closely related to young children's mental and motor development (Cabrera, Shannon, West, & Brooks-Gunn, 2006).

Home literacy environment and gender: Macrosystem-level

Gender gaps in the domain of academic success and socioemotional behaviors have been observed. The pattern that girls perform better in reading and boys do better in math was consistently observed in U.S. children (Perie & Moran 2005). And girls exhibit better social skills than boys, a pattern that begins in early childhood and persists into the pre-school and elementary school years (Entwisle, Alexander, & Olson, 2007).

Andre and his colleagues (1999) identified parents' stereotypes about the differences between boys and girls in the educational domain using a sample of parents of fourth grade children. These parents tended to view math as more important for sons, and language skills and reading as more important for daughters. They were more likely to expect and encourage their sons to do better in mathematics and science than they were to encourage their daughters in these subjects (Eccles, Jacobs, & Harold, 1990). Davis-Kean (2005) studied 868 8-12-year-old European American and African American children and found gender differences in children's achievement and reading behaviors at home. Girls from both groups showed a higher level of engagement on a reading activities scale that was composed of two items reported by the parents: frequency of reading for enjoyment and number of books the child has. They also showed higher scores on reading than did boys. Child gender difference in interactions with parents was observed in a review of literature on this

topic (McHale, Crouter, & Whiteman, 2003); parents used more supportive speech with girls than with boys, and more directive speech with boys than with girls. At home, children often choose sex-typed activities. For example, girls are significantly more likely to do school work and communicate with others on the computer, whereas boys are likely to use the computer to play games (Hofferth, 2010; Louie, 2003).

In sum, depending on child gender, there are different children's outcomes, parental expectations in the domain of children's academic success, parental attitudes about interacting with children, and sex-typed activities identified when children were allowed to choose what they did. Thus, it is essential to examine gender differences in the home literacy environment if we wish to understand the effects on child outcomes.

Home literacy environment and child outcomes: Microsystem-level

Britto and Brooks-Gunn (2001) identified three dimensions of the family literacy environment: language and verbal interactions, learning climate, and social and emotional climate. The dimension of language and verbal interactions is based on the child's exposure to and use of decontextualized language skills, which is the ability to talk about ideas and nonpresent objects or events. Children who were exposed to more literacy-related interactions, such as talking about a past event or participating in a mealtime conversation, used decontextualized language more often than those who had fewer literacy experiences. The learning climate consists of the presence and availability of, and access to, printed matter in the home. Parents' interactions with the child using printed materials are more likely than direct skill

instruction to lead to the child's more positive attitude toward reading and to better reading skills. The social and emotional climate refers to emotional warmth and motivational support in the home during the child's literacy-related activities. All of these family literacy environment dimensions were significantly associated with better language skills and school readiness in young children of less educated African American mothers. The aspects of the home literacy environment in which parents are directly involved have positive effects, and this is consistent with the ecological perspective: children are not the recipients of what goes on in their environments; rather, children interact with their environment. When it comes to developing children's knowledge and skills, the environment requires the child to actively interact with his or her parents. Children develop their skills in the presence of educational materials and their parents, who have facilitated the availability of those materials. The notion that children interact with their environment also suggests that the patterns and associations between children, parents, and environment may change over time as the dominant environment for children changes (e.g., the primary domain in early childhood is home and parents, whereas for older children, it is school and peers).

This study borrows the concept of the learning climate dimension from Britto and Brooks-Gunn (2001). Factors available in the data that represent the presence of literacy-related experiences and interactions with parents in the home were examined as factors comprising a home literacy environment. Also, changes in the home literacy environment over time during children's middle childhood and early teenage years were examined.

Home literacy environment and child academic achievement

Research has consistently supported the idea that the home literacy environment has a significant positive effect on children's achievement. The effect on children's oral language development, better phonological skills, and print awareness is strong, as the home literacy environment involves interactions with parents through written materials and verbal contact (Burgess, et al., 2002; Senechal & Lefevre, 1996). Especially for young children, home literacy activities, including telling stories to the child, singing songs together, doing arts and crafts together, and visiting libraries, all significantly contribute to the child's cognitive development (Nord, Lennon, & Liu, 1999). Children's mathematical skills are also found to be affected by the home literacy environment (Lin, 2003). Literacy-related activities often involve number-related activities, too. For example, children may be able to learn math skills from the behaviors of turning pages, counting animals/persons or events in a book or conversation, counting scores for games, and remembering past events.

Farver and others (2006) measured parents' involvement in the literacy of 122 Latino children aged 3-4 by asking questions about the frequency of various activities, such as reading to the child, library visits, teaching the alphabet, playing rhyming games, and pointing out words. They found that parents' more direct involvement in, and encouragement of, literacy-related activities at home was associated with children's better receptive vocabulary scores.

Lin (2003) documented the effect of the home literacy environment on kindergarteners using a national sample of 16,083 children from the Early Childhood Longitudinal Study-Kindergarten class; both the home literacy environment and

home cognitive stimulation were significantly associated with kindergarten children's better reading and math test scores. Home resources, e.g., parental interactions and educational materials, were particularly beneficial for racial/ethnic minority children and those in low-income families.

Foster and others (2005) examined 325 Head Start Program children. The home learning environment was constructed using the following items: frequency of reading to child, interpersonal interactions at home (e.g., singing a song, playing games, and helping with arts and crafts), library visits, and the availability of books and reading materials in the home. Results showed that home learning experiences enhanced children's performance on the vocabulary test, phonemic awareness, and language and literacy competence. Parents reading to the child, home literacy activities, and more books and reading materials also appeared to mediate the influence of low socioeconomic status on children's language skills.

Crane (1996) used a National Longitudinal Survey of Youth (NLSY) sample of 1,123 mothers and their children aged 5-9 years old to examine the effects of the home environment on math achievement scores. This study used the Home Observation for Measurement of the Environment (HOME) inventory (Caldwell & Bradley, 1984), which measures the quality of the relation between parents and their child, along with the number of stimulating toys and the quality of the physical environment. He found that, among several familial background factors, the home environment had the most significant impact on children's math test scores. Children who had never been read to by their parents had disproportionately lower math

scores. The relationship between the family's socioeconomic status and children's mathematics scores was attenuated by controlling for the home environment.

The Home Observation of Measurement of the Environment (HOME) inventory was thoroughly and rigorously assessed in a special issue of *Parenting* in 2004, and it was determined that it provided meaningful subscales for children's cognitive development (Linver, Brooks-Gunn, & Cabrera, 2004). Although the effect of home based activities was not as strong for older children as it was for younger children, there were still significant effects of direct verbal interaction with parents and home-based activities provided by parents on increased vocabulary/verbal knowledge, word recognition, and pronunciation ability for children in middle childhood (Han, Leventhal, & Linver, 2004).

A more recent study by Davis-Kean and Sexton (2009) supported previous research on the importance of factors in the home education environment, and also extended an earlier finding that, among racial/ethnic minority families, reading activities with parents at kindergarten continued to influence the reading and math test scores of third-grade children.

Even though there are consistent findings that the environment outside the home becomes increasingly more important as children grow older, a study examining children's daily activity patterns showed that activities structured by parents were critical to children's academic achievement from babyhood until the age of 12 (Hofferth & Sandberg, 2001). Unsupervised activities that took place after school hours had a detrimental effect on 10-12-year-old children's overall school performance in math, science, social studies, and language arts (McHale, Crouter, &

Tucker, 2001). Thus, the home literacy environment is expected to have longitudinal influences over the course of middle childhood.

Home literacy environment and children's social skills

The home literacy environment benefits not only children's reading and math performance, but also their social skills. Children's learning occurs through an internalizing process that involves interpersonal interactions with persons, materials, and the environment. In other words, when children develop knowledge and skills, they achieve this through collaborating with others in various ways, not just because knowledge was transmitted from adults or educational materials to the child (Vygotsky, 1978). Therefore, through the home literacy environment, children's social skills can be expected to develop along with cognitive skills. Foster and others (2005) noted that "children's language competence is associated with better social skills and emotional adjustment in that children who are able to communicate their feelings, and to use language to direct their own and others' behavior, are better able to negotiate social situations and to regulate their own emotions" (p. 14-15). The following is a discussion of the evidence from empirical research on the home literacy environment and its effect on children's social skills.

Foster and others (2005) found that the frequency of parents' reading to child, home literacy activities, and the availability of books and reading materials were significantly associated with positive social functioning, e.g., making friends easily and enjoying learning, and fewer behavior problems in their sample of 325 children aged 3-6 in a Head Start program. The home literacy environment also appeared to mediate the relation between family socioeconomic status and children's social skills.

This study suggested that parents who were socially and economically disadvantaged need to be informed about how to structure their daily interactions with children and the home environment so as to develop young children's linguistic and social skills, which are necessary for their later success in school.

Parents' involvement in literacy-related activities at home was found to promote positive social functioning among Latino children aged 3-4. Children with more involved parents were more likely to exhibit behaviors such as beginning conversations appropriately, volunteering to help their teacher, offering to help other children, smiling at others, showing interest in others' ideas, and having a sense of humor (Farver, Xu, Eppe, & Lonigan, 2006).

Research on American children's time use outside of school also confirmed the benefit of a stimulating home literacy environment on children's socio-emotional behaviors. Well-structured activities that were appropriately monitored by parents or adults were associated with decreased behavior problems (Hofferth & Sandberg, 2001; McHale, Crouter, & Tucker, 2001).

Other significant factors to be considered

Socioeconomic status

Socioeconomic status, as represented by family income and parents' education level, has been used as a characteristic determining financial ability and influencing parents' desires for the types of experiences and opportunities available to children. Children from a higher socioeconomic background outperform children from lower socioeconomic backgrounds in both academic achievement and social skills (Brooks-

Gunn, Duncan, & Britto, 1999; Entwisle & Alexander, 1990; Duncan, Yeung, Brooks-Gunn, & Smith, 1998).

Alexander, Entwisle, and Bedinger (1994) found that parents' expectations of their children vary depending on socioeconomic status. Using data from 790 4th grade children and their parents in the Baltimore area, these researchers suggested that parents with a higher SES, who had themselves been successful in school and the workplace, were more likely to structure appropriate activities for their children and to provide tangible resources at home. In other words, children's higher academic achievement related to higher SES may be explained by the well-structured environment provided by their parents. Britto and Brooks-Gunn (2001) also supported the important role of parenting values; more educated mothers felt that they were more self-empowered to assist their children's education, and provided more learning opportunities and emotional support in the home compared to mothers who had not completed high school.

Davis-Kean (2005) studied the influence of parental income and education on child reading and math test scores. A sample of 868 8-12-year old children was taken from the 1997 Child Development Supplement of the Panel Study of Income Dynamics. Significant relationships emerged between SES and child outcomes; these relationships were mediated through the quality of home-based literacy-related parenting behaviors. The mediating role of the home literacy environment between family socioeconomic status and children's reading and math scores was more significant for African American children than it was for European American children.

Family structure

Family structure may also influence the home literacy environment. Children who live in single-parent families are more likely to be in poverty and have higher risk of developmental delays (McLoyd, 1990). Hofferth and Sandberg (2001) found that American children under 13 years old in single parent families were less likely to engage in structured activities such as reading than were children in two-parent families. Single mothers and employed mothers have very limited time resources to spend with their children on educational activities and interactions at home (Hofferth, Shauman, Henke, & West, 1998).

The locale of residence

Neighborhood characteristics could affect children's educational outcomes in terms of providing more or fewer potentially cognitively stimulating amenities, such as libraries and museums, depending on the size of the city. Froiland (2011) found that parents in small town/rural neighborhoods were less likely to access community educational amenities than were those in larger towns. Rural areas tend to have fewer extracurricular activities and less center-based child care (Fuller, Holloway, & Liang, 1996). The neighborhood environment can affect the home environment, as parents in small towns or rural areas may have a more difficult time obtaining the information and materials they need to facilitate their children's educational activities.

Gaps in the literature

According to research findings, the home literacy environment has effects that go beyond the child's acquisition of specific skills for reading, writing, and

arithmetic: those learning processes occur through interactions between the child and others, which means they are also significantly related to social skills. Some researchers have argued that the benefit of the home literacy environment is more salient for racial/ethnic minority children and those in families with a low socio-economic status. However, there is little research focusing on children in immigrant families, a socio-economically and linguistically disadvantaged population. Additionally, most literature focuses on the influence of the home literacy environment on young children. Even though children are expected to extend their activity domains and experiences out of the home as they grow older, children are still under parental influence whenever they are engaged in activities structured by their parents. The effect of the home literacy environment may last longer for older children in cultures that endorse parent-driven activities (Sy & Schulenberg, 2005). However, there is a lack of research examining the effects of the home literacy environment on children in immigrant families over the course of their development.

Therefore, to fill these gaps in the literature, this study examined changes in the home literacy environment of children in immigrant families during the period from kindergarten to fifth grade, documenting their longitudinal association with changes in children's academic performance and social skills. Concurrently, this study looked at gender differences in the effects of the home literacy environment on children in immigrant families. Given that not all immigrant groups value and use home resources equally, this study also examined how much variation there is in the home literacy environment, and its effects on children, among different ethnic immigrant groups.

Chapter 3: Research Questions and Hypotheses

The primary goal of this study is to examine the longitudinal effects of the home literacy environment on children's academic achievement and social skills in immigrant families. In accordance with the ecological perspective this study adopts, the longitudinal trajectory of microsystem-level influences – namely, the home literacy environment and its relation to children's academic achievement and social skills – were examined. In addition, two macrosystem-level influences, gender and mother's country of origin, were investigated.

As a microsystem-level influence, children's home literacy environment was examined in terms of its effect on children's reading and math performance and interpersonal and self-control skills in school. This study investigated literacy-related activities that might affect children's academic performance and social skills.

This study also attempted to determine whether there was a difference in the relation between the home literacy environment and children's outcomes depending on child gender and/or mother's country of origin. To summarize, the research questions and hypotheses are as follows:

Research question 1.

What is the longitudinal trajectory of the home literacy environment in immigrant families over the time span starting kindergarten and ending in fifth grade? Does it differ by gender and across immigrant groups?

Hypothesis 1. Home-based literacy related activities will decrease over time from kindergarten to 5th grade.

Hypothesis 2. The pattern of change in home-based literacy related activities will differ by gender.

Hypothesis 3. The pattern of change in home-based literacy related activities will differ across immigrant groups.

Research question 2.

What is the longitudinal trajectory of academic achievement test scores and social skills of children in immigrant families over the time span starting in kindergarten and ending in fifth grade? Does it differ by gender and across immigrant groups?

Hypothesis 4_a. Children's reading and math test scores will increase over time from kindergarten to 5th grade.

Hypothesis 4_b. Children's self-control and interpersonal skills will increase over time from kindergarten to 5th grade.

Hypothesis 5_a. The pattern of the growth trajectory for reading and math test scores will differ by gender.

Hypothesis 5_b. The pattern of the growth trajectory for self-control and interpersonal skills will differ by gender.

Hypothesis 6_a. The pattern of the growth trajectory for reading and math test scores will differ across immigrant groups.

Hypothesis 6_b. The pattern of the growth trajectory for self-control and interpersonal skills will differ across immigrant groups.

Research question 3.

Is the home literacy environment associated with children's academic achievement and social skills over the time span starting in kindergarten and ending in fifth grade? Does it differ by gender and across immigrant groups?

Hypothesis 7_a. The home literacy environment will be associated with higher children's reading and math test scores.

Hypothesis 7_b. The home literacy environment will be associated with higher levels of self-control and interpersonal skills.

Hypothesis 8_a. The association between the home literacy environment and children's reading and math test scores will differ by gender.

Hypothesis 8_b. The association between the home literacy environment and levels of self-control and interpersonal skills will differ by gender.

Hypothesis 9_a. The association between the home literacy environment and children's reading and math test scores will differ across different immigrant groups.

Hypothesis 9_b. The association between the home literacy environment and levels of self-control and interpersonal skills will differ across different immigrant groups.

Research question 4.

Are there differences in the association of the home literacy environment with academic achievement and social skills over childhood?

Hypothesis 10. The association of the home literacy environment with children's academic achievement test scores and social skills will be stronger during the earlier time period than during the later time period.

Hypothesis 11. The time period during which the association of the home literacy environment is stronger will differ by gender.

Hypothesis 12. The time period during which the association of the home literacy environment is stronger will differ across immigrant groups.

Chapter 4: Methods

Data

This study uses data from the Early Childhood Longitudinal Study-Kindergarten Class of 1998-1999 (ECLS-K), sponsored by the National Center for Education Statistics division of the U.S. Department of Education (NCES 2006). The participants in the ECLS-K study are children from both public and private schools that attended either full-day or part-day kindergarten programs. The ECLS-K sampled 21,260 kindergarten children from over 1,000 schools, and had tracked the early school experiences of these children through eighth grade by 2007. The survey contains extensive information on children's family background, teacher and school characteristics, and test scores. Data collection for ECLS-K was conducted in the fall and spring of kindergarten, spring of first grade, spring of third grade, spring of fifth grade, and spring of eighth grade, with an additional sub-sample collection of around 30 percent of the original cohort in the fall of first grade. The original ECLS-K sample was nationally representative of kindergarten students in America in 1998-1999. The ECLS-K followed all children who remained in the same school, and also children who transferred schools in first grade, third grade, fifth grade, or eighth grade. The study accounted for these non-random data selection methods by applying proper weights. In this way, findings can be representative of the national population.

The other participants in the ECLS-K include the children's parents, teachers, and school administrators. The parent interview consisted of background information about the parents, such as education level, household income, place of birth, and parental roles, along with information on the home environment, such as number of

parents/siblings in the household and whether parents were biological or adoptive. Teachers and school administrators provided information about the sampled child's academic performance and social skills, and about the school learning environment, such as classroom curriculum, instructional practices, and school resources.

Direct cognitive assessments were conducted by a trained interviewer, who measured the child's knowledge and academic skills in reading, math, and science subjects. Reading and math assessments were taken from kindergarten through eighth grade and science assessments were taken in third, fifth, and eighth grade.

Children's social-emotional skills were rated by teacher, parent and child based on the Social Rating Scale (SRS). The components of the SRS included approaches to learning, self-control, interpersonal skills, externalizing problems, and internalizing problems. The first three indicators capture positive aspects of non-cognitive traits, whereas the last two present problem behaviors. Teachers rated children's social behaviors at each round of data collection, while parents rated children only in kindergarten and first grade, and the children rated themselves in third, fifth, and eighth grade.

Sample

Among the six data waves available, this study uses four data waves for child outcomes: fall kindergarten, spring first grade, spring third grade, and spring fifth grade. The home literacy environment variables were drawn from three data waves: fall kindergarten, spring first grade, and spring third grade. Families in which both parents' countries of origin were identifiable were chosen from the initial sample of 21, 620 children. There were 10,234 families in which both parents were born in the

U.S. or a U.S. territory; 408 families with a foreign-born mother and a U.S.-born father; 469 families with a U.S.-born mother and a foreign-born father; and 2,334 families in which both parents were born somewhere other than the U.S. The current sample is limited to immigrant families, which means at least one of the parents was born somewhere other than the U.S. or a U.S. territory. Cases in which all variables were missing have been excluded; therefore, the final sample size for analysis is 2,613. The immigrant groups were categorized primarily based on mother's country of origin. The rationale for grouping the families is described in the next paragraph separately, along with a review of the relevant literature. South Americans (n=117) include those from Argentina, Brazil, Chile, and Venezuela. Mexican-origin immigrant families (n=787) are distinguished from other Latino-origin families. Central American and Caribbean immigrants are grouped together (n = 292). East Asians (n=232) include children of mothers who were born in China, Japan, India, Hong Kong, or Korea; Southeast Asians (n=414) include children of mothers who were born in Cambodia, Laos, Malaysia, or Vietnam. Children of mothers who were born in Africa, Europe, the Middle East or the Oceania region are grouped together as "other countries" (n=359). Families with a U.S.-born mother and a foreign-born father (n=412) were also included in the analyses. These seven groups comprise the immigrant groups in this study.

Cases that have missing data for some variables were included using full information maximum likelihood estimation in the analyses. A base year weight of C1PWO was used. It encompasses the four waves of assessment data and represents the population of U.S. children who began kindergarten in 1998. The base year

sampling weights adjust for differential selection probabilities and reduce bias associated with non-response by adjusting for differential nonresponse (Tourangeau, Nord, Le, Pollack, & Atkins-Burnett, 2006). A scale of cluster identification was created with strata and PSU identifiers, and was used for adjusting clustered sample problems in the analysis. ECLS-K sample children were clustered within primary sampling units to reduce field costs; thus, children were in closer geographical proximity than would occur in a simple random sample. Using cluster identifications in the analyses, standard errors for estimates from a complex sample were accounted for the within cluster as well as across cluster variation.

Review of rationale for grouping immigrant families.

As Portes and Rumbaut (2001) have emphasized, more studies have been recognizing the importance of diversity within the immigrant population. Given the consideration of within-group variability, this study divided immigrant families into one of seven groups according to the mother's country of origin. The rationale for using maternal nativity is that the divergence in academic performance observed during the early elementary school period (kindergarten to third grade) in immigrant families was better explained by maternal origin than by children's immigrant generational status (Glick & Hohmann-Marriott, 2007). The present study uses mother's national origin to examine possible diverging trends in children's academic performance and social skills, controlling for family socio-economic status (which was not included as a variable in Glick and Hohmann-Marriott's study). The other reason for using mother's country of origin was that this study focuses on home-based activities, and most of the primary caregivers were mothers. The rationale for

distinguishing between mothers of Latino origin and mothers of Asian origin is that substantial differences between these groups have been found in collective cultural beliefs and values having to do with children and education (e.g., priority of education for Asians and *bien educado* for Latinos), their children's educational trajectories, and socioeconomic status before and after immigration (Grieco, 2009). It may seem that when immigrant families are grouped according to their country of origin, it is as if they are merely being grouped according to their socioeconomic status in the U.S., and little has been accomplished. However, even controlling for SES, lower achievement of children from immigrant families of Mexican origin still remained (Harris, Jamison, & Trujillo, 2008). Also, some variations in children's academic performance within the same race group have been explained by national origin; East Asian parents had higher educational expectations than Southeast Asians, and this difference was linked to their children's academic performance (Goyette & Xie, 1999).

Therefore, Latino immigrant families were divided into three groups, South American, Mexican, and Caribbean/Central American origin (see figure 1), and Asians were divided according to whether they were of East Asian or Southeast Asian origin (see figure 2). Lastly, the rationale for including families with a U.S.-born mother and a foreign-born father is that preliminary analysis indicated that the academic achievement and social skills of children in these families were substantially different than those of children from non-immigrant families. And these families were also distinct from families in which both parents were foreign-born and from families with a foreign-born mother and a U.S.-born father. Thus, families with

a U.S.-born mother were grouped separately. Children from families with a U.S.-born father and a foreign-born mother, on the other hand, were similar to children from families with two foreign-born parents, so they were grouped together.

Figure 1. Reading and Math Test Scores of Children in Latino Immigrant Families.

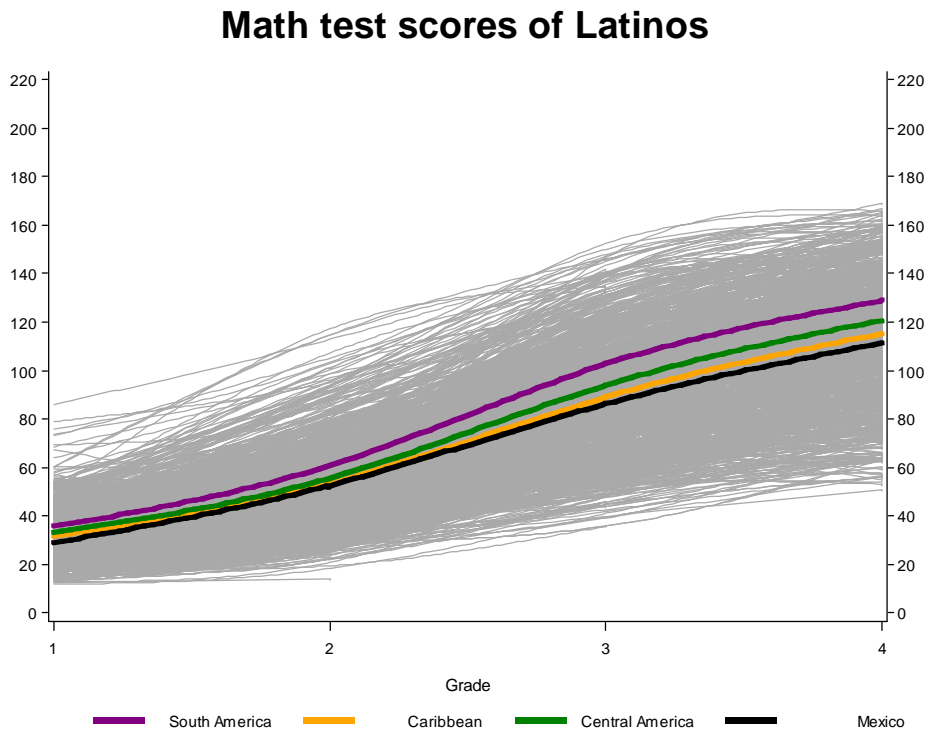
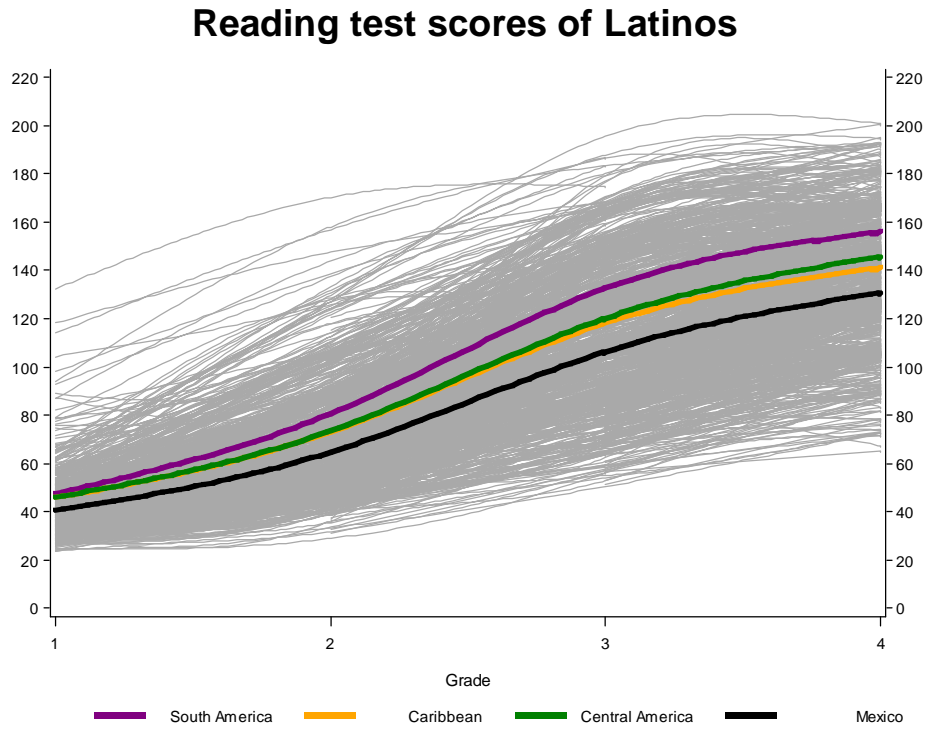
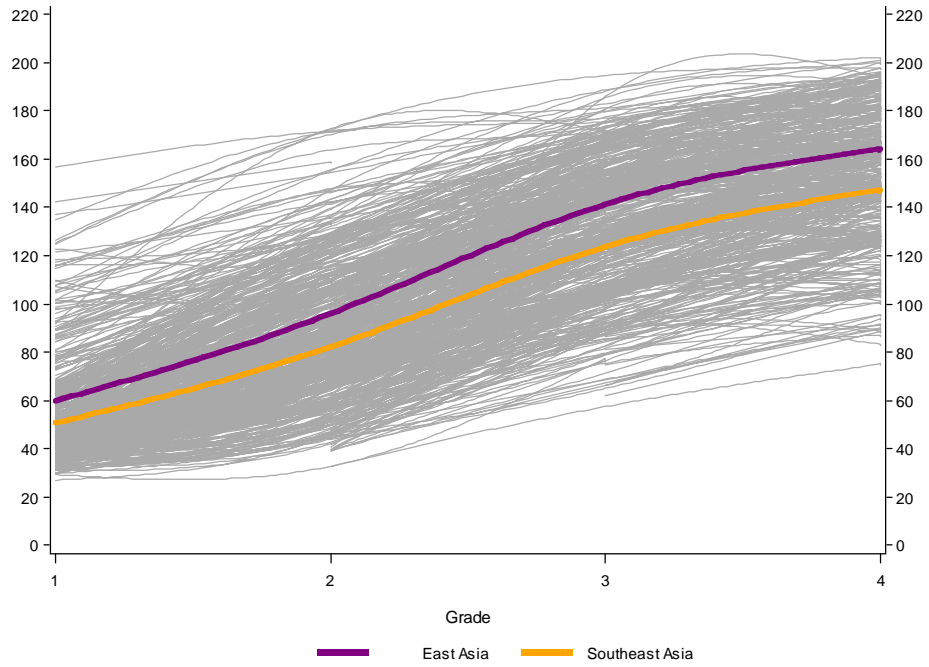
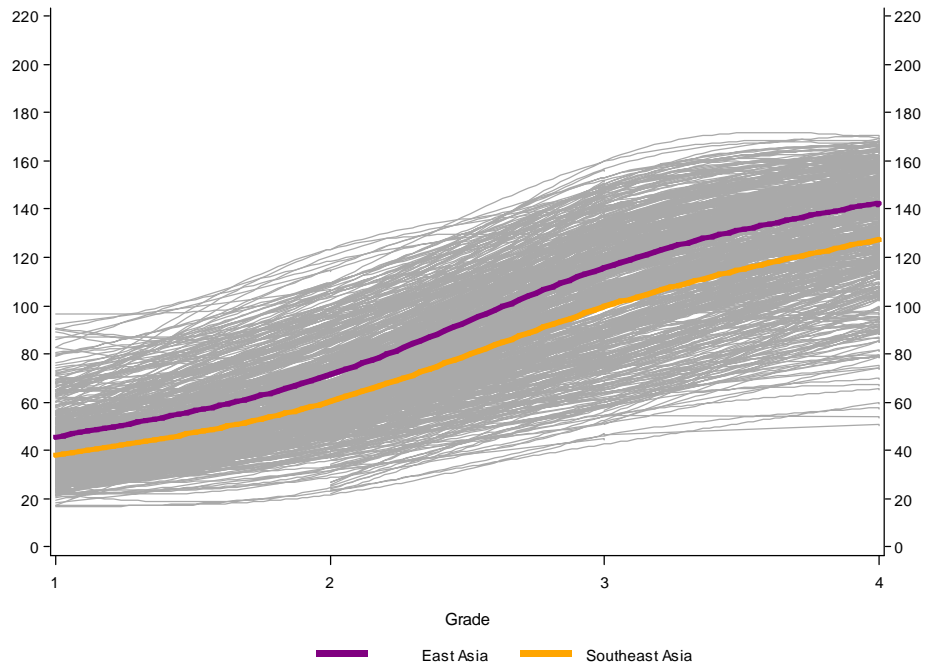


Figure 2. Reading and Math Test Scores of Children in Asian Immigrant Families.

Reading test scores of Asians



Math test scores of Asians



Measures

Dependent variables.

Cognitive skills. To ensure accurate measurement of ability over time and to reduce floor and ceiling effects, ECLS-K used Item Response Theory (IRT) to create a common scale of ability estimates across rounds (Pollack, Atkins-Burnett, Rock, & Weiss, 2005). The assessment employed a two-stage design; at the first stage, all children received a set of assessment items, and then, depending on their performance, they were given a second-stage set of items. By using the overall pattern of right and wrong responses and the characteristics of each item to estimate ability, IRT compensates for the possibility of a low-ability student guessing several hard items correctly. If answers on several easy items are wrong, the probability of a correct answer on a difficult item would be quite low. Omitted items are also less likely to cause distortion of scores, as long as enough items have been answered right and/or wrong to establish a consistent pattern. Unlike raw scoring, which treats omitted items as if they had been answered incorrectly, IRT procedures use the pattern of responses to estimate the probability of correct responses for all assessment questions. IRT scoring makes possible longitudinal measurement of gains in achievement over time, even though the assessments that are administered are not identical at each point. The IRT scale score had high internal item-consistency reliability, 0.92-0.96 at each round.

The reading assessment measures the child's ability to identify upper and lower case letters by name; associate letters with sounds at the beginning of words and at the end of words; recognize common sight words; read words in context, make

inferences using cues that are directly stated with key words in the text; identify clues used to make inferences; demonstrate understanding of author's craft; and critically evaluate texts. The mathematics assessment measures the child's ability to recognize/perform number and shape; relative size; ordinality and sequence; addition/subtraction; multiplication/division; place value; rate and measurement; fractions; and area and volume.

Social skills. This study used the teacher ratings of self-control and interpersonal skills as the two social skills variables. The reasons for using teacher ratings are as follows: teachers were the only respondents whose ratings were gathered at every round of data collection, from kindergarten to fifth grade; and the teacher measure was based on observations of children in the classroom context, which is regarded as less biased (Piquero, Jennings, & Farrington, 2010), since the other children in the class serve as a reference for rating each individual child. The Social Rating Scale used a frequency scale (1=never to 4=very often) to rate how often children exhibited distinct social skills. NCES does not provide users with the individual SRS items; instead, factor analysis scales were provided. The self-control scale included four items that indicated the child's ability to control behavior by controlling temper, respecting others' property, accepting peer ideas, and handling peer pressure. The interpersonal skills scale included five items that rated the child's skills in forming and maintaining friendships, getting along with people who are different, comforting or helping other children, expressing feelings, ideas, and opinions in positive ways, and showing sensitivity to the feelings of others. A high score on both self-control and interpersonal skills reflects a favorable outcome. Self-

control had a reliability of 0.79 – 0.80 at each round, and interpersonal skills had a reliability of 0.89 at each round.

Independent variables.

Home literacy environment. Parents responded to questions on the home literacy environment, which included 9 items for interactions with parents and one separate measure of the child's reading for pleasure. Interactions with parents were defined as activities mostly driven by parents that occurred at home. Four items focus on parents' direct verbal interactions with the child: frequency per week of reading to the child; telling stories to the child; discussion of nature or science projects; and singing songs together. Five items focus on parent-child interaction in the form of play and daily living activities: frequency per week of helping child with arts and crafts; playing games or puzzles with child; playing with construction toys with child; playing a sport or exercising together; and involving the child in household chores. All nine interactions with parents use a response range of 1=never, 2=once or twice a week, 3=3 to 6 times a week, and 4=every day. According to the results of exploratory principal components analysis using the nine parent-child interaction items, a one-component solution was optimal, as it accounted for about 31.7% of total variance. The result was consistent with items drawn from kindergarten, 1st grade and 3rd grade. A composite variable was created as a sum of the 9 items. The reliability of the composite variable of parent-involved activities is .73, .72, and .70, at kindergarten, 1st grade, and 3rd grade, respectively. Reliability is consistent across gender and immigrant groups.

Child's reading for pleasure is one of the significant predictors of academic success that takes place at home (Hofferth, 2010). The response range on this item is 1=never, 2=once or twice a week, 3=3 to 6 times a week, and 4=every day.

Number of books at home is usually included as one of the components of the home literacy environment. However, the correlation between the number of books owned by a family and family socioeconomic status is over .5, which is relatively high. Therefore, to avoid a multicollinearity problem, this particular measure was not included in the present study.

The two measures of the home literacy environment, parental involvement and child's reading activity are used later this section to refer to the home literacy environment.

Control variables.

Individual and family characteristics that might influence the children's educational outcomes are included as control variables.

Child gender. Child gender is used as a control variable for analysis within each immigrant group, and as a comparison reference group for analysis of comparisons between boys and girls.

Parent English proficiency. A parent English proficiency scale was created using the sum of each parent's speaking, reading, and writing skills. Parents rated these skills on a 4-point scale: 1=very well, 2=pretty well, 3=not very well, and 4=not well at all. After reverse coding these data, a higher value means better English proficiency.

Parents' length of stay in the U.S. Parents' length of stay in the U.S. was calculated using information on their age at immigration and the age at which they were interviewed. Primarily, the mother's length of stay in the U.S. was used in data analyses; however, father's length of stay was used in the case of single father families and for families with a U.S.-born mother and a foreign-born father. The average length of stay in the U.S. after immigration was 14 years.

Family SES. A standardized composite measure of family SES is provided by ECLS-K. The composite was constructed using these five components: father/father figure's education; mother/mother figure's education; father/father figure's occupation; mother/mother figure's occupation; and household income. The SES composite has a mean of 0 and a standard deviation of 1. Family SES at kindergarten, 1st grade and 3rd grade were included in the longitudinal analysis.

Number of siblings. Number of siblings in the household was included in the analysis. The range is 0-11. The number of siblings at kindergarten, 1st grade, and 3rd grade were included in the longitudinal analysis.

Number of parents. Whether both parents were living together when the interview was conducted was included. One parent in the household was coded as 0, and two parents in the household was coded as 1. The number of parents at kindergarten, 1st grade, and 3rd grade were included in the longitudinal analysis.

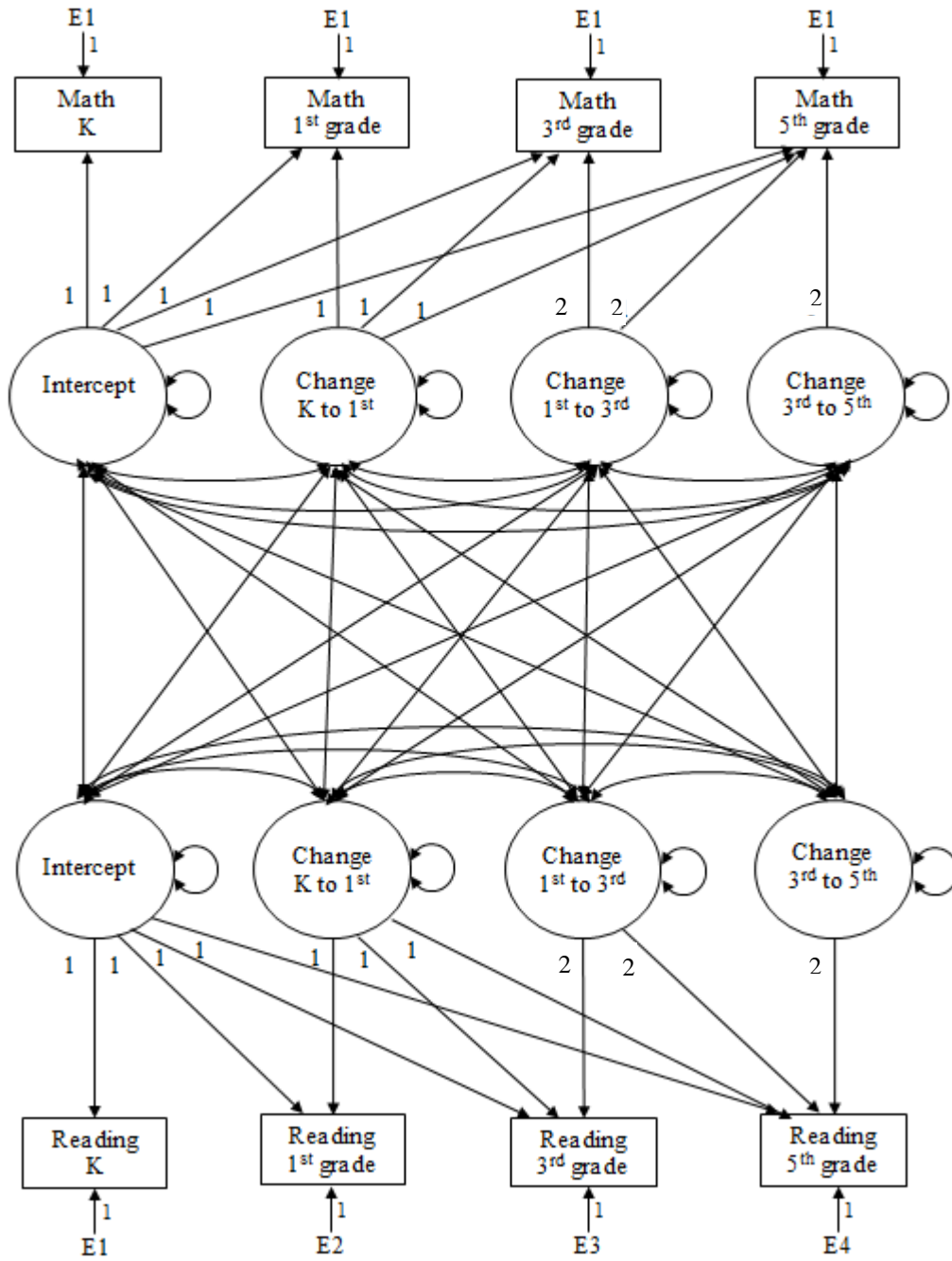
Locale of residence. The locale of the family residence at the time information was gathered was included, and assigned to one of three categories: large or mid-size city, suburbs or large town, and small town or rural. The locale at kindergarten, 1st grade, and 3rd grade were included in the longitudinal analysis.

Analysis plan

Children's reading and math test scores at four time points – kindergarten, 1st grade, 3rd grade, and 5th grade – were fitted into a latent difference score model. A latent difference score analysis is an extension of a latent growth curve model and is appropriate with data in which many respondents have been measured repeatedly over time (McArdle, 2009). While a latent growth curve model estimates the average intercept and average slope from the starting time point to an ending time point, latent difference scores are modeled at each time of measurement, and the change in variables is modeled using latent growth parameters, e.g., intercept, change in kindergarten to 1st grade, change in 1st grade to 3rd grade, and change in 3rd grade to 5th grade.

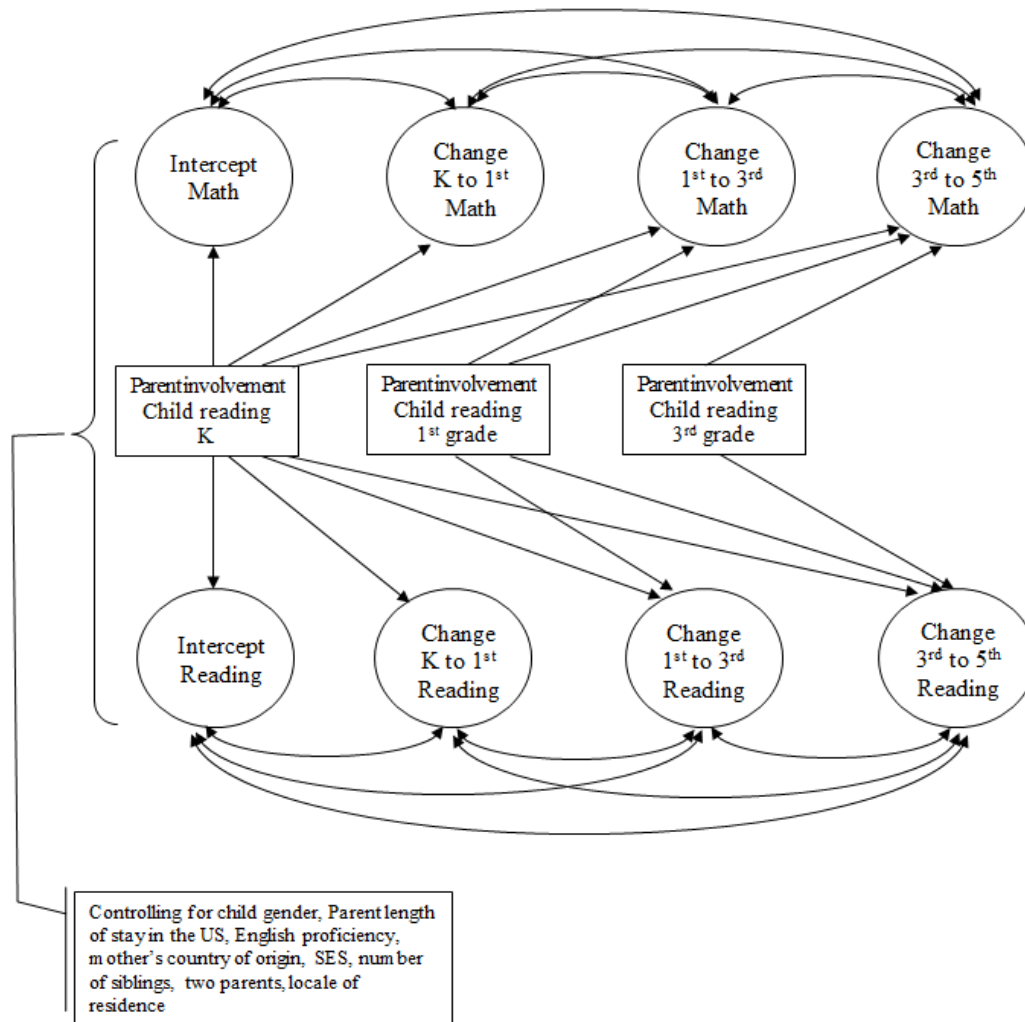
The intercept for children's reading test scores and changes in each time period were simultaneously modeled with the intercept for math test scores and changes (figure 3). Latent variables of changes in test scores from kindergarten to 1st grade were loaded at 1, representing the growth for one year, and latent variables of changes in scores from 1st to 3rd grade and from 3rd to 5th grade were loaded at 2, representing the growth for two years. All latent variables were allowed to covary above and beyond the effects of covariates structured in the analysis. The variance of the intercept parameter represented variations in the initial status of the reading and math test scores among children at kindergarten, and the variance of the latent differences parameter indicated the variability of the rate of change across children.

Figure 3. Latent Difference Score Models of Reading and Math Test Scores



Latent intercept factors and difference factors were regressed on the two measures of the home literacy environment controlling for six immigrant groups with a reference group of families with a U.S.-born mother, and covariates. Figure 4 shows that initial reading and math test scores were examined with the effects of the home literacy environment at kindergarten controlling for covariates. The effect of the home literacy environment at kindergarten on changes in reading and math scores from kindergarten to 1st grade was examined. The effect of the home literacy environment at kindergarten and 1st grade on changes in reading and math test scores from 1st grade to 3rd grade was examined, controlling the covariates. The effect of the home literacy environment at kindergarten, 1st grade, and 3rd grade on changes in reading and math test scores from 3rd grade to 5th grade was examined. Time-invariant covariates such as child gender were included across all structural latent variable models. Time-variant covariates that have three variables (e.g., kindergarten, 1st grade, 3rd grade) for each measurement, such as family SES, number of siblings, number of parents living together, and locale of residence, were included in the same order as the home literacy environment variables in the analyses. Parents' length of stay in the U.S. was treated as a time-invariant variable because there is no variability across time. All people increased their length of stay at the exact same rate. Parents' English proficiency level was treated as a time-invariant variable because information was available at only one time point.

Figure 4. Structural Latent Difference Score Model



- For simplicity, covariances among the latent variables are not shown in the figure.

To present the effect size of differences in academic achievement test scores and social skills between boys and girls, pooled variances were used as follows:

$$effect\ size = \frac{\widehat{\mu}_{boy} - \widehat{\mu}_{girl}}{\sqrt{\sigma_{pooled}^2}}$$

$$\sigma_{pooled}^2 = \sqrt{\frac{n_{boy}\sigma_{boy}^2 + n_{girl}\sigma_{girl}^2}{n_{boy} + n_{girl}}}$$

To examine differences in the parameters between genders, the structural models were conducted separately for boys and girls. The difference of unstandardized estimates of two parameters were divided by the square root of the sum of each standard error squared (Mann, Rutstein, & Hancock, 2009).

$$|Z_{diff}| = \frac{\widehat{b}_1 - \widehat{b}_2}{\sqrt{SE_{b_1}^2 + SE_{b_2}^2}}$$

If the difference score was greater than 1.96, it was inferred that there was significant difference in the parameter between boys and girls at the .05 level. This method was used for examining differences in means and variances of latent variables, and the effect of the home literacy environment on children's outcomes. The same methods were also used to compare the parameters across immigrant groups by pairing two among the seven groups.

To examine differences in the parameters over time within the group, an asymptotic covariance matrix was used. This was used for testing research question 4, which compared the parameters measured during the period from kindergarten to 1st grade to the parameters measured during the period from 1st to third grade; and

comparing the parameters measured during the period from 1st to third grade to parameters measured during the period from 3rd to 5th grade.

$$|Z_{diff}| = \frac{\widehat{b}_1 - \widehat{b}_2}{\sqrt{SE_{b_1}^2 + SE_{b_2}^2 - 2(SE_{b_1}SE_{b_2}r_{b_1b_2})}}$$

$$= \frac{\widehat{b}_1 - \widehat{b}_2}{\sqrt{SE_{b_1}^2 + SE_{b_2}^2 - 2Cov_{b_1b_2}}}$$

These same procedures of latent difference scores model, structural model, and comparing parameters for gender and immigrant groups were applied to the set of models with children's self-control and interpersonal skills.

Model fit was evaluated by examining specific goodness-of-fit statistics. A Root Mean Square Error of Approximation (RMSEA) that is below 0.06, a Comparative Fit Index (CFI) greater than 0.96, and a Standardized Root Mean Square Residual (SRMR) of less than 0.09 all indicate good model fit (Hu & Bentler, 1999). SAS 9.2 was used to create scales and obtain descriptive results. Mplus version 6 (Muthen & Muthen, 1998-2010) was used for structural equation modeling. Maximum likelihood parameter estimates with robust standard errors (MLR) were used with sampling weights and cluster identification. Missing data were handled with full information maximum likelihood estimation (FIML).

Human subject protection

This research was conducted using existing data. Informed consent was obtained by the original investigators. Confidentiality is maintained in the current study, as there was no contact with subjects and no identifiable information (i.e., names) regarding subjects in the data provided. This study used only public data

provided by the National Center for Education Statistics. No restricted-use data was used. There were no foreseeable risks or benefits to the subjects in these analyses. The research proposal was submitted to the University of Maryland Human Institutional Review Board, which determined on December 22nd, 2011 that this project is not human subject research (see Appendix A).

Chapter 5: Results

This chapter presents findings of the study. The sample selection test and sample background are described. Then, for simplicity in presenting the findings, this chapter is divided into two separate sections: the first section focuses on findings related to children's academic achievement, and the second section focuses on findings related to children's social skills. Latent difference scores for reading and math test scores are modeled to examine the longitudinal growth trajectory of children's academic achievement, and the differences in the trajectories between genders and across immigrant groups are subsequently examined. Latent difference scores for self-control and interpersonal skills are modeled to examine the longitudinal growth trajectory of children's social skills, and the differences between genders and across immigrant groups are then examined. Two measures of the home literacy environment, parental involvement in literacy related activities and children's reading activity at home, are employed in the structural model as exogenous variables to examine the effect on children, and differences in the effect between genders and across immigrant groups are reported.

Sample selection test

One of the first questions that arose was how to define an immigrant family when both parents may not have the same background. Whether families in which only the mother was foreign-born and families in which only the father was foreign-born should or could be combined into one group was tested. Children's academic achievement test scores and social skills outcome variables were regressed on four

categories of mothers' nativity status (both parents U.S.-born (n=10,234), included as a reference group; foreign-born father (n=469); foreign-born mother (n=408), and both parents foreign-born (n=2,334)) controlling for parents' immigrant characteristics, such as length of stay in the U.S. and English proficiency. Differences in children's test scores and social skills were observed across the groups (table 1). For example, children from families in which both parents were foreign-born, the father was foreign-born, or the mother was foreign-born had better reading test scores from kindergarten through fifth grade compared to children whose parents were both U.S.-born, but the effect size in the case of the foreign-born father group was small compared to families in which both parents were foreign-born or in which only the mother was foreign-born. Children from families in which only the father was foreign-born had lower math test scores than did children whose parents were both born in the U.S., whereas children in the other two groups (both parents foreign-born or only the mother foreign-born) had better math test scores. Generally there was little difference between families in which both parents were foreign-born and those in which only the mother was foreign-born, whereas these two groups differed from families with foreign-born fathers. Children in this latter group had the lowest scores overall. For this reason, immigrant families were grouped according to the mother's region or country of origin. Families in which the father was foreign-born and the mother was U.S. born were retained but treated as a separate category that was not divided by country of origin. This is consistent with the data collection, which reports primarily on the interaction of the mother with the child.

Table 1. Regressions of Child Outcomes on Mother's Nativity^a

Variable	Reading at K			Reading at 1st grade			Reading at 3rd grade			Reading at 5th grade		
	b	SE	ES	b	SE	ES	b	SE	ES	b	SE	ES
(Both U.S.-born parents omitted)												
Both foreign-born parents	8.07	1.04 ***	0.04	14.87	1.75 ***	0.04	12.15	2.02 ***	0.03	10.54	1.88 ***	0.03
Foreign-born mother & U.S.-born father	9.62	1.47 ***	0.05	15.69	2.46 ***	0.05	19.83	2.85 ***	0.05	17.76	2.65 ***	0.05
U.S.-born mother & foreign-born mother	0.63	0.79	0.00	0.83	1.33	0.00	0.47	1.54	0.00	0.63	1.43	0.00

Variable	Math at K			Math at 1st grade			Math at 3rd grade			Math at 5th grade		
	b	SE	ES	b	SE	ES	b	SE	ES	b	SE	ES
(Both U.S.-born parents omitted)												
Both foreign-born parents	1.77	0.84 *	0.01	2.21	1.26	0.01	9.87	1.71 ***	0.03	12.06	1.72 ***	0.03
Foreign-born mother & U.S.-born father	4.00	1.17 ***	0.02	6.27	1.75 ***	0.03	15.43	2.38 ***	0.04	18.35	2.39 ***	0.05
U.S.-born mother & foreign-born mother	-1.46	0.67 *	-0.01	-0.32	1.01	0.00	0.61	1.37	0.00	0.74	1.37	0.00

Variable	Self-control at K			Self-control at 1st			Self-control at 3rd			Self-control at 5th		
	b	SE	ES	b	SE	ES	b	SE	ES	b	SE	ES
(Both U.S.-born parents omitted)												
Both foreign-born parents	-0.04	0.05	0.00	0.13	0.05 *	0.02	0.14	0.05 **	0.02	0.22	0.05 ***	0.03
Foreign-born mother & U.S.-born father	0.02	0.07	0.00	0.09	0.07	0.01	0.16	0.07 *	0.02	0.22	0.07 **	0.03
U.S.-born mother & foreign-born mother	0.10	0.04 *	0.01	0.03	0.04	0.00	0.07	0.04	0.01	0.04	0.04	0.01

Variable	Interpersonal at K			Interpersonal at 1st			Interpersonal at 3rd			Interpersonal at 5th		
	b	SE	ES	b	SE	ES	b	SE	ES	b	SE	ES
(Both U.S.-born parents omitted)												
Both foreign-born parents	-0.08	0.06	-0.01	0.08	0.06	0.01	0.10	0.06	0.01	0.14	0.06 *	0.02
Foreign-born mother & U.S.-born father	-0.05	0.08	-0.01	0.05	0.08	0.01	0.11	0.08	0.01	0.18	0.08 *	0.02
U.S.-born mother & foreign-born mother	0.09	0.04 *	0.01	0.05	0.04	0.01	0.09	0.04	0.01	0.07	0.04	0.01

ES: effect size.

* < .05, ** < .01, *** < .001

^a Controlling for parent's length of stay in the U.S. and parent's English proficiency

Descriptives

Table 2 presents the weighted means or proportions and the standard deviation of all variables in the analysis. Reading and math IRT scale scores for all children increased from kindergarten through 5th grade. Self-control scores increased, but interpersonal skills were stable from kindergarten through 5th grade. Five percent of all children came from families in which the mother was born in South America; 37.3 percent had mothers from Mexico; and 12.5% had mothers who hailed from a Caribbean/Central American country. About 5 percent of children had an East Asia-born mother, and about 9 % had a Southeast Asia-born mother. Almost 15 percent of children lived in families in which the mother came from some other country. The remaining 16.3 percent of children lived in a family in which the father was foreign-born and the mother was U.S.-born. Boys and girls were almost equally represented. The average length of stay in the U.S. was about 16 years. A negative value for family SES indicated that the immigrant family's SES was lower than the mean of the total ECLS-K sample, and this pattern was constant across time. The average number of siblings was less than 2. More than 85 % of children lived with two parents. Less than 10 % lived in rural areas, almost 40% lived in the suburbs, and half of all immigrant families lived in large cities. Family backgrounds were quite stable from kindergarten through 3rd grade.

The third and fourth columns in Table 2 show descriptive statistics for the variables for boys and girls, and the last column indicates t-test results for the difference between genders. Gender differences were observed in children's academic achievement test scores and social skills. Girls showed significantly better test scores

in reading than did boys at each time point. There was no difference in math test scores between boys and girls at kindergarten, but boys had significantly better scores at 1st grade, 3rd grade, and 5th grade. Girls scored better than boys on measures of self-control and interpersonal skills at all waves. No significant difference in family background between boys and girls was observed except locale of residence at kindergarten, when more boys lived in the suburbs, and more girls lived in large cities.

Table 2. Weighted Means and Standard Deviations of Outcome and Background Variables, All Children and by Gender

Outcome variables	All children		Boys		Girls		Boy vs.
	Mean/%	SD	Mean/%	SD	Mean/%	SD	Girl
Reading at K	46.48	208.25	45.70	207.18	47.30	208.84	*
Reading at 1st	75.14	330.52	73.14	332.09	77.21	326.67	***
Reading at 3rd	120.17	396.48	117.49	394.01	122.94	395.43	***
Reading at 5th	143.84	374.14	141.44	385.09	146.26	360.31	***
Math at K	33.72	171.10	34.08	179.06	33.34	162.63	
Math at 1st	57.92	243.23	58.69	260.92	57.13	223.92	*
Math at 3rd	95.62	349.19	97.61	367.54	93.55	327.69	***
Math at 5th	121.24	356.12	123.53	362.17	118.92	347.39	***
Self-control at K	3.20	8.31	3.11	8.50	3.30	7.90	***
Self-control at 1st	3.21	8.37	3.11	8.88	3.31	7.58	***
Self-control at 3rd	3.25	8.33	3.13	8.74	3.36	7.61	***
Self-control at 5th	3.29	8.01	3.17	8.50	3.42	7.12	***
Interpersonal at K	3.12	8.64	3.01	8.63	3.23	8.37	***
Interpersonal at 1st	3.13	8.95	3.01	9.19	3.26	8.36	***
Interpersonal at 3rd	3.12	8.85	2.98	8.99	3.27	8.27	***
Interpersonal at 5th	3.14	8.40	2.97	8.53	3.31	7.58	***
Mother's country of origin							
South America	5.0%	3.05	4.4%	2.92	5.6%	3.18	
Mexico	37.3%	6.78	38.3%	6.89	36.1%	6.65	
Caribbean/Central America	12.5%	4.63	12.5%	4.69	12.5%	4.58	
East Asia	5.5%	3.19	5.5%	3.23	5.5%	3.16	
Southeast Asia	8.9%	3.98	8.9%	4.05	8.8%	3.92	
Other countries	14.6%	4.95	14.5%	4.99	14.8%	4.91	
U.S.-born mother	16.3%	5.17	15.9%	5.18	16.7%	5.17	
Child background							
Girl	48.7%	7.00					
Family background							
Parents length of stay in the US	16.16	136.41	16.13	139.10	16.18	133.71	
Parents English proficiency	8.61	47.02	8.55	47.84	8.68	46.19	
Family SES (K)	-0.20	11.87	-0.21	12.27	-0.19	11.47	
Family SES (1)	-0.25	12.16	-0.24	12.65	-0.25	11.65	
Family SES (3)	-0.24	12.09	-0.24	12.55	-0.25	11.61	
Number of sibling (K)	1.62	17.59	1.62	17.95	1.62	17.22	
Number of sibling (1)	1.68	17.17	1.68	17.67	1.68	16.66	
Number of sibling (3)	1.76	17.09	1.75	17.46	1.76	16.71	
Two parents (K)	86.4%	4.83	86.2%	4.90	86.5%	4.75	
Two parents (1)	87.2%	4.70	87.1%	4.78	87.3%	4.63	
Two parents (3)	88.0%	4.56	87.6%	4.68	88.5%	4.44	
Locale of residence							
Rural (K)	7.3%	3.64	7.2%	3.66	7.4%	3.63	
Rural (1)	6.8%	3.53	6.6%	3.53	7.0%	3.53	
Rural (3)	6.7%	3.50	6.3%	3.44	7.1%	3.55	
Suburb (K)	40.1%	6.87	42.2%	7.00	37.8%	6.72	*
Suburb (1)	38.8%	6.83	39.9%	6.94	37.6%	6.71	
Suburb (3)	38.8%	6.83	39.9%	6.95	37.7%	6.71	
Large city (K)	52.6%	7.00	50.6%	7.09	54.7%	6.89	*
Large city (1)	50.1%	7.01	48.5%	7.09	51.6%	6.92	
Large city (3)	48.1%	7.00	46.6%	7.07	49.8%	6.92	
N	2613		1310		1303		

* < .05, ** < .01, *** < .001

Children's outcome and family backgrounds variables across immigrant groups are shown in Table 3. ANOVA was used to compare variables across immigrant groups. Children with an East Asian mother had the highest test scores in reading and math at all waves, and children with a Mexican mother had the lowest test scores in both reading and math. Better self-control and interpersonal skills were generally observed for children with a mother from East Asia, Southeast Asia, or South America compared to children with a Mexican, Caribbean/Central American, or a U.S. born-mother and a foreign-born father.

Parents from locales other than Latin America and Asia, and families with a U.S.-born mother, indicated that they had better English skills, whereas Mexican parents rated themselves as having lower English skills. Families from East Asia and those in the "other countries" category had a higher socioeconomic status than the average of the total U.S. sample ECLS-K collected. Families from Mexico and Caribbean/Central American countries had a lower socioeconomic status. The proportion of two parents in the household was higher for East Asian families. More Southeast Asian families lived in rural areas, whereas those in the East Asia and "other" categories were more likely to live in the suburbs. Mexican and Caribbean/Central Latin American families were more likely to live in large cities.

Table 3. Weighted Means and Standard Deviations of Outcome and Background Variables by Immigrant Groups

	South America		Mexico		Caribbean/Central America		East Asia		Southeast Asia		Other countries		U.S.-born mother	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Outcome variables														
Reading at K	46.94	218.75	39.93	138.80	45.34	197.58	58.29	231.90	51.10	203.09	49.31	220.47	46.94	196.75
Reading at 1st	79.02	368.19	64.43	273.75	72.11	316.17	93.93	288.77	82.02	274.73	83.74	330.45	78.08	347.67
Reading at 3rd	130.35	358.63	106.09	388.11	118.07	388.27	139.52	260.67	124.02	276.34	136.63	350.06	127.73	399.18
Reading at 5th	154.43	332.35	130.77	383.74	142.52	365.62	163.01	238.73	147.85	271.89	158.42	309.67	151.66	356.55
Math at K	34.91	140.67	28.54	147.35	31.93	147.64	45.24	177.70	38.70	141.50	39.04	178.27	35.87	163.84
Math at 1st	59.30	248.16	52.24	222.29	54.10	230.12	70.71	210.47	61.05	190.15	64.77	251.91	61.56	262.68
Math at 3rd	101.36	367.76	86.03	343.73	91.34	339.98	114.88	257.76	100.50	256.94	107.19	337.04	99.82	350.53
Math at 5th	127.12	378.84	111.14	379.78	118.18	355.14	141.43	213.13	128.53	243.01	132.36	312.09	125.70	343.88
Self-control at K	3.22	8.99	3.19	8.89	3.08	10.06	3.33	6.00	3.26	5.66	3.22	8.36	3.22	8.81
Self-control at 1st	3.29	8.26	3.19	9.35	3.10	9.17	3.34	5.62	3.36	5.77	3.20	8.71	3.20	8.81
Self-control at 3rd	3.37	7.49	3.20	9.70	3.23	8.61	3.37	6.37	3.36	5.94	3.18	9.06	3.26	8.18
Self-control at 5th	3.41	7.62	3.26	8.69	3.21	9.37	3.52	5.13	3.45	5.37	3.30	7.97	3.22	8.87
Interpersonal at K	3.17	9.47	3.07	9.47	3.04	9.64	3.24	6.57	3.15	6.34	3.15	9.07	3.18	8.56
Interpersonal at 1st	3.24	8.13	3.12	9.89	3.07	9.85	3.19	6.47	3.23	6.40	3.10	9.09	3.14	9.82
Interpersonal at 3rd	3.17	8.65	3.10	10.05	3.10	9.42	3.24	6.07	3.23	5.96	3.06	9.96	3.13	9.10
Interpersonal at 5th	3.19	8.52	3.10	9.29	3.08	9.11	3.30	6.07	3.30	5.93	3.16	8.98	3.11	8.56
Child background														
Girl	54.4%	7.40	47.2%	7.78	48.8%	7.42	48.8%	5.52	48.2%	5.24	49.2%	7.23	50.0%	7.13
Family background														
Parents length of stay	14.76	136.15	13.84	126.30	16.33	141.41	15.88	107.14	14.97	81.07	18.29	167.66	-	152.44
Parents English profier	9.24	40.90	6.07	47.19	8.35	43.86	9.84	27.33	9.56	25.55	10.83	25.43	-	21.64
Family SES (K)	0.01	10.20	-0.73	8.83	-0.28	10.72	0.61	9.59	0.00	8.11	0.35	11.55	0.14	11.77
Family SES (1)	-0.03	10.66	-0.81	8.55	-0.35	11.47	0.58	9.45	-0.04	8.56	0.31	11.94	0.13	11.63
Family SES (3)	0.02	10.31	-0.80	8.96	-0.33	11.22	0.58	8.87	-0.06	8.36	0.33	12.01	0.09	11.39

Number of sibling (k)	1.23	12.97	1.83	19.23	1.44	16.41	1.13	8.53	1.87	18.67	1.49	17.00	1.56	17.66
Number of sibling (1)	1.29	13.25	1.93	19.41	1.43	16.13	1.19	8.75	1.94	17.83	1.57	16.21	1.56	16.11
Number of sibling (3)	1.31	12.43	2.02	18.81	1.53	16.43	1.23	8.36	1.98	17.47	1.66	16.95	1.63	16.43
Two parents (k)	86.3%	5.13	87.8%	5.11	76.2%	6.33	96.1%	2.17	88.2%	3.38	84.1%	5.29	88.8%	4.51
Two parents (1)	87.5%	4.92	87.3%	5.19	77.3%	6.25	95.1%	2.38	91.0%	3.00	85.7%	5.06	91.3%	4.00
Two parents (3)	87.9%	4.83	87.2%	5.22	76.3%	6.33	91.8%	3.04	89.0%	3.28	87.3%	4.83	96.9%	2.48
Locale of residence														
Rural (K)	4.5%	3.08	5.6%	3.58	2.0%	2.09	6.7%	2.76	22.3%	4.37	6.5%	3.56	9.0%	4.07
Rural (1)	4.5%	3.08	5.3%	3.48	1.5%	1.82	6.7%	2.76	21.3%	4.30	5.8%	3.37	8.2%	3.90
Rural (3)	5.1%	3.27	4.8%	3.35	1.4%	1.74	6.4%	2.71	21.9%	4.34	5.8%	3.37	8.0%	3.87
Suburb (K)	48.8%	7.43	32.5%	7.30	32.4%	6.95	54.0%	5.51	31.8%	4.89	57.1%	7.16	45.1%	7.09
Suburb (1)	48.5%	7.43	31.8%	7.26	31.5%	6.90	50.3%	5.53	30.3%	4.82	54.4%	7.20	44.1%	7.08
Suburb (3)	49.4%	7.43	31.5%	7.24	32.3%	6.94	49.8%	5.53	33.3%	4.94	53.5%	7.21	43.6%	7.07
Large city (K)	46.7%	7.41	61.9%	7.57	65.5%	7.06	39.3%	5.40	45.9%	5.23	36.4%	6.96	46.0%	7.10
Large city (1)	45.3%	7.40	58.4%	7.69	64.8%	7.09	38.9%	5.39	42.9%	5.19	33.7%	6.84	43.5%	7.07
Large city (3)	39.8%	7.27	58.3%	7.69	61.6%	7.22	36.0%	5.30	37.9%	5.09	34.2%	6.86	39.1%	6.96
N	117		787		292		232		414		359		412	

Findings of home literacy environment over time

Testing of hypothesis 1: Home-based literacy related activities will decrease over time from kindergarten to 5th grade.

Weighted means and standard deviations for the measures of the home literacy environment for all children are shown in Table 4. The sum of parental involvement decreased, and children's reading activity at home increased over time from kindergarten to 3rd grade. Among the parental involvement items, the frequency of singing songs, playing games or puzzles, helping the child with arts/crafts, and playing with construction toys together decreased from kindergarten to 3rd grade.

Table 4. Weighted Means, Standard Deviations, and Intercorrelations of Home Literacy Environment, All Children

	Mean	SD	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Kindergarten													
(1) Parent involvement	23.85	4.75	1										
(2) Telling stories	2.72	13.21	0.59	1									
(3) Singing songs	2.89	14.40	0.57	0.25	1								
(4) Reading to child	3.10	12.24	0.53	0.43	0.17	1							
(5) Playing games	2.67	12.87	0.59	0.23	0.24	0.21	1						
(6) Doing arts/crafts	2.54	13.43	0.53	0.23	0.22	0.19	0.26	1					
(7) Talking nature	2.05	12.40	0.58	0.24	0.26	0.21	0.28	0.22	1				
(8) Playing with toys	2.26	13.41	0.59	0.26	0.21	0.22	0.32	0.22	0.29	1			
(9) Playing a sport	2.47	13.62	0.56	0.18	0.22	0.17	0.28	0.20	0.25	0.29	1		
(10) Household work	3.04	14.34	0.49	0.17	0.21	0.14	0.16	0.14	0.20	0.18	0.20	1	
(11) Child reading	3.02	14.31	0.22	0.24	0.12	0.21	0.09	0.13	0.09	0.08	0.10	0.07	1
1st grade													
(1) Parent involvement	22.90	4.62	1										
(2) Telling stories	2.75	12.70	0.60	1									
(3) Singing songs	2.64	14.44	0.58	0.31	1								
(4) Reading to child	3.11	13.27	0.55	0.43	0.20	1							
(5) Playing games	2.46	12.20	0.59	0.23	0.22	0.21	1						
(6) Doing arts/crafts	2.21	11.90	0.57	0.25	0.26	0.20	0.31	1					
(7) Talking nature	2.11	11.88	0.57	0.25	0.27	0.22	0.27	0.27	1				
(8) Playing with toys	2.07	12.29	0.56	0.23	0.18	0.19	0.31	0.29	0.27	1			
(9) Playing a sport	2.48	14.02	0.52	0.14	0.17	0.15	0.24	0.22	0.22	0.22	1		
(10) Household work	3.07	13.50	0.47	0.16	0.20	0.14	0.19	0.14	0.14	0.15	0.17	1	
(11) Child reading	3.10	13.05	0.27	0.23	0.17	0.22	0.10	0.12	0.16	0.10	0.10	0.15	1
3rd grade													
(1) Parent involvement	22.08	4.51	1										
(2) Telling stories	2.57	12.76	0.60	1									
(3) Singing songs	2.55	14.47	0.56	0.31	1								
(4) Reading to child	2.52	15.46	0.56	0.35	0.21	1							
(5) Playing games	2.39	11.96	0.55	0.17	0.18	0.18	1						
(6) Doing arts/crafts	2.15	11.89	0.53	0.23	0.22	0.21	0.24	1					
(7) Talking nature	2.15	11.85	0.55	0.23	0.19	0.17	0.27	0.24	1				
(8) Playing with toys	1.95	12.36	0.54	0.21	0.16	0.19	0.29	0.23	0.30	1			
(9) Playing a sport	2.52	13.35	0.54	0.24	0.19	0.15	0.29	0.19	0.21	0.23	1		
(10) Household work	3.21	12.92	0.45	0.18	0.20	0.12	0.14	0.10	0.16	0.11	0.17	1	
(11) Child reading	3.28	11.80	0.19	0.15	0.09	0.10	0.09	0.10	0.13	0.07	0.08	0.14	1

Testing of hypothesis 2: The pattern of change in home-based literacy related activities will differ by gender.

Gender differences in parental involvement and child's reading activity are shown in Table 5. Overall, parents were involved in more activities with boys than they were with girls, but this difference was not statistically significant. Looking at specific activities, a pattern emerges in which parents were more involved in activities of singing together and helping with arts/crafts for girls than for boys. But parents were significantly more engaged with boys than girls when it came to discussion of nature or science, playing with construction toys, or playing sports together. Girls spent more time reading than did boys at kindergarten. The pattern was consistent over time. There was no statistically significant difference in the pattern of change in parental involvement and child's reading activity over time between boys and girls.

Table 5. Weighted Means, Standard Deviations, and Intercorrelations of Parental Involvement and Child's Reading Activity by Gender

	Boys		Girls		boy vs girl	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	Mean	SD	Mean	SD												
Kindergarten																
(1) Parent involvement	23.90	4.75	23.79	4.76			0.6	0.6	0.5	0.6	0.6	0.6	0.6	0.6	0.5	0.2
(2) Telling stories	2.70	13.44	2.75	12.97		0.6		0.2	0.5	0.2	0.3	0.2	0.3	0.2	0.2	0.2
(3) Singing songs	2.81	14.57	2.96	14.15	***	0.6	0.3		0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.1
(4) Reading to child	3.07	12.57	3.13	11.88		0.5	0.4	0.2		0.2	0.3	0.2	0.2	0.1	0.2	0.2
(5) Playing games	2.69	13.28	2.63	12.45		0.6	0.2	0.3	0.2		0.3	0.3	0.3	0.3	0.2	0.0
(6) Doing arts/crafts	2.50	13.49	2.59	13.34	**	0.5	0.2	0.2	0.1	0.2		0.3	0.2	0.2	0.1	0.1
(7) Talking nature	2.09	12.82	2.00	11.94	*	0.6	0.3	0.3	0.2	0.3	0.2		0.3	0.2	0.2	0.1
(8) Playing with toys	2.41	13.69	2.11	12.78	***	0.6	0.3	0.2	0.3	0.3	0.3	0.3		0.3	0.2	0.1
(9) Playing a sport	2.52	13.68	2.42	13.53	**	0.6	0.2	0.2	0.2	0.3	0.2	0.3	0.3		0.2	0.0
(10) Household work	3.02	14.84	3.06	13.82		0.5	0.1	0.2	0.1	0.1	0.2	0.2	0.2	0.2		0.0
(11) Child reading	2.84	14.89	3.20	13.24	***	0.3	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.1
1st grade																
(1) Parent involvement	23.07	4.66	22.74	4.57			0.6	0.6	0.5	0.6	0.6	0.6	0.6	0.5	0.5	0.3
(2) Telling stories	2.76	12.86	2.74	12.54		0.6		0.3	0.4	0.2	0.3	0.2	0.2	0.1	0.1	0.2
(3) Singing songs	2.54	14.80	2.74	13.95	***	0.6	0.3		0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.2
(4) Reading to child	3.11	13.49	3.11	13.05		0.6	0.5	0.2		0.2	0.2	0.2	0.2	0.1	0.1	0.1
(5) Playing games	2.50	12.46	2.42	11.91	*	0.6	0.2	0.2	0.2		0.3	0.3	0.3	0.2	0.2	0.1
(6) Doing arts/crafts	2.15	11.96	2.27	11.78	***	0.6	0.2	0.2	0.2	0.3		0.2	0.3	0.3	0.2	0.2
(7) Talking nature	2.15	12.28	2.07	11.45	*	0.6	0.3	0.3	0.2	0.3	0.3		0.3	0.3	0.2	0.2
(8) Playing with toys	2.22	12.83	1.91	11.29	***	0.6	0.2	0.2	0.2	0.3	0.3	0.3		0.2	0.1	0.1
(9) Playing a sport	2.55	14.00	2.41	13.99	***	0.5	0.1	0.2	0.2	0.3	0.2	0.2	0.2		0.2	0.2
(10) Household work	3.04	13.81	3.11	13.18		0.5	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.2		0.1
(11) Child reading	2.94	13.86	3.26	11.75	***	0.3	0.3	0.2	0.3	0.1	0.1	0.2	0.1	0.1	0.1	0.1
3rd grade																
(1) Parent involvement	22.22	4.46	21.95	4.55			0.6	0.6	0.6	0.6	0.5	0.6	0.5	0.6	0.4	0.2
(2) Telling stories	2.58	12.97	2.56	12.54		0.6		0.4	0.4	0.2	0.3	0.2	0.2	0.3	0.2	0.1
(3) Singing songs	2.43	14.63	2.67	14.10	***	0.6	0.3		0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.1
(4) Reading to child	2.50	15.46	2.54	15.46		0.5	0.3	0.2		0.2	0.2	0.2	0.2	0.2	0.1	0.1
(5) Playing games	2.42	12.32	2.36	11.56		0.5	0.1	0.1	0.1		0.3	0.3	0.3	0.3	0.2	0.1
(6) Doing arts/crafts	2.11	12.47	2.20	11.23	**	0.5	0.2	0.2	0.2	0.2		0.3	0.2	0.2	0.1	0.1
(7) Talking nature	2.20	12.45	2.11	11.16	**	0.5	0.2	0.2	0.1	0.3	0.2		0.3	0.2	0.2	0.1
(8) Playing with toys	2.10	12.91	1.79	11.36	***	0.6	0.2	0.2	0.2	0.3	0.3	0.3		0.3	0.1	0.1
(9) Playing a sport	2.59	13.76	2.45	12.85	***	0.5	0.2	0.1	0.1	0.3	0.2	0.2	0.2		0.1	0.1
(10) Household work	3.20	13.29	3.22	12.53		0.4	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2
(11) Child reading	3.17	12.47	3.39	10.84	***	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1

* < .05, ** < .01, *** < .001

Intercorrelations of items for boys are the below the diagonal. Intercorrelations of items for girls are the above the diagonal.

Testing of hypothesis 3: The pattern of change in home-based related activities will differ across immigrant groups.

The initial status and subsequent changes in parental involvement and child's reading activity were examined where there was a difference across immigrant groups using ANOVA (table 6). Families in which the mother was U.S.-born reported the highest frequency of activities with boys at kindergarten compared to families with a Mexican, Caribbean/Central, or East Asian mother. There was no difference in the decrease in parental involvement from kindergarten to 1st grade across immigrant groups. While overall families decreased the amount of time spent with child and parent together from 1st to 3rd grade, families in which the mother was in the "other countries" category significantly decreased time with their boys compared to those in other immigrant groups. Boys with a Mexican mother read books significantly less often at kindergarten than boys with a Caribbean/Central American mother, an East Asian mother, or a Southeast Asian mother. In contrast to parental involvement, children's reading activity increased over time, and there was no statistically significant difference in the increase in reading activity from kindergarten to 1st grade, or from 1st grade to 3rd grade, across immigrant groups.

Girls with a Mexican mother spent significantly less time with a parent on literacy related activities at home than others did. While overall girls decreased their time with parents from kindergarten to 1st grade, girls with an East Asian mother decreased more than girls with a Caribbean/Central American mother. Girls with a Caribbean/Central American mother significantly decreased time spent with parents from 1st to 3rd grade compared to others. Girls with an East Asian mother read books

significantly more than girls with a Mexican mother at kindergarten. Most of the girls increased their time for reading books at home after kindergarten, and there was no statistically significant difference in changes in reading activity from kindergarten to 1st grade, or from 1st to 3rd grade, across immigrant groups.

Table 6. Weighted Means and Standard Deviations of Parental Involvement and Child's Reading Activity by Immigrant Groups

	<u>South America</u>		<u>Mexico</u>		<u>Caribbean/Central America</u>		<u>East Asia</u>		<u>Southeast Asia</u>		<u>Other countries</u>		<u>U.S.-born</u>	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Boys														
Parent involvement (K)	23.91	3.87	22.52	5.14	23.67	4.77	23.74	4.57	24.50	4.64	24.76	4.06	25.56	4.10
Parent involvement (1)	23.24	3.63	21.68	4.66	22.83	4.74	22.39	4.48	23.61	4.56	24.32	4.08	24.65	4.67
Parent involvement (3)	23.16	4.05	21.47	4.62	21.88	4.45	20.91	4.08	23.13	4.34	22.40	4.27	23.20	4.34
Child reading (K)	3.04	0.97	2.64	1.05	2.99	1.08	3.08	0.98	3.07	1.01	2.99	1.00	2.90	1.02
Child reading (1)	3.27	0.83	2.73	1.00	3.06	0.98	3.10	0.93	2.83	0.95	3.15	0.83	3.01	0.95
Child reading (3)	3.42	0.73	3.04	0.93	3.15	0.87	3.46	0.79	3.18	0.87	3.31	0.80	3.11	0.88
N	53		408		145		111		210		177		205	
Girls														
Parent involvement (K)	24.33	4.69	22.38	4.90	23.93	4.96	24.40	4.37	24.22	4.45	24.47	4.61	24.75	4.50
Parent involvement (1)	23.93	4.48	21.58	4.60	23.42	4.80	22.18	4.56	22.77	4.85	23.34	4.01	23.61	4.20
Parent involvement (3)	21.74	4.42	21.38	4.49	21.57	4.38	21.45	4.42	23.02	4.79	21.93	4.83	22.56	4.25
Child reading (K)	3.35	0.81	3.11	0.97	3.27	1.00	3.42	0.83	3.25	0.86	3.21	0.99	3.14	0.95
Child reading (1)	3.46	0.83	3.14	0.89	3.47	0.80	3.21	0.89	3.16	0.87	3.27	0.84	3.26	0.76
Child reading (3)	3.44	0.80	3.32	0.81	3.32	0.85	3.39	0.79	3.43	0.75	3.46	0.73	3.43	0.73
N	64		378		147		121		204		182		207	

Findings related to academic achievement test scores

Table 7 shows the means and variances of intercept factors and difference factors of reading and math test scores from kindergarten through 5th grade. This is a just identified model with zero degrees of freedom, chi-square of 0, an RMSEA of 0.00, a CFI of 1.00, and an SRMR of 0.00. Large variances in intercept factors suggest that children's reading and math test scores at kindergarten were quite dispersed across individuals. Large variances in difference factors indicate that changes in reading and math test scores at each time period were also quite dispersed across individual children.

Testing of hypothesis 4_a: Children's reading and math test scores will increase over time from kindergarten to 5th grade.

Children's reading and math test scores increased over time from kindergarten to 5th grade. A positive change between each wave indicates there were increases in scores over time. The mean of the intercept is 44.11, which was children's average reading test score at kindergarten. A positive change of 29.06 indicates there was an increase in scores from kindergarten to 1st grade. A larger value of the change in scores from kindergarten to 1st grade compared to the change from 1st to 3rd grade means there was a sharp increase in reading test scores at this point. From 3rd to 5th grade, there was a slow increase observed. The same pattern was found in the math test scores. This shows that, overall, children's reading and math test scores increased over time, but the trajectory was not linear; rather, it was quadratic.

Testing of hypothesis 5_a: The pattern of the growth trajectory will differ by gender.

The growth trajectory of children's reading and math test scores was examined to see whether there was a difference between genders using unstandardized coefficients and standard errors. Examining differences in the means of intercept factors and difference factors between boys and girls, there was no statistically significant difference in the mean of the intercept in reading and math between boys and girls. However, the change in reading test scores from kindergarten to 1st grade and the change in math test scores from 1st to 3rd grade significantly differed by gender. Girls had a greater increase in reading test scores from kindergarten to 1st grade (Mean = 30.09, $SE = .63$) than did boys (Mean = 28.07, $SE = .55$), and the effect size is 0.13. Boys had a greater increase in math test scores from 1st grade to 3rd grade (Mean = 19.49, $SE = .31$) than did girls (Mean = 18.21, $SE = .30$), and the effect size is 0.16. Examining differences in the variance of latent factors between boys and girls, there was no difference in their intercept. However, variances in the change in math test scores from kindergarten to 1st grade, and the change from 1st to 3rd grade, were significantly larger for boys than for girls ($\widehat{\sigma}^2 = 147.92$ for boys vs. $\widehat{\sigma}^2 = 99.04$ for girls; $\widehat{\sigma}^2 = 66.52$ for boys vs. $\widehat{\sigma}^2 = 56.07$ for girls, respectively).

Table 7. Means and Variances of Latent Factors of Academic Achievement, All Children and by Gender

	All children		Boys		Girls		boy vs. girl	effect size
	Means	SE	Mean	SE	Mean	SE		
Reading test scores								
Intercept	44.11	0.52	43.42	0.61	44.81	0.59		0.09
Change K - 1st grade	29.06	0.47	28.07	0.55	30.09	0.63 *		0.13
Change 1st-3rd grade	23.35	0.30	22.87	0.38	23.85	0.36		0.10
Change 3rd-5th grade	11.92	0.21	12.08	0.30	11.74	0.26		0.05
Math test scores								
Intercept	33.51	0.45	33.83	0.54	33.17	0.52		0.05
Change K - 1st grade	24.30	0.41	24.81	0.56	23.76	0.38		0.09
Change 1st-3rd grade	18.86	0.24	19.49	0.31	18.21	0.30 *		0.16
Change 3rd-5th grade	12.85	0.18	12.91	0.25	12.80	0.22		0.02

	All children		Boys		Girls		boy vs. girl
	Variance	SE	Variance	SE	Variance	SE	
Reading test scores							
Intercept	229.25	17.79	220.34	22.02	238.15	25.59	
Change K - 1st grade	237.67	9.20	232.65	12.38	240.56	11.58	
Change 1st-3rd grade	88.95	3.38	88.32	4.64	89.11	4.32	
Change 3rd-5th grade	57.23	2.00	60.97	2.93	53.60	2.81	
Math test scores							
Intercept	148.15	6.91	158.80	9.74	136.57	7.96	
Change K - 1st grade	124.13	5.82	147.92	9.05	99.04	5.89 *	
Change 1st-3rd grade	61.78	2.08	66.52	3.24	56.07	2.47 *	
Change 3rd-5th grade	41.20	1.34	40.15	2.10	42.38	2.12	

* Significant difference between boys and girls at the .05.

Testing of hypothesis 6_a: The pattern of the growth trajectory will differ across immigrant groups.

Whether the intercept and changes in reading and math test scores differed across immigrant groups was examined. The means of the intercept and changes in scores were presented for boys and girls for each immigrant group because there were significant differences in the change in scores found in the previous analysis (table 8_a). Table 8_b shows whether there were statistically significant differences across immigrant groups according to the result achieved by comparing the parameters across immigrant groups by pairing two among the seven groups. In the table, *each* refers to each one of the six other immigrant groups being compared with a given immigrant group; *South Am* refers to South America; *CC* to Caribbean/Central America; *Mexico* to Mexico; *East* to East Asia; *Southeast* to Southeast Asia; *other* to other countries; and *U.S.* to U.S.-born mother. The parameter with larger values is shown first and the parameter with smaller values follows. So, for example, ‘East vs. each’ means that the mean of the reading test scores for boys of East Asian mothers was significantly higher when compared to each of all the other 6 different immigrant groups. ‘South Am vs. Mexico’ means that the mean of the reading test scores for boys of South American mothers was significantly higher than the mean score for boys of Mexican mothers only.

Boys’ starting point for reading skills was different across immigrant groups. Reading test scores at kindergarten of boys with an East Asian mother were significantly higher than those of children from any other immigrant group. Changes in scores from kindergarten to 5th grade were also different across immigrant groups.

Boys with an East Asian mother significantly increased their reading test scores from kindergarten to 1st grade more than boys with a Mexican mother, a Caribbean/Central American mother, a Southeast Asian mother, or a U.S.-born mother. The change in reading test scores from 1st to 3rd grade significantly increased more for boys with a South American mother compared to boys of Mexican mothers, Caribbean/Central American mothers, East Asian mother, and Southeast Asian mothers. The change in reading test scores from 3rd to 5th grade significantly increased more for boys of Mexican mothers and Caribbean/Central American mothers compared to boys with mother in the “other countries” category.

Math test scores at kindergarten were also significantly higher for boys with an East Asian mother than for others. Children with a Caribbean/Central American mother were significantly less likely to exhibit increases in scores from kindergarten to 1st grade than were children of East Asian mothers, U.S.-born mothers, and mothers in the “other countries” category. Boys of South American mothers increased their math test scores from 1st to 3rd grade more than others. Boys of Southeast Asian mothers increased their math scores from 3rd to 5th grade significantly more than boys of East Asian mothers.

Differences in the intercept and changes in test scores were also observed in girls. Girls’ initial status in reading and math test scores was significantly higher for girls of East Asian mothers compared to those of girls in other groups. Subsequent changes in reading and math test scores from kindergarten to 1st grade were significantly higher for girls of East Asian mothers compared to those of girls of Mexican mothers and Caribbean/Central American mothers. Girls of South American

mothers significantly increased their reading test scores from 1st to 3rd grade, and 3rd to 5th grade more than girls of Southeast Asian mothers. Girls of East Asian mothers increased their math test scores from 1st to 3rd grade more than girls of South American mothers, Mexican mothers, and Caribbean/Central American mothers. Girls of East Asian mothers increased their math test scores from 3rd to 5th grade more than girls of Mexican mother and “other countries” mothers.

In sum, these results show that the intercept and changes in reading and math test score differed across immigrant groups, noting that both boys and girls of East Asian mothers started out with significantly better reading and math skills at kindergarten than children from all other groups, but after kindergarten and until 3rd grade, children of South American mothers, “other countries” mothers, and U.S.-born mothers increased scores in reading and math test at a sharper rate than children from other groups. The difference in change in scores between those in the Mexican or Caribbean/Central American group and children from other groups was very large at the earlier time points, but this gap was substantially reduced during the period from 3rd to 5th grade.

Examining differences in the variance across immigrant groups, boys with Mexican mothers and Caribbean/Central American mothers had significantly less variability in reading test scores at kindergarten than others, which means that their individual reading scores were more concentrated at the lower end of the spectrum of scores. The variance in the change in reading test scores from kindergarten to 1st grade was the smallest for boys with a Mexican mother, and this was significantly smaller than the variance in change for boys of East Asian mothers, Southeast Asian

mothers, and U.S.-born mothers. Boys of Southeast Asian mothers had the smallest variance in change in reading scores from 1st to 3rd grade. There was no statistically significant difference in variance of change in reading scores from 3rd to 5th grade across all immigrant groups. Boys of South American mothers, Mexican mothers and Caribbean/Central American mothers had a small variance in math test scores at kindergarten, one significantly lower than the variance for boys of East Asian mothers and Southeast Asian mothers. Boys of Mexican mothers had the smallest variance in change in math scores from kindergarten to 1st grade, and this was significantly lower than the variance for boys with a South American mother, or a U.S.-born mother. There was no significant difference in variance of change in math test scores from 1st to 3rd grade, and 3rd to 5th grade, across all immigrant groups.

There were substantial differences in the variance of girls' intercept and change in scores across immigrant groups. Girls of Mexican mothers and Caribbean/Central American mothers usually had less variability in the intercept and change in reading and math test scores than others, whereas there was no difference during the period from 1st to 3rd grade.

This shows that, overall, children increased their reading and math test scores over the time period beginning in kindergarten and ending in 5th grade; however, there were differences in the change in scores between each time point both by gender and across immigrant groups.

Table 8_a. Means and Variances of Latent Factors of Academic Achievement by Immigrant Groups

	Boys				Girls			
	Mean	SE	Variance	SE	Mean	SE	Variance	SE
South America								
Reading Test Scores								
Reading at K	43.57	1.96	186.06	102.57	48.47	2.21	238.93	97.76
Change from K to 1st	30.51	2.92	323.45	67.58	32.80	2.29	242.99	47.90
Change from 1st to 3rd	27.05	1.48	170.83	35.91	25.03	1.39	179.86	36.91
Change from 3rd to 5th	11.35	1.43	128.36	28.14	12.95	0.76	70.52	15.04
Math Test Scores								
Math at K	34.17	0.99	69.31	12.17	35.62	1.44	105.19	19.84
Change from K to 1st	26.16	2.20	179.72	30.92	22.60	1.74	127.28	26.77
Change from 1st to 3rd	23.24	1.32	135.82	36.49	18.64	0.83	84.16	14.02
Change from 3rd to 5th	13.32	1.11	88.71	19.99	13.57	1.19	107.39	21.66
Mexico								
Reading Test Scores								
Reading at K	37.32	0.61	75.35	8.72	38.82	0.52	76.72	12.76
Change from K to 1st	23.23	0.82	152.04	15.20	25.33	0.97	209.61	23.40
Change from 1st to 3rd	20.99	0.44	152.51	16.75	22.52	0.61	167.58	15.69
Change from 3rd to 5th	12.76	0.48	118.80	10.05	12.13	0.49	120.66	9.57
Math Test Scores								
Math at K	28.55	0.63	89.94	10.42	28.34	0.62	89.51	10.41
Change from K to 1st	23.80	0.98	110.46	9.44	23.42	0.61	94.87	9.54
Change from 1st to 3rd	17.46	0.45	123.55	8.46	16.36	0.47	114.59	9.01
Change from 3rd to 5th	12.88	0.48	82.97	6.61	12.26	0.34	94.35	8.44
Caribbean/Central America								
Reading Test Scores								
Reading at K	43.03	1.06	156.40	43.11	44.77	1.34	195.13	70.32
Change from K to 1st	26.07	1.41	186.30	24.37	28.85	1.27	182.11	27.55
Change from 1st to 3rd	22.03	1.09	204.37	31.49	23.49	0.78	172.80	22.08
Change from 3rd to 5th	12.91	0.76	125.01	20.21	12.01	0.54	98.03	14.89
Math Test Scores								
Math at K	31.71	0.99	98.95	12.90	31.85	1.01	100.11	24.09
Change from K to 1st	22.16	1.09	132.61	17.82	21.83	0.79	81.43	14.89
Change from 1st to 3rd	19.05	0.82	141.08	17.01	17.83	0.66	89.47	11.53
Change from 3rd to 5th	13.66	0.57	70.65	9.37	13.78	0.63	71.00	8.07
East Asia								
Reading Test Scores								
Reading at K	56.80	2.18	401.38	83.98	58.22	2.09	483.51	87.96
Change from K to 1st	36.42	2.01	242.84	41.53	35.75	1.87	307.58	55.03
Change from 1st to 3rd	22.85	1.14	184.07	31.97	22.79	0.76	147.26	24.39
Change from 3rd to 5th	11.86	0.84	104.79	14.44	11.96	0.85	88.16	18.95
Math Test Scores								
Math at K	46.11	1.98	320.75	49.07	42.44	1.48	201.80	34.08
Change from K to 1st	26.48	1.40	166.70	26.18	26.22	1.11	103.57	17.78
Change from 1st to 3rd	23.08	0.90	126.45	14.98	21.09	0.74	92.53	12.69
Change from 3rd to 5th	12.40	0.67	67.47	9.44	14.21	0.59	63.63	9.56

Southeast Asia**Reading Test Scores**

Reading at K	47.83	1.91	322.90	103.35	50.53	1.91	449.74	105.87
Change from K to 1st	30.89	1.39	244.15	25.52	34.33	1.33	242.94	33.33
Change from 1st to 3rd	21.07	0.68	129.80	16.10	21.54	0.81	151.52	15.76
Change from 3rd to 5th	12.16	0.68	115.39	12.83	10.92	0.53	87.00	10.04

Math Test Scores

Math at K	37.19	1.57	233.16	53.27	37.01	1.24	142.42	18.79
Change from K to 1st	24.39	1.48	172.33	29.45	23.19	0.90	90.45	13.61
Change from 1st to 3rd	19.99	0.59	104.30	10.57	19.82	0.61	101.88	10.12
Change from 3rd to 5th	14.59	0.57	66.83	8.17	13.05	0.57	78.88	9.52

Other countries**Reading Test Scores**

Reading at K	50.05	1.46	268.81	55.15	47.98	1.11	195.05	37.27
Change from K to 1st	34.45	1.20	204.39	20.91	34.75	1.34	228.20	26.72
Change from 1st to 3rd	26.43	0.80	177.33	16.34	26.60	0.93	190.35	23.27
Change from 3rd to 5th	10.65	0.73	140.11	18.49	10.88	0.70	104.05	16.62

Math Test Scores

Math at K	40.20	1.02	147.14	16.34	37.39	1.01	156.58	23.95
Change from K to 1st	26.44	1.03	142.73	17.01	25.19	0.90	127.29	19.90
Change from 1st to 3rd	22.13	0.64	126.21	15.38	20.56	0.72	121.88	15.90
Change from 3rd to 5th	12.74	0.62	84.83	11.67	12.52	0.57	75.36	7.36

U.S.-born mother**Reading Test Scores**

Reading at K	45.71	0.99	187.89	38.29	46.85	1.12	205.66	58.44
Change from K to 1st	30.37	1.30	293.65	38.76	31.80	1.23	238.88	25.88
Change from 1st to 3rd	24.38	0.80	172.56	19.38	25.67	0.76	176.69	15.98
Change from 3rd to 5th	11.50	0.59	110.75	12.90	11.61	0.58	117.48	19.73

Math Test Scores

Math at K	36.40	0.89	138.38	14.39	35.19	0.88	125.20	15.80
Change from K to 1st	26.96	1.16	211.88	32.22	24.44	0.71	82.92	8.68
Change from 1st to 3rd	19.70	0.65	120.68	17.67	18.50	0.54	103.76	11.61
Change from 3rd to 5th	11.89	0.55	80.64	9.27	12.82	0.53	80.40	9.58

Table 8_b. Summary of Significant Differences in the Mean and Variance of Latent Variables across Immigrant groups

	Intercept	Change K to 1st	Change 1st to 3rd	Change 3rd to 5th
Boys				
Mean				
Reading	East vs. each South Am vs. Mexico	East vs. Mexico, CC, Southeast	South Am vs. Mexico, CC, East, Southeast	Mexico, CC vs. other
Math	East vs. each	East, U.S., other vs. CC	South Am vs. Mexico, CC, Southeast, U.S.	Southeast vs. Mexico, East, other, U.S.
Variance				
Reading	each vs. Mexico, CC	East, Southeast, U.S. vs. Mexico	CC, other vs. Southeast	-
Math	East, Southeast vs. South Am, Mexico, CC	South Am, East, Southeast, U.S. vs. Mexico	-	-
Girls				
Mean				
Reading	East vs. each	East vs. Mexico, CC	South Am vs. Southeast	South Am vs. Southeast
Math	East vs. each	East vs. Mexico, CC, Southeast	East vs. South Am, Mexico, CC, U.S.	East vs. Mexico, other
Variance				
Reading	East, Southeast vs. Mexico, CC	East vs. CC	-	Mexico vs. South Am, Southeast
Math	Southeast, other vs. Mexico	-	-	Mexico vs. East

Each (every other immigrant group); South Am (South America); CC (Caribbean/Central America); East (East Asia); Southeast (Southeast Asia); other (Other countries); U.S. (U.S.-born mother). Selectively shown for statistical significance. Larger value first vs. smaller value second.

Testing of hypothesis 7_a: The home literacy environment will be associated with higher reading and math test scores.

The structural model of academic achievement test scores was quite a good fit to the data, with 70 degrees of freedom, a chi-square of 266.172 ($p < .00$), a CFI of .99, an RMSEA of .03, and an SRMR of .02.

Reading test scores at kindergarten. The intercept columns in table 9 show the effects of parental involvement and child's reading activity and family background on children's reading test scores at kindergarten above the effects of covariates. Children's reading activity was associated with higher reading test scores ($\beta = .17, p < .001$), whereas activities in which the parents were involved with the child did not show a significant effect. Children of East Asian and Southeast Asian mothers had higher reading test scores ($\beta = .11, p < .001$ and $\beta = .09, p < .01$, respectively), and children of Mexican mothers had lower reading test scores compared to children from families in which the father, rather than the mother, was foreign-born ($\beta = -.08, p < .01$). Higher socioeconomic status and fewer siblings were significantly associated with better reading test performance ($\beta = .31, p < .001, \beta = -.08, p < .001$, respectively). Whether or not both parents were living together had no effect on children's reading scores at kindergarten. All variables in the model explained 27% of variance in children's reading test scores at kindergarten.

Change in reading test scores from kindergarten to 1st grade. Spending more time on reading was a significant predictor for increases in children's reading scores from kindergarten to 1st grade ($\beta = .07, p < .01$). Girls had larger increases in test scores than boys ($\beta = .05, p < .05$). Children with parents who were more

proficient in English showed increased reading scores ($\beta = .07, p < .01$). Compared to families with foreign-born fathers, families in which the mother belonged in the “other countries” category had higher increases in reading scores ($\beta = .06, p < .05$). Higher socioeconomic status was significantly associated with an increase in reading scores ($\beta = .21, p < .001$).

Change in reading test scores from 1st grade to 3rd grade. Children’s reading activity at kindergarten was negatively associated with the change in reading test scores from 1st grade to 3rd grade ($\beta = -.07, p < .01$). The test scores of children of East Asian mothers, Southeast Asian mothers, and Mexican mothers declined. The effect of family socioeconomic status, which was significantly associated with reading scores at kindergarten and with the change in scores from kindergarten to 1st grade, was attenuated when it came to the change in reading scores from 1st grade to 3rd grade ($\beta = .11, p < .10$).

Change in reading test scores from 3rd grade to 5th grade. The effects of children’s reading were no longer significant for changes in reading scores from 3rd grade to 5th grade. There was no effect of mother’s country of origin. Contrary to expectation, better family socioeconomic status at kindergarten and living with both parents at 1st grade were associated with decreases in reading scores ($\beta = -.21, p < .01$).

Table 9. Coefficients from the Structural Model of Reading Test Scores, All Children

	Intercept			Change K - 1st			Change 1st-3rd			Change 3rd-5th		
	Beta	b	SE	Beta	b	SE	Beta	b	SE	Beta	b	SE
Home literacy environment												
Parents involvement(K)	0.00	-0.01	0.07	0.00	-0.01	0.08	-0.05	-0.09	0.05	0.01	0.01	0.05
Parents involvement(1)							0.02	0.05	0.05	-0.01	-0.01	0.05
Parents involvement(3)										-0.02	-0.04	0.05
Child reading (K)	0.17 ***	2.57	0.26	0.07 **	1.10	0.34	-0.07 **	-0.67	0.22	0.00	0.00	0.21
Child reading (1)							0.05	0.49	0.28	-0.02	-0.12	0.25
Child reading (3)										0.00	0.02	0.21
Time invariant covariates												
Girl	0.02	0.44	0.61	0.05 *	1.41	0.72	0.05	0.84	0.44	-0.02	-0.23	0.38
Length of stay in the U.S.	0.01	0.01	0.03	-0.01	-0.01	0.04	0.01	0.01	0.02	-0.01	-0.01	0.02
English proficiency	0.02	0.10	0.12	0.07 *	0.33	0.16	-0.01	-0.02	0.10	-0.05	-0.11	0.08
Country of origin (U.S.-born mother omitted)												
South America	0.00	0.12	1.58	0.02	1.62	1.73	0.02	0.85	1.05	0.01	0.26	0.92
Mexico	-0.08 **	-2.54	0.94	-0.05	-1.58	1.31	-0.10 *	-1.85	0.75	0.00	-0.05	0.63
Caribbean/Central America	0.00	-0.01	1.09	-0.03	-1.42	1.36	-0.05	-1.51	0.97	0.02	0.38	0.67
East Asia	0.11 ***	7.58	1.72	0.05	3.11	1.69	-0.07 **	-2.67	0.92	0.01	0.17	0.75
Southeast Asia	0.09 **	4.58	1.48	0.04	2.15	1.36	-0.10 ***	-3.30	0.81	-0.01	-0.19	0.66
Other countries	0.03	1.41	1.05	0.06 *	2.80	1.29	0.05	1.24	0.81	-0.04	-0.87	0.59
Time variant covariates												
Family SES (K)	0.31 ***	5.55	0.64	0.21 ***	3.75	0.61	0.11	1.20	0.62	-0.21 **	-1.86	0.55
Family SES (1)							0.01	0.15	0.65	0.08	0.72	0.92
Family SES (3)										0.08	0.74	0.85
Number of sibling(K)	-0.08 ***	-0.95	0.23	-0.03	-0.42	0.27	-0.03	-0.24	0.53	0.04	0.22	0.45
Number of sibling(1)							-0.02	-0.19	0.55	0.05	0.29	0.55
Number of sibling(3)										-0.10	-0.62	0.36
Two parents(K)	0.02	1.07	0.78	0.03	1.23	0.98	-0.03	-0.75	1.04	0.05	1.08	0.87
Two parents(1)							0.03	0.78	1.01	-0.08 *	-1.80	0.89
Two parents(3)										0.01	0.15	0.82
Locale of residence												
Suburb (K)	0.07	2.14	1.31	-0.02	-0.54	1.78	-0.11	-2.18	1.76	0.05	0.71	1.86
Suburb (1)							0.08	1.46	1.65	-0.04	-0.60	1.60
Suburb (3)										-0.04	-0.55	1.06
Large city (K)	0.05	1.64	1.24	-0.01	-0.28	1.83	-0.07	-1.39	1.52	0.00	-0.06	1.71
Large city (1)							0.03	0.47	1.31	-0.12	-1.78	1.42
Large city (3)										0.08	1.21	0.98
R ²	0.27			0.13			0.06			0.02		

* < .05, ** < .01, *** < .001

Math test scores at kindergarten. Table 10 shows the structural model test of parental involvement and child's reading activity and family background on children's math test scores. More frequent reading activity was associated with a higher math test score at kindergarten ($\beta = .10, p < .001$). Boys were better at math than girls ($\beta = -.05, p < .05$). When immigrant parents had been in the U.S. longer, their children had better math scores ($\beta = .05, p < .05$). Having an East Asian mother, a Southeast Asian mother, or an immigrant mother in the "other countries" category was associated with children's higher math test scores ($\beta = .12, p < .001$; $\beta = .06, p < .05$; $\beta = .06, p < .01$, respectively), whereas having a Mexican or Caribbean/Central American mother was associated with a lower math test score compared to families with a U.S.-born mother ($\beta = -.10, p < .01$; $\beta = -.05, p < .05$, respectively). Children who had a higher socioeconomic status and fewer siblings performed better on the math test ($\beta = .32, p < .001$; $\beta = -.06, p < .001$, respectively).

Change in math test scores from kindergarten to 1st grade. Activities with parents and children's reading at kindergarten were not associated with the change in math test scores from kindergarten to 1st grade. Boys were still better at the math test than girls ($\beta = -.06, p < .05$). The effects of mother's country of origin disappeared, except in the case of children with a Caribbean/Central American mother. Higher family socioeconomic status was associated with an increase in math scores ($\beta = .14, p < .001$).

Change in math test scores from 1st grade to 3rd grade. Neither activities with parents nor reading time was statistically significant for the change in math test scores from 1st grade to 3rd grade. Boys still outperformed girls ($\beta = -.10, p < .001$).

Children from families that had recently immigrated were more likely to have increased test scores from 1st grade to 3rd grade ($\beta = -.06, p < .01$). Children with an East Asian mother or one from the “other countries” category had increased math scores ($\beta = .06, p < .05$; $\beta = .09, p < .01$), but children with a Mexican mother had decreased math scores ($\beta = -.07, p < .05$). Family socioeconomic status effects were not significant ($\beta = .10, p = .15$), but having fewer siblings was beneficial to the target child’s math test scores ($\beta = -.13, p < .05$).

Change in math test scores from 3rd grade to 5th grade. Boys no longer outperformed girls when it came to increases in their math scores. Caribbean/Central American mothers had children whose math scores increased ($\beta = .06, p < .05$) compared to those in the reference group.

Table 10. Coefficients from the Structural Model of Math Test Scores, All Children

	Intercept			Change K - 1st			Change 1st-3rd			Change 3rd-5th		
	Beta	b	SE	Beta	b	SE	Beta	b	SE	Beta	b	SE
Home literacy environment												
Parents involvement(K)	0.01	0.03	0.05	-0.04	-0.09	0.05	0.02	0.04	0.04	-0.04	-0.05	0.04
Parents involvement(1)							-0.01	-0.01	0.04	-0.01	-0.01	0.04
Parents involvement(3)										0.02	0.02	0.04
Child reading (K)	0.10 ***	1.20	0.24	0.03	0.35	0.30	0.04	0.31	0.19	-0.01	-0.08	0.16
Child reading (1)							0.04	0.36	0.20	-0.01	-0.07	0.20
Child reading (3)										0.05	0.37	0.20
Time invariant covariates												
Girl	-0.05 *	-1.27	0.54	-0.06 *	-1.24	0.54	-0.10 ***	-1.59	0.34	-0.01	-0.16	0.32
Length of stay in the U.S.	0.05 *	0.07	0.03	-0.01	-0.01	0.03	-0.06 **	-0.05	0.02	-0.02	-0.02	0.02
English proficiency	0.00	0.01	0.10	0.02	0.06	0.11	-0.03	-0.08	0.08	-0.03	-0.05	0.07
Country of origin (U.S.-born mother omitted)												
South America	0.00	-0.13	0.99	-0.03	-1.47	1.49	0.04	1.42	0.78	0.03	0.95	0.90
Mexico	-0.10 **	-2.48	0.85	-0.02	-0.54	0.94	-0.07 *	-1.14	0.58	-0.01	-0.13	0.59
Caribbean/Central America	-0.05 *	-1.99	0.98	-0.09 **	-3.10	1.08	-0.01	-0.33	0.72	0.06 *	1.21	0.59
East Asia	0.12 ***	6.23	1.34	-0.02	-0.72	1.11	0.06 *	1.89	0.79	0.03	0.86	0.64
Southeast Asia	0.06 *	2.56	1.12	-0.04	-1.48	1.09	0.03	0.79	0.58	0.05	1.02	0.57
Other countries	0.06 **	2.17	0.83	-0.02	-0.47	0.92	0.09 **	1.92	0.60	0.01	0.23	0.56
Time variant covariates												
Family SES (K)	0.32 ***	4.63	0.43	0.14 ***	1.82	0.45	0.10	0.94	0.64	-0.01	-0.07	0.43
Family SES (1)							0.06	0.58	0.62	0.00	-0.01	0.68
Family SES (3)										0.02	0.12	0.64
Number of sibling(K)	-0.06 ***	-0.57	0.16	-0.03	-0.25	0.20	0.09	0.57	0.41	0.05	0.26	0.38
Number of sibling(1)							-0.13 *	-0.82	0.41	-0.02	-0.09	0.49
Number of sibling(3)										-0.03	-0.14	0.32
Two parents(K)	0.02	0.81	0.61	0.01	0.42	0.80	-0.02	-0.37	1.01	-0.07	-1.21	0.83
Two parents(1)							0.04	0.99	1.01	0.07	1.37	0.97
Two parents(3)										-0.02	-0.47	0.61
Locale of residence												
Suburb (K)	0.02	0.39	1.33	0.11	2.47	1.33	-0.09	-1.49	1.70	0.07	0.92	1.84
Suburb (1)							0.08	1.25	1.58	-0.05	-0.72	1.47
Suburb (3)										-0.15	-1.98	1.16
Large city (K)	0.04	0.85	1.32	0.10	2.30	1.39	-0.08	-1.25	1.25	0.06	0.77	1.45
Large city (1)							0.06	0.93	1.14	-0.12	-1.60	1.03
Large city (3)										-0.06	-0.77	1.09
R ²	0.26			0.04			0.09			0.02		

* < .05, ** < .01, *** < .001

Testing of hypothesis 8_a: The association with the home literacy environment will differ by gender

The model allowing the effect of the two measures of the home literacy environment, parental involvement and child's reading activity, to differ between boys and girls was a good fit, with a CFI of .95, an RMSEA of .06, and an SRMR of .06.

Reading and math test scores at kindergarten for boys and girls. The structural models were compared between boys and girls (Table 11). Parental involvement and child's reading activity at kindergarten were both significantly associated with boys' reading test scores at kindergarten ($\beta = .11, p < .001$; $\beta = .22, p < .001$, respectively), whereas only child's reading activity was significant for girls ($\beta = .16, p < .001$), controlling for family background, e.g., parent's length of stay in the U.S., parents' English proficiency, maternal nativity, family SES, number of siblings, number of parents, and the locale of residence. For math test scores at kindergarten, more parental involvement at home and more frequent child reading activity was associated with boys' higher math test scores at kindergarten ($\beta = .14, p < .001$; $\beta = .13, p < .001$). Although there was no significant effect of parental involvement on girls' math scores, more time spent reading was associated with girls' higher math scores ($\beta = .11, p < .001$).

Change in reading and math test scores from kindergarten to 1st grade.

Both parental involvement and children's reading activity were still significant predictors for increased reading test scores for boys from kindergarten to 1st grade ($\beta = .11, p < .001$; $\beta = .08, p < .05$, respectively), controlling for family backgrounds.

Meanwhile, only children's reading activity was significant for increases in reading test scores for girls ($\beta = .11, p < .01$). There were still benefits of parental involvement and more children's reading activity for boys' increases in math scores from kindergarten to 1st grade ($\beta = .09, p < .01$; $\beta = .08, p < .05$, respectively). But neither parental involvement nor children's reading activity was significant for the change in math scores from 1st to 3rd grade for girls.

Change in reading and math test scores from 1st grade to 3rd grade. More parental involvement and time spent reading at 1st grade were associated with the increase in boys' reading test scores from 1st grade to 3rd grade ($\beta = .14, p < .001$; $\beta = .08, p < .05$, respectively), controlling for family background. Parental involvement at kindergarten and 1st grade did not have an effect on the change in girls' reading test scores from 1st to 3rd grade. But when girls read more at kindergarten, this was associated with a decline in their reading scores from 1st grade to 3rd grade ($\beta = -.08, p < .05$). These findings are discussed at greater length in the next chapter. For children's math test scores, parental involvement at kindergarten and 1st grade was associated with increases in boys' math test scores from 1st grade to 3rd grade ($\beta = .10, p < .01$; $\beta = .08, p < .05$), as well as more reading time at kindergarten and 1st grade ($\beta = .07, p < .05$; $\beta = .08, p < .05$). There was no benefit of parental involvement or children's reading for the change in girls' math skills from 1st to 3rd grade.

Change in reading and math test scores from 3rd grade to 5th grade.

Parental involvement in activities at 3rd grade was a significant predictor for increased reading test scores from 3rd grade to 5th grade for boys. None of the home activities

was significant for predicting changes in girls' reading scores at any time point. The increase in boys' math test scores from 3rd grade to 5th grade was significantly influenced by children spending more time on reading at 3rd grade.

Significantly different paths by gender. According to results comparing differences in the path between genders, the effect of parental involvement at kindergarten on reading and math test scores was significantly different between boys and girls ($\beta = .11$ vs. $\beta = .01$ for reading test scores; $\beta = .14$ vs. $\beta = .02$ for math test scores). The effect of parental involvement at kindergarten on the change in reading test scores from kindergarten to 1st grade was significantly different between boys and girls ($\beta = .11$ vs $\beta = -.04$). The effect of parental involvement at 1st grade on the change in reading and math test scores from 1st to 3rd grade was significantly different between boys and girls ($\beta = .14$ vs. $\beta = -.01$ for reading test scores; $\beta = .08$ vs. $\beta = -.05$ for math test scores). The effect of parental involvement at 3rd grade on the change in reading scores from 3rd to 5th grade was significantly higher for boys than it was for girls ($\beta = .09$ vs. $\beta = -.06$). The effect of children's reading activity at 3rd grade on the change in math test scores from 3rd to 5th grade was significantly higher for boys than it was for girls ($\beta = .16$ vs. $\beta = -.03$).

In sum, among the activities comprising the home literacy environment, children's reading activity significantly contributed to increased reading and math test scores. Boys' higher math and reading scores at kindergarten and increased scores between grades were associated with more reading at home. Girls' higher reading and math scores at kindergarten were also associated with their reading more at home, and the increase in math scores from kindergarten to 1st grade was associated with more

reading at home. The other aspect of the home literacy environment, parental involvement, was associated only with boys' test scores. There was no significant effect of parental involvement on girls' academic test scores. More parental involvement at kindergarten was associated with boys' higher reading and math scores at kindergarten, increases in reading and math scores from kindergarten to 1st grade, and increases in math scores from 1st to 3rd grade. More parental involvement at 1st grade also significantly contributed to increases in boys' math scores from 1st to 3rd grade. More parental involvement at 3rd grade had a positive effect on boys' increase in reading scores from 3rd to 5th grade.

Table 11. Coefficients from the Structural Model of Reading and Math Test Scores by Gender^a

	Intercept			Change K - 1st			Change 1st-3rd			Change 3rd-5th		
	Beta	b	SE	Beta	b	SE	Beta	b	SE	Beta	b	SE
Reading Test Scores												
Boys												
Parents involvement(K)	0.11 ***	0.36	0.09 ^b	0.11 ***	0.37	0.10 ^b	0.04	0.08	0.08	0.03	0.05	0.07
Parents involvement(1)							0.14 ***	0.31	0.08 ^b	-0.01	-0.01	0.09
Parents involvement(3)										0.09 *	0.16	0.06 ^b
Child reading (K)	0.22 ***	3.25	0.34	0.08 *	1.11	0.46	-0.03	-0.25	0.30	0.05	0.35	0.29
Child reading (1)							0.08 *	0.83	0.35	0.00	0.04	0.34
Child reading (3)										0.05	0.42	0.33
R ²	0.32			0.15			0.12			0.05		
Girls												
Parents involvement(K)	0.01	0.03	0.09 ^b	-0.04	-0.12	0.11 ^b	-0.03	-0.05	0.08	0.00	0.00	0.06
Parents involvement(1)							-0.01	-0.01	0.07 ^b	0.00	0.00	0.07
Parents involvement(3)										-0.06	-0.09	0.06 ^b
Child reading (K)	0.16 ***	2.61	0.39	0.11 **	1.70	0.51	-0.08 *	-0.78	0.31	-0.04	-0.26	0.28
Child reading (1)							0.04	0.44	0.43	-0.01	-0.10	0.38
Child reading (3)										0.02	0.19	0.38
R ²	0.28			0.15			0.05			0.03		
Math Test Scores												
Boys												
Parents involvement(K)	0.14 ***	0.40	0.07 ^b	0.09 **	0.24	0.08 ^b	0.10 **	0.18	0.05	-0.04	-0.05	0.05
Parents involvement(1)							0.08 *	0.16	0.07 ^b	0.03	0.04	0.07
Parents involvement(3)										0.04	0.05	0.05
Child reading (K)	0.13 ***	1.69	0.33	0.08 *	0.91	0.40	0.07 *	0.54	0.24	0.03	0.17	0.25
Child reading (1)							0.08 *	0.66	0.26	0.00	0.02	0.31
Child reading (3)										0.16 ***	1.19	0.31 ^b
R ²	0.31			0.08			0.15			0.08		
Girls												
Parents involvement(K)	0.02	0.05	0.07 ^b	-0.05	-0.09	0.07 ^b	0.02	0.04	0.06	0.00	0.01	0.06
Parents involvement(1)							-0.05	-0.08	0.05 ^b	0.01	0.01	0.06
Parents involvement(3)										0.07	0.10	0.06
Child reading (K)	0.11 ***	1.36	0.36	0.03	0.26	0.36	0.05	0.36	0.28	-0.03	-0.19	0.24
Child reading (1)							0.01	0.04	0.30	0.03	0.20	0.28
Child reading (3)										-0.03	-0.26	0.31 ^b
R ²	0.27			0.03			0.07			0.04		

^a Controlling for parent's length of stay in the US, English proficiency, mother's country of origin, family SES, number of siblings, two parents, the locale of residence.

^b Significant difference in the path between boys and girls.

* < .05, ** < .01, *** < .001

Testing of hypothesis 9_a: The association with the home literacy environment will differ across immigrant groups

The effects of parental involvement and children's reading activity were examined across seven immigrant groups. Given the finding of substantial difference between genders, the structural model was conducted separately for each immigrant group without constraining parameters between boys and girls. The model fit for the South American group indicates a CFI of .86, an RMSEA of .15, and an SRMR of .15; model fit for the Caribbean/Central American group is a CFI of .95, an RMSEA of .09, and an SRMR of .12; model fit for the Mexican immigrant group is a CFI of .91, an RMSEA of .10, and an SRMR of .19; model fit for the East Asian group is a CFI of .90, an RMSEA of .12, and an SRMR of .19; model fit for the Southeast Asian group is a CFI of .94, an RMSEA of .09, and an SRMR of .13; model fit for the group of other countries is a CFI of .93, an RMSEA of .07, and an SRMR of .09; and model fit for the U.S.-born mother group is a CFI of .92, an RMSEA of .10, and an SRMR of .11. The larger values of RMSEA and SRMR (which should be less than .06 and .09, respectively) mean that differences across immigrant groups need to be interpreted with caution, since the average discrepancy between the observed and predicted covariances may increase. The smaller values, in the case of CFIs, which should be greater than .96, can indicate that there is not much improvement in the overall fit of the tested model relative to a null model, which is assumed to be uncorrelated. Thus, the results of this study are reported along with a cautionary note about interpreting and representing the results. Table 12 shows the effect of parental

involvement and children's reading on reading test scores for boys across immigrant groups.

Reading test scores at kindergarten_boys. The significant effect of parental involvement and child's reading activity on reading test scores operated according to a similar pattern among boys with a South American, Mexican, or Southeast Asian mother. For these three groups, more parental involvement and more children's reading at kindergarten were associated with boys' higher reading test scores at kindergarten. For Caribbean/Central American families, there was a significant effect of parent involvement ($\beta = .35, p < .001$), but children's reading activity had no effect. For the remaining three immigrant groups (East Asian mother, mother from "other" country, and U.S.-born mother/foreign-born father), a significant positive effect of boys' reading activity emerged ($\beta = .44, p < .001$; $\beta = .29, p < .001$; $\beta = .22, p < .01$, respectively), but parental involvement had no effect. Comparing the effect of parental involvement and child's reading activity between groups, the parental involvement effect was significantly greater for children of Caribbean/Central Latin American mothers than it was for children of South American, Mexican, or Southeast Asian mothers; and the effect of children's reading activity was significantly greater for children of East Asian mother than for others.

Change in reading test scores from kindergarten to 1st grade_boys.

Parental involvement had a significant effect on the change in reading scores from kindergarten to 1st grade for boys of Mexican mothers ($\beta = .24, p < .001$), Caribbean/Central American mothers ($\beta = .34, p < .001$), East Asian mothers ($\beta = .19, p < .05$), and mothers from "other" countries ($\beta = .15, p < .05$). The effect for

children of Caribbean/Central American mothers was significantly larger than for children of South American mothers and Mexican mothers. Reading activity was associated with the change in reading scores for boys of South American mothers ($\beta = .46, p < .001$), East Asian mothers ($\beta = .21, p < .05$), Southeast Asian mothers ($\beta = .23, p < .05$), and mothers from “other” countries ($\beta = .17, p < .05$). This effect of children's reading activity was significantly larger for children of South American mothers than for children of mothers from “other” countries.

Change in reading test scores from 1st grade to 3rd grade_boys. The effect of parental involvement on the increase in reading scores for boys was significant except in the case of those with a mother in the “Caribbean/Central American” category or those with a U.S.-born mother and a foreign-born father. Parental involvement at kindergarten was associated with the increase in reading scores for boys of South American mothers; and parental involvement at 1st grade was significantly associated with increased scores from 1st to 3rd grade for boys of Mexican mothers, East Asian mothers, Southeast Asian mothers, and mothers in the “other countries” category. Boys’ reading had a positive effect on the increase in scores only for Mexican and Caribbean/Central American boys ($\beta = .13, p < .05$; $\beta = .18, p < .05$).

Change in reading test scores from 3rd grade to 5th grade_boys. Parental involvement at 3rd grade had a significant effect on increases in reading scores from 3rd to 5th grade for boys of Southeast Asian mothers ($\beta = .27, p < .001$) and mothers from “other” countries ($\beta = .24, p < .01$), suggesting that boys' reading test scores increased more when they engaged in more activities with their parent. More parental

involvement at 1st grade had a negative effect on the change in scores for boys of mothers from “other” countries ($\beta = -.24, p < .05$), but had a positive effect for boys from families with a U.S.-born mother and a foreign-born father ($\beta = .24, p < .05$). The increase in reading scores of East Asian boys and Mexican boys was associated with more children’s reading at home during 3rd grade ($\beta = .22, p < .01$; $\beta = .11, p < .05$, respectively).

Table 12. Coefficients from the Structural Model of Reading Test Scores by Immigrant Groups, Boys^a

	Intercept			Change K - 1st			Change 1st-3rd			Change 3rd-5th		
	Beta	b	SE	Beta	b	SE	Beta	b	SE	Beta	b	SE
South America												
Parents involvement(K)	0.14 *	0.52	0.25	-0.10	-0.45	0.48	0.28 *	0.78	0.37	0.30	0.60	0.30
Parents involvement(1)							0.13	0.39	0.41	-0.12	-0.26	0.37
Parents involvement(3)										0.01	0.01	0.26
Child reading (K)	0.36 ***	5.47	1.32	0.46 ***	9.18	2.77	-0.53 **	-6.27	1.74	-0.20	-1.69	1.35
Child reading (1)							0.21	2.85	1.63	0.35 *	3.44	1.80
Child reading (3)										-0.21	-2.35	1.61
Mexico												
Parents involvement(K)	0.32 ***	0.74	0.09	0.24 ***	0.61	0.13	0.07	0.14	0.14	0.12 *	0.19	0.10
Parents involvement(1)							0.16 *	0.33	0.13	0.01	0.02	0.14
Parents involvement(3)										0.06	0.10	0.09
Child reading (K)	0.29 ***	3.19	0.55	0.07	0.85	0.77	0.13 *	1.12	0.46	0.09	0.66	0.42
Child reading (1)							0.07	0.70	0.53	-0.10	-0.74	0.51
Child reading (3)										0.11 *	0.98	0.43
Caribbean/Central America												
Parents involvement(K)	0.35 ***	1.12	0.14	0.34 ***	0.98	0.21	0.12	0.29	0.20	0.17	0.29	0.18
Parents involvement(1)							0.13	0.30	0.19	-0.10	-0.17	0.18
Parents involvement(3)										0.09	0.16	0.16
Child reading (K)	0.10	1.99	0.98	-0.08	-1.05	1.41	-0.09	-0.97	1.02	0.26 **	1.97	0.78
Child reading (1)							0.18 *	2.08	0.93	0.02	0.14	0.80
Child reading (3)										0.04	0.42	0.75
East Asia												
Parents involvement(K)	0.15	0.76	0.40	0.19 *	0.74	0.32	0.05	0.13	0.25	-0.12	-0.21	0.25
Parents involvement(1)							0.19 *	0.51	0.25	0.07	0.13	0.31
Parents involvement(3)										0.07	0.12	0.16
Child reading (K)	0.44 ***	9.60	1.76	0.21 *	3.49	1.63	-0.11	-1.22	1.11	0.09	0.66	0.99
Child reading (1)							0.01	0.11	1.29	-0.03	-0.24	1.09
Child reading (3)										0.22 **	1.99	0.78
Southeast Asia												
Parents involvement(K)	0.16 **	0.69	0.21	0.11 *	0.38	0.20	-0.03	-0.05	0.15	-0.07	-0.12	0.12
Parents involvement(1)							0.30 ***	0.57	0.13	0.11	0.19	0.16
Parents involvement(3)										0.27 ***	0.49	0.13
Child reading (K)	0.21 ***	4.17	0.94	0.23 *	3.72	1.41	-0.07	-0.59	0.64	-0.27 **	-2.07	0.78
Child reading (1)							0.10	0.87	0.67	0.03	0.24	0.83
Child reading (3)										0.15	1.40	0.98
Other countries												
Parents involvement(K)	-0.01	-0.05	0.25	0.15 *	0.55	0.22	0.11	0.27	0.18	-0.04	-0.09	0.22
Parents involvement(1)							0.26 **	0.63	0.20	-0.24 *	-0.53	0.24
Parents involvement(3)										0.24 **	0.51	0.19
Child reading (K)	0.29 ***	4.89	1.07	0.17 *	2.49	1.09	-0.12	-1.18	0.69	-0.06	-0.48	0.67
Child reading (1)							0.00	-0.03	0.81	0.25 *	2.48	1.07
Child reading (3)										-0.12	-1.28	1.07
U.S.-born mother family												
Parents involvement(K)	0.08	0.29	0.22	0.00	0.01	0.26	0.03	0.07	0.22	-0.01	-0.02	0.19
Parents involvement(1)							-0.05	-0.11	0.18	0.24 *	0.39	0.16
Parents involvement(3)										-0.03	-0.05	0.17
Child reading (K)	0.22 **	3.17	0.99	0.07	1.19	1.33	0.10	0.90	0.74	0.05	0.37	0.64
Child reading (1)							0.14	1.48	0.88	-0.08	-0.67	0.71
Child reading (3)										-0.03	-0.24	0.85

^a Controlling for parent's length of stay in the US, English proficiency, family SES, number of siblings, two parents, and the locale of residence.

* < .05, ** < .01, *** < .001

Table 13 shows the effect of parental involvement and child's reading activity on boys' math test scores from kindergarten to 5th grade across immigrant groups.

Table 14 summarizes findings of significant difference in the association of parental involvement and child's reading activity with reading and math test scores for boys across immigrant groups.

Math test scores at kindergarten_boys. More parental involvement was associated with higher math test scores at kindergarten for boys of all Latin American families ($\beta = .24, p < .01$ for South America; $\beta = .31, p < .001$ for Mexico; $\beta = .35, p < .001$ for Caribbean/Central America), whereas there was no effect on boys of East Asian mothers. The positive association between math test scores and parental involvement was significantly higher for boys of Mexican mothers and Caribbean/Central American mothers than for boys of U.S.-born mothers. Reading activity was significantly associated with higher math scores except in the case of boys of Caribbean/Central American mothers. The association between math test scores and child's reading activity was significantly higher for boys of East Asian mothers than for boys of other immigrant groups.

Change in math test scores from kindergarten to 1st grade_boys. For boys of Caribbean/Central American mothers, more parental involvement was associated with the increase in test scores from kindergarten to 1st grade ($\beta = .20, p < .01$). Southeast Asian boys' increase in math scores from kindergarten to 1st grade was associated with more reading at home at kindergarten ($\beta = .25, p < .01$).

Change in math test scores from 1st grade to 3rd grade_boys. Parental involvement at kindergarten was significantly associated with the increases in boys'

scores for all Latin immigrant families ($\beta = .33, p < .01$ for South America; $\beta = .19, p < .01$ for Mexico; $\beta = .27, p < .01$ for Caribbean/Central America). This association was significantly higher for boys of Latin-origin mothers than for boys of U.S.-born mothers.

Change in math test scores from 3rd grade to 5th grade_boys. Significant effects of parental involvement disappeared except in the case of the Southeast Asian group. Meanwhile, children's reading, which did not seem to have an effect on the increase in scores between kindergarten and 3rd grade, appeared to have a significant positive effect on the increase in scores from 3rd to 5th grade. Specifically, more reading at kindergarten and at 3rd grade was associated with increased math scores from 3rd to 5th grade for Mexican boys ($\beta = .14, p < .05$; $\beta = .18, p < .01$). More reading at 3rd grade was associated with the increase in math scores for East Asian boys ($\beta = .37, p < .001$), Southeast Asian boys ($\beta = .22, p < .01$), and those in the "other countries" group ($\beta = .19, p < .05$).

Table 13. Coefficients from the Structural Model of Math Test Scores by Immigrant Groups, Boys^a

	Intercept			Change K - 1st			Change 1st-3rd			Change 3rd-5th		
	Beta	b	SE	Beta	b	SE	Beta	b	SE	Beta	b	SE
South America												
Parents involvement(K)	0.24 **	0.57	0.19	-0.01	-0.05	0.36	0.33 **	0.69	0.26	-0.14	-0.23	0.22
Parents involvement(1)							0.13	0.29	0.41	-0.03	-0.06	0.32
Parents involvement(3)										0.31	0.51	0.28
Child reading (K)	0.25 **	2.48	0.98	0.25	4.08	2.93	-0.03	-0.28	1.29	-0.07	-0.51	1.14
Child reading (1)							0.16	1.71	1.33	-0.11	-0.94	1.34
Child reading (3)										0.14	1.39	1.25
Mexico												
Parents involvement(K)	0.31 ***	0.68	0.09	0.21 ***	0.48	0.09	0.19 **	0.31	0.10	0.01	0.01	0.09
Parents involvement(1)							0.09	0.17	0.11	0.09	0.13	0.11
Parents involvement(3)										0.00	0.00	0.08
Child reading (K)	0.19 ***	2.00	0.47	0.14 **	1.46	0.57	0.10 *	0.81	0.40	0.14 *	0.88	0.40
Child reading (1)							0.05	0.41	0.42	-0.09	-0.58	0.51
Child reading (3)										0.18 **	1.33	0.47
Caribbean/Central America												
Parents involvement(K)	0.35 ***	0.85	0.13	0.20 **	0.51	0.15	0.27 **	0.52	0.17	0.15	0.20	0.17
Parents involvement(1)							0.00	0.00	0.15	-0.15	-0.20	0.15
Parents involvement(3)										0.17	0.25	0.14
Child reading (K)	0.10	1.00	0.88	-0.03	-0.37	1.04	0.06	0.49	0.85	-0.02	-0.12	0.57
Child reading (1)							0.18	1.60	0.93	0.17	1.08	0.71
Child reading (3)										0.11	0.78	0.70
East Asia												
Parents involvement(K)	0.05	0.24	0.34	0.16	0.53	0.30	0.11	0.22	0.19	0.02	0.03	0.20
Parents involvement(1)							0.09	0.19	0.27	0.19	0.30	0.23
Parents involvement(3)										0.03	0.04	0.17
Child reading (K)	0.40 ***	7.79	1.28	0.14	1.90	1.67	0.25	2.17	1.20	-0.21 *	-1.32	0.67
Child reading (1)							0.07	0.61	1.39	-0.04	-0.28	1.10
Child reading (3)										0.37 ***	2.91	0.70
Southeast Asia												
Parents involvement(K)	0.15 *	0.54	0.22	0.11	0.31	0.18	0.07	0.13	0.15	-0.02	-0.02	0.11
Parents involvement(1)							0.19 *	0.34	0.15	-0.05	-0.06	0.15
Parents involvement(3)										0.30 ***	0.42	0.10
Child reading (K)	0.18 **	2.95	0.97	0.25 **	3.30	1.16	-0.01	-0.10	0.53	-0.19	-1.13	0.60
Child reading (1)							0.09	0.72	0.57	0.08	0.51	0.62
Child reading (3)										0.16	1.14	0.64
Other countries												
Parents involvement(K)	0.18 **	0.57	0.21	0.13	0.39	0.21	0.05	0.11	0.17	-0.14	-0.25	0.18
Parents involvement(1)							0.17 *	0.34	0.16	0.00	0.00	0.20
Parents involvement(3)										0.09	0.16	0.12
Child reading (K)	0.13	1.62	1.03	0.04	0.49	1.05	0.13 *	1.07	0.53	-0.02	-0.14	0.66
Child reading (1)							0.13	1.20	0.70	0.00	0.03	0.83
Child reading (3)										0.19 *	1.63	0.69
U.S.-born mother family												
Parents involvement(K)	0.07	0.21	0.18	0.09	0.31	0.24	-0.15	-0.30	0.21	0.04	0.07	0.17
Parents involvement(1)							0.12	0.21	0.16	0.07	0.11	0.15
Parents involvement(3)										-0.20	-0.32	0.16
Child reading (K)	0.17 *	2.05	1.00	0.05	0.70	1.12	0.13	1.01	0.62	0.06	0.41	0.67
Child reading (1)							0.09	0.76	0.72	0.02	0.17	0.74
Child reading (3)										0.14	1.06	0.81

^a Controlling for parent's length of stay in the US, English proficiency, family SES, number of siblings, two parents, and the locale of residence.

* < .05, ** < .01, *** < .001

Table 14. Summary of Significant Differences in the Association with Boys' Academic Achievement across Immigrant Groups

	Intercept	Change K to 1st	Change 1st to 3rd	Change 3rd to 5th
Boys				
Reading Test Scores				
Parental involvement(K)	CC vs. South Am, Mexico, Southeast	CC vs. South Am, Mexico	South Am vs. Southeast	South Am, Mexico vs. East,Southeast
Parental involvement(1)			Mexico, East, Southeast, other vs. U.S.	-
Parental involvement(3)				Mexico vs. Southeast
Child reading (K)	East vs. each (except South Am)	South Am vs. other	South Am vs. each (except other)	CC vs. South Am East vs. Southeast
Child reading (1)			-	South Am vs. Mexico, U.S.
Child reading (3)				Mexico, East, Southeast vs. South Am
Math Test Scores				
Parental involvement(K)	Mexico, CC vs. U.S.	-	South Am, Mexico, CC vs. U.S.	-
Parental involvement(1)			-	-
Parental involvement(3)				South Am, Mexico, CC, Southeast vs. U.S.
Child reading (K)	East vs. each	Southeast vs. CC	-	Mexico vs. East,Southeast
Child reading (1)			-	-
Child reading (3)				Southeast vs. CC

Each (every other immigrant group); South Am (South America); CC (Caribbean/Central America); East (East Asia); Southeast (Southeast Asia); other (Other countries); U.S. (U.S.-born mother). Selectively shown for statistical significance. Larger value first vs. smaller value second.

Table 15 presents the effect of parental involvement and children's reading on changes in girls' reading scores across immigrant groups.

Reading test scores at kindergarten_girls. There was no effect of parental involvement at kindergarten on reading scores at kindergarten in any of the immigrant groups. But children's reading activity was significantly associated with girls' higher test scores at kindergarten in all immigrant groups except girls with a South American mother. The association between children's reading and reading test scores was significantly higher for girls of East Asian mothers than girls of other immigrant groups.

Change in reading test scores from kindergarten to 1st grade_girls. Parental involvement had an effect on the change in reading scores from kindergarten to 1st grade for only one immigrant group and in the opposite direction from that predicted: more parental involvement on the part of Mexican mothers was associated with a decrease in their daughters' reading scores ($\beta = -.14, p < .05$).

More reading activity at kindergarten was associated with increased test scores from kindergarten to 1st grade for girls from all three Latin American groups ($\beta = .31, p < .05$ for South America; $\beta = .15, p < .05$ for Mexico; $\beta = .19, p < .05$ for Caribbean/Central American). The association between reading activity and change in reading scores was significantly higher for girls of South American mothers and Caribbean/Central mothers than for girls of East Asian mothers.

Change in reading test scores from 1st grade to 3rd grade_girls. None of the home activities was associated with the change in reading scores from 1st to 3rd grade for girls for any of the immigrant groups.

Change in reading test scores from 3rd grade to 5th grade_girls. There were few significant effects of parental involvement and child's reading activity on girls' change in reading scores from 3rd grade to 5th grade. Only girls of South American mothers and those with mothers from "other" countries were influenced at all. More parental involvement at 1st grade was associated with increased test scores from 3rd to 5th grade for girls of South American mothers ($\beta = .48, p < .01$), but more parental involvement at 3rd grade decreased scores for girls of South American mothers ($\beta = -.49, p < .01$) and girls of mothers from "other" countries ($\beta = -.16, p < .05$).

Table 15. Coefficients from the Structural Model of Reading Test Scores by Immigrant Groups, Girls^a

	Intercept			Change K - 1st			Change 1st-3rd			Change 3rd-5th		
	Beta	b	SE	Beta	b	SE	Beta	b	SE	Beta	b	SE
South America												
Parents involvement(K)	-0.07	-0.24	0.37	-0.11	-0.36	0.52	0.14	0.29	0.25	-0.21	-0.29	0.21
Parents involvement(1)							-0.08	-0.16	0.25	0.48 **	0.65	0.20
Parents involvement(3)										-0.49 **	-0.68	0.26
Child reading (K)	0.18	3.25	2.46	0.31 *	5.87	2.61	-0.09	-0.98	1.44	-0.14	-1.06	0.98
Child reading (1)							0.08	0.89	1.23	-0.21	-1.65	0.90
Child reading (3)										-0.10	-0.79	0.87
Mexico												
Parents involvement(K)	0.00	0.00	0.11	-0.14 *	-0.41	0.18	-0.10	-0.18	0.12	0.03	0.05	0.10
Parents involvement(1)							-0.03	-0.06	0.12	-0.05	-0.08	0.13
Parents involvement(3)										-0.08	-0.14	0.11
Child reading (K)	0.14 *	1.24	0.57	0.15 *	2.14	0.90	-0.03	-0.29	0.49	0.02	0.15	0.53
Child reading (1)							0.11	1.08	0.68	0.04	0.32	0.64
Child reading (3)										-0.04	-0.35	0.62
Caribbean/Central America												
Parents involvement(K)	0.10	0.29	0.30	-0.11	-0.31	0.22	0.07	0.14	0.18	-0.11	-0.17	0.15
Parents involvement(1)							0.11	0.23	0.18	-0.02	-0.03	0.12
Parents involvement(3)										-0.04	-0.06	0.17
Child reading (K)	0.13 +	1.85	0.88	0.19 *	2.59	1.13	-0.10	-0.97	0.78	0.09	0.65	0.76
Child reading (1)							0.08	0.94	0.93	0.05	0.42	1.09
Child reading (3)										-0.05	-0.39	0.93
East Asia												
Parents involvement(K)	0.05	0.27	0.42	-0.03	-0.14	0.44	0.03	0.06	0.25	-0.09	-0.13	0.19
Parents involvement(1)							0.07	0.14	0.22	0.09	0.14	0.18
Parents involvement(3)										0.03	0.04	0.13
Child reading (K)	0.30 ***	8.97	2.82	-0.13	-3.10	2.53	-0.13	-1.47	1.03	-0.14	-1.27	0.92
Child reading (1)							0.00	0.01	1.03	0.07	0.52	0.96
Child reading (3)										0.07	0.61	0.97
Southeast Asia												
Parents involvement(K)	0.02	0.09	0.29	0.17	0.63	0.35	-0.15	-0.30	0.18	0.06	0.09	0.14
Parents involvement(1)							-0.05	-0.08	0.16	0.00	0.00	0.13
Parents involvement(3)										-0.07	-0.09	0.17
Child reading (K)	0.10	2.21	1.35	0.12	2.06	1.39	-0.01	-0.05	0.76	-0.21 *	-1.57	0.74
Child reading (1)							-0.07	-0.68	0.84	0.01	0.04	0.76
Child reading (3)										-0.08	-0.74	0.98
Other countries												
Parents involvement(K)	0.03	0.10	0.25	0.09	0.29	0.23	-0.08	-0.17	0.18	0.13	0.22	0.13
Parents involvement(1)							0.00	0.00	0.21	-0.02	-0.04	0.18
Parents involvement(3)										-0.16 *	-0.25	0.11
Child reading (K)	0.25 ***	3.53	0.99	0.11	1.70	1.17	-0.22 **	-2.14	0.73	0.02	0.15	0.55
Child reading (1)							-0.07	-0.75	0.94	-0.05	-0.40	0.68
Child reading (3)										0.10	1.04	0.81
U.S.-born mother family												
Parents involvement(K)	-0.04	-0.13	0.25	0.01	0.05	0.26	0.09	0.18	0.23	-0.01	-0.01	0.18
Parents involvement(1)							-0.06	-0.12	0.18	0.09	0.17	0.18
Parents involvement(3)										-0.01	-0.01	0.17
Child reading (K)	0.17 ***	2.52	0.79	0.01	0.14	1.10	-0.16 +	-1.55	0.82	-0.06	-0.49	0.82
Child reading (1)							-0.05	-0.56	1.01	-0.10	-0.97	0.97
Child reading (3)										0.16 *	1.71	0.67

^a Controlling for parent's length of stay in the US, English proficiency, family SES, number of siblings, two parents, and the locale of residence.

* < .05, ** < .01, *** < .001

Table 16 presents the effect of parental involvement and children's reading on changes in girls' math test scores across immigrant groups. Table 17 summarizes differences in the association of parental involvement and girls' reading activity with reading and math test scores at kindergarten and over time.

Math test scores at kindergarten_girls. In the case of girls of Caribbean/Central American mothers and mothers from "other" countries, more children's reading at home was associated with higher math test scores at kindergarten ($\beta = .20, p < .01$; $\beta = .21, p < .01$, respectively).

Change in math test scores from kindergarten to 1st grade_girls. The positive effect of more reading activity at kindergarten persisted to increase scores from kindergarten to 1st grade for girls of Caribbean/Central American mothers ($\beta = .16, p < .05$). This association was significantly higher for girls of Caribbean/Central American mothers than for girls of U.S.-born mothers.

Change in math test scores from 1st grade to 3rd grade_girls. More parental involvement negatively affected the change in scores for girls of mothers in the "other countries" group ($\beta = -.20, p < .05$). More reading at kindergarten was associated with the increase in math scores from 1st to 3rd grade for girls of East Asian mothers ($\beta = .23, p < .01$). This association was significantly higher for girls of East Asian mother and for girls of Mexican mothers.

Change in math test scores from 3rd grade to 5th grade_girls. More parental involvement at 3rd grade was associated with increases in math scores from 3rd to 5th grade for girls of East Asian mothers and U.S.-born mothers ($\beta = .21, p < .05$; $\beta = .23, p < .05$, respectively). More reading activity in kindergarten, which had a

positive effect on the change in scores from 1st to 3rd grade, now had a negative influence on the change in scores from 3rd to 5th grade for girls of East Asian mothers ($\beta = -.21, p < .05$).

Table 16. Coefficients from the Structural Model of Math Test Scores by Immigrant Groups, Girls^a

	Intercept			Change K - 1st			Change 1st-3rd			Change 3rd-5th		
	Beta	b	SE	Beta	b	SE	Beta	b	SE	Beta	b	SE
South America												
Parents involvement(K)	-0.02	-0.05	0.26	0.04	0.09	0.39	-0.02	-0.03	0.19	-0.26	-0.44	0.35
Parents involvement(1)							0.08	0.10	0.21	0.32	0.53	0.31
Parents involvement(3)										-0.01	-0.01	0.32
Child reading (K)	0.21	2.56	1.41	-0.06	-0.76	2.28	-0.07	-0.52	1.17	0.09	0.83	1.26
Child reading (1)							-0.19	-1.45	0.83	0.04	0.35	1.30
Child reading (3)										0.25	2.44	1.42
Mexico												
Parents involvement(K)	-0.04	-0.07	0.11	-0.10	-0.19	0.11	0.00	0.00	0.11	0.02	0.02	0.10
Parents involvement(1)							-0.06	-0.10	0.09	-0.01	-0.02	0.12
Parents involvement(3)										0.01	0.02	0.10
Child reading (K)	0.07	0.68	0.55	0.07	0.70	0.52	-0.01	-0.10	0.50	-0.01	-0.06	0.39
Child reading (1)							0.03	0.26	0.54	0.03	0.20	0.43
Child reading (3)										-0.06	-0.51	0.56
Caribbean/Central America												
Parents involvement(K)	0.10	0.20	0.17	-0.18	-0.33	0.19	-0.06	-0.08	0.13	0.17	0.21	0.17
Parents involvement(1)							0.04	0.06	0.14	-0.04	-0.05	0.12
Parents involvement(3)										0.08	0.10	0.15
Child reading (K)	0.20 **	2.04	0.65	0.16 *	1.45	0.66	0.09	0.62	0.62	0.02	0.12	0.59
Child reading (1)							0.05	0.38	0.66	0.16	1.15	0.81
Child reading (3)										-0.16	-1.14	0.75
East Asia												
Parents involvement(K)	0.08	0.25	0.26	0.06	0.14	0.24	0.07	0.10	0.18	-0.13	-0.16	0.17
Parents involvement(1)							0.07	0.11	0.14	-0.03	-0.04	0.16
Parents involvement(3)										0.21 *	0.28	0.14
Child reading (K)	0.09	1.79	1.87	0.02	0.23	1.37	0.23 **	2.12	0.86	-0.21 *	-1.62	0.80
Child reading (1)							-0.09	-0.77	0.70	-0.06	-0.38	0.72
Child reading (3)										-0.03	-0.18	0.76
Southeast Asia												
Parents involvement(K)	0.06	0.17	0.21	0.06	0.14	0.19	-0.04	-0.07	0.12	-0.09	-0.13	0.14
Parents involvement(1)							-0.10	-0.14	0.11	0.03	0.03	0.19
Parents involvement(3)										0.01	0.01	0.18
Child reading (K)	0.06	0.84	0.94	0.02	0.24	0.66	0.10	0.75	0.57	-0.06	-0.43	0.59
Child reading (1)							0.04	0.31	0.60	-0.04	-0.30	0.93
Child reading (3)										0.22	1.91	1.00
Other countries												
Parents involvement(K)	0.03	0.09	0.19	0.05	0.13	0.18	0.12	0.22	0.14	-0.05	-0.08	0.16
Parents involvement(1)							-0.20 *	-0.42	0.16	0.18	0.32	0.18
Parents involvement(3)										-0.14	-0.20	0.13
Child reading (K)	0.21 **	2.60	0.92	-0.01	-0.06	1.20	0.08	0.66	0.70	-0.10	-0.67	0.52
Child reading (1)							0.01	0.08	0.65	0.01	0.06	0.80
Child reading (3)										-0.05	-0.48	0.81
U.S.-born mother family												
Parents involvement(K)	-0.04	-0.09	0.15	-0.01	-0.03	0.20	0.05	0.07	0.14	-0.06	-0.09	0.14
Parents involvement(1)							-0.01	-0.02	0.16	-0.04	-0.06	0.14
Parents involvement(3)										0.23 *	0.36	0.16
Child reading (K)	0.05	0.58	0.69	-0.11	-1.01	0.83	0.01	0.11	0.59	0.08	0.53	0.57
Child reading (1)							0.01	0.11	0.74	0.01	0.12	0.77
Child reading (3)										-0.10	-0.87	0.68

^a Controlling for parent's length of stay in the US, English proficiency, family SES, number of siblings, two parents, and the locale of residence.

* < .05, ** < .01, *** < .001

Table 17. Summary of Significant Differences in the Association with Girls' Academic Achievement across Immigrant Groups

	Intercept	Change K to 1st	Change 1st to 3rd	Change 3rd to 5th
Girls				
Reading Test Scores				
Parental involvement(K)	-	Southeast vs. Mexico,CC	-	other vs. South Am
Parental involvement(1)			-	South Am vs. Mexico, CC, Southeast,other
Parental involvement(3)				CC, East vs. South Am
Child reading (K)	East vs. each (excpt.South Am)	South Am vs. CC, East	-	CC vs. Southeast
Child reading (1)			-	-
Child reading (3)				U.S. vs. South Am, Mexico, Southeast
Math Test Scores				
Parental involvement(K)	-	-	-	-
Parental involvement(1)			South Am, CC, East vs. other	-
Parental involvement(3)				East vs. other
Child reading (K)	-	CC vs. U.S.	East vs. Mexico	U.S. vs. East
Child reading (1)			-	-
Child reading (3)				South Am. vs. CC

Each (every other immigrant group); South Am (South America); CC (Caribbean/Central America); East (East Asia); Southeast (Southeast Asia); other (Other countries); U.S. (U.S.-born mother). Selectively shown for statistical significance. Larger value first vs. smaller value second.

Findings related to social skills

Table 18 shows the means and variances of intercept factors and difference factors of self-control and interpersonal skills from kindergarten through 5th grade. The goodness-of-fit indices indicate a very good fit to the data, with an RMSEA of 0.00, a CFI of 1.00, and an SRMR of 0.00.

Testing of hypothesis 4_b: Children's self-control and interpersonal skills will increase over time.

Scores on self-control increased steadily over time. Large values of variance of all latent variables indicate that self-control and interpersonal skills differed substantially across individuals at kindergarten, and that the change in scores at each time period also differed across individuals.

Testing of hypothesis 5_b: The pattern of the growth trajectory will differ by gender.

Girls had significantly higher self-control and interpersonal skills at kindergarten than did boys. The effect size is 0.32, and 0.35. However, the changes in self-control and interpersonal skills from kindergarten to 1st grade, 1st to 3rd grade, and 3rd to 5th grade were same between boys and girls.

Table 18. Means and Variances of Latent Factors of Social Skills, All Children and by Gender

	All children		Boys		Girls		boy vs. girl	effect size
	Means	SE	Mean	SE	Mean	SE		
Self-control								
Intercept	3.20	0.02	3.11	0.02	3.30	0.02	*	0.32
Change K - 1st grade	0.00	0.02	-0.01	0.03	0.01	0.03		0.03
Change 1st-3rd grade	0.02	0.01	0.01	0.01	0.02	0.01		0.03
Change 3rd-5th grade	0.03	0.01	0.02	0.01	0.03	0.01		0.02
Interpersonal skills								
Intercept	3.12	0.02	3.01	0.02	3.23	0.02	*	0.35
Change K - 1st grade	0.01	0.02	-0.01	0.03	0.02	0.03		0.05
Change 1st-3rd grade	0.00	0.01	-0.01	0.02	0.00	0.02		0.05
Change 3rd-5th grade	0.01	0.01	-0.01	0.02	0.02	0.01		0.07

	All children		Boys		Girls		boy vs. girl
	Variance	SE	Variance	SE	Variance	SE	
Self-control							
Intercept	0.35	0.01	0.36	0.01	0.33	0.01	
Change K - 1st grade	0.43	0.02	0.45	0.03	0.42	0.02	
Change 1st-3rd grade	0.11	0.01	0.12	0.01	0.11	0.01	
Change 3rd-5th grade	0.11	0.01	0.12	0.01	0.10	0.01	
Interpersonal skills							
Intercept	0.38	0.01	0.37	0.01	0.37	0.01	
Change K - 1st grade	0.51	0.02	0.51	0.03	0.51	0.03	
Change 1st-3rd grade	0.13	0.01	0.14	0.01	0.12	0.01	
Change 3rd-5th grade	0.12	0.01	0.13	0.01	0.12	0.01	

* Significant difference between boys and girls at the .05.

Testing of hypothesis 6_b: The pattern of the growth trajectory will differ across immigrant groups.

Table 19_a shows means and variances of intercepts and changes over time across immigrant groups. Table 19_b shows summarized results for whether there were differences in changes in social skills across immigrant groups. Boys' initial statuses for self-control and interpersonal skills were significantly different across immigrant groups. Boys of East Asian mothers had significantly higher self-control and interpersonal skills at kindergarten than did boys of Mexican mothers and Caribbean/Central American mothers. Changes in boys' self-control from kindergarten to 1st grade, and 1st grade to 3rd grade, differed across immigrant groups, whereas there was no difference in the change from 3rd to 5th grade. For interpersonal skills, there was no difference from 1st to 3rd grade, or from 3rd to 5th grade.

Girls of East Asian mother had significantly higher self-control at kindergarten than did girls of Caribbean/Central American mothers. From kindergarten to 3rd grade, immigrant groups appeared not to differ, but some differences were found from 3rd to 5th grade. Girls of East Asian mothers increased self-control skills from 3rd to 5th grade more than did girls of Mexican mothers, Caribbean/Central American mothers, and U.S.-born mothers. Girls' initial status for interpersonal skills was the same across immigrant groups, but the change from 3rd to 5th grade was different. Girls of East Asian mothers increased interpersonal skills from 3rd to 5th grade more than did girls of Mexican mothers, Caribbean/Central American mothers, and U.S.-born mothers.

Table 19_a. Means and Variances of Latent Factors of Social Skills by Immigrant Groups

	Boys				Girls			
	Mean	SE	Varian	SE	Mean	SE	Varian	SE
South America								
Self-control skills								
Self-control at K	3.14	0.10	0.37	0.04	3.29	0.09	0.36	0.08
Change from K to 1st	0.14	0.10	0.37	0.11	0.00	0.11	0.54	0.09
Change from 1st to 3rd	0.03	0.04	0.15	0.04	0.08	0.05	0.19	0.04
Change from 3rd to 5th	-0.01	0.04	0.17	0.05	0.03	0.05	0.15	0.03
Interpersonal skills								
Interpersonal skills at K	3.08	0.11	0.37	0.07	3.25	0.10	0.41	0.06
Change from K to 1st	0.13	0.12	0.46	0.11	0.00	0.12	0.56	0.12
Change from 1st to 3rd	-0.04	0.06	0.20	0.07	0.03	0.06	0.26	0.04
Change from 3rd to 5th	-0.05	0.07	0.25	0.06	0.01	0.06	0.21	0.03
Mexico								
Self-control skills								
Self-control at K	3.10	0.03	0.33	0.02	3.28	0.03	0.29	0.02
Change from K to 1st	0.00	0.05	0.46	0.06	-0.01	0.04	0.42	0.04
Change from 1st to 3rd	-0.02	0.02	0.25	0.03	0.04	0.02	0.22	0.03
Change from 3rd to 5th	0.04	0.02	0.24	0.03	0.02	0.02	0.21	0.02
Interpersonal skills								
Interpersonal skills at K	2.96	0.04	0.37	0.03	3.19	0.03	0.33	0.02
Change from K to 1st	0.04	0.05	0.48	0.05	0.05	0.05	0.49	0.04
Change from 1st to 3rd	-0.02	0.03	0.27	0.03	0.01	0.03	0.24	0.02
Change from 3rd to 5th	-0.02	0.03	0.23	0.02	0.01	0.02	0.25	0.03
Caribbean/Central America								
Self-control skills								
Self-control at K	2.94	0.08	0.53	0.05	3.20	0.06	0.36	0.04
Change from K to 1st	0.02	0.08	0.58	0.08	-0.02	0.07	0.49	0.07
Change from 1st to 3rd	0.12	0.04	0.30	0.06	0.02	0.03	0.20	0.03
Change from 3rd to 5th	-0.03	0.04	0.27	0.04	0.01	0.04	0.25	0.03
Interpersonal skills								
Interpersonal skills at K	2.91	0.07	0.44	0.04	3.17	0.05	0.37	0.03
Change from K to 1st	-0.01	0.08	0.58	0.08	0.01	0.08	0.63	0.10
Change from 1st to 3rd	0.03	0.04	0.26	0.05	0.01	0.04	0.25	0.04
Change from 3rd to 5th	-0.01	0.04	0.29	0.05	-0.03	0.03	0.19	0.03
East Asia								
Self-control skills								
Self-control at K	3.30	0.06	0.33	0.05	3.37	0.05	0.23	0.04
Change from K to 1st	0.02	0.07	0.37	0.06	-0.01	0.06	0.27	0.04
Change from 1st to 3rd	-0.01	0.04	0.16	0.03	0.04	0.04	0.21	0.04
Change from 3rd to 5th	0.04	0.05	0.21	0.04	0.11	0.03	0.15	0.03
Interpersonal skills								
Interpersonal skills at K	3.21	0.07	0.33	0.04	3.25	0.07	0.36	0.06
Change from K to 1st	-0.09	0.07	0.43	0.08	0.01	0.07	0.34	0.05
Change from 1st to 3rd	0.04	0.04	0.23	0.04	0.00	0.04	0.23	0.04
Change from 3rd to 5th	-0.05	0.04	0.17	0.03	0.12	0.04	0.26	0.04

Southeast Asia**Self-control skills**

Self-control at K	3.18	0.05	0.30	0.03	3.36	0.06	0.28	0.05
Change from K to 1st	0.06	0.05	0.38	0.05	0.11	0.07	0.35	0.06
Change from 1st to 3rd	0.01	0.04	0.23	0.04	0.00	0.03	0.17	0.03
Change from 3rd to 5th	0.03	0.04	0.21	0.02	0.06	0.04	0.17	0.03

Interpersonal skills

Interpersonal skills at K	3.05	0.06	0.36	0.03	3.27	0.07	0.36	0.04
Change from K to 1st	0.03	0.06	0.50	0.10	0.09	0.08	0.52	0.09
Change from 1st to 3rd	0.00	0.03	0.27	0.05	0.01	0.04	0.22	0.03
Change from 3rd to 5th	0.02	0.03	0.23	0.03	0.04	0.03	0.19	0.02

Other countries**Self-control skills**

Self-control at K	3.11	0.05	0.31	0.03	3.32	0.05	0.35	0.04
Change from K to 1st	-0.03	0.06	0.42	0.06	0.00	0.06	0.41	0.06
Change from 1st to 3rd	-0.01	0.03	0.24	0.03	-0.01	0.04	0.26	0.03
Change from 3rd to 5th	0.05	0.03	0.25	0.04	0.06	0.04	0.23	0.04

Interpersonal skills

Interpersonal skills at K	3.03	0.05	0.36	0.03	3.28	0.06	0.40	0.04
Change from K to 1st	-0.05	0.06	0.43	0.04	-0.07	0.06	0.54	0.07
Change from 1st to 3rd	-0.02	0.04	0.33	0.05	-0.02	0.04	0.27	0.04
Change from 3rd to 5th	0.01	0.04	0.34	0.05	0.07	0.04	0.26	0.05

U.S.-born mother**Self-control skills**

Self-control at K	3.12	0.05	0.35	0.03	3.31	0.05	0.39	0.04
Change from K to 1st	-0.12	0.05	0.43	0.05	0.06	0.05	0.38	0.05
Change from 1st to 3rd	0.04	0.03	0.23	0.04	0.00	0.03	0.20	0.03
Change from 3rd to 5th	0.00	0.03	0.22	0.03	-0.02	0.03	0.19	0.02

Interpersonal skills

Interpersonal skills at K	3.08	0.04	0.31	0.03	3.27	0.05	0.39	0.03
Change from K to 1st	-0.15	0.06	0.59	0.07	0.05	0.05	0.49	0.05
Change from 1st to 3rd	-0.01	0.03	0.26	0.04	-0.01	0.03	0.25	0.04
Change from 3rd to 5th	0.01	0.03	0.28	0.04	-0.02	0.03	0.20	0.03

Table 19_b. Summary of Significant Differences in the Mean and Variance of Latent Variables across Immigrant Groups

	Intercept	Change K to 1st	Change 1st to 3rd	Change 3rd to 5th
Boys				
Mean				
Self-control	East vs. Mexico,CC	East vs. Mexico, CC, other, U.S.	CC vs. Mexico	-
Interpersonal skills	East vs. Mexico,CC,other	U.S. vs. Mexico, CC	-	-
Variance				
Self-control	CC vs. each	CC vs. East,Southeast	Mexico, CC vs. South Am	-
Interpersonal skills	CC. vs. U.S.	U.S. vs. other	-	other, U.S. vs. East
Girls				
Mean				
Self-control	East vs. CC	-	-	East vs. Mexico, CC, U.S.
Interpersonal skills	-	-	-	East vs. Mexico, CC, U.S.
Variance				
Self-control	U.S. vs. Mexico,East	South Am, Mexico, CC, other vs. East	other vs. Southeast	CC vs. South Am, East, Southeast
Interpersonal skills	-	Mexico, CC, other, U.S. vs. East	-	-

Each (every other immigrant group); South Am (South America); CC (Caribbean/Central America); East (East Asia); Southeast (Southeast Asia); other (Other countries); U.S. (U.S.-born mother). Selectively shown for statistical significance. Larger value first vs. smaller value second.

Testing of hypothesis 7_b: The home literacy environment will be associated with better self-control and interpersonal skills.

Table 20 shows the effect of parental involvement and child's reading activity and covariates on children's self-control skills from kindergarten to 5th grade. The goodness-of-fit indices indicate a very good fit to the data, with an RMSEA of 0.026, a CFI of .98, and an SRMR of 0.02.

Self-control scores at kindergarten. There was no significant effect of parental involvement or children's reading on self-control skills at kindergarten. Girls showed better self-control skills than boys ($\beta = .15, p < .001$). Children whose immigrant parents had lived longer in the U.S. had better self-control ($\beta = .07, p < .01$). Higher family socioeconomic status also predicted children's better self-control ($\beta = .09, p < .01$).

Change in self-control from kindergarten to 1st grade. Immigrant parents' length of stay in the U.S. was associated with children's decreases in self-control skills from kindergarten to 1st grade ($\beta = -.06, p < .05$). None of the other variables was significant for changes in self-control during this period.

Change in self-control from 1st grade to 3rd grade. Living with both parents in the same household at 1st grade was associated with an increase in the self-control rating from 1st grade to 3rd grade ($\beta = .11, p < .01$).

Change in self-control from 3rd grade to 5th grade. Children from East Asian families showed increased self-control from 3rd grade to 5th grade ($b = .06, p < .05$) compared to children from families with a foreign-born father.

Table 20. Coefficients from the Structural Model of Self-control, All Children

	Intercept			Change K - 1st			Change 1st-3rd			Change 3rd-5th		
	Beta	b	SE	Beta	b	SE	Beta	b	SE	Beta	b	SE
Home literacy environment												
Parents involvement(K)	0.02	0.00	0.00	0.01	0.00	0.00	-0.02	0.00	0.00	-0.02	0.00	0.00
Parents involvement(1)							0.00	0.00	0.00	0.02	0.00	0.00
Parents involvement(3)										0.00	0.00	0.00
Child reading (K)	0.04	0.02	0.01	-0.01	-0.01	0.02	0.01	0.00	0.01	0.00	0.00	0.01
Child reading (1)							0.03	0.01	0.01	0.00	0.00	0.01
Child reading (3)										0.01	0.00	0.01
Time invariant covariates												
Girl	0.15 ***	0.18	0.03	0.02	0.02	0.03	0.01	0.00	0.02	0.01	0.01	0.02
Length of stay in the U.S.	0.07 **	0.00	0.00	-0.06 *	0.00	0.00	0.02	0.00	0.00	-0.01	0.00	0.00
Parents English proficiency	-0.03	-0.01	0.01	0.01	0.00	0.01	0.02	0.00	0.00	-0.04	0.00	0.00
Country of origin (U.S.-born mother omitted)												
South America	0.01	0.02	0.08	0.03	0.08	0.09	0.02	0.04	0.04	0.00	0.00	0.04
Mexico	0.04	0.04	0.05	0.01	0.01	0.06	0.02	0.01	0.03	0.01	0.00	0.04
Caribbean/Central America	-0.05	-0.10	0.07	0.02	0.03	0.07	0.05	0.05	0.04	-0.01	-0.01	0.04
East Asia	0.04	0.09	0.06	0.01	0.02	0.06	-0.01	-0.01	0.04	0.06 *	0.08	0.04
Southeast Asia	0.04	0.07	0.06	0.04	0.08	0.06	0.00	0.00	0.03	0.04	0.04	0.04
Other countries	0.00	-0.01	0.05	0.01	0.02	0.05	-0.03	-0.03	0.03	0.06	0.06	0.04
Time variant covariates												
Family SES (K)	0.09 **	0.06	0.02	-0.01	-0.01	0.02	-0.02	-0.01	0.02	-0.14 *	-0.06	0.03
Family SES (1)							0.03	0.01	0.02	0.02	0.01	0.04
Family SES (3)										0.12	0.05	0.03
Number of sibling(K)	0.00	0.00	0.01	0.00	0.00	0.01	0.01	0.00	0.02	-0.02	-0.01	0.03
Number of sibling(1)							-0.06	-0.02	0.02	0.06	0.02	0.03
Number of sibling(3)										0.02	0.01	0.02
Two parents(K)	0.05	0.08	0.05	0.00	0.00	0.05	-0.07	-0.07	0.04	0.05	0.04	0.05
Two parents(1)							0.11 **	0.11	0.04	-0.04	-0.04	0.06
Two parents(3)										-0.02	-0.02	0.04
Locale of residence												
Suburb (K)	-0.01	-0.02	0.08	-0.08	-0.11	0.11	-0.02	-0.02	0.07	0.23 *	0.15	0.08
Suburb (1)							0.07	0.05	0.04	-0.10	-0.07	0.06
Suburb (3)										-0.11	-0.07	0.04
Large city (K)	-0.03	-0.03	0.08	-0.09	-0.12	0.11	-0.03	-0.02	0.08	0.23 *	0.15	0.07
Large city (1)							0.08	0.05	0.05	-0.23 *	-0.15	0.07
Large city (3)										0.01	0.01	0.03
R2	0.05			0.01			0.01			0.02		

* < .05, ** < .01, *** < .001

Table 21 shows the effect of parental involvement and child's reading activity and covariates on children's interpersonal skills from kindergarten to 5th grade.

Interpersonal skills at kindergarten. Children's reading for pleasure at kindergarten was associated with better interpersonal skills at kindergarten ($\beta=.07, p < .01$). Girls and children whose parents had lived longer in the U.S. had higher ratings for interpersonal skills, as did those whose parents were less proficient in English ($\beta = .16, p < .001$; $\beta = .08, p < .01$; $\beta = -.08, p < .05$, respectively). Children from Caribbean/Central American families had lower interpersonal skills compared to children from families in which the father was foreign-born ($\beta = -.08, p < .05$). Family socioeconomic status, of course, was an important predictor for children's better social skills ($\beta = .08, p < .01$).

Change in interpersonal skills from kindergarten to 1st grade. Children with a Mexican immigrant mother were more likely than other children to experience an increase in interpersonal skills from kindergarten to 1st grade ($\beta = .09, p < .05$).

Change in interpersonal skills from 1st grade to 3rd grade. For increased interpersonal skills from 1st grade to 3rd grade, living with both parents in the household at 1st grade was the significant contributing factor for children in immigrant families ($\beta = .13, p < .01$).

Change in interpersonal skills from 3rd grade to 5th grade. More frequent activities with parents at kindergarten was associated with a decline in interpersonal skills from 3rd grade to 5th grade ($\beta = -.09, p < .05$). Children who lived in the suburbs or in large cities at kindergarten increased their interpersonal skills from 3rd grade to 5th grade ($\beta = .31, p < .05$ for suburbs; $\beta = .31, p < .05$ for large city), whereas

children who lived in the suburbs at 3rd grade decreased their interpersonal skills ($\beta = -0.14, p < .05$), compared to children who lived in rural areas.

Table 21. Coefficients from the Structural Model of Interpersonal Skills, All Children

	Intercept			Change K - 1st			Change 1st-3rd			Change 3rd-5th		
	Beta	b	SE	Beta	b	SE	Beta	b	SE	Beta	b	SE
Home literacy environment												
Parents involvement(K)	0.04	0.01	0.00	-0.01	0.00	0.00	0.02	0.00	0.00	-0.09 *	-0.01	0.00
Parents involvement(1)							0.01	0.00	0.00	0.01	0.00	0.00
Parents involvement(3)										0.02	0.00	0.00
Child reading (K)	0.07 **	0.04	0.02	0.00	0.00	0.02	-0.03	-0.01	0.01	0.03	0.01	0.01
Child reading (1)							0.00	0.00	0.01	0.01	0.00	0.01
Child reading (3)										0.02	0.01	0.01
Time invariant covariates												
Girl	0.16 ***	0.20	0.03	0.02	0.03	0.04	0.03	0.02	0.02	0.03	0.02	0.02
Length of stay in the U.S.	0.08 **	0.01	0.00	-0.03	0.00	0.00	-0.01	0.00	0.00	-0.04	0.00	0.00
English proficiency	-0.08 *	-0.02	0.01	0.02	0.01	0.01	0.02	0.00	0.00	0.01	0.00	0.00
Country of origin (U.S.-born mother omitted)												
South America	-0.01	-0.02	0.08	0.03	0.11	0.10	0.01	0.01	0.05	-0.01	-0.02	0.06
Mexico	-0.07	-0.08	0.05	0.09 *	0.13	0.06	0.03	0.02	0.03	-0.02	-0.02	0.03
Caribbean/Central America	-0.08 *	-0.14	0.06	0.04	0.08	0.07	0.03	0.04	0.04	-0.01	-0.01	0.04
East Asia	0.01	0.02	0.07	0.00	0.00	0.07	0.02	0.04	0.04	0.02	0.03	0.04
Southeast Asia	0.00	-0.01	0.06	0.04	0.10	0.07	0.02	0.02	0.03	0.02	0.02	0.03
Other countries	-0.02	-0.03	0.05	-0.01	-0.02	0.06	0.00	0.00	0.04	0.04	0.04	0.04
Time variant covariates												
Family SES (K)	0.08 **	0.06	0.02	0.03	0.02	0.03	-0.04	-0.02	0.03	-0.11	-0.05	0.03
Family SES (1)							0.02	0.01	0.03	0.06	0.03	0.04
Family SES (3)										0.07	0.03	0.03
Number of sibling(K)	-0.03	-0.02	0.01	-0.01	0.00	0.01	0.00	0.00	0.02	0.06	0.02	0.03
Number of sibling(1)							-0.01	0.00	0.02	-0.05	-0.01	0.03
Number of sibling(3)										0.05	0.02	0.01
Two parents(K)	0.03	0.06	0.05	-0.02	-0.04	0.06	-0.07	-0.07	0.04	0.05	0.05	0.06
Two parents(1)							0.13 **	0.13	0.04	-0.07	-0.08	0.06
Two parents(3)										-0.03	-0.04	0.03
Locale of residence												
Suburb (K)	0.00	0.00	0.07	-0.09	-0.13	0.11	0.03	0.02	0.08	0.31 *	0.22	0.10
Suburb (1)							0.01	0.00	0.06	-0.14	-0.10	0.08
Suburb (3)										-0.14 *	-0.10	0.05
Large city (K)	0.04	0.05	0.07	-0.10	-0.14	0.11	-0.04	-0.03	0.09	0.31 *	0.22	0.09
Large city (1)							0.06	0.04	0.06	-0.25 *	-0.18	0.07
Large city (3)										-0.01	-0.01	0.03
R2	0.06			0.01			0.01			0.03		

* < .05, ** < .01, *** < .001

Testing of hypothesis 8_b: The association of social skills with the home literacy environment will differ by gender.

The fit of the model allowing differences by gender in the effect of parental involvement and children's reading activity on social skills indicates a CFI of .91, an RMSEA of .05, and an SRMR of .09. The value of the CFI is a smaller than the .96 recommended by Hu and Bentler (1999), but other indices are still in the acceptable range.

Table 22 shows the effect of parental involvement and children's reading on self-control and interpersonal skills by gender.

Self-control at kindergarten. More parental involvement and children's reading were both associated with better self-control skills at kindergarten for boys ($\beta = .25, p < .001$; $\beta = .11, p < .01$). However, none of the home activities was significantly related to girls' self-control at kindergarten. The association between parental involvement and self-control skills significantly differed by gender.

Change in self-control from kindergarten to 1st grade. Neither parental involvement nor children's reading at kindergarten was associated with the change in self-control from kindergarten to 1st grade, regardless of gender.

Change in self-control from 1st grade to 3rd grade. More parental involvement at kindergarten was associated with a decline in boys' self-control skills from 1st grade to 3rd grade ($\beta = -.12, p < .05$); meanwhile, parental involvement at 1st grade was associated with an increase in boys' self-control skills ($\beta = .13, p < .01$). More time spent reading at 1st grade increased self-control for boys, too ($\beta = .08, p <$

.05). However, more parental involvement at 1st grade was associated with a decline in girls' self-control skills from 1st grade to 3rd grade ($\beta = -.07, p < .05$).

Change in self-control from 3rd grade to 5th grade. None of the home activities was associated with changes in self-control from 3rd to 5th grade, neither for boys nor for girls.

Interpersonal skills at kindergarten. Parental involvement and children's reading were both associated with better interpersonal skills at kindergarten for boys ($\beta = .28, p < .001$; $\beta = .12, p < .001$). Parental involvement was not associated with girls' interpersonal skills at kindergarten. Children's reading was associated with better interpersonal skills for girls ($\beta = .07, p < .05$).

Change in interpersonal skills from kindergarten to 1st grade. There was no effect of parental involvement nor of children's reading on the change in interpersonal skills.

Change in interpersonal skills from 1st grade to 3rd grade. Boys' increased interpersonal skills from 1st to 3rd grade was associated with more parental involvement ($\beta = .11, p < .01$). No other effect of parental involvement was observed. Children's reading activity did not have an effect.

Change in interpersonal skills from 3rd grade to 5th grade. More parental involvement at kindergarten was associated with a decrease in interpersonal skills from 3rd to 5th grade for both boys and girls ($\beta = -.13, p < .01$; $\beta = -.08, p < .05$).

Significant difference between genders. The effect of parental involvement at kindergarten on the intercept of self-control and interpersonal skills was significantly larger for boys than girls. The effect of parental involvement at

kindergarten and at 1st grade on the change in self-control from 1st grade to 3rd grade differed significantly between boys and girls. The association with children's reading at 1st grade and the change in self-control from 1st to 3rd grade also differed by gender. There was no difference in the association of children's reading activity with interpersonal skills between genders. However, the association of parental involvement at 1st grade with the change in interpersonal skills from 1st to 3rd grade was significantly different for boys and girls.

Overall, the distinctive difference between boys and girls in terms of how their interpersonal and social skills were affected by parental involvement and child's reading activity is that boys were more influenced by parental involvement and their own reading activity than were girls. More parental involvement benefited boys' social skills up to 3rd grade, whereas it did not have any effect for girls. Reading more at home was helpful for improving boys' self-control, but it did not have that benefit for girls. Reading more at home was associated with girls' interpersonal skills at kindergarten only.

Table 22. Coefficients from the Structural Model of Self-control and Interpersonal Skills by Gender^a

	Intercept			Change K - 1st			Change 1st-3rd			Change 3rd-5th		
	Beta	b	SE	Beta	b	SE	Beta	b	SE	Beta	b	SE
Self-control												
Boys												
Parents involvement(K)	0.25 ***	0.04	0.00 ^b	0.03	0.00	0.00	-0.12 *	-0.01	0.00 ^b	-0.04	0.00	0.00
Parents involvement(1)							0.13 **	0.01	0.00 ^b	-0.04	0.00	0.00
Parents involvement(3)										0.02	0.00	0.00
Child reading (K)	0.11 **	0.08	0.02	0.00	0.00	0.02	-0.02	-0.01	0.02	0.01	0.00	0.01
Child reading (1)							0.08 *	0.03	0.01 ^b	-0.02	-0.01	0.02
Child reading (3)										0.05	0.02	0.01
R ²	0.23			0.02			0.05			0.05		
Girls												
Parents involvement(K)	0.00	0.00	0.00 ^b	0.01	0.00	0.01	0.04	0.00	0.00 ^b	-0.04	0.00	0.00
Parents involvement(1)							-0.07 *	-0.01	0.00 ^b	0.08	0.01	0.00
Parents involvement(3)										0.02	0.00	0.00
Child reading (K)	0.04	0.02	0.02	0.01	0.01	0.03	0.01	0.00	0.01	-0.01	0.00	0.01
Child reading (1)							-0.02	-0.01	0.01 ^b	0.05	0.02	0.02
Child reading (3)										0.02	0.01	0.01
R ²	0.03			0.01			0.02			0.03		
Interpersonal skills												
Boys												
Parents involvement(K)	0.28 ***	0.04	0.01 ^b	-0.01	0.00	0.01	-0.07	-0.01	0.00	-0.13 **	-0.01	0.00
Parents involvement(1)							0.11 **	0.01	0.00 ^b	-0.05	0.00	0.00
Parents involvement(3)										0.06	0.00	0.00
Child reading (K)	0.12 ***	0.08	0.02	0.00	0.00	0.03	-0.05	-0.02	0.02	0.05	0.02	0.01
Child reading (1)							0.04	0.02	0.02	0.00	0.00	0.02
Child reading (3)										0.04	0.02	0.01
R ²	0.22			0.01			0.02			0.03		
Girls												
Parents involvement(K)	0.00	0.00	0.01 ^b	0.02	0.00	0.01	0.05	0.00	0.00	-0.08 *	-0.01	0.00
Parents involvement(1)							-0.03	0.00	0.00 ^b	0.05	0.00	0.00
Parents involvement(3)										0.02	0.00	0.00
Child reading (K)	0.07 *	0.05	0.02	0.03	0.02	0.03	-0.05	-0.02	0.01	0.00	0.00	0.01
Child reading (1)							-0.03	-0.01	0.02	0.04	0.02	0.02
Child reading (3)										0.04	0.02	0.01
R ²	0.03			0.01			0.03			0.06		

^a Controlling for parent's length of stay in the US, English proficiency, mother's country of origin, family SES, number of siblings, two parents, the locale of residence.

* < .05, ** < .01, *** < .001

Testing of hypothesis 9_b. The association with the home literacy environment will differ across immigrant groups.

The structural paths of the effect of parental involvement and child's reading activity on boys' self-control skills across immigrant groups are shown in Table 23. Given the finding of substantial difference between genders, the structural model was conducted separately for each immigrant group without constraining parameters between boys and girls. The model fit for the South American group indicates a CFI of .81, an RMSEA of .14, and an SRMR of .22 ; model fit for the Caribbean/Central American group is a CFI of .89, an RMSEA of .09, and an SRMR of .20; model fit for the Mexican immigrant group is a CFI of .83, an RMSEA of .10, and an SRMR of .24; model fit for the East Asian group is a CFI of .81, an RMSEA of .12, and an SRMR of .25; model fit for the Southeast Asia group is a CFI of .78, an RMSEA of .11, and an SRMR of .27; model fit for the group of other countries is a CFI of .93, an RMSEA of .08, and an SRMR of .15; and model fit for the U.S.-born mother group is a CFI of .86, an RMSEA of .10, and an SRMR of .16.

Self-control at kindergarten_boys. Parental involvement was positively associated with better self-control for boys from all immigrant groups. Among them, the effect of parental involvement on the intercept was significantly larger for boys of South American mothers and Caribbean/Central American mothers than boys of U.S.-born mothers.

Children's reading was associated with better self-control for boys with a mother from Mexico, East Asia, Southeast Asia, or from one of the "other" countries ($\beta = .19, p < .001$; $\beta = .30, p < .01$, $\beta = .15, p < .05$; $\beta = .24, p < .01$). The effect of

reading activity was significantly larger for boys of East Asian mothers than boys of Caribbean/Central American mothers.

Change in self-control from kindergarten to 1st grade_boys. The effect of parental involvement disappeared for changes in self-control from kindergarten to 1st grade except in the case of boys with a U.S.-born mother and a foreign-born father. More parental involvement at kindergarten was associated with decreased self-control skills for boys from families with a U.S. born-mother and a foreign-born father ($\beta = -.23, p < .01$). This association was statistically significantly different from boys of Mexican mother, Caribbean/Central American mother, and East Asian mother.

More children's reading was associated with decreased self-control skills for boys of East Asian mothers ($\beta = -.23, p < .05$). These boys may not have been able to learn self-control from books. The effect of reading activity differed significantly between boys of East Asian mothers and boys of Southeast Asian mothers.

Change in self-control from 1st grade to 3rd grade_boys. Parental involvement at kindergarten was associated with decreased self-control for boys of Mexican mothers ($\beta = -.23, p < .001$). Parental involvement at 1st grade was associated with increased self-control for boys of Mexican mothers and Caribbean/Central American mothers ($\beta = .19, p < .01$; $\beta = .19, p < .05$). The effect of parental involvement at 1st grade differed significantly between Mexican group and South American group.

More reading at 1st grade was associated with a decrease in self-control from 1st to 3rd grade for boys of East Asian mothers ($\beta = -.31, p < .01$), but it was

associated with an increase for boys of Southeast Asian mothers ($\beta = .19, p < .01$).

This association was significantly different between these two Asian groups.

Change in self-control from 3rd grade to 5th grade_boys. More parental involvement at 1st grade was associated with increased self-control skills of boys with a South American mother ($\beta = .33, p < .01$). More children's reading at 3rd grade was associated with increased self-control for boys of Mexican mothers ($\beta = .14, p < .01$).

The most distinctive difference across immigrant groups is that there was a positive effect of parental involvement on self-control skills (i.e., more involvement was associated with better self-control) after kindergarten for boys of South American, Mexican, and Caribbean/Central American mothers, whereas there was no effect of parental involvement for East Asian or Southeast Asian families. Children's reading at home at 3rd grade was important for better self-control from 3rd to 5th grade for boys with a Mexican mother. For boys of East Asian mothers, more reading at kindergarten and 1st grade had a negative effect, but for boys of Southeast Asian mothers, more reading at 1st grade had a positive effect on changes in self-control from 1st to 3rd grade.

Table 23. Coefficients from the Structural Model of Self-control by Immigrant Groups, Boys^a

	Intercept			Change K - 1st			Change 1st-3rd			Change 3rd-5th		
	Beta	b	SE	Beta	b	SE	Beta	b	SE	Beta	b	SE
South America												
Parents involvement(K)	0.45 ***	0.09	0.02	-0.05	-0.01	0.02	0.01	0.00	0.01	-0.25	-0.02	0.01
Parents involvement(1)							-0.10	-0.01	0.01	0.33 **	0.03	0.01
Parents involvement(3)										0.05	0.00	0.01
Child reading (K)	0.08	0.06	0.13	0.21	0.13	0.12	-0.16	-0.05	0.07	0.11	0.04	0.09
Child reading (1)							0.16	0.06	0.06	-0.20	-0.07	0.07
Child reading (3)								0.00	0.00	-0.19	-0.08	0.09
Mexico												
Parents involvement(K)	0.40 ***	0.07	0.01	0.03	0.00	0.00	-0.23 ***	-0.02	0.01	0.04	0.00	0.01
Parents involvement(1)							0.19 **	0.02	0.01	-0.04	0.00	0.01
Parents involvement(3)										0.01	0.00	0.00
Child reading (K)	0.19 ***	0.16	0.03	0.00	0.00	0.03	-0.04	-0.01	0.03	-0.08	-0.03	0.03
Child reading (1)							0.11	0.04	0.03	-0.05	-0.02	0.03
Child reading (3)										0.14 **	0.05	0.02
Caribbean/Central America												
Parents involvement(K)	0.43 ***	0.08	0.01	0.07	0.01	0.01	-0.23	-0.02	0.01	0.08	0.01	0.01
Parents involvement(1)							0.19 *	0.02	0.01	-0.11	-0.01	0.01
Parents involvement(3)										0.01	0.00	0.01
Child reading (K)	0.03	0.02	0.07	0.08	0.06	0.07	0.10	0.03	0.04	0.08	0.03	0.04
Child reading (1)							0.09	0.03	0.03	0.07	0.03	0.04
Child reading (3)										-0.03	-0.01	0.04
East Asia												
Parents involvement(K)	0.28 ***	0.05	0.01	0.17	0.02	0.01	0.00	0.00	0.01	-0.22	-0.02	0.01
Parents involvement(1)							0.11	0.01	0.01	-0.06	-0.01	0.01
Parents involvement(3)										0.14	0.01	0.01
Child reading (K)	0.30 **	0.25	0.08	-0.23 *	-0.14	0.07	-0.10	-0.03	0.04	0.22	0.08	0.04
Child reading (1)							-0.31 **	-0.10	0.03	0.06	0.02	0.05
Child reading (3)										0.06	0.03	0.04
Southeast Asia												
Parents involvement(K)	0.37 ***	0.07	0.01	-0.05	-0.01	0.01	-0.12	-0.01	0.01	-0.05	0.00	0.01
Parents involvement(1)							0.13	0.01	0.01	-0.14	-0.01	0.01
Parents involvement(3)										0.13	0.01	0.01
Child reading (K)	0.15 *	0.12	0.06	0.13	0.08	0.08	-0.16	-0.06	0.04	-0.01	0.00	0.04
Child reading (1)							0.19 **	0.07	0.03	-0.18	-0.06	0.03
Child reading (3)										0.09	0.04	0.03
Other countries												
Parents involvement(K)	0.33 ***	0.06	0.01	0.01	0.00	0.01	-0.05	0.00	0.01	-0.18	-0.02	0.01
Parents involvement(1)							-0.04	0.00	0.01	0.09	0.01	0.01
Parents involvement(3)										-0.01	0.00	0.01
Child reading (K)	0.24 **	0.17	0.05	-0.10	-0.06	0.04	0.03	0.01	0.03	0.00	0.00	0.04
Child reading (1)							0.13	0.05	0.04	-0.04	-0.02	0.04
Child reading (3)										-0.01	-0.01	0.03
U.S.-born mother												
Parents involvement(K)	0.23 **	0.04	0.01	-0.23 **	-0.04	0.01	0.06	0.00	0.01	-0.04	0.00	0.01
Parents involvement(1)							0.16	0.01	0.01	-0.20	-0.01	0.01
Parents involvement(3)										0.08	0.01	0.01
Child reading (K)	0.14	0.10	0.05	-0.07	-0.04	0.06	-0.08	-0.03	0.03	0.13	0.04	0.03
Child reading (1)							-0.01	0.00	0.03	0.12	0.04	0.04
Child reading (3)										-0.04	-0.02	0.03

^a Controlling for parent's length of stay in the US, English proficiency, family SES, number of siblings, two parents, and the locale of residence.

* < .05, ** < .01, *** < .001

Table 24 shows the effect of parental involvement and child's reading activity on interpersonal skills for boys across immigrant groups. Table 25 summarizes whether there were significant differences in the association of parental involvement and children's reading activity of boy's self-control and interpersonal skills across immigrant groups.

Interpersonal skills at kindergarten_boys. Parental involvement was crucial to boys' interpersonal skills at kindergarten for all immigrant groups. Among them, the effect was significantly larger for boys of Mexican mothers and Caribbean/Central mothers than boys of U.S.-born mothers. Children's reading at home was significantly associated with better interpersonal skills for boys of Mexican, East Asian, and Southeast Asian mothers, and also for those whose mothers came from "other" countries ($\beta = .20, p < .001$; $\beta = .26, p < .05$; $\beta = .18, p < .01$; $\beta = .24, p < .01$, respectively).

Change in interpersonal skills from kindergarten to 1st grade_boys. There was no effect of parental involvement or of children's reading on the change in interpersonal skills from kindergarten to 1st grade except in the case of boys with a U.S.-born mother. More parental involvement at home was associated with decreased interpersonal skills for boys in families with a U.S.-born mother and a foreign-born father.

Change in interpersonal skills from 1st grade to 3rd grade_boys. More parental involvement at kindergarten was detrimental to changes in interpersonal skills from 1st to 3rd grade for boys of Mexican mothers. More parental involvement

at 1st grade was beneficial to changes in interpersonal skills for boys of Mexican mothers; however, there was no statistically different effect across immigrant groups.

Change in interpersonal skills from 3rd grade to 5th grade_boys. More parental involvement at kindergarten was associated with a decrease in interpersonal skills from 3rd to 5th grade for boys of South American mothers and boys with a mother in the “other countries” group ($\beta = -.41, p < .01$; $\beta = -.29, p < .01$). More reading at 3rd grade was helpful in increasing Mexican boys’ interpersonal skills. More reading at kindergarten contributed to increased interpersonal skills from 3rd to 5th grade for boys with an East Asian or a U.S.-born mother. This may mean that for these boys, early experiences at home are important for increasing social skills later, whereas for boys whose mothers are Mexican immigrants, immediate experience is more crucial to increasing their social skills.

The most distinctive difference in the effect on interpersonal skills for boys is that although more parental involvement was universally associated with better interpersonal skills at kindergarten for all immigrant groups, children’s reading was important only for boys in the Mexican, East Asian, Southeast Asian, or “other countries” group. Both parental involvement and child’s reading activity did not affect the change in interpersonal skills between kindergarten and 3rd grade for boys in immigrant families except in the case of boys of Mexican mothers. Early reading experience was important for boys with an East Asian or U.S.-born mother, whereas immediate reading experience was more important for boys with a Mexican mother.

Generally, although both parental involvement and children’s reading at home were significant predictors for boys’ social skills at kindergarten, the social skills of

Latin American-origin boys were influenced more by parental involvement at home, and those of Asian-origin boys were influenced more by reading time at home.

Among Latin American-origin boys, early experience with parents (e.g., at kindergarten and 1st grade) influenced changes from 3rd to 5th grade for boys with a South American mother, and changes from 1st to 3rd grade for boys with a Mexican mother. It was striking that for boys whose mothers immigrated to the U.S. from Mexico, unlike those whose mothers came from elsewhere in Latin America, reading at home was important for predicting better social skills from 3rd to 5th grade. As for the Asian group, more reading at home negatively affected the social skills of boys of East Asian mothers, whereas it positively affected the social skills of boys of Southeast Asian mothers.

Table 24. Coefficients from the Structural Model of Interpersonal Skills by Immigrant Groups, Boys^a

	Intercept			Change K - 1st			Change 1st-3rd			Change 3rd-5th		
	Beta	b	SE	Beta	b	SE	Beta	b	SE	Beta	b	SE
South America												
Parents involvement(K)	0.38 ***	0.07	0.02	0.06	0.01	0.03	-0.08	-0.01	0.01	-0.41 **	-0.04	0.02
Parents involvement(1)							0.11	0.01	0.01	-0.12	-0.01	0.02
Parents involvement(3)										0.25	0.02	0.01
Child reading (K)	0.15	0.12	0.13	0.13	0.10	0.20	-0.01	-0.01	0.08	-0.11	-0.04	0.07
Child reading (1)							-0.15	-0.06	0.10	0.18	0.08	0.10
Child reading (3)										0.04	0.02	0.07
Mexico												
Parents involvement(K)	0.42 ***	0.07	0.01	0.01	0.00	0.01	-0.19 **	-0.01	0.00	-0.04	0.00	0.01
Parents involvement(1)							0.18 **	0.01	0.01	-0.12	-0.01	0.01
Parents involvement(3)										0.05	0.00	0.00
Child reading (K)	0.20 ***	0.16	0.03	0.01	0.00	0.04	-0.06	-0.02	0.03	-0.03	-0.01	0.02
Child reading (1)							0.04	0.02	0.03	0.07	0.02	0.03
Child reading (3)										0.09 *	0.03	0.02
Caribbean/Central America												
Parents involvement(K)	0.47 ***	0.09	0.01	0.00	0.00	0.01	-0.11	-0.01	0.01	-0.04	0.00	0.01
Parents involvement(1)							0.10	0.01	0.01	0.03	0.00	0.01
Parents involvement(3)										0.06	0.01	0.01
Child reading (K)	0.06	0.05	0.06	0.13	0.09	0.07	0.01	0.00	0.04	-0.03	-0.01	0.04
Child reading (1)							0.04	0.01	0.04	-0.01	0.00	0.05
Child reading (3)										0.07	0.03	0.03
East Asia												
Parents involvement(K)	0.35 ***	0.07	0.02	0.07	0.01	0.01	-0.07	-0.01	0.01	-0.07	-0.01	0.01
Parents involvement(1)							0.10	0.01	0.01	-0.14	-0.01	0.01
Parents involvement(3)										0.15	0.01	0.01
Child reading (K)	0.26 *	0.21	0.09	-0.10	-0.06	0.08	-0.17	-0.06	0.04	0.41 ***	0.13	0.03
Child reading (1)							-0.11	-0.04	0.02	-0.25 *	-0.08	0.03
Child reading (3)										0.11	0.04	0.04
Southeast Asia												
Parents involvement(K)	0.36 ***	0.06	0.01	-0.02	0.00	0.02	-0.06	0.00	0.01	-0.11	-0.01	0.01
Parents involvement(1)							0.03	0.00	0.01	0.05	0.00	0.01
Parents involvement(3)										0.07	0.01	0.01
Child reading (K)	0.18 **	0.14	0.05	0.06	0.04	0.09	-0.15	-0.05	0.05	0.05	0.02	0.04
Child reading (1)							0.12	0.04	0.03	-0.26 *	-0.09	0.04
Child reading (3)										0.16	0.06	0.03
Other countries												
Parents involvement(K)	0.33 ***	0.06	0.01	-0.07	-0.01	0.01	0.08	0.01	0.01	-0.29 **	-0.03	0.01
Parents involvement(1)							-0.02	0.00	0.01	0.06	0.01	0.01
Parents involvement(3)										0.11	0.01	0.01
Child reading (K)	0.24 **	0.18	0.06	-0.06	-0.04	0.05	-0.02	-0.01	0.04	0.04	0.02	0.04
Child reading (1)							0.05	0.02	0.04	-0.01	-0.01	0.05
Child reading (3)										-0.02	-0.01	0.04
U.S.-born mother												
Parents involvement(K)	0.24 **	0.04	0.01	-0.18 *	-0.03	0.02	0.14	0.01	0.01	-0.17	-0.02	0.01
Parents involvement(1)							0.12	0.01	0.01	-0.16	-0.01	0.01
Parents involvement(3)										0.12	0.01	0.01
Child reading (K)	0.11	0.07	0.05	-0.07	-0.05	0.07	-0.08	-0.03	0.04	0.22 *	0.08	0.04
Child reading (1)							-0.09	-0.04	0.04	0.14	0.06	0.05
Child reading (3)										0.03	0.01	0.03

^a Controlling for parent's length of stay in the US, English proficiency, family SES, number of siblings, two parents, and the locale of residence.

* < .05, ** < .01, *** < .001

Table 25. Summary of Significant Differences in the Association with Boys' Social Skills across Immigrant Groups

	Intercept	Change K to 1st	Change 1st to 3rd	Change 3rd to 5th
Boys				
Self-control skills				
Parental involvement(K)	South Am, CC vs. U.S.	Mexico, CC, East vs. U.S.	U.S. vs. Mexico	-
Parental involvement(1)			Mexico vs. South Am. other	South Am vs. Mexico, CC, Southeast, U.S.
Parental involvement(3)				-
Reading(K)	East vs. CC	CC, Southeast vs. East	-	East vs. Mexico
Reading(1)			Southeast vs. East	-
Reading(3)				Mexico vs. U.S.
Interpersonal skills				
Parental involvement(K)	Mexico, CC vs. U.S.-born	Mexico, East vs. U.S.	other, U.S. vs. Mexico	Mexico vs. South Am, other
Parental involvement(1)			-	-
Parental involvement(3)				-
Reading(K)	-	-	-	East vs. South Am, Mexico, CC, Southeast
Reading(1)			Southeast vs. East	Mexico, U.S. vs. East, Southeast
Reading(3)				-

Each (every other immigrant group); South Am (South America); CC (Caribbean/Central America); East (East Asia); Southeast (Southeast Asia); other (Other countries); U.S. (U.S.-born mother). Selectively shown for statistical significance. Larger value first vs. smaller value second.

Table 26 shows the effect of parental involvement and child's reading activity on the self-control skills of girls across immigrant groups.

Self-control at kindergarten_girls. The child's reading activity had an effect only for girls in the East Asian group. More reading at home at kindergarten was associated with better self-control skills for girls in this group ($\beta = .19, p < .05$).

Change in self-control from kindergarten to 1st grade_girls. Neither parental involvement nor child's reading activity had an effect on the change in self-control among girls from kindergarten to 1st grade.

Change in self-control from 1st grade to 3rd grade_girls. More children's reading at home was associated with decreased self-control skills from 1st to 3rd grade for girls with a mother born in the U.S. ($\beta = -.26, p < .01$).

Change in self-control from 3rd grade to 5th grade_girls. More parental involvement at kindergarten was detrimental to improvements in self-control from 3rd to 5th grade for girls of East Asian mothers ($\beta = -.29, p < .05$). More reading at 1st grade and at 3rd grade was associated with increased self-control for girls of U.S.-born mothers ($\beta = .23, p < .01$; $\beta = .16, p < .05$).

Parental involvement and child's reading activity did not explain the change in girls' self-control skills over time. Girls in the East Asian group benefited from more reading activity at home, but more parental involvement did not improve their self-control skills later, after 3rd grade. More reading activity significantly influenced the growth self-control for girls of U.S.-born mothers.

Table 26. Coefficients from the Structural Model of Self-control by Immigrant Groups, Girls^a

	Intercept			Change K - 1st			Change 1st-3rd			Change 3rd-5th		
	Beta	b	SE	Beta	b	SE	Beta	b	SE	Beta	b	SE
South America												
Parents involvement(K)	0.03	0.00	0.02	0.07	0.01	0.02	-0.13	-0.01	0.02	0.22	0.01	0.01
Parents involvement(1)							-0.01	0.00	0.01	-0.19	-0.01	0.01
Parents involvement(3)										0.04	0.00	0.01
Child reading (K)	-0.01	-0.01	0.12	-0.03	-0.03	0.16	-0.06	-0.02	0.07	0.04	0.01	0.06
Child reading (1)							0.10	0.04	0.06	0.02	0.01	0.06
Child reading (3)										0.11	0.04	0.02
Mexico												
Parents involvement(K)	0.03	0.00	0.01	-0.07	-0.01	0.01	0.05	0.00	0.01	0.04	0.00	0.00
Parents involvement(1)							-0.11	-0.01	0.00	0.06	0.00	0.01
Parents involvement(3)										0.00	0.00	0.00
Child reading (K)	-0.06	-0.03	0.03	0.08	0.05	0.05	0.04	0.01	0.03	0.05	0.02	0.02
Child reading (1)							0.02	0.01	0.02	0.01	0.00	0.03
Child reading (3)										-0.01	0.00	0.02
Caribbean/Central America												
Parents involvement(K)	0.01	0.00	0.01	0.09	0.01	0.02	-0.11	-0.01	0.01	0.04	0.00	0.01
Parents involvement(1)							-0.10	-0.01	0.01	0.22	0.02	0.01
Parents involvement(3)										-0.13	-0.01	0.01
Child reading (K)	0.14	0.08	0.05	-0.05	-0.04	0.07	0.13	0.04	0.04	-0.09	-0.03	0.04
Child reading (1)							0.04	0.02	0.04	0.20	0.09	0.05
Child reading (3)										-0.12	-0.05	0.05
East Asia												
Parents involvement(K)	0.04	0.01	0.01	-0.01	0.00	0.01	0.04	0.00	0.01	-0.29 *	-0.02	0.01
Parents involvement(1)							-0.13	-0.01	0.01	0.21	0.01	0.01
Parents involvement(3)										0.11	0.01	0.00
Child reading (K)	0.19 *	0.12	0.07	-0.13	-0.09	0.06	-0.09	-0.04	0.04	0.00	0.00	0.05
Child reading (1)							0.04	0.02	0.04	-0.12	-0.04	0.05
Child reading (3)										0.08	0.03	0.03
Southeast Asia												
Parents involvement(K)	0.00	0.00	0.01	-0.10	-0.01	0.01	0.16	0.01	0.01	-0.13	-0.01	0.01
Parents involvement(1)							-0.05	0.00	0.01	0.09	0.01	0.01
Parents involvement(3)										0.00	0.00	0.01
Child reading (K)	0.07	0.04	0.05	-0.08	-0.05	0.06	0.00	0.00	0.02	0.02	0.01	0.02
Child reading (1)							-0.11	-0.04	0.03	0.04	0.01	0.03
Child reading (3)										-0.01	0.00	0.02
Other countries												
Parents involvement(K)	-0.01	0.00	0.01	0.09	0.01	0.01	0.11	0.01	0.01	-0.23	-0.02	0.01
Parents involvement(1)							-0.14	-0.01	0.01	0.18	0.02	0.01
Parents involvement(3)										0.06	0.00	0.01
Child reading (K)	0.06	0.03	0.05	-0.06	-0.04	0.06	-0.07	-0.03	0.04	0.12	0.04	0.03
Child reading (1)							-0.03	-0.01	0.03	0.09	0.04	0.03
Child reading (3)										-0.08	-0.04	0.03
U.S.-born mother												
Parents involvement(K)	-0.11	-0.02	0.01	0.11	0.02	0.01	0.09	0.01	0.01	-0.15	-0.01	0.01
Parents involvement(1)							0.06	0.00	0.01	-0.10	-0.01	0.01
Parents involvement(3)										0.15	0.01	0.01
Child reading (K)	0.04	0.03	0.05	0.06	0.04	0.06	-0.06	-0.02	0.03	-0.16	-0.05	0.03
Child reading (1)							-0.26 **	-0.10	0.03	0.23 **	0.09	0.04
Child reading (3)										0.16 *	0.07	0.03

^a Controlling for parent's length of stay in the US, English proficiency, family SES, number of siblings, two parents, and the locale of residence.

* < .05, ** < .01, *** < .001

Table 27 shows the effect of parental involvement and child's reading activity on the interpersonal skills of girls across immigrant groups.

Interpersonal skills at kindergarten_girls. More reading at kindergarten was associated with better interpersonal skills for girls of Caribbean/Central American mothers ($\beta = .18, p < .05$).

Change in interpersonal skills from kindergarten to 1st grade_girls. Neither parental involvement nor child's reading activity was associated with the change in interpersonal skills from kindergarten to 1st grade.

Change in interpersonal skills from 1st grade to 3rd grade_girls. More parental involvement for girls of Southeast Asian mothers ($\beta = -.12, p < .05$), and more reading at home for girls of U.S.-born mothers ($\beta = -.33, p < .001$), were associated with a decrease in interpersonal skills from 1st to 3rd grade. ($\beta = -.33, p < .001$).

Change in interpersonal skills from 3rd grade to 5th grade_girls. More parental involvement at 1st grade influenced the decrease in interpersonal skills from 3rd to 5th grade for girls of South American mothers ($\beta = -.51, p < .05$). More parental involvement at 3rd grade was associated with increased interpersonal skills for girls of South American mothers ($\beta = .22, p < .05$). More reading at 1st grade and at 3rd grade influenced increases in interpersonal skills for girls of U.S.-born mothers ($\beta = .23, p < .05$; $\beta = .16, p < .05$).

Parental involvement had an impact only for the interpersonal skills of girls of Southeast Asian mothers, South American mothers, and U.S.-born mothers.

Children's reading at home was important for Caribbean/Central American girls'

interpersonal skills at kindergarten. And children's reading was important for girls of U.S.-born mothers when it came to the change in their interpersonal skills from 3rd to 5th grade.

Generally, girls of Mexican mothers and those whose mothers came from "other" countries were not influenced by parental involvement and child's reading activity in developing their social skills during the time period studied. For families with a South American, East Asian, or Southeast Asian mother, parental involvement in activities affected girls' social skills: negatively for girls of East Asian mothers, and positively for girls of South American or Southeast Asian mothers, during the period from 3rd to 5th grade.

Table 27. Coefficients from the Structural Model of Interpersonal Skills by Immigrant Groups, Girls^a

	Intercept			Change K - 1st			Change 1st-3rd			Change 3rd-5th		
	Beta	b	SE	Beta	b	SE	Beta	b	SE	Beta	b	SE
South America												
Parents involvement(K)	0.05	0.01	0.02	0.10	0.02	0.02	-0.25	-0.02	0.02	0.22	0.02	0.02
Parents involvement(1)							0.21	0.02	0.01	-0.51 *	-0.04	0.02
Parents involvement(3)										0.22 *	0.02	0.01
Child reading (K)	0.13	0.10	0.12	-0.14	-0.13	0.16	0.02	0.01	0.07	-0.32 *	-0.13	0.06
Child reading (1)							0.10	0.05	0.05	0.00	0.00	0.06
Child reading (3)										0.18	0.08	0.04
Mexico												
Parents involvement(K)	0.02	0.00	0.01	-0.08	-0.01	0.01	0.12	0.01	0.01	-0.08	-0.01	0.01
Parents involvement(1)							-0.10	-0.01	0.01	0.08	0.01	0.01
Parents involvement(3)										0.00	0.00	0.00
Child reading (K)	-0.04	-0.02	0.03	0.11	0.08	0.05	-0.08	-0.03	0.02	0.08	0.03	0.02
Child reading (1)							0.05	0.02	0.03	0.02	0.01	0.04
Child reading (3)										-0.06	-0.03	0.02
Caribbean/Central America												
Parents involvement(K)	-0.02	0.00	0.01	0.09	0.02	0.02	-0.08	-0.01	0.01	0.03	0.00	0.01
Parents involvement(1)							0.09	0.01	0.01	0.06	0.00	0.01
Parents involvement(3)										-0.08	-0.01	0.01
Child reading (K)	0.18 *	0.11	0.05	0.07	0.06	0.08	-0.12	-0.04	0.04	-0.06	-0.02	0.03
Child reading (1)							-0.04	-0.02	0.03	0.20	0.08	0.04
Child reading (3)										-0.01	0.00	0.05
East Asia												
Parents involvement(K)	-0.03	0.00	0.01	0.02	0.00	0.01	0.15	0.01	0.01	-0.20	-0.02	0.01
Parents involvement(1)							-0.11	-0.01	0.01	0.18	0.01	0.01
Parents involvement(3)										0.04	0.00	0.01
Child reading (K)	0.08	0.07	0.08	-0.01	-0.01	0.08	0.07	0.03	0.05	-0.14	-0.07	0.06
Child reading (1)							-0.04	-0.02	0.05	-0.08	-0.03	0.06
Child reading (3)										0.10	0.05	0.03
Southeast Asia												
Parents involvement(K)	-0.07	-0.01	0.01	0.00	0.00	0.01	0.12	0.01	0.01	-0.12	-0.01	0.01
Parents involvement(1)							-0.12 *	-0.01	0.00	0.26 **	0.02	0.01
Parents involvement(3)										-0.11	-0.01	0.01
Child reading (K)	0.10	0.06	0.07	-0.12	-0.10	0.10	-0.06	-0.02	0.04	0.07	0.03	0.02
Child reading (1)							0.05	0.02	0.02	-0.14	-0.05	0.05
Child reading (3)										0.02	0.01	0.04
Other countries												
Parents involvement(K)	-0.06	-0.01	0.01	0.08	0.01	0.01	0.09	0.01	0.01	-0.20	-0.02	0.01
Parents involvement(1)							-0.10	-0.01	0.01	0.07	0.01	0.01
Parents involvement(3)										0.06	0.00	0.01
Child reading (K)	0.15	0.10	0.05	-0.04	-0.03	0.07	-0.02	-0.01	0.04	-0.05	-0.02	0.03
Child reading (1)							-0.01	0.00	0.04	0.02	0.01	0.04
Child reading (3)										0.00	0.00	0.04
U.S.-born mother												
Parents involvement(K)	-0.04	-0.01	0.01	0.16	0.03	0.02	0.09	0.01	0.01	-0.32 **	-0.02	0.01
Parents involvement(1)							0.02	0.00	0.01	0.01	0.00	0.01
Parents involvement(3)										0.17 **	0.01	0.01
Child reading (K)	0.07	0.05	0.05	-0.03	-0.02	0.07	0.02	0.01	0.03	-0.02	-0.01	0.03
Child reading (1)							-0.33 ***	-0.14	0.03	0.23 *	0.10	0.04
Child reading (3)										0.16 *	0.07	0.03

^a Controlling for parent's length of stay in the US, English proficiency, family SES, number of siblings, two parents, and the locale of residence.

* < .05, ** < .01, *** < .001

Table 28. Summary of Significant Differences in the Association with Girls' Social Skills across Immigrant Groups

	Intercept	Change K to 1st	Change 1st to 3rd	Change 3rd to 5th
Girls				
Self-control skills				
Parental involvement(K)	-	-	-	Mexico vs. other
Parental involvement(1)			-	CC, other vs. South Am CC, other vs. U.S.
Parental involvement(3)				U.S. vs. CC
Reading(K)	East vs. Mexico	-	-	U.S. vs. other
Reading(1)			each (excpt. Southeast) vs. U.S.	East vs. U.S.
Reading(3)				South Am, U.S. vs. other
Interpersonal skills				
Parental involvement(K)	-	-	-	South Am, CC vs. U.S.
Parental involvement(1)			South Am, CC vs. Southeast	each vs. South Am
Parental involvement(3)				South Am vs. CC, Southeast Mexico, Southeast vs. U.S.
Reading(K)	CC vs. Mexico	-	-	Mexico, Southeast vs. South Am
Reading(1)			each (excpt. Southeast) vs. U.S.	CC, U.S. vs. Southeast
Reading(3)				U.S. vs. Mexico

Each (every other immigrant group); South Am (South America); CC (Caribbean/Central America); East (East Asia); Southeast (Southeast Asia); other (Other countries); U.S. (U.S.-born mother). Selectively shown for statistical significance. Larger value first vs. smaller value second.

Findings regarding association over time

Testing of hypothesis 10: The association of the home literacy environment with children's academic achievement and social skills will be stronger during the earlier time period than during the later time period.

To examine whether there was a diminished effect of parental involvement and children's reading activity on children's performance over time, early associations in earlier childhood were compared to the associations during later childhood. For example, the association between parental involvement/child reading activity at kindergarten and the change in reading/math test scores from kindergarten to 1st grade was compared to the association between parental involvement/child reading activity at kindergarten and the change in reading/math scores from 1st to 3rd grade; and the association between parental involvement/child reading activity at kindergarten and the change in reading/math test scores from 1st grade to 3rd grade was compared to the association between parental involvement/child reading activity at kindergarten and the change in reading/math test scores from 3rd to 5th grade. Results showed that there was no difference in the association between children's reading activity and the changes in reading/math test scores over time. However, parental involvement at kindergarten had a greater association with the change in reading test scores from kindergarten to 1st grade than with the change in reading test scores from 1st to 3rd grade. The association between children's reading activity and the change in math test scores did not vary over time.

Testing of hypothesis 11: The time period during which the association of the home literacy environment is stronger will differ by gender.

For boys, the association between parental involvement at kindergarten and the change in reading scores from kindergarten to 1st grade was greater than the association between parental involvement at kindergarten and the change in reading scores from 1st to 3rd grade; whereas there was no difference in the association between parental involvement and the change in reading scores over time for girls. For both boys and girls, the association between children's reading activity at kindergarten and the change in reading test scores from kindergarten to 1st grade was greater than the association between reading activity at kindergarten and the change in reading test scores from 1st to 3rd grade.

For math test scores, the associations for children's reading activity at kindergarten, which did not change over time, did not differ by gender. However, for boys, the association between parental involvement and the change in math test scores from 1st grade to 3rd grade was greater than the association between parental involvement and the change in math test scores from 3rd to 5th grade; whereas, for girls, there was no difference in the association between parental involvement and the changes in math test scores over time.

For children's social skills, parental involvement had a greater influence on the change in self-control from kindergarten to 1st grade than on the change from 1st to 3rd grade for boys. The association between parental involvement at 1st grade and the change in self-control/interpersonal skills from 1st to 3rd grade was greater for boys than the association between parental involvement at 1st grade and the change in

self-control/interpersonal skills from 3rd to 5th grade. However, in contrast to boys, for whom there was a greater association between parental involvement and self-control during their earlier years, there was no difference in the association over time for girls.

Testing of hypothesis 12: The time period during which the association of the home literacy environment is stronger will differ across immigrant groups.

For boys of South American mothers, East Asian mothers and Southeast Asian mothers, children's reading activity at kindergarten had more influence on the change in reading test scores from kindergarten to 1st grade than on the change in reading test scores from 1st to 3rd grade. But the associations for the reading activity did not vary over time for boys of Mexican mothers and Caribbean/Central American mothers. For math test scores of boys of South American mothers and Mexican mothers, the association between parental involvement and the change in math test scores from 1st to 3rd grade was greater than the association between parental involvement and the change in math test scores from 3rd to 5th grade. For math test scores of boys of East Asian mothers, reading activity had a greater association with the change in math test scores from 1st to 3rd grade than with the change in math test scores from 3rd to 5th grade. For boys of Southeast Asian mothers, children's reading activity had a greater association with the change in math test scores from kindergarten to 1st grade than with the change in math test scores from 1st to 3rd grade.

For girls of Caribbean/Central American mothers, children's reading activity had a greater association with the change in reading test scores from kindergarten to 1st grade than with the change in reading test scores from 1st to 3rd grade. For girls of

East Asian mothers, reading activity had a greater association with the change in math test scores from kindergarten to 1st grade than with the change in math test scores from 1st to 3rd grade. For girls of Southeast Asian mothers, parental involvement had a greater association with the change in reading test scores from kindergarten to 1st grade than with the change in reading scores from 1st to 3rd grade.

In sum, there was a stronger association between parental involvement and children's reading activity during earlier childhood than later childhood. Parental involvement had a significantly greater association with the change in boys' math test scores from 1st to 3rd grade than it did between 3rd and 5th grade; whereas, for girls, there was no difference in the change in the association between parental involvement and math test scores over time. Additionally, children of Latin-origin mothers tended to show a stronger association between parental involvement and the change in math test scores during the earlier compared to the later elementary school period. Similarly, children of Asian-origin mothers showed a stronger association between reading activity and the change in math test scores during the early elementary school period compared to the later elementary school period.

Chapter 6: Discussion

This study examined children in immigrant families from kindergarten through 5th grade, focusing specifically on their activities at home and the effect of these activities on their academic achievement test scores and social skills. The goal of this study was to investigate whether children’s academic achievement and social skills could be explained by the two measures comprising home-based literacy related activities, namely parental involvement and child’s reading activity. Overall, parental involvement and child’s reading activity were both found to have a significant positive effect on the academic achievement and social skills of children in immigrant families; however, there were substantial differences in the association between both measures and children’s performance by gender and across immigrant groups.

This chapter includes a summary of findings. The ‘home literacy environment’ referenced in the research questions is divided into its two constituent measures (i.e., parental involvement and child’s reading activity) in the summary and interpretation of results. Findings from the analyses are discussed in the order in which the research questions were posed initially. This chapter also describes the limitations of the study, along with conclusions and implications for policy, education, and further research.

Summary of findings

Hypothesis

Results

Research question 1. What is the longitudinal trajectory of the home literacy environment in immigrant families over the time span starting in kindergarten and ending in fifth grade?

H1. Home-based literacy related activities will decrease over time through kindergarten to 5th grade.	H1. Partially supported. Parental involvement decreased over time, but children's reading increased over time.
H2. The pattern of change in home-based literacy related activities over time will differ by gender.	H2. Not supported. The pattern of change in parental involvement over time did not differ by gender. The pattern of change in children's reading activity did not differ by gender, even though girls spent more time reading than did boys at kindergarten.
H3. The pattern of change in home-based literacy related activities over time will differ across immigrant groups.	H3. Supported. Those in the Mexican group had children who read less than others. East Asian mothers decreased parental involvement more than Caribbean/Central American mothers did.

Research question 2. What is the longitudinal trajectory of academic achievement test scores and social skills of children in immigrant families over the time span starting in kindergarten and ending in fifth grade?

H4_a. Children's reading and math test scores will increase over time from kindergarten to 5 th grade.	H4_a. Supported. Children increased reading and math test scores over the time span starting in kindergarten and ending in fifth grade.
H4_b. Children's self-control and interpersonal skills will increase over time.	H4_b. Not supported. Children's self-control and interpersonal skills were stable over time.
H5_a. The pattern of change in reading and math test scores will differ by gender.	H5_a. Supported. There was no difference in reading and math scores at kindergarten between boys and girls. However, increases in girls' reading test scores were steeper than boys' increases from kindergarten to 1 st grade; increases in boys' math test scores were steeper than girls' increases from 1 st to 3 rd grade.
H5_b. The pattern of change in self-control and interpersonal skills will differ by gender.	H5.b. Not supported. Girls had better self-control and interpersonal skills than boys at kindergarten but there was no difference in changes over time.
H6_a. The pattern of change in reading and math test scores will differ across immigrant groups.	H6_a. Supported. Children of East Asian mothers had significantly higher reading and math test scores at kindergarten than children in other immigrant groups. Children of South American mothers had a significantly steeper increase in reading and math scores from 1 st to 3 rd grade compared to children in other immigrant groups.
H6_b. The pattern of change in self-control and interpersonal skills will differ across immigrant groups.	H6_b. Supported. Boys of East Asian mothers had significantly better self-control and interpersonal skills at kindergarten than boys of

Mexican and Caribbean/Central American mothers. Girls of East Asian mothers had a steeper increase in interpersonal skills between 3rd to 5th grade than girls of Mexican mothers.

Research question 3. Is the home literacy environment associated with children's academic achievement and social skills?

H7_a. The home literacy environment will be associated with higher children's reading and math test scores.

H7_a. Supported. Children's reading activity was significantly associated with higher reading and math test scores. However, parental involvement was not so associated.

H7_b. The home literacy environment will be associated with better self-control and interpersonal skills.

H7_b. Supported. Children's reading activity was significantly associated with better interpersonal skills at kindergarten. However, parental involvement was not so associated.

H8_a. The association between the home literacy environment and reading and math test scores will differ by gender.

H8_a. Supported. The positive association between parental involvement and reading and math test scores was significantly higher for boys than for girls.

H8_b. The association between the home literacy environment and self-control and interpersonal skills will differ by gender.

H8_b. Supported. The positive association between parental involvement and self-control and interpersonal skills was significantly higher for boys than for girls. The association between children's reading activity and self-control was significantly higher for boys than for girls.

H9_a. The association between the home literacy environment and reading and math test scores will differ across immigrant groups.

H9_a. Supported. The association between parental involvement and reading test scores at kindergarten was significantly higher for boys of Caribbean/Central American mothers than for boys of other immigrant groups.

H9_b. The association between the home literacy environment and self-control and interpersonal skills will differ across immigrant groups.

H9_b. Supported. The association between children's reading activity at kindergarten and the self-control at kindergarten was significantly higher for girls of East Asian mothers than it was for girls of Mexican mothers. The association between parental involvement at 1st grade and the change in self-control from 3rd to 5th grade was significantly higher for boys of South American mothers than it was for boys of Mexican and Caribbean/Central American mothers.

Research question 4. Are there differences in the association of the home literacy environment with reading and math test scores over childhood?

H10. The significant association will be

H10. Supported. The association between

<p>greater during the early time period than during the later time period.</p>	<p>parental involvement and reading and math test scores from kindergarten to 1st grade was significantly greater than that during the later time periods.</p>
<p>H11. The stronger association during the early time period will differ by gender.</p>	<p>H11. Supported. The effect of parental involvement on boys' changes in reading and math test scores from 1st to 3rd grade was significantly greater than the effect on the change from 3rd to 5th, whereas there was no difference in the effect of parental involvement on girls' test scores across different time periods.</p>
<p>H12. The stronger association during the early time period will differ across immigrant groups.</p>	<p>H12. Supported. There was a stronger association of parental involvement at kindergarten with the change in math scores from 1st to 3rd grade for boys of South American and Mexican mothers than the association during other time periods, whereas there was no difference in the associations across different time points for boys in other immigrant groups.</p>

Discussion of findings

Research question 1: Parental involvement and child's reading activity in immigrant families.

Overall results for children in immigrant families. The frequency of activities in which a parent was involved decreased over time from kindergarten to 5th grade, and children's reading activity increased over time. Although little research has examined how parental involvement and child's reading activity change over time in immigrant families, based on the literature on the familial obligations of children in immigrant families, it was expected that time spent with parents would not decrease over time (Kim, 2005; Fuligni, Tseng, & Lam, 1999) because children would be more likely to comply with familial or parental rules and to participate in activities driven by parents (Kim, 2005; Lau & Cheung, 1987). However, this study found that

parental involvement did decrease over time in immigrant families. The unexpected finding may be because children spent more time with peers or had more free time away from parents as they grew older (Le & Stockdale, 2005). Or, if immigrant parents were assumed to have high expectations for their children's education, the decrease in parental involvement that was observed could be because most of the parental involvement activities examined in this study were more playful activities, not strictly educational/instructional activities. Immigrant parents may spend more time with their child helping him or her to prepare for standardized tests or assisting with homework. Indeed, a previous study found that East Asian parents devoted more time to providing structured academic-related activities after school (Schneider & Lee, 1986). The current study found that children's reading activity increased over time, and perhaps parents played some role in encouraging their children to read independently.

Parental involvement and child's reading activity by gender. The frequency of activities in which a parent was involved decreased, and reading for pleasure increased, for both boys and girls over time. There was no difference in parent involvement between boys and girls at kindergarten. The decreased rate of parental involvement over time did not differ by gender. Girls spent more time reading than did boys, but the increased rate of children's independent reading activity over time did not differ by gender. The net results indicate that girls engaged in more home-based literacy related activities than boys as girls read more. This gender difference in reading activity out of school is consistent with what has been

found in the general population of U.S. children ages 3-12: girls read more than boys (Hofferth, 2010).

Home-based activities across immigrant groups. Regardless of mother's country of origin, all children experienced decreased parental involvement from kindergarten to 3rd grade. Meanwhile, the frequency of children's reading for pleasure increased over time except in the case of children with an Asian mother. These children read less at 1st grade than they read at kindergarten and 3rd grade. Beginning in 1st grade, more school work related to reading and math preparation may be emphasized. Or it may be that less confident parents seek resources outside the home, such as private tutoring. Educating by teachers, not parents, is considered more practical among Asians (Lew, 2006).

Research question 2: Longitudinal trajectory of academic achievement test scores and social skills of children in immigrant families over time.

Growth trajectory of children in immigrant families. The measure of children's academic achievement, namely reading and math test scores, increased over time during the period starting in kindergarten and ending in fifth grade. The growth was not linear. The rate of increase from 1st grade to 3rd grade was steeper than it was during both the period from kindergarten to 1st grade and the period from 3rd grade to 5th grade. Social skills, that is, self-control and interpersonal skills, were stable over time. Most of the children showed relatively high teachers' ratings for self-control and interpersonal skills, even in kindergarten. This may explain the lack of change during later time periods.

Growth trajectory by gender. Comparing the growth rate in reading and math test scores over time for boys and girls, it is clear that both boys and girls increase their reading and math test scores over time. The gender gap in reading and math test scores appeared after kindergarten. Reading scores increased significantly more for girls than for boys during the period from kindergarten to 1st grade. Math test scores increased significantly more for boys than for girls during the period from 1st grade to 3rd grade. Variances in math test scores from kindergarten to 1st grade, and from 1st grade to 3rd grade, were different for boys and girls. There was more variability among boys than among girls during those periods. This finding of gender gaps in reading and math is consistent with the pattern exhibited by U.S. children overall (Denton & West, 2002; Perie & Moran 2005; Rathbun, West, & Germino-Hausken, 2004; Robinson & Lubienski, 2011).

Social skills, that is, self-control and interpersonal skills, were significantly different between boys and girls at kindergarten, but there was no difference in change over time. Girls showed better self-control and interpersonal skills than boys at kindergarten. This means girls who had better social skills at kindergarten kept scoring higher than boys on self-control and interpersonal skills until 5th grade. This finding that girls exhibit better social skills over time is consistent with previous findings that girls' lower rate of antisocial behavior problems beginning in early childhood persisted into the pre-school and elementary school years (Entwisle, Alexander, & Olson, 2007).

Growth trajectory across immigrant groups. Even though there were differences in reading and math performance in Kindergarten across immigrant

groups, all children increased their reading and math test scores over the period from kindergarten to 5th grade. The finding that Asian children initially had the highest scores and Mexican children had the lowest scores was consistent with a previous study's finding (Glick & Hohmann-Marriott, 2007). However, Asian children's advances in reading and math test scores did not last after 1st grade. Children of South American mothers had greater increases in reading and math scores from 1st to 3rd grade than others; and children of Mexican and Caribbean/Central American mothers showed a big increase from 3rd to 5th grade. Even though those children increased significantly during the later time period, children of East Asian mothers consistently scored higher across all time points.

In terms of the growth pattern of social skills, both boys and girls of East Asian mothers showed better self-control and interpersonal skills than children with a Mexican mother or a Caribbean/Central American mother at kindergarten. Boys of Mexican mothers increased significantly less in self-control between 1st to 3rd grade compared to boys of East Asian mothers; and girls of Mexican and Caribbean/Central American mothers increased significantly less in their interpersonal skills between 3rd to 5th grade compared to girls of East Asian mothers. The pattern of smaller improvement in social skills in the Mexican and Caribbean/Central American groups may be due to Latino children's peer relations. In general, Latino children experience very warm and supportive parenting. Children are taught to respect others, especially adults, and they have a good sense of how to get along with others. However, research (e.g., Pantin et al, 2003) indicates that Latino children were more likely to be adversely influenced by peers when they entered into early adolescence. Updegraff

and her colleagues (2006) found that more time spent with peers was related to risky behavior and delinquency among children in Mexican immigrant families. Such peer-approved behaviors might be seen as less desirable by teachers.

Research question 3: The association of parental involvement and child's reading activity with academic achievement and social skills.

The overall association for children in immigrant families. Controlling for immigrant characteristics such as mothers' nativity and English proficiency, as well as family socioeconomic status, more children's reading at home was associated with higher reading and math test scores at kindergarten, whereas the activities in which parents were involved did not have any positive effect on children's reading and math test scores. The positive effect of children's reading at kindergarten was associated with increased reading test scores from kindergarten to 1st grade. For children in immigrant families, children's reading activity seems to have played a greater role in increased test scores than did parental involvement. This finding provides quite a contrast to the studies on the positive effect of parental involvement in activities on children's cognitive development. Perhaps this is because the sample in this study was older than the sample that has usually been tested in studies on the home literacy environment (Linver, Brooks-Gunn, & Cabrera, 2004). But the positive effect of children's reading in this study is very well aligned with findings of previous studies that reading for pleasure is a significant predictor for children's academic achievement test scores (Hofferth, 2010). Combining boys and girls obscures substantial gender differences, which we discuss below.

For the association of parental involvement and child's reading activity and social skills, children who read more often in kindergarten also exhibited better interpersonal skills in kindergarten. This can be understood by noting that reading is related to less disruptive behaviors, and it is beneficial to forming friendships and getting along with others by showing sensitivity to their feelings. Meanwhile, in this sample, more parental involvement in activities at kindergarten was detrimental to interpersonal skills from 3rd grade to 5th grade. This may suggest that more socializing experience with others, not parents, during the early period could benefit their interpersonal skills later.

The different associations by gender. Distinct differences in the association of parental involvement and child's reading activity with academic achievement and social skills between boys and girls were found. For academic achievement, parental involvement had a significant effect on reading and math test scores at kindergarten and increased scores over time for boys, whereas parental involvement was not significantly associated with girls' academic achievement test scores or with changes in these scores over time. The positive effect of children's reading was universal as a significant factor for better reading and math test scores, for both boys and girls. There was a similar pattern for social skills. Boys gained more of an advantage from parental involvement for self-control and interpersonal skills than did girls. In other words, boys' test scores and social skills were more dependent on the frequency of interactions and conversations with parents. Meanwhile, girls were more independent and could better utilize the benefits of reading, an activity that is mostly conducted alone. This finding of a significant positive effect of parental involvement for boys

may provide an important message to parents. Boys might achieve better test scores and improve their social skills when their parents make an effort to involve them in interactions and conversations at home. A possible explanation for the fact that parental involvement benefits boys more than girls is that boys have traditionally been given more independence than girls (Entwisle, Alexander, & Olson, 2007). Playing outside the home and with many peers are privileges more likely to be granted to boys. But more time spent with peers has been shown to elevate behavior problems and delinquency in immigrant adolescent boys (Pantin, Schwarts, Sullivan, Coatsworth, & Szapocznik, 2003; Updegraff, McHale, Whiteman, Thayer, & Crouter, 2006), which are related to poorer academic achievement test scores.

The association across immigrant groups. Boys with East Asian mothers outperformed boys from other groups on math test scores, but their higher achievement was not explained by parental involvement; instead, their reading behavior during kindergarten contributed their increased scores up to 5th grade. Meanwhile, the test scores of boys of Caribbean and Central American mothers were associated with parental involvement. Presumably, they could achieve higher scores in math if their parents were more involved in activities at kindergarten. Parental involvement also played key roles for boys of South American and Mexican descent, in terms of their association with increases in math scores from 1st grade to 3rd grade. This finding suggests that the positive effect of parental involvement was not as applicable to boys of Asian descent as it was to boys from Latin American families. As mentioned earlier in this chapter, the lack of association between higher math test achievement and frequency of parental involvement and child's reading activity may

be due to the greater number of resources outside the home that are utilized by Asian immigrant groups. For example, because they have high expectations of their children when it comes to their academic achievement, Asian families commonly sign their children up for extra classes to prepare for tests (Lew, 2006). After-school programs and Sunday schools provided by churches in these communities also teach children language and math. Outside resources could be more effective at raising the academic test scores of Asian boys.

For girls, there were many fewer effects of parental involvement across all immigrant groups. Despite very few effects of parental involvement overall, two exceptions to this pattern were notable: more parental involvement in the activities of girls with Mexican mothers was associated with a decline in reading test scores from kindergarten to 1st grade, whereas such involvement was associated with increased test scores for girls with Southeast Asian mothers. The inconsistent results, with controls for immigrant characteristics and family SES, could be explained by possible differences in parenting behaviors or different ways of interacting between parents and children. A parent may engage in activities with the child inefficiently, thus having a negative effect on the child's academic performance. For families in which parental involvement seems to have negative consequences for children's academic outcomes, parents may need resources that show them how to engage in their children's activities more effectively, or their children may need more specific outside help related to reading and math.

More activities with parents and more reading were associated with boys' better self-control and interpersonal skills. The social skills of Latin American-origin

boys were influenced more by parental involvement at home, and those of Asian-origin boys were influenced more by reading time at home. Among Latin American-origin boys, early experience with parents (e.g., at kindergarten and 1st grade) was good for their improvement of social skills later. As for the Asian group, more reading at home positively affected the social skills for boys of Southeast Asian mothers. The positive effect of parental involvement for boys in Latin American immigrant families may be due to the “*bien educado*” (well behaved) cultural value, which could very well be better transmitted to children when they engaged more with their parents. For most girls, the ability to control emotions and behaviors was not associated with either parental involvement or reading activity.

Research question 4: Different associations over time.

The overall association for children in immigrant families. This study found that the association of parental involvement with academic achievement and social skills is stronger earlier on. Home-based activities were more crucial to younger children than to older children.

Different associations by gender. Parental involvement had a significantly greater association with boys’ reading and math test performance during earlier childhood than during later childhood; whereas, for girls, there was no difference in the association between parental involvement and the changes in their reading and math test scores over time. This means that for boys, early parental involvement was crucial for academic performance, and that the effects were significant until 3rd grade. Considering that children tend to spend more time engaged in independent reading as their age goes up, this quite long-lasting and significant association suggests that boys

need more consistent interaction with their parents during their elementary school years in order to develop academically. The same pattern was observed for children's social skills.

The different association across immigrant groups. In general, early parental involvement was important for children of Latin-origin mothers, whereas early reading activity was important for children of Asian-origin mothers. Specifically, parental involvement was more beneficial to Latin-origin boys' math performance and interpersonal skills during their early elementary school years than it was later on. Even though Latin-origin parents were more likely to be disadvantaged with a lower socioeconomic status, lower English proficiency skills and a lower percentage of two-parent families as compared to other immigrant groups, more parental interactions at home played a positive role in their children's academic performance and social skills. Latino cultures that place value on children's being *bien educado* (well-behaved) and learning to conform may have been very effective in developing children's cognitive and social skills. Meanwhile, for Asian origin boys, reading activity was more effective at improving math scores during the early school years. There was no change in the association between parental involvement and reading activity and children's social skills over time.

In sum, this study's findings of differences in parental involvement and children's reading activity, both by gender and across different cultural affiliations, provide evidence of the interaction between children's immediate environment and macrosystem level influences. According to the Ecological perspective, children are nested in various layers of context, and they are influenced directly and indirectly by

these layered environments and the interactions that occur within and across their multiple environments. This study found that there is a significant difference in the effect of parental involvement on children's reading and math test scores between boys and girls, whereas no gender difference in the effect of children's independent reading activity was found. This may be because activities in which parents are involved tend to reflect parents' values (e.g., gender roles) or beliefs (e.g., what boys are like vs. what girls are like). More strict or coercive monitoring could be more effective for boys' school performance than for girls'. In addition, differences in home environment, children's performance, and the effect of the home environment across different cultural affiliations show how parents' cultural orientation plays a role in their children's development. Most of the children in this study were born in the U.S., but their academic achievement and social skills were clearly related to their mother's nativity.

Moreover, the fact that there were similar trends in the association of parental involvement and child's reading activity between East Asian and Southeast Asian children suggests common collective cultural beliefs and values among Asians. The family backgrounds of Southeast Asian families were more likely to be disadvantaged, with a lower socioeconomic status, parents' lower English proficiency and a greater likelihood of living in a rural area compared to East Asian families. Indeed, the family backgrounds of Southeast Asians were quite similar to those of South American families, who had higher SES, better English proficiency, and more two-parent families than other Latin American groups. However, the effect of Southeast Asians' home environment on their children's academic performance was quite

similar to the association found for East Asians. Asian cultures, which can be characterized as placing a higher value on education, may play an important role for disadvantaged Southeast Asian children. Or perhaps Southeast Asian families may share, or be more influenced by resources and information provided by the larger Asian-ethnic community. Even though there is a difference in socioeconomic status between the two Asian immigrant groups, their child-rearing practices and expectations may be similar.

Significance of this study

This study contributes to the literature on the influence of the home environment on children's education outcomes. Two aspects of the home literacy environment were studied. One comprises activities structured by parents and done in their company, such as doing arts and crafts or discussing a science project. The other aspect is an activity the child may do alone, namely reading for pleasure. Both the set of activities requiring parental involvement and children's reading for pleasure have been known to have a positive effect on children's cognitive and social/emotional development during early and middle childhood. Given the findings of differences in academic achievement test scores and social skills, both by gender and across immigrant groups, their association with home-based activities was examined to determine whether the positive effects noted for the general population are generalizable to children from immigrant families. According to the literature review, higher academic achievement and better social skills during early and middle childhood were expected to be explained by more parental involvement in activities and by children's voluntary reading. This study confirmed previous studies, and

found that parental involvement played a more important role for boys in immigrant families. From the developmental perspective, parental involvement should become less important as children grow older, but such an association has not been confirmed for U.S. immigrant families. Because of language barriers and low family income, both of which may limit the educational resources available to immigrant families, home-based activities may be a more accessible avenue for these parents and their children.

Using latent difference score models, parental involvement and children's reading activity were found to influence children's initial statuses for academic achievement and social skills and to have a significant positive effect on changes from kindergarten to 5th grade in immigrant families. This study confirmed findings from previous studies indicating that the home literacy environment has a positive effect during early elementary school. And this study added a new finding, namely that the home-based activities that are usually expected to lose power over time actually continued to have quite a strong influence up to 3rd grade for some immigrant groups, especially for boys. Southeast Asian boys improved their reading and math skills during the period from 3rd to 5th grade with more parental involvement in home-based activities at 3rd grade; Caribbean/Central American boys improved their reading test scores from 3rd to 5th grade if they had read more books at kindergarten. Reading more books at 3rd grade was helpful for Mexican boys in terms of learning to control emotions and behaviors, and also for forming friendships in the period from 3rd to 5th grade.

The gender difference in the effect of parental involvement and children's reading activity was very distinct. Generally, boys needed more parental engagement from kindergarten through 5th grade, whereas girls were more independent from their parents after 1st grade in terms of their academic performance and social skills. But for girls of East Asian descent and girls with a U.S.-born mother and a foreign-born father, more parental involvement was crucial for improving their math test scores from 3rd to 5th grade.

This study also contributes to the literature on academic performance of children in immigrant families by evaluating both children's standardized academic test scores in reading and math and their social skills, including interpersonal and self-control skills. When immigrant children's academic performance has been considered in previous studies, their standardized test scores have been the focus on attention, whereas their social skills have not been studied as carefully. However, children's interpersonal skills and their ability to control their behaviors are important aspects of their school performance. For example, Asian children in this study were often considered by their teachers to be a "model minority," given their high achievement on standardized tests. But they were also sometimes viewed as too shy and lacking in leadership skills, or sometimes their teachers failed to comment on their social skills at all. Including the social skills of immigrant children in the current research may address the current lack of research on this important topic.

Limitations

This study has several limitations that should be addressed before interpreting the findings. First, this study did not include activities that occurred outside the home,

even though they may have influenced children's academic achievement and social skills. Because of this study's longitudinal design, it is to be expected that, as children grow older, the contributing effects of peer relations and the environments of school, neighborhood and community become more salient when examining children's educational performance. Since this study examined the effect of parental involvement and child's reading activity on children in immigrant families, a follow-up study could use multi-level models to investigate how out-of-home factors work together to affect children's performance over time.

A second limitation is that the SRS scales for self-control and interpersonal skills were rated by different teachers over time, and the over-time correlations for these items are relatively small compared to correlations for the reading and math test scores. Different teachers could have different understandings and perceptions of children's exhibited behaviors. It is hard to determine whether the differences across time are due to changes in children's attitudes and behaviors or due to differences between the raters. However, this study took advantage of teachers' ratings because teachers can provide a less biased rating than parents (Piquero, Jennings, & Farrington, 2010). Using teachers' ratings is also reasonable because this study is interested in children's educational outcomes, and the test scores and social skills in this study are expected to factor into children's overall school performance.

The third limitation is that this study did not model academic achievement and social skills simultaneously in the analysis. Findings reported in this study were from separate models: one for reading and math test scores; and the other for self-control and interpersonal skills. Even though there was little evidence of causal linkage

between academic achievement and social skills, they are certainly associated with each other. Using children's overall educational performance, including standardized test scores and socio-emotional status, will be useful to understand the dynamics of the effect of home-based activities in immigrant families.

Suggestions for further research

More research is necessary to examine children's educational performance in immigrant families, with special consideration paid to cultural factors that may buffer these children from, or possibly exacerbate, the effects of their socio-economically and linguistically disadvantaged starting point. This minority group may have expectations for their children's education and values on child rearing that are different from those of mainstream America. Even more importantly, cultural beliefs and values can differ across different immigrant groups. Including these cultural factors, which can capture immigrant parents' perceptions of their children's educational success and provide insight into their parenting practices, will be helpful in gaining a better understanding of the effect of the home environment on minority children's achievement over time.

Future research should investigate the role of the school context by addressing questions such as how much immigrant parents involve themselves and how willing they are to cooperate with teachers and school personnel when it comes to their children's school performance. Considering the fact that immigrant parents have not had the experience of being schooled in the U.S., they might need more information for their children's transition to formal schooling, in elementary school. Identifying

barriers to parents' involvement at school is an important precursor to understanding the most effective way to improve children's outcomes.

This study tracked children's outcomes during their elementary school years, and found that East Asian children's high academic achievement in elementary school was associated with their own reading activity more than with parental involvement, whereas South American children improved their reading and math test scores more with more parental involvement than with their own reading activity. The long-term educational consequences (e.g., graduating from high school and enrolling in college) of the home environment need to be investigated. There is also little known about what career paths are expected for early high achievers among Asians and for socioeconomically disadvantaged Latin-origin children, and whether/how descendants of immigrants are likely to be trapped by their parents' socioeconomic status or motivated to improve upon it.

Implications for research, policy, and practice

The current study extends the existing research on the home literacy environment and children's educational performance by investigating longitudinal effects of parental involvement and children's reading activity on changes in academic achievement test scores and social skills from kindergarten to fifth grade.

The finding of gender differences in the effect of parental involvement and children's reading activity suggests that different approaches for boys and girls may be necessary to improve child outcomes. Contrary to the traditional child-rearing perspective, which stipulates that boys can be given more independence from parental monitoring, it is actually the case that parental involvement and reading at home may

be crucial for boys to improve their academic test scores and social skills over time. More structured home-based activities are therefore recommended for boys in immigrant families. And schools can provide efficient parenting information to encourage more gender-specific home activities.

This study highlights the differences in the effect of parental involvement and child's reading activity across immigrant groups based on mothers' countries of origin. Variations within the racial/ethnic groups that are usually categorized as Latino and Asian were distinguished. Research on the U.S. immigrant population is increasingly recognizing such variations within the traditional race categorizations, and many researchers are adopting the practice of dividing their samples according to general area or country of origin (Glick & Hohmann-Marriott, 2007). Policies that affect the immigrant population, specifically those related to children's education, also need to display more sensitivity to these within-group variations. Further research and future policies having to do with immigrant children should be sensitive to the consistent findings that children's educational and behavior outcomes have much to do with their parents' country of origin.

This study also found that the effect of parental involvement and children's reading activity was not only significant for children's initial status at kindergarten, but also lasted until 5th grade for children in immigrant families. This emphasizes the importance of the effect early experiences have on later outcomes. For example, Mexican boys could significantly increase their math test scores from 3rd to 5th grade if they did more reading in kindergarten. Southeast Asian girls might exhibit better interpersonal skills at 5th grade if they had more activities with parents at home in 1st

grade. The importance of the early home environment should not be overlooked, and attention should be given to which specific components of the home environment are most salient for which immigrant groups. This may be achieved by building a good partnership with local ethnic communities. Educators and evaluators who work with local immigrant populations can identify what barriers exist for specific immigrant parents when it comes to their involvement in structured activities at home; for example, some ethnic groups may experience trouble obtaining information about the U.S. educational system, have more problems with their economic situation, or experience more difficulty communicating in English. Ethnic affiliation and local environment-specific programs that respect immigrants' cultural values are necessary for immigrant children's smooth transition to formal schooling and to their performance later on in school. Also, providing some examples of successfully structured ethnic communities can be helpful to other immigrant groups. Generally, immigrants share some common problems, regardless of their ethnic affiliation, such as the language barrier. Identifying how other immigrants were able to overcome such problems, and what resources they used, may be helpful to other ethnic groups. Providing this kind of support can be a meaningful step in the right direction because research has found continuing divergence in socioeconomic status, and children's educational outcomes, in different immigrant groups.

This study evaluated children's performance by examining both their academic achievement test scores on reading and math, and also their self-control and interpersonal skills. American children's educational achievement is usually assessed by measuring both cognitive and non-cognitive skills; however, for children in

immigrant families, there has been too little focus on social skills. For example, it is often reported that Mexican immigrant children's academic achievement is lower, or that children of Asian descent do better in math, but not enough is known about their emotional and behavioral status. In addition to examining children's scores on standardized tests of academic achievement, the emotional/behavioral control skills of immigrant children should be evaluated together, and gaps in social skills by gender and across specific immigrant groups also should be considered.

Conclusion

This study examined how parental involvement and children's reading activity in immigrant families are linked to their children's educational performance, measured by academic test scores in reading and math, and to teachers' ratings of social skills, specifically self-control and interpersonal skills.

Several findings are notable. Boys benefit more than girls from parents' involvement at home. Girls' independent reading appears to be strongly linked to developing strong reading and math skills.

This study highlights the importance of considering immigrant children according to their mother's country of origin. Intriguing differences across immigrant groups were found. Substantial differences in reading and math performance were in evidence very early, at kindergarten. Children of East Asian and Southeast Asian mothers benefited more from reading activity when it came to achieving higher reading and math scores at kindergarten, but the positive effect did not last after kindergarten. Meanwhile, children of Latin-origin mothers benefited from both parental involvement at home and reading activity when it came to their reading and

math scores. For children of Mexican and Caribbean/Central American descent, especially, parental involvement had a continuing significant effect up to 5th grade. Similarly, parental involvement and children's reading activity was crucial for better social skills of kindergarteners from immigrant families. But the positive effects did not continue after kindergarten except for children of Latin-origin mothers and Southeast Asian mothers.

The finding of a strong and long-lasting association of both parental involvement and children's reading activity with Mexican and Caribbean/Central American children's performance emphasizes the importance of early experience with parents at home, especially for boys in disadvantaged immigrant families. The finding of differences in the association across immigrant groups also sends a message that researchers who study this population need a clearer understanding of ethnic-group differences; research and policies should recognize and reflect these differences, and interventions should be designed so that they are effective for specific groups.

Appendix A



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INSTITUTIONAL REVIEW BOARD

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Date: December 22, 2011

To: Sandra Hofferth, PhD
Professor
Department of Family Science
University of Maryland College Park

From: Joseph M. Smith, MA, CIM
IRB Manager
University of Maryland, College Park

Re: Request for Human Subject Research Determination

Title: "Home computer use and child development: Cognitive and Non-cognitive skills and health of children from immigrant families"

The request for determination of Non Human Subject Research for the above-cited project has been reviewed by the University of Maryland College Park Institutional Review Board Office. According to the information provided, it has been determined that this project does not meet one or both of the following definitions and therefore does not require further evaluation by the University of Maryland College Park Institutional Review Board.

§46.102 - (d) Research means a systematic investigation, including research development, testing and evaluation, designed to develop or contribute to generalizable knowledge.

§46.102 - (f) Human subject means a living individual about whom an investigator (whether professional or student) conducting research obtains:

- (1) Data through intervention or interaction with the individual, or**
- (2) Identifiable private information.**

If the scope of your project changes and meets one of the above definitions, an IRB protocol must be created and submitted to the UMCP IRB for approval. For further clarification, questions or concerns please contact the IRB Office at 301-405-0678.

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