ACADEMIC ACHIEVEMENT AMONG CHILDREN OF IMMIGRANTS: A CROSS-CONTEXTUAL ANALYSIS

by

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Children with immigrant parents tend to start school with fewer of the reading and math skills necessary for early academic success, though there is significant heterogeneity by parental region of origin. Little is known about how early experiences in home and non-parental care settings contribute to the academic skills of children of immigrants. Using data from the Early Childhood Longitudinal Study birth cohort (ECLS-B, *N* ~= 6,850), this study examines associations between parental region of origin and children's math and reading skills at age 5. It also considers whether home and non-parental care experiences are pathways through which parental region of origin relates to academic achievement. There was significant heterogeneity in children's early reading and math skills related to region of origin. Adjusting for differences in child, socioeconomic, and family characteristics greatly attenuated links between parental region of origin and early academic skills. Early experiences in the home environment and non-parental care both attenuate and exacerbate academic skills differences based on region of origin.

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1 .0 INTRODUCTION

Children of immigrant parents represent the most rapidly growing segment of the population of young children in the United States today, doubling in size from over 4 million in 1990 to 8.7 million in 2007 (Fortuny, Capps, Simms, & Chaudry, 2009). Limited evidence suggests that children of immigrants begin school with fewer of the basic reading and math skills that are essential to early scholastic success (Crosnoe, 2007; Han, 2008; Hernández, 1999; Magnuson, Lahaie, & Waldfogel, 2006; Suárez-Orozco & Suárez-Orozco, 2001). Yet, there is substantial variability in the academic skills of children of immigrants depending on parental region of origin (De Feyter & Winsler, 2009; Han, 2008). Understanding these differences is important because disparities in reading and math skills in kindergarten tend to widen as children move through elementary school (Entwisle & Alexander, 1999).

Differences in home and early care and education (ECE) settings are crucial for understanding disparities in math and reading skills when children start kindergarten (Magnuson, Meyers, Ruhm, & Waldfogel, 2004; NICHD ECCRN & Duncan, 2003). In particular, warm, responsive, and stimulating home environments and formal center-based ECE experiences promote early learning by offering children the materials and experiences necessary to master the central academic challenges of early childhood. While the contributions of home and ECE settings to the early academic skills are well-established among children with native-born parents, less is known about how these early environments contribute to disparities in math

and reading skills for children with immigrant parents (Hernández, Denton, Macartney, 2008). The goal of this study is to strengthen our understanding of the contributions of children's experiences in their early home and non-parental care settings to disparities in age 5 math and reading skills related to parental region of origin.

1.1 THEORETICAL FRAMEWORK

This study is grounded in bioecological and sociocultural theories of child development. Understanding how proximal experiences in home and ECE settings contribute to disparities in academic achievement related to parental region of origin is essential within a bioecological framework of human development. According to bioecological models, child development is driven by proximal processes and reciprocal interactions between individuals and their environments (Bronfenbrenner & Morris, 1998; Sameroff, 1994). Bioecological theory purports that characteristics and behaviors of individuals affect the contexts into which they select as well as the experiences elicited in these contexts. In turn, contextual experiences, along with individuals' characteristics, produce proximal processes and interactions that drive development. Home and ECE settings are two of the primary contexts that shape the development during early childhood.

According to sociocultural theories of development, both sociodemographic and cultural differences related to parental region of origin give rise to diversity in the home and ECE experiences of children of immigrants. Immigrants migrate to the U.S. for a variety of reasons, including improved employment prospects, opportunities for upward mobility, and to escape oppressive political or economic conditions in their region of origin. These pre-migration

differences in migration motivation, socioeconomic circumstances, and cultural background are associated with significant heterogeneity in immigrant families in the U.S. and are likely to be linked to differences in math and reading skills when children start formal schooling. Immigrant families in the U.S. are vastly different from each other in terms of in economic resources, educational attainment, and English-language proficiency (Hernández, Denton, & Macartney, 2007). For example, Mexican parents are much more likely than Southeast Asian or East Asian/Pacific parents to fall two times below the poverty line (69%, 40%, and 23%, respectively) and to have earned less than a high school degree (47%, 20%, 4%, respectively; Ruggles et al., 2008).

Beyond these sociodemographic factors, immigrant families are culturally distinct. Parental beliefs about child development, concepts of school readiness, as well as child-rearing practices are culturally specific and may be related to different parenting practices and patterns of ECE use among immigrant families (Bornstein, 1991, 2006; LeVine, 1977). These too may have implications for the development of early academic skills. For instance, Latino families emphasize the importance of family (*familismo*), respect for the self and others (*respeto*), and proper behavior (*bien educado*) in child-rearing over the development of autonomy, in contrast to European American mothers who tend to emphasize autonomy and independence in their parenting practices (Halgunseth, Ispa, & Rudy, 2006; Harwood, Leyendecker, Carlson, Asencio, & Miller, 2002; Landale, Oropesa, & Bradatan, 2006). In fact, Latino parents are more likely than Asian American or European American parents to rate socioemotional skills as more important than cognitive skills (Okagaki & Frensch, 1998). Cultures also differ in the extent to which child-rearing is viewed as a maternal/familial responsibility and in the acceptability of non-parental care (Holloway, Fuller, Rambaut, & Eggers-Pierola, 1997; LeVine, Miller,

Richman, & LeVine, 1996; Whiting & Edwards, 1988). For example, Latino children tend to be underrepresented in center-based childcare settings and this may be grounded in the core cultural value of *familismo,* which emphasizes the centrality of parents and extended kin networks in raising children (Sabogal, Marin, Otero-Sabogal, Marin, & Perez-Stable, 1987). Differences such as these may have significant implications on the early academic skills development of children of immigrants.

1.1 NATIVITY STATUS AND ACADEMIC SKILLS DEVELOPMENT

A growing body of research has documented disparities in academic achievement related to parental immigrant status (e.g. Han, 2008; Magnuson et al., 2006). On average, children of immigrants perform below children of native parents in terms of math and reading achievement (e.g. Han, 2008; Lahaie, 2006; 2008; Magnuson et al., 2006). For example, recent work by Crosnoe (2007) shows that children from Mexican immigrant families score nearly a full standard deviation below children from native White families and one-third of a standard deviation lower than children from native African-American and native Latino families on a kindergarten math assessment. However, there is great heterogeneity among children of immigrants based on parental region of origin (De Feyter & Winsler, 2009; Han, 2008). For example, using data from the Early Childhood Longitudinal Study kindergarten cohort (ECLS-K), Han (2008) found that Puerto Rican, Central American, South American, Mexican, Cuban, Southeast Asian, and children with origins in the Dominican Republic scored below native White children on kindergarten reading and math measures, while East Asian and Indian children outscored native White children. The sizes of these differences ranged from small for Indian,

East Asian, Cuban, other Southeast Asian, and South American to medium for Vietnamese/Thai/Cambodian/Laos, Puerto Rican, and Mexican children. Recent work by De Feyter and Winsler (2009) also highlights differences in academic achievement across region of origin, with South American children demonstrating moderately higher academic performance in kindergarten than children from Cuba and Central America.

1.2 HOME ENVIRONMENT AND ACADEMIC SKILLS DEVELOPMENT

During early childhood, parenting practices in the home environment are important for shaping reading and math skills. Parents who provide high levels of cognitive stimulation by reading books, playing games, and facilitating educational experiences outside of the home through visits to the library or museum promote early academic skills development (Case & Griffin, 1990; Snow, 1993; Snow, Burns, & Griffin, 1998). Indeed, measures of cognitive stimulation in the home environment are strong predictors of math and reading skills during early childhood and beyond (Berlin, Brooks-Gunn, Spiker, & Zaslow, 1995; Smith, Brooks-Gunn, Klebanov, 1997; Votruba-Drzal, 2003)

Warm and responsive home environments also promote the development of academic skills by contributing to secure attachment relationships, encouraging child compliance to parental requests, and facilitating emotion recognition and the internalization of socially appropriate emotional responses (Ainsworth, 1967; Campbell, 1997; Carson & Parke, 1996; Howes, Hamilton, & Matheson, 1994; Maccoby, 1992). Early secure attachments promote cognitive development by encouraging confident exploration and self-efficacy, in addition to decreasing reactivity in stressful situations (e.g. Gunnar, Brodersen, Nachmias, Buss, &

Rigatuso, 1996; Matas, Arend, & Sroufe, 1978). In contrast, harsh, over-controlling parenting is linked to less secure attachment relationships and undermine children's self-confidence, leading to lower early achievement (Grolnick, 2003). Currently, knowledge related to the role of home environments in shaping children's academic skills has focused heavily on children with native-born parents, making it difficult to ascertain whether there are important differences in the early home experiences of children of immigrants that give rise to achievement disparities during the transition to school.

As discussed earlier, cultural models guide parents' interactions with their children by influencing parental goals, values, beliefs, and behaviors and may give rise to important differences in early home environments among children of immigrants (Garcia Coll & Pachter, 2002). For example, Mexican immigrant parents report engaging in fewer reading activities with their children than native White, African American, Asian-American, and other Latino parents (Crosnoe, 2006). Ethnographic data suggests that this difference may be partially explained by a belief among many Mexican parents that literacy acquisition takes place primarily through formal instruction during school and less so during parent-child interactions in the home (Reese & Gallimore, 2000). This can be contrasted with the prevailing notion in the United States that views literacy as an emerging ability, encouraged in the home by shared book-reading, exposure to literacy materials, and spoken communication (Adams, 1990; Scarborough, & Dobrich, 1994). Cultural differences extend beyond cognitive stimulation and have been found in regards to parental displays of warmth and control. For example, mothers from North America and Western Europe tend to be more emotionally expressive with their children than do mothers from Asia, Africa, and South/Central America (Bornstein et al., 1998). Furthermore, Latino and Chinese American households have been classified as displaying authoritarian features (e.g. Glasgow,

Dornbausch, Troyer, Steinberg, & Rutter, 1997); however, the stricter disciplinary practices are often found within the context of high levels of warmth and supportiveness (Carlson & Harwood, 2003; Chao, 1994). Still, very few studies have considered whether these sorts of early experiences in the home environment are a pathway through which parental region of origin is related to academic achievement.

1.3 CHILDCARE AND ACADEMIC SKILLS DEVELOPMENT

Beyond the early home environment, experiences in ECE settings are important in influencing the development of early academic skills. About two-thirds of children under the age of five in the United States regularly attend ECE settings (Laughlin, 2010). Increasingly, evidence suggests that experiences in early education and care settings have significant implications for early academic skills (Gormley, Gayer, Phillips, & Dawson, 2005; Loeb, Bridges, Bassok, Fuller, & Rumberger, 2007; Magnuson, Ruhm, & Waldfogel, 2007; Morrissey, 2010; NICHD ECCRN & Duncan, 2003). More specifically, when compared to parental care and care in more informal settings (e.g. relative/non-relative home-based care), center-based care appears to promote higher levels of academic skills at kindergarten entry (Loeb, Fuller, Kagan, & Carrol, 2004; Magnuson et al., 2004; NICHD ECCRN & Duncan, 2003). The NICHD ECCRN and Duncan (2003) found, for example, that greater exposure to center-based ECE settings between 27 and 54 months was related to increased academic skills at kindergarten entry. Similarly, Magnuson and colleagues (2007) found that center-care was related to nearly one-fifth of a standard deviation increase in reading skills. Using a regression discontinuity design, Gormley and colleagues (2005) show medium to large effects of pre-K attendance on reading, math, and spelling achievement.

Despite the extant literature examining the relationship between childcare and school readiness, few studies have considered whether differences in ECE experiences are important for explaining achievement gaps related to parental region of origin (exceptions include Crosnoe, 2007; Magnuson et al., 2006). While only a small number studies have considered the ECE experiences of children of immigrants, a growing body of research suggests that pre-K attendance is beneficial for children with immigrant parents (e.g. Crosnoe, 2004; Gormley & Gayer, 2005; Magnuson et al., 2004; 2006). Still children of immigrants are less likely than children of native parents to be in regular non-parental care (34.4% vs. 52.8%, respectively) (Capps, Fix, Ost, Reardon-Anderson, & Passel, 2004). The most pronounced difference is in center-based care attendance, with rates of enrollment for children of immigrants and children of native-born parents at 17% and 26%, respectively (Capps et al., 2004; Chiswick & DebBurman, 2006; Turney & Kao, 2009). Such disparities in preschool attendance may in part explain the discrepancies in academic achievement between children of immigrant and native parents at school entry.

1.4 LIMITATIONS IN PREVIOUS RESEARCH

Increasingly, literature has documented differences in the reading and math skills of children of immigrants when compared to children with native-born parents, however, several limitations must be addressed to improve our understanding of how early home and non-parental care settings contribute to these differences. First, there has been a trend in research on academic achievement among children of immigrants to focus on comparisons between children of immigrants and children of native-born parents, ignoring the heterogeneity within both groups of children (e.g. Capps, Fix, Ost, Reardon-Anderson, & Passel, 2004; Lahaie, 2008; Mistry, Biesanz, Chien, Howes, & Benner, 2008). Several factors, including the political disposition of one's region of origin, families' reasons for migration, and the families' socioeconomic circumstances, give rise to distinct experiences when immigrant families arrive in the United States (Suarez-Orozco & Carhill, 2008). Furthermore, there are vast cultural and ethnic differences within the population of children of immigrants that shape proximal experiences of children in their home and care settings during early childhood. To address this limitation, the current study explores the heterogeneity in early math and reading achievement by comparing several immigrant subgroups based on region of origin.

Second, studies focused on school readiness among children of immigrants have relied heavily on samples of children of Mexican or East Asian immigrants because of their great representation among immigrants in the U.S. (e.g. Buriel & Hurtado-Ortiz, 2000; Crosnoe, 2007; Garcia & Jensen, 2007; Gormley et al., 2005; Lahaie, 2008; Magnuson et al., 2006; Turney & Kao, 2009; Winsler et al., 2008). While Mexico and East Asia account for approximately half of

all children of immigrants in the U.S., sizable numbers of children are born to immigrants from other countries, including the Philippines, India, El Salvador, and the Dominican Republic (Capps et al., 2005; Fortuny et al., 2009). To address this oversight in the literature, the current study focuses on a diverse and nationally representative birth cohort of children, which includes children of immigrants from 10 regions of origin, representing over 100 distinct countries/territories/islands.

Third, previous studies tend to compare children from immigrant families to native White children, when children of similar racial/ethnic backgrounds whose parents were born in the U.S. may serve as better reference group (Fernandez-Kelly and Schauffler, 1994). In this study, we first examine differences between each of our children of immigrant subgroups and children from native White families, but we take our analysis a step further and examine differences between children of immigrants and their ethnically similar native counterparts (e.g. children of Mexican immigrants to children of Mexican native-born parents). We argue, in agreement with Harris, Jamison, & Trujillo (2008), that this allows for a more precise measure of the effect of parental nativity status. Moreover, because the social stratification system of the United States is based on racial/ethnic identities, children of immigrant and native parents from historically disadvantaged groups may encounter different obstacles to gain the same academic success as White peers of immigrant or native parents.

1.5 RESEARCH QUESTIONS

This study aims to strengthen our understanding of how early home and childcare settings contribute to disparities in early academic skills related to parental region of origin by addressing two primary research goals. First, we consider whether parental region of origin is associated with age 5 math and reading achievement. Second, we investigate whether characteristics of the children's early experiences in home and non-parental care settings are pathways through which parental region of origin relates to academic achievement.

2.0 METHOD

2.0.1 Participants

Data for this study was drawn from the Early Childhood Longitudinal Study – Birth Cohort (ECLS-B), a nationally representative study of a cohort of 10,700 children born in the United States in the year 2001 (Flanagan & West, 2004). The ECLS-B is a multi-source, multi-method longitudinal study aimed at characterizing the early home and educational experiences of young children in the United States, documenting their cognitive, academic, and socioemotional development from birth through kindergarten (Jacobson, Flanagan, McPhee, & Park, 2007). The ECLS-B oversampled several subgroups, including children born with low or very low birthweight, twins, and children with American Indian/Native Alaskan, Asian/Pacific Islander, and Chinese identities. Births were sampled from 96 core primary sampling units (PSU), which were geographic regions consisting of counties or groups of counties. Children who died or were adopted prior to the age of 9 months were excluded from the sample as were children born to mothers younger than 15 years old. The ECLS-B collected data at four waves for all children in the sample, at ages of approximately 9 months (wave 1), 2 years (wave 2), 4 years (wave 3), and 5 - 6 years (wave 4). A fifth wave of data was collected from children entering kindergarten in the fall of 2007 and from children who repeated kindergarten in this same year. Response rates for waves 1 through 5 are 74%, 93%, 91%, 92%, and 93%, respectively. A sampling weight was

utilized for all analyses presented in this study so that the findings can be generalized to a nationally representative birth cohort. During each wave, the child's primary caregiver (99.7% biological mother or female guardian) was interviewed and children's cognitive, academic, and socioemotional development was assessed using multiple methodologies. Parents were asked about regular non-parental care settings, including the type of childcare that children attended.

It is important to note the strengths of ECLS-B dataset for the current investigation. First, the data are nationally representative, and thus generalizable. Moreover, the sample is large with a sizable sample of children of immigrants (N ~=2,950) with parents from diverse national origins. A significant strength of the ECLS-B data is that nearly all subgroups of children of immigrants based on region of origin have a native reference group to whom they can be compared. Second, the ECLS-B used reliable and well-validated direct assessments of children's reading and math scores at kindergarten entry. Third, the ECLS-B follows children from infancy into kindergarten, which provides rich longitudinal information about children's experiences in their early home and ECE settings from early childhood through the transition into formal schooling. Finally, the ECLS-B took measures to ensure that interviews and assessments were conducted for those participants who were not English-proficient. Data collection instruments were translated into Spanish for children who did not pass the English-fluency screening, and interpreters were provided for parents or ECEP providers/teachers who were not English-proficient. Less than 1% of cases were not assessed due to language barriers (Snow et al., 2007).

Our sample consists of roughly 6,850 children who were followed by the ECLS-B from 9 months until age 5. Among these children, approximately 88% have complete data on all control variables. Of the 12% with some missing data, roughly 4% were missing data from the Two Bag Task and around 8% were missing data on child, family, or household covariates. Patterns of

missing data revealed few significant differences between children in our sample with complete data and those with some missing data. Overall, children with all valid data were somewhat more likely to be non-Hispanic White, less likely to be from immigrant or non-English speaking households, and had higher baseline cognitive scores at 9 months when compared to children who were dropped from the analysis due to missing data. After examining patterns of missing data, Stata 10.0 was used to impute missing data using multiple imputation by chained equations (MICE; Royston, 2004; 2005). Altogether 10 complete datasets were created and analyzed in Stata 10.0. Results were combined using standard techniques in the Stata software (StataCorp, 2005).

2.0.2 Analytic Approach

To address our first research question, which considers how parental region of origin and race/ethnicity are associated with reading and math skills at age 5, we ran OLS regression models. This modeling is based on an accumulation of inputs framework, most clearly articulated in the work of NICHD Early Child Care Research Network and Duncan (2003) and Blau (1999). As shown in equation 1 below, math and reading skills at age 5 are expressed as a function of parental region of origin.

(1) $\text{Child Outcomes}_{4i} = B_0 + B_1\text{Origin}_i + B_2\text{Cog}_{1i} + B_3\text{Child}_{1\text{-}3i} + B_4\text{Family}_{1\text{-}3i} + B_5\text{Child}_i + B_6\text{Family}_i + B_7\text{Home}_{1\text{-}3i} + B_8\text{ECE}_{1\text{-}3i} + \varepsilon_t$

A series of time-varying and time-invariant child and family covariates aggregated from 9 months to preschool were included in the models. A lagged measure of cognitive ability at 9 months (Cog_{1i}) was included as a covariate to reduce concerns of omitted variable bias. In order to parse apart the unique link between parental region of origin and achievement scores from the

confounding influences of child and family characteristics, we utilized hierarchical regression analysis. In the first model we entered parental region of origin, which identifies unadjusted mean differences in reading and math achievement based on parental region of origin. Then, several covariates were added to the models, including characteristics of children and their families, to consider adjusted differences in reading and math skills related to parental region of origin. Introducing covariates into unadjusted models may result in mediation (attenuation), exacerbation (suppression), or stability in coefficients from the unadjusted to the adjusted model. Significant suppression and attenuation effects are discussed as relevant.

To address our second research aim, which aims to examine whether early experiences in home and ECE settings are pathways through which region of origin relates to academic skills at age 5, a final model was estimated by adding characteristics of early home and childcare experiences to the regression model. At each step of the hierarchy, post-hoc comparisons were performed to consider differences related to race/ethnicity and parental region of origin. First, comparisons were made between each immigrant subgroup and native White children. Next, a series of post-hoc comparisons were run to examine differences in math and reading among children of immigrants based on parental region of origin. After considering differences using native White children as the reference group, planned post-hoc comparisons were run to compare children of immigrants to their ethnically similar native counterparts. More specifically, African and Caribbean children were compared to native African American children; Mexican, Latin American, and children with parents from the U.S. Territories were compared to native Hispanic children; and Southeast Asian, East Asian, and Indian Asian children were compared to native Asian children. Middle Eastern and European children were only compared to native White children as this appeared to be the most appropriate native referent. For simplicity's sake, only

these last post-hoc comparisons are shown in Table 2 and Table 3. All other post-hoc comparisons are available from the author by request.

In order for characteristics of the home environment and non-parental care experiences to be pathways through which parental region of origin is related to age 5 achievement, there must be significant differences in home characteristics and early childcare experiences related to region of origin that are also associated with age 5 reading and math skills. To determine whether this is case, we estimated the exact same series of hierarchical regression models and post-hoc comparisons described above (excluding the final step), but predicted characteristics of children's early home and childcare environments aggregated from 9 months through preschool waves of data collection. Sobel tests (Sobel, 1982) were performed to test the statistical significance of the indirect effects of parental region operating through characteristics of the home and ECE environments. Table 5 shows the adjusted models for the home and ECE characteristics that were significantly related to achievement. Again, post-hoc comparisons are not depicted in the table but are available upon request.

2.1 MEASURES

2.1.1 Immigrant Characteristics

A child was defined as a child of an immigrant if one of their parents was born outside of the United States, including the United States Territories. To clarify, none of these children are *immigrant children.* Rather, these children were all born in the United States to immigrant parents. Otherwise, children were considered to be from native-born families. Among the approximately 2,950 immigrant families in our sample, 52% had an immigrant father and immigrant mother, 30% had an immigrant mother, and 18% had an immigrant father. Parents were grouped according to parental report of region of origin. If both parents were immigrants, children were grouped according to maternal region of origin. Over 100 distinct countries/territories/islands are represented in the ECLS-B, however analysis by country was not feasible due to inadequate sample sizes for the subgroups. Instead, children of immigrants were grouped into different regions, based predominantly on geographic location. If geographically adjacent countries/territories/islands could feasibly be grouped into more than one category, primary language, religion, economic infrastructure, and historical context were also taken into consideration. Parental country of origin was grouped into the following regions: Mexico, Latin America, East Asia, Indian Asia, Southeast Asia, Africa, the Middle East, Europe, the Caribbean, and the U.S. Territories (for a more detailed description, please refer to the Appendix). Among children of native parents, race/ethnicity was categorized as non-Hispanic White (reference),

non-Hispanic African American, Hispanic, Asian, American Indian, and multiracial. Native Hawaiian or other Pacific Islanders were combined with American Indian or Alaska natives.

2.1.2 Children's Academic Achievement

Cognitive ability was assessed at 9 months using the *Bayley Short Form-Research Edition* (BSF-R) (α = .80), an adaptation of the *Bayley Scales of Infant Development* (BSID-II; Bayley, 1993) created for use in the ECLS-B. The BSF-R assessed cognitive development across diverse domains, including exploration of objects, babbling, early problem-solving, and preverbal communication (Flanagan & West, 2004). IRT scores were used (Bayley, 1993).

Literacy and math achievement was measured at age 5 using direct assessments. The assessments were developed specifically for the ECLS-B and are comprised of items drawn from well-validated standardized instruments, such as the *Peabody Picture Vocabulary Test Third Edition* (PPVT-III) (Dunn & Dunn, 1997), the PreLAS 2000 (Duncan & DeAvila, 1998), the *Preschool Comprehensive Test of Phonological & Print Processing* (Lonigan, Wagner, Torgesen, & Rashotte, 2002), *Test of Early Mathematics Ability* (3rd ed.; Ginsburg & Baroody, 2003). The age 5 literacy assessment (wave 4 , α = .92) consisted of 74 items that measured early literacy and language skills, including letter knowledge, word recognition, print conventions, and initial understanding. The math assessment (wave 4, α = 92) consisted of 58 items, including number sense, properties, operations, and probability. The IRT scores were used for these analyses.

2.1.3 Home Environments

Cognitive stimulation in the home environment was assessed during the parent interviews at the 9 month, 2 year, and preschool waves of data collection using items from the well-validated Short Form of the Home Observation for Measurement of the Environment (HOME) Inventory (Caldwell & Bradley, 1979; Caldwell & Bradley, 2001), the National Household Education Survey (NHES), and several questions constructed by the ECLS-B. Items included assess the frequency with which parents engage in a variety of learning activities with their children, such as reading or telling stories to their child, and singing with their child, on a three-point scale ranging from “not at all” to “every day”. To maintain developmental appropriateness, the items measuring cognitive stimulation in the home environment changed as children aged. Cognitive stimulation composites consisted of 7 items at 9 months, 18 items at 2 years, and 11 items at preschool waves of data collection. These three composites were aggregated to create a single measure of cognitive stimulation in the home environment (herein referred to as parent-report cognitive stimulation, $\alpha = .71$).

Additional characteristics of the home environment were assessed using observational measures from the Two Bags Task (Fauth, Brady-Smith, & Brooks-Gunn, 2003) at 2 years and preschool. The Two Bags Task is a semi-structured interaction between mother-child dyads. Each mother-child dyad was given two bags, one containing a book and the other containing items for pretend play (i.e. Play-Doh, a rolling pin, and cookie cutters), and were instructed to play for ten minutes. Characteristics of parenting, including parental intrusiveness, emotional supportiveness, and cognitive stimulation, were coded on a seven-point scale. Three parenting composites were created to reflect cognitive stimulation, emotional support, and parental

negativity. The cognitive stimulation composite reflected the degree to which parents attempted to enhance their child's cognitive or language abilities and used appropriate scaffolding to facilitate this development (herein referred to as observed cognitive stimulation, α = .43). The parental emotional support composite measured the degree to which parents provided a safe base for children to explore and embraced independence on the part of their child (α = .48). At 2 years, the ECLS-B measured parental sensitivity and positive regard; at preschool, it measured parental emotional supportiveness, which tapped into the same dimensions as the 2 year ratings. As such, we averaged across the 2 year ratings to form a 2 year emotional support composite. Our measure of parental negativity reflected the degree to which parents directed discontentment, anger, disapproval, or rejection towards their child during the task. (α = .53). We created this measure by averaging across parental intrusiveness, detachment, and negativity as rated at 2 years and preschool. At 2 years, percent agreement reliabilities among the coders ranged from 95.06% to 97.33% and at preschool, from 90.8% to 98.5% (Nord, Edwards, Andreassen, Green, & Wallner-Allen, 2006; Snow et al., 2007). Composite measures of cognitive stimulation, parental emotional supportiveness and negativity, were constructed by averaging scores across the age two and preschool assessments. The 2 year and preschool assessments are correlated at .23, .32, and .14 for cognitive stimulation composite, emotional supportiveness, and negative parenting composites, respectively. Correlations between characteristics of the home environment and child outcomes suggest that these measures operate similarly across immigrant and native subgroups.

2.1.4 Childcare Characteristics

Parents reported on the type of childcare arrangement their child experienced at 9 months, 2 years, and preschool. Dummy variables were created at each wave indicating whether children spent most hours during the week in center-based (including Head Start), home-based (relative and non-relative), or parental care (reference). Children who experienced the same number of hours in center-based and home-based settings were coded into the center-based category. Parental care included both children who did not routinely attend non-parental care arrangements and those children in regular non-parental care for less than 5 hours per week. The extent of childcare children experienced was measured using maternal reports of the number of hours per week children spent in their primary care arrangement at 9 months, 2 years, and preschool. The amount of time spent in childcare at each time point was not significantly associated with achievement and thus was dropped from the analyses[1].

[1] Model specifications including both type and hours revealed a high degree of intercorrelation between hours per week of care and type of care, which gave rise to problems of collinearity when attempting to simultaneously estimate independent associations between type and extent of care at each wave. This was primarily due to the fact that children in the parent care category were coded as experiencing 0 hours of care per week. As a robustness check, we ran an additional analysis differentiating care type at each wave into part-time (10 – 25 hours per week), full-time (26 – 45 hours per week), and over-time (greater than 45 hours per week) and found that our results were robust. In other words, there were no systematic differences in center-care associations with achievement outcomes depending on the extent of care. Full models incorporating hours of care are available by request.

2.1.5 Child Characteristics

A variety of child characteristics were included in our regression models, including age at assessment, measured in months, and gender. Child birthweight was represented with an indicator of whether the child was born low (less than 2500 grams) or normal birthweight (reference). Fair or poor child health was represented by a variable that indicated whether parents reported that a child was in fair/poor health at any wave from 9 months to preschool. A dichotomous indicator of whether the child attended kindergarten during 2006 or 2007 was also included as an additional covariate to allow for mean differences in the academic achievement of the child depending on whether or not they had started kindergarten at the time of their assessment.

2.1.6 Family Characteristics

Several maternal and household characteristics were included as covariates, including highest level of parental education, maternal employment, marital status, and family structure. Parental education was represented with a series of variables indicating whether the highest level of education at the preschool wave of data collection was less than high school, high school/GED (reference), some college or vocational school, Bachelor's degree, or Masters/Doctorate/other professional degree. Maternal employment was measured dichotomously as whether mothers were consistently employed at each of the three waves. Marital status was measured with an indicator of whether children lived in a household with a married parent at 9 months, 2 years, and preschool waves of the survey. Family income was assessed using total household income in

the prior calendar year and was averaged over the first three waves of the survey. A dichotomous indicator capturing whether the primary language of the household was consistently non-English at 9 months, 2 years, and preschool waves of data collection was also included in the models. Number of children in the household was represented as the average number of children in the home across the first three wave of data collection. A dummy variable of whether there were more than two adults in the home at any of the three waves was also included in our models. Lastly, a categorical variable of whether the target child had an older sibling was included in the equation.

3.0 RESULTS

3.1.1 Descriptive Statistics

Descriptive statistics for children with native-born parents by race/ethnicity and for children of immigrants based on parental region of origin can be found in Table 1 and Table 2, respectively. As previously discussed, immigrant families in the U.S. are markedly heterogeneous when it comes to sociodemographic factors. The immigrant families in our sample varied tremendously in socioeconomic and demographic features across parental region of origin, with the most pronounced differences found in household income and parental educational background.

East Asian, Indian Asian, and European immigrants were the most socioeconomically advantaged immigrant subgroups, with average household incomes comparable to that of native Asians. These parents also tended to be the most highly educated of immigrant and native parents, with the majority having earned a college degree or higher. Middle Eastern, African, and Southeast Asian families were “moderately” socioeconomically advantaged, earning roughly similar incomes to those of native White families. Approximately half of these parents earned a bachelor’s degree or above, similar to the education level of native Asian parents. The most socioeconomically disadvantaged families were from the Caribbean, Latin America, the U.S. Territories, and Mexico, whose household income was comparable to that of native Hispanics. In terms of educational background, these families resembled native multiracial families. Notably, Mexican families were significantly more disadvantaged than even their most disadvantaged

immigrant counterparts, earning similar income and education levels to that of the most socioeconomically disadvantaged native groups, native American Indian and native African American families. In comparing across the most advantaged and disadvantaged immigrant subgroups in this representative sample, there is an income differential of approximately $65,000.

3.1.2 Is parental region of origin associated with academic achievement at age 5?

In the first step of our hierarchical regression analysis unadjusted differences between groups of children based on nativity status, race/ethnicity, and region of origin were examined. The results of these models for reading and math achievement are found in Model 1 of Table 3 and Table 4, respectively. Unadjusted means on literacy are graphically depicted in Figure 1, organized by parental nativity status and in order from highest scoring to lowest (i.e. from Native Asian, the highest scoring native group to Mexican, the lowest scoring immigrant group). It can be seen here that there was enormous heterogeneity in academic performance at age 5 – 6 for children of immigrants based on region of origin.

Overall, patterns suggest that children of immigrants tended to fall into one of four groups based on their achievement scores, which we will refer to as “High”, “Upper-Middle”, “Lower-Middle”, and “Low” performing groups. Children with parents from Indian Asia and East Asia were in the high-performing group, significantly outscoring native White children by anywhere from one-half to nearly a full standard deviation across measures of reading and math. It should be noted that among this group of high-achieving students, children of immigrant parents from Indian Asia outperformed those from East Asia on the reading assessment but results were in the opposite direction for math. The upper-middle group consisted of children with European,

Southeast Asian, and African parents with scores that were indistinguishable from native White and similar to native Asian children across reading and math. Children with parents from the Middle East, Caribbean, Latin America, and the U.S. Territories made up the lower-middle group, scoring significantly below native White children, with standard deviation differences for reading ranging from -0.13 to -0.27 and for math ranging from -0.23 to -0.38. The children in the lower-middle group had academic skills similar to native multiracial and native Hispanic children. The lowest performing group was comprised of children whose parents originated from Mexico. These children were between one-half to nearly a whole standard deviation unit below native White children across both reading and math and had scores that more closely resembled native African American and native American Indian subgroups.

After calculating the main effect of parental region of origin on age 5 achievement, child and family covariates were entered into the regression equation to determine how much of the associations between parental region of origin and literacy and math achievement are explained by differences in child and family characteristics. As shown in Model 2 of Table 3 and Table 4, the introduction of these variables into the regression model greatly attenuate differences in achievement related to parental region of origin.

In terms of literacy, the greatest reduction in achievement disparities occurred between native White children and the lower-middle and lower performing groups. More specifically, differences in achievement for Caribbean and African immigrants were greatly reduced from Model 1 to Model 2. After adjusting for child and family characteristics these children were indistinguishable from all other groups of children except those with parents from East and Indian Asia. The inclusion of this extensive set of control variables also substantially curtailed the initial advantage of the highest scoring group. The unadjusted scores of Indian Asia and East

Asian children were nearly an entire standard deviation above native White children. This advantage drops to less than one-tenth of a standard deviation unit in Model 2. Differences in child and family factors also explained disparities in achievement scores among our four categories, in particular between the upper-middle and the lowest scoring group. After controlling for these characteristics, children in these groups look quite similar.

Results were comparable for math achievement for each group except Southeast Asian children who experienced a slight suppression effect with the inclusion of covariates, though their scores still did not significantly differ from those of native White children. Holding constant child and family characteristics reduced the differences in math performance across region of origin and among native race/ethnic groups. The greatest reduction occurred in the lower-middle scoring group, with Caribbean children of immigrants showing a 95% improvement in math achievement. Again, the highest performing group lost their academic advantage once covariates were added to the model; this was especially pronounced for children of European parents.

Characteristics that seemed to be most important in attenuating differences related to region of origin and race/ethnicity were birthweight, child health, parental education, income, household size, and marriage stability. Still important achievement discrepancies remain, with Indian Asian and East Asian children outscoring all other immigrant and native groups, and Southeast Asian children outscoring children with parents from Mexico, the Middle East, and the U.S. Territories.

3.1.3 Are characteristics of the home and ECE experiences pathways through which parental region of origin relates to academic achievement?

To determine whether differences in early home and ECE experiences are pathways through which parental region of origin relates to academic achievement, characteristics of the home and ECE type were added to the regression model. As shown in Model 3 of Table 3 and Table 4, significant associations between reading and math performance and both measures of cognitive stimulation, negative parenting, and preschool center care emerged. Adjusted differences in these home and ECE characteristics by race/ethnicity and region of origin are shown in Table 5.

In terms of literacy, the addition of these characteristics further attenuated disparities in reading by 17%-25% for children with parents from the Middle East, Europe, Mexico, and the U.S. Territories when compared to native White children. Formal tests of mediation demonstrated that differences in parent-report cognitive stimulation in the home environment significantly mediated the relationship between parental region of origin and age 5 math and reading achievement for children with parents from Mexico and the U.S. Territories. More specifically, children whose parents migrated from Mexico and the U.S. Territories were in homes where parents reported lower levels of cognitive stimulation compared to native White parents. Once cognitive stimulation was held constant, the achievement disparity between these children and native White children decreased. Further, children with Mexican parents were less likely to attend center care during preschool than native White children. Controlling for the lower rate of center care attendance, the academic differences between Mexican and native White children were further mediated. Interestingly, there was also a smaller indirect suppression effect for children of Mexican immigrants by way of lower rates of negative parenting that was off-set by the larger size of the indirect effects of cognitive stimulation and center care

attendance during preschool. Specifically, Mexican parents were less likely to use negative parenting than native White parents, and because negative parenting is related to worse achievement scores, controlling for the lower rate of negative parenting buffered the performance of Mexican children, masking the full extent of mediation related to cognitive stimulation and center care attendance during preschool. The indirect effect of observed cognitive stimulation also appeared to help attenuate academic differences between native White children and those with parents from Mexico, the Middle East, and the U.S. Territories, but Sobel tests revealed only trend level significance.

For other children of immigrants, the addition of home and ECE characteristics was associated with little change in achievement disparities between their reading scores and those of native White children (i.e. African, Latin American, and Caribbean children). Finally, achievement disparities in reading were exacerbated with the inclusion these covariates for children of Indian Asian, East Asian, and Southeast Asian immigrants. This suggests that there were suppression effects for these groups. Sobel tests revealed a significant suppression effects related to parent-report cognitive stimulation in the home for Indian Asian, East Asian, and Southeast Asian children. In other words, children with parents from these three regions of origin reported significantly fewer cognitively stimulating experiences in the home environment, which enhance the development of early reading skills. Once these differences were taken into consideration, these three groups performed even better than did their native White peers. Among children of Indian Asian parents, higher rates of negative parenting also contributed to this exacerbation. Children with parents from Southeast Asia had significantly lower rates of center care attendance during preschool when compared to native White children, which resulted

in even greater differences in reading achievement between these two groups when characteristics of ECE were introduced into the model.

In terms of math achievement at age 5, the pattern of attenuation, stability, and suppression were somewhat different. Again, disparities between children with parents from Mexico, the Middle East, and the U.S. Territories and native White children were attenuated by 10%-28% with the addition of home and ECE characteristics. Similar to the reading results, lower rates of parent-report cognitive stimulation significantly mediated the relationship between parent region of origin and math skills for children with parents from the U.S. Territories and Mexico. Observed cognitive stimulation from the Two Bag task and lower center care attendance during preschool were also important in attenuating achievement differences between Mexican and native White children. Again, there was a significant indirect suppression effect related to negative parenting for Mexican children that was offset by the larger mediating effects of cognitive stimulation and center-based care during preschool. Although children of Caribbean immigrants experience an overall suppression effect related to their higher rates of center care attendance relative to native White children, this was offset by an indirect mediating effect of parent-report and observed cognitive stimulation. In other words, children with Caribbean parents are more likely to be enrolled in center-based care during preschool, which promotes the early academic achievement. Controlling for the higher rate of center attendance, the discrepancy in math performance between Caribbean and native White children increased. However, the indirect mediating effect of lower parent-report cognitive stimulation masked the full suppression effect related to center care attendance during preschool.

When considering disparities in math performance, the achievement gap between Latin American children of immigrants and native White children was the only one that remained

stable with the addition of home and ECE. Departing from the reading results, achievement disparities between native White children and African, Caribbean, and European, in addition to East Asian, Indian Asian, and Southeast Asian groups were exacerbated after controlling for characteristics of the home and ECE type. Sobel tests suggested that differences in parent-report and observed cognitive stimulation were related to suppression for children of African immigrants. More specifically, African immigrant parents reported and were observed during the Two Bag task to engage in fewer cognitively stimulating activities with their children compared to native White parents. After controlling for cognitive stimulation, the achievement disparity between children of African parents and native White children grew. Replicating reading results, formal Sobel tests reveal significant suppression effects for children of East Asian, Indian Asian, and Southeast Asian immigrants related to lower rates of parent-report cognitive stimulation. Lower rates of observed cognitive stimulation during the Two Bag task was also related to the exacerbation of differences between Indian Asian and Southeast Asian children and native White children. Mirroring the reading results, Sobel tests also demonstrated a significant suppression effect operating through higher rates of negative parenting practices for children of Indian Asian parents.

In summary, the achievement gap between several immigrant groups and native Whites was attenuated by as much as 28% after controlling for both measures of cognitive stimulation, negative parenting, and center care during preschool. For other immigrant groups, most notably all children of Asian immigrants, holding constant these home and ECE characteristics was related to an exacerbation of achievement disparities relative to native White children. This was largely driven by lower parent-report cognitive stimulation in the home among these families. For Mexican and Caribbean children, an interesting pattern emerged whereby there was not

solely suppression or attenuation but multiple factors related to mediation and exacerbation that offset the effects of the other. For Mexican children, the mediating effects of lower rates of center care attendance and cognitive stimulation in the home compared to native White children was off-set by suppression effects related to lower rates of negative parenting. For Caribbean children, the overall suppression effect driven by higher levels of center care attendance relative to native White children was off-set by attenuation related to lower parent-report cognitive stimulation.

3.1.4 How do children of immigrants compare to their ethnically similar native counterparts?

In a final set of post-hoc comparisons, children of immigrants were compared to their ethnically similar native peers to better gauge the effect of parental nativity status on academic achievement. Specifically, African and Caribbean children were compared to native African American children; East Asian, Indian Asian, and Southeast Asian children of immigrants were compared to native Asian peers; and Latin American, Mexican, and children with parents from the U.S. Territories were compared to children of native-born Hispanic parents.

In regards to literacy, the unadjusted achievement scores suggest several significant differences between scores of children of immigrants and those of their ethnically similar native peers. Some children of immigrants were more advantaged in early reading skills compared to their ethnically similar native peers. More specifically, African and Caribbean children outscore native African American children by .43 and .27 of a standard deviation, respectively. Children with Latin American immigrant parents score slightly higher than native Hispanic children. Indian Asian and East Asian children outperformed their native Asian agemates by .70 and .47 of

a standard deviation, respectively, while Southeast Asian children had scores that closely resembled those of native Asian children. Other children of immigrants evidenced significant disadvantage when compared to their ethnically similar native peers. For example children with parents from the U.S. Territories performed slightly below native Hispanic children and children with parents from Mexico scored significantly below native Hispanic peers by nearly one-third of a standard deviation.

In terms of math, unadjusted math results comparing children of immigrants to their ethnically similar native peers closely align with those of literacy, although the magnitude of the disparities in math tended to be larger for certain subgroups than they were for reading. More specifically, native African American children trail further behind African and Caribbean children of immigrants in terms of math compared to reading. This is also true of children with parents from the U.S. Territories who score similarly to native Hispanic children in reading and roughly one-tenth of a standard deviation below in math. The gap between native Asian children and Southeast Asian children is also somewhat larger for math than reading. However, the achievement discrepancy between Indian Asian and native Asian children is about 50% greater for reading than math.

Introducing child and family covariates into the regression equation greatly attenuated literacy disparities between children of immigrants and their native reference group. The only remaining differences were between native Asian and Indian and East Asian children, who continued to outscore native Asian children. The characteristics linked to this reduction varied by race/ethnicity and region origin, although household income, marriage stability, and parental education were consistently important in explaining differences in achievement. Specifically, after accounting for the higher incidence of poor health, low birthweight, single-parent

households, having parents with less than a college degree, and lower household income, native African American children score equivalently to their African and Caribbean peers. Differences between children with Mexican parents and their native Hispanic peers were explained primarily by the larger household size and lower household incomes and parental educational attainment among Mexican families. Interestingly, Mexican parents are about 20% more likely to have been stably married across waves of data collection, which buffered these children from lower achievement scores. Native Asian children score below Indian and East Asian children even after including a host of child and family covariates. Characteristics most important in explaining these differences appear to be the lower 9 month achievement baseline scores of native Asian children, their larger households, the lower likelihood of being stably married or having earned an advanced degree, and lower household income (compared to East Asian).

The introduction of home and childcare characteristics into the model does not explain as large a proportion of the differences in literacy related to parental nativity status relative to child and family covariates. Differences are attenuated between children of immigrants with parents from Africa, Mexico, the U.S. Territories, East Asia, and Southeast Asia and their ethnically similar native peers. The differences grow between children of Caribbean and Indian Asian parents and their ethnically similar referents. The disparities are relatively stable for children with Latin American parents and their native Hispanic counterparts. The statistical significance of differences between children of immigrants and their ethnically similar native peers change little with the introduction of home and child care characteristics. The only notable change is that Southeast Asian children scored significantly below native Asian children.

In terms of math, child and family characteristics were also instrumental in explaining differences between children of immigrants and their ethnically similar native peers, although

these differences remain significant for nearly all groups, the only exception is that native Asian children no longer score above Indian Asian children. The magnitude of the achievement gap between native reference groups and children of immigrants did, however, decrease for several groups. Namely, native African American perform less than one-fifth of a standard deviation below children of African and Caribbean parents with the introduction of child and family covariates. Further, children of native Hispanic parents score roughly one-tenth of a standard deviation above children of Mexican parents after controlling for child and family characteristics, a decrease from roughly one-third of a standard deviation before these controls. Interestingly, after holding child and family variability constant, the achievement disparity favoring native Hispanic children over those of parents from Latin American and the U.S. Territories increases. This can be largely attributed to the lower probability of native Hispanic parents to have a college degree or higher or to have been stably married compared to parents from Latin America or the U.S. Territories.

Again, the introduction of home and child care characteristics does little to explain the differences in math achievement related to parental nativity status relative to child and family characteristics. The pattern of attenuation, exacerbation, and stability of the differences in math are identical to the reading results, with differences decreasing between children of immigrants with parents from Africa, Mexico, the U.S. Territories, East Asia, and Southeast Asia and their ethnically similar native peers. Again, math disparities increase between children of Caribbean and Indian Asian parents and their ethnically similar counterparts while the discrepancy between Latin American children and native Hispanic children remain stable. The introduction of home and child care characteristics into the model did little to the statistical significance of differences between children of immigrants and their ethnically similar native peers. The only change in

statistical significance is between native Asian children and Indian Asian children, who outscore native Asian children when home and childcare is added into the model.

In sum, children of immigrants tend to score differently in terms of literacy and math achievement from their ethically similar native peers. However, controlling for variability in child and family characteristics, most notably parental education, marriage stability, and household income, greatly reduces these differences for early literacy skills and attenuates the magnitude of differences for math skills. With a few exceptions, characteristics of the home and childcare experiences were not particularly important for explaining differences in early academic skills between children of immigrants and their ethnically similar native peers.

4.0 DISCUSSION

This study examined associations between parental region of origin and both reading and math achievement at age 5, and considered whether this association is mediated by characteristics of the home environment and childcare experiences. The current investigation is one of few studies to examine the relationship between parental region of origin and academic achievement using nationally representative data from 9 months to age 5. In line with previous scholarship, our analyses uncovered significant heterogeneity in early reading and math scores related to parental region of origin, with four general achievement clusters of children emerging ("High", "Upper-Middle", "Lower-Middle", and "Low" performing) (e.g. De Feyter & Winsler, 2009; Glick & Hohmann-Marriott, 2007; Han, 2008). Adjusting for child and family characteristics, differences in reading and math between children of immigrants and native Whites (e.g. between Mexican and native White children) and among children of immigrants (e.g. between Latin American and European) were greatly attenuated or eliminated.

These findings can be understood using a sociocultural lens of child development that suggests that pre-migration characteristics of parents are important for understanding achievement disparities across parental nativity status and region of origin (Bornstein, 1991; 2006). Parents immigrate to the U.S. for a myriad of reasons including enhanced economic prospects, educational opportunities, or to escape oppressive or dangerous conditions in their home countries. The diversity in socioeconomic status, cultural background, and migration

motivation prior to immigrating give rise to significant heterogeneity in the sociodemographic backgrounds of immigrant families upon arrival into the U.S. While these factors were instrumental in explaining achievement disparities across parental nativity status and region of origin in the current study, important differences remained even after taking child and family characteristics into account.

Differences in cognitive stimulation and negative parenting in the home as well as variations center care attendance during preschool were also important in understanding disparities in achievement associated with parental region of origin and race/ethnicity. Controlling for characteristics of the home environment and child care type attenuated some differences in the achievement gap, particularly for the lowest performing subgroup. However, there was also a pattern whereby the introduction of features of the home and ECE experiences exacerbated differences among the highest and middle-scoring subgroups, suggesting that these groups perform even better when differences in home and childcare are controlled. Surprisingly, a consistent pattern of suppression in both reading and math surfaced among children of East Asian, Indian Asian, and Southeast Asian parents with the inclusion of home and ECE characteristics. More specifically, children from these three groups tended to experience lower levels of cognitive stimulation in their home environments and once these were included in the analysis, adjusted mean differences between each of these groups and native Whites grew. Notably, children of Mexican parents were in more cognitively stimulating households with less parental negativity than were those in the higher performing subgroup, yet were lowest on academic achievement. Our study supports the well-established finding that cognitively stimulating homes promote academic growth, while negative parenting is linked to lower achievement (e.g. Bradley, Corwyn, Burchinal, McAdoo, & Garcia Coll, 2001; De Temple &

Snow, 1996; Downer & Pianta, 2006; Ramey & Ramey, 2004; Smith et al., 1997). While the traditional finding that higher cognitive stimulation and lower negative parenting relate to better academic achievement was found among all groups, the findings are more complex. More specifically, it was not simply the case that the highest achieving children were in the most cognitively stimulating homes with the least negative parenting practices and vice versa. Namely, East Asian, Indian Asian, and Southeast Asian children were among the highest achieving children in our sample, yet their home environments were among the lowest in terms of cognitive stimulation and, for Indian Asian children, highest on negative parenting. Even after taking into account parenting and child care experiences, these groups significantly outscored every other immigrant and native subgroup.

These findings suggest that models of early school readiness must adapt to include additional contextual factors that may be instrumental in promoting academic achievement among immigrant families from Asia that are not being captured by the standard measures of cognitive stimulation that are so prevalent in the school readiness literature. Prior literature suggests that differences in parental socialization goals may be an important aspect of early contexts that help to explain the advantage that children from Asian immigrant families exhibit. For instance, work with Asian families suggests that the chief socialization goal of the parents is educating their child and, as such, the academic success or failure of their children is a proxy for parental efficacy (Chao, 1994). In this context, academic achievement is representative of the larger constellation of Asian culture emphasizing respect for and obligation to one's family above oneself (filial piety) and high academic achievement is a mechanism through which children demonstrate loyalty and deference to their family (Bempechat, Graham, & Jimenez, 1996). These central dimensions of parenting related to academic socialization may be important

for explaining academic advantages that are evidenced for Asian families, even after controlling for aspects of parenting and childcare experiences. These findings cannot be solely attributed to how negative parenting and cognitive stimulation were operationalized in our measures, as characteristics of the home and child care environments predicted similarly to achievement outcomes across immigrant and native groups. Thus, cultural scripts inform both parenting practices and parenting goals and may lead to differential outcomes.

Sociocultural models of child development may also be useful in explaining why children of Mexican immigrant parents continue to exhibit a disadvantage in early math skills, even after controlling for extensive sociodemographic differences and characteristics of early contexts. Prior research suggests that differences in parental beliefs about their role in promoting early academic skills development may be important in contributing to this enduring difference. Parents differ with respect to beliefs about the appropriate role they play in their child's education and how in their conceptions of how best to promote achievement (Carrington & Luke, 2003; Cole, 1996). Sociocultural theory suggests that these parenting beliefs are linked to parenting behaviors, and research supports this presupposition. For instance, research on Mexican American families suggests that parents view schools as responsible for educating children as these institutions have the necessary know-how and resources to do so and that questioning the school or teacher practices is a sign of disrespect. Parents support their child's education by teaching their child proper decorum and respect for their teacher, but spend less time directly teaching their children academic skills (e.g. Delgado-Gaitan, 2004). This may partially explain Reese & Gallimore's (2000) ethnographic finding that Mexican parents believe literacy acquisition takes place through repeated practice in school, mirroring the way parents themselves learned to read (Goldenberg et al., 1992).

Differential rates of preschool center-based care based on nativity status and region of origin were also important for understanding heterogeneity in reading and math skills associated with parental region of origin. While results of this study support past literature documenting enhanced reading and math performance among children attending center-based preschool (e.g. Gormley et al., 2005; Loeb et al., 2004; Magnuson et al., 2004; NICHD ECCRN & Duncan, 2003), patterns of center care usage varied tremendously across race/ethnicity and nativity status. Specifically, formal preschool in the year before kindergarten was beneficial for the academic skills for all children, regardless of region of origin. Again, however, the picture is more complicated than simply that the highest achieving immigrant groups attend center care at higher rates while the lower achieving subgroups attend center care at lower rates. More specifically, children of Southeast Asian immigrants were among the least likely to attend center care during preschool, and yet are among the highest in academic achievement. Other more disadvantaged subgroups, such as children of Caribbean immigrants, attended center care during preschool at much higher rates and were among the lowest on measures of achievement. The patterns of care attendance may be partially explained by parental scripts or attitudes towards out of home care. Again, our findings suggest that there are experiences inside and outside the home and ECE that act as important pathways through which parental region of origin is related to academic achievement that are not accounted for in traditional measures of cognitive stimulation and type of care. With the majority of children under age 5 regularly attending ECE settings and the increased focus on the potential for early childhood education and care experiences to narrow achievement gaps, it is imperative to consider how child care experiences relate to achievement for children with immigrant parents (Magnuson & Waldfogel, 2006).

Our study also corroborates past research that Mexican children are underrepresented in center-based care arrangements (e.g. Buriel & Hurtado-Ortiz, 2000; Liang, Fuller, & Singer, 2000; Radey & Brewster, 2007). The underrepresentation of Latino children in center-based care settings may partially be explained by the centrality of the family in Latino households (*familism*) (Sabogal et al., 1987). Alternatively, it may be due to structural factors such as language barriers or inaccessibility of formal care settings in immigrant communities (Hernandez, 2008; Liang et al., 2000). In fact, a recent study of child care decisions among economically disadvantaged Latino families found that the majority of parents strongly endorsed preschool or ECE enrollment (93%) and cited that increasing awareness about eligibility requirements, making greater use of Spanish, and making available subsidized care would increase their preschool participation (Zucker, Howes, & Garza-Moarino, 2007). Additional research is needed to parse out how much of the underrepresentation of children of Mexican immigrants is related to culture versus structural barriers.

4.1.1 Limitations and Future Directions

While the current investigation has several strengths, including the use of a large, nationally representative dataset with a sizable population of immigrant parents from diverse regions of origin, there were also several limitations. First, the findings of the current study are only generalizable to children born to immigrant parents and not “immigrant children” who are not represented in the ECLS-B. This distinction is noteworthy in that there is some evidence to suggest that there are important differences in both sociodemographic characteristics as well as home and ECE experiences between children who immigrate to the U.S. from other countries (first-generation) and those of children born to immigrant parents (second-generation) (Chiswick

& DebBurman, 2006; Portes & Fernandez-Kelly, 2008). One might expect a larger proportion of differences in achievement to be explained by ECE for immigrant children than children who were born in the U.S., and are therefore citizens, since children of immigrants are eligible for federal and state childcare subsidies and Head Start that noncitizen immigrant children are ineligible to receive (Capps et al., 2005). If children of immigrants are better able to access these public benefits, than are their immigrant peers, differences in childcare experiences may be even more instrumental in explaining achievement disparities among non-citizen immigrant children.

Second, while the present study highlights the necessity of differentiating immigrant groups by region of origin rather than grouping all immigrants together for analyses, countries were combined into regions to ensure sample size and power. Acknowledging this, it is important to emphasize that great means were taken to make certain that countries were similar on key features such as culture, geographic location, religion, main language spoken, stage of development of the economy, and current trends in maternal employment and use of non-parental care. Further, the present study expanded upon previous literature by comparing children of immigrants to ethnically similar native reference groups in addition to native White children (Harris et al., 2008). This is a point of departure from past literature, which has often relied on samples with limited availability of racially and ethnically similar native groups. Several significant differences were indeed found between children with immigrant parents and those of similar ethnic/racial backgrounds with parents born in the U.S. The unadjusted mean differences suggest that children with African, Caribbean, Latin American, Indian Asia, and East Asia parents perform significantly above their relevant native reference groups across reading and math (except Latin American children who score roughly the same as native Hispanic children). Such differences in achievement underscores the utility of using a sociocultural

framework for understanding achievement gaps related to parental nativity status. Consistent with sociocultural theories, these differences are largely accounted for by differences in sociodemographic characteristics of children of immigrants and their racially and ethnically similar native groups.

Third, the present study only considered the relationship between parental region of origin and academic domains of school readiness. Given the strong links between socioemotional readiness and future academic and social outcomes, an imperative next step is to determine whether parental region of origin is associated with socioemotional aspects of school readiness, and how the home and child care experiences contribute to these realms (e.g. McClelland, Morrison, & Holmes, 2000). Recent work suggests a slight advantage of children of immigrants over native peers in terms of socioemotional functioning, however few studies have considered the relationship between region of origin and social functioning (Crosnoe. 2006, 2007).

Finally, our study could not eliminate the well-established Asian achievement advantage (e.g. Han, 2008). Overall, we were able to attenuate differences in achievement for those immigrant subgroups performing below native White children, but we were unable to completely explain the advantage of children from Indian Asian, East Asian, or Southeast families, who continued to outscore every other immigrant and native group even after including a host of covariates and the disadvantage of children from Mexican families when it came to early math skills. This suggests that important factors are not captured in our data that may be important in maintaining these differences.

Related to the above limitation is the fact that childcare quality was not included as covariate in our analyses. The ECLS-B captured childcare quality data on only a small subset of children at 2 years and preschool, which was even further reduced when examining the number

of children from each immigrant subgroup with quality data. If Asian children experience higher quality care than do other children, it may be that including quality as a covariate attenuates the achievement gap between these and other children. Notably, attending center-based childcare for children in our study promoted academic skills and yet it was not especially important in eliminating gaps in achievement related to nativity status or region of origin. More research must be directed at these important issues to get a better handle on how childcare quality relates to achievement for children of immigrants across regions of origin.

In conclusion, the results of this study add to the growing knowledge base suggesting that there is significant heterogeneity in terms of academic achievement, home environments, and child care experiences related to nativity status and parental region of origin. This study is one of the first to consider the contributions of early contexts to academic disparities in school readiness among children of immigrants using nationally representative data. The findings of the current study create a sense of urgency for developmental research to begin incorporating measures of parenting that more accurately reflect diverse families and populations of children. As developmental scientists attempting to understand diverse populations, our measures must reflect the diversity of our populations of interest. The call to understand the development of racial and ethnic minority children using measures that more accurately reflect the demography in the US is both timely and imperative, given the rapid rate of population growth among children from immigrant families. Children from immigrant families will comprise the majority of the workforce in the coming years, thus it is in our nation's best interest to understand how early contexts shape their development, so that we can help to insure that they start school with the academic skills necessary to ensure long-term academic success (Hernandez et al., 2008).

5.0 FIGURE

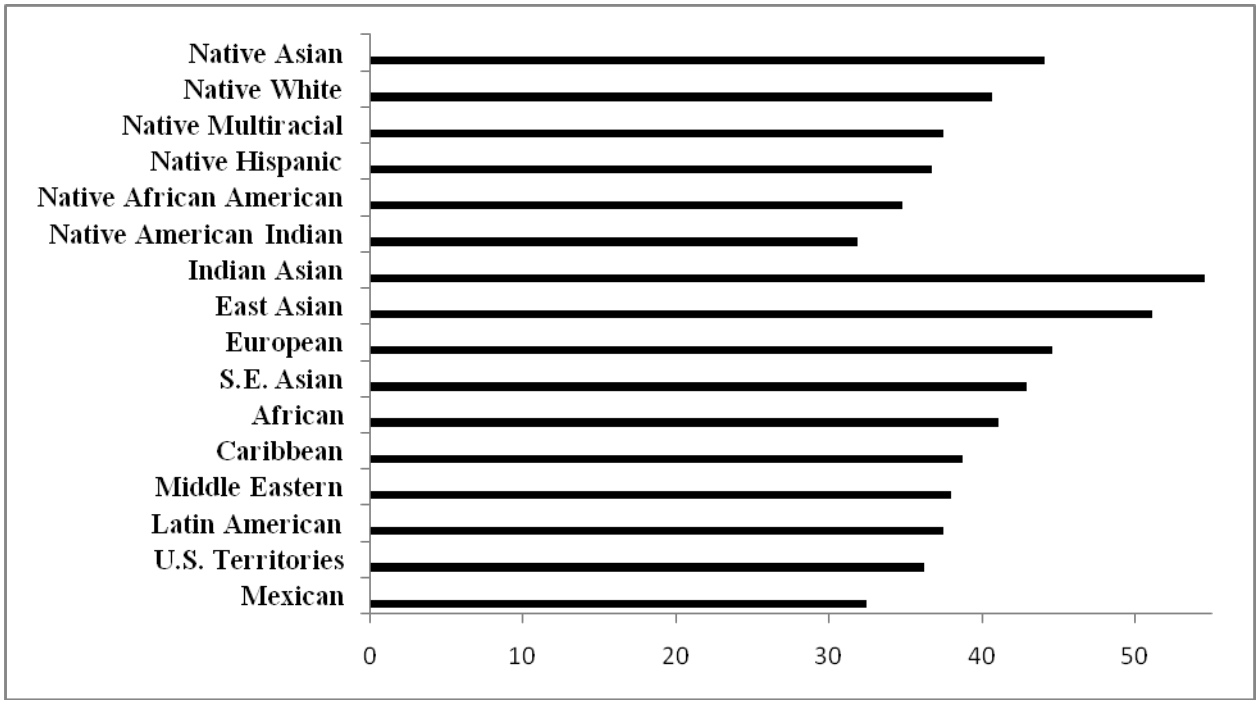

Figure 1. Unadjusted mean difference values representing age 5 literacy scores

Table 1. Weighted Descriptive Statistics for Native Subgroups

	White (~*N*= 2,600) *M* or % (*SD*)	African American (~*N*=950) *M* or % (*SD*)	Hispanic (~*N*=550) *M* or % (*SD*)	Asian (~*N*= 50) *M* or % (*SD*)	Native American (~*N*=200) *M* or % (*SD*)	Multiracial (~*N*=450) *M* or % (*SD*)
Child characteristics						
9 month BSF-R	51.01	49.33	50.12	46.45	48.37	51.31
	(9.72)	(10.07)	(9.96)	(10.13)	(10.53)	(10.35)
Age (months)	64.73	64.38	64.86	63.86	64.66	64.92
	(3.70)	(3.79)	(3.54)	(3.94)	(4.00)	(3.91)
Boy	51.26%	50.88%	52.88%	40.93%	55.63%	45.12%
Low birthweight	6.53%	13.23%	7.47%	7.19%	3.46%	8.57%
Ever fair/poor health	3.46%	9.79%	6.22%	4.20%	10.67%	2.91%
Kindergarten (2006)	70.88%	72.02%	77.44%	86.63%	69.09%	72.00%
Family and household						
Income	$66,703	$27,154	$42,597	$81,663	$29,843	$48,919
	($44,913)	($26,088)	($33,238)	($50,180)	($24,996)	($38,541)
Mother employed	36.17%	32.61%	34.40%	37.51%	26.32%	39.58%
Parental education						
Below high school	2.70%	11.74%	8.11%	17.76%	6.88%	2.31%
High school/GED	15.13%	36.43%	29.86%	6.98%	23.32%	22.26%
Vocational/technical	35.52%	38.67%	44.42%	17.47%	58.99%	42.93%
Bachelor's degree	27.18%	8.52%	11.06%	38.40%	8.84%	20.12%
Advanced degree	19.47%	4.64%	6.55%	19.40%	1.97%	12.38%
Stably married	73.54%	18.90%	41.00%	77.67%	32.22%	49.41%
Non-English speaking	0.18%	0.43%	8.15%	5.81%	2.99%	0.54%
More than 2 adults in home	20.10%	29.50%	42.51%	54.60%	46.52%	26.30%
Number of children	2.17	2.48	2.35	2.17	2.75	2.19
	(1.00)	(1.21)	(1.13)	(0.85)	(1.26)	(1.01)
Older sibling	59.91%	63.02%	54.62%	56.90%	58.83%	60.01%
Home environment						
Cognitive stimulation	0.12	-0.10	0.00	-0.04	-0.07	0.08
	(0.33)	(0.35)	(0.32)	(0.36)	(0.33)	(0.33)
Stimulation (Observed)	4.35	3.93	4.07	4.28	3.82	4.16

	(0.84)	(0.80)	(0.82)	(0.86)	(0.82)	(0.77)
Emotional supportiveness	0.25	-0.32	-0.02	0.08	-0.20	0.19
	(0.74)	(0.84)	(0.75)	(0.69)	(0.82)	(0.70)
Negative parenting	1.21	1.41	1.24	1.15	1.27	1.23
	(0.32)	(0.47)	(0.36)	(0.24)	(0.35)	(0.33)
Child care type						
9 month						
Parent care	54.12%	39.11%	45.62%	49.28%	50.62%	45.67%
Home-based care	36.68%	46.91%	47.94%	43.05%	36.46%	39.06%
Center-based care	9.20%	13.99%	6.45%	7.67%	12.92%	15.27%
2 years						
Parent care	53.70%	38.63%	48.83%	50.52%	59.30%	43.31%
Home-based care	31.06%	36.70%	39.50%	38.41%	26.49%	30.53%
Center-based care	15.24%	24.67%	11.66%	11.07%	14.21%	26.16%
Preschool						
Parent care	19.94%	19.00%	23.06%	23.19%	21.18%	21.73%
Home-based care	20.47%	18.45%	25.49%	35.87%	18.72%	21.30%
Center-based care	59.59%	62.55%	51.45%	40.93%	60.09%	56.97%
Age 5 achievement						
Reading	40.64	34.76	36.69	44.07	31.87	37.43
	(14.52)	(13.77)	(14.41)	(17.86)	(14.01)	(15.28)
Math	42.56	36.14	38.55	44.51	34.16	39.62
	(10.02)	(10.22)	(9.81)	(11.05)	(11.58)	(10.57)

Note. *N*s represent those with valid kindergarten weight and valid race/ethnicity data. *N*s rounded to nearest 50.

Table 2. Weighted Descriptive Statistics for Immigrants

	Indian Asia (~*N*=150) *M* or % (*SD*)	East Asia (~*N*=400) *M* or % (*SD*)	Europe (~*N*=100) *M* or % (*SD*)	Southeast Asia (~*N*=300) *M* or % (*SD*)	Africa (~*N*=50) *M* or % (*SD*)	Middle East (~*N*=50) *M* or % (*SD*)	Caribbean (~*N*=100) *M* or % (*SD*)	Latin America (~*N*=150) *M* or % (*SD*)	US Territories (~*N*=50) *M* or % (*SD*)	Mexico (~*N*=500) *M* or % (*SD*)
Child characteristics										
9 month BSF-R	51.17	47.95	50.52	48.17	49.34	49.01	50.21	49.07	49.20	48.57
	(10.81)	(10.33)	(9.36)	(9.55)	(8.48)	(8.38)	(8.15)	(10.90)	(8.48)	(10.05)
Age (months)	64.79	65.26	64.21	65.44	65.25	63.90	64.34	64.71	65.63	64.82
	(3.67)	(3.56)	(3.67)	(3.71)	(3.74)	(3.63)	(3.95)	(3.60)	(4.00)	(3.71)
Boy	52.27%	52.87%	43.68%	55.61%	55.58%	55.95%	40.42%	48.70%	40.00%	55.06%
Low birthweight	6.29%	4.71%	4.05%	8.26%	6.10%	6.95%	7.31%	7.09%	16.52%	6.18%
Ever fair/poor health	4.32%	3.52%	2.83%	4.84%	2.54%	13.36%	10.39%	9.52%	4.86%	13.73%
Kindergarten (2006)	84.15%	87.36%	70.18%	79.32%	81.52%	72.22%	68.56%	81.43%	76.50%	75.63%
Family and household										
Income	$84,887	$92,026.02	$83,261	$52,708	$54,461	$70,738	$43,038	$37,531	$36,099	$27,025
	($45,075)	($51,987)	($46,228)	($34,520)	($38,292)	($53,366)	($37,300)	($25,907)	($21,978)	($17,466)
Mother employed	17.61%	36.50%	41.81%	38.80%	33.25%	16.54%	38.03%	25.42%	24.27%	17.72%
Parental education										
Below high school	0.45%	1.16%	0.00%	6.64%	5.97%	9.52%	6.32%	11.92%	5.79%	25.93%
High school/GED	3.36%	4.14%	3.87%	14.68%	16.52%	12.20%	27.79%	27.15%	27.47%	37.01%
Vocational/technical	8.96%	14.32%	32.58%	32.17%	18.46%	15.54%	28.93%	35.32%	45.81%	27.37%
Bachelor's degree	20.19%	32.54%	25.76%	33.19%	28.58%	19.63%	28.95%	15.65%	18.36%	8.30%
Advanced degree	67.03%	47.85%	37.78%	13.31%	30.48%	43.11%	8.00%	9.96%	2.57%	1.39%
Stably married	97.55%	94.74%	88.91%	80.18%	84.37%	95.66%	48.86%	55.34%	52.13%	59.87%
Non-English speaking	75.65%	58.60%	28.34%	47.62%	41.30%	58.39%	52.51%	79.55%	50.37%	85.12%
More than 2 adults in home	29.90%	33.30%	20.52%	47.14%	25.99%	10.91%	32.97%	49.99%	21.31%	50.40%
Number of children	1.83	1.86	1.99	2.31	2.66	2.41	2.16	1.97	2.22	2.63
	(0.75)	(0.72)	(0.75)	(1.18)	(1.79)	(1.04)	(1.09)	(1.14)	(1.32)	(1.16)
Older sibling	50.50%	51.88%	57.45%	59.02%	61.98%	65.00%	56.85%	43.32%	41.38%	64.24%
Home environment										
Cognitive stimulation	-0.05	-0.05	0.13	-0.10	-0.09	-0.06	-0.19	-0.10	-0.19	-0.20
	(0.34)	(0.37)	(0.33)	(0.35)	(0.38)	(0.35)	(0.39)	(0.35)	(0.29)	(0.33)

Stimulation (Observed)	4.02	4.26	4.53	3.84	3.75	3.78	3.70	3.92	3.68	3.51
	(0.87)	(0.86)	(0.84)	(0.83)	(0.72)	(0.85)	(1.04)	(0.91)	(0.76)	(0.78)
Emotional supportiveness	0.00	-0.01	0.32	-0.24	-0.18	-0.40	-0.43	-0.16	-0.33	-0.61
	(0.84)	(0.79)	(0.63)	(0.73)	(0.82)	(0.76)	(0.98)	(0.91)	(0.87)	(0.85)
Negative parenting	1.25	1.18	1.12	1.26	1.40	1.17	1.39	1.24	1.27	1.18
	(0.32)	(0.37)	(0.23)	(0.32)	(0.59)	(0.27)	(0.57)	(0.50)	(0.39)	(0.31)
Child care type										
9 month										
Parent care	68.67%	47.87%	54.52%	50.90%	45.72%	76.59%	38.76%	56.00%	56.36%	67.24%
Home-based care	27.35%	48.48%	36.31%	43.89%	45.34%	18.06%	51.97%	39.37%	43.64%	31.06%
Center-based care	3.98%	3.65%	9.18%	5.21%	8.95%	5.35%	9.26%	4.63%	0.00%	1.70%
2 years										
Parent care	60.22%	49.65%	45.99%	57.08%	56.60%	57.05%	39.05%	53.74%	53.14%	71.20%
Home-based care	23.23%	38.48%	38.02%	35.81%	27.36%	27.89%	41.73%	38.96%	30.30%	24.29%
Center-based care	16.54%	11.87%	16.00%	7.11%	16.05%	15.06%	19.22%	7.31%	16.55%	4.51%
Preschool										
Parent care	12.43%	11.24%	16.99%	27.70%	21.16%	26.69%	6.68%	26.83%	16.28%	41.87%
Home-based care	16.17%	13.75%	15.23%	23.41%	14.71%	4.80%	15.05%	15.14%	16.54%	18.89%
Center-based care	71.40%	75.01%	67.78%	48.89%	64.13%	68.51%	78.26%	58.02%	67.18%	39.24%
Age 5 achievement										
Reading	54.55	51.07	44.58	42.93	41.09	37.96	38.72	37.47	36.21	32.43
	(14.58)	(14.91)	(14.08)	(15.64)	(13.52)	(16.13)	(13.41)	(14.52)	(14.56)	(14.30)
Math	48.38	49.75	44.07	42.66	43.26	40.17	39.99	38.52	37.23	35.33
	(9.36)	(10.51)	(9.97)	(11.01)	(8.25)	(13.24)	(10.02)	(10.60)	(10.85)	(10.16)

Note. *N*s represent those with valid kindergarten weight and valid race/ethnicity data. *N*s rounded to nearest 50.

Table 3. Hierarchical Regression Analysis: Reading

	Model 1		Model 2		Model 3	
	Point Est.	*Est.SE*	*Point Est.*	*Est. SE*	*Point Est.*	*Est. SE*
Race/Ethnicity						
Native African American	-5.88***[ab]	0.67	0.46	0.63	0.91	0.64
Native Hispanic	-3.96***[cde]	0.94	-0.52	0.76	-0.40	0.76
Native Asian	3.43[fg]	4.83	3.25[ab]	2.99	3.99[abc]	2.93
Native American Indian	-8.80***	1.83	-2.86*	1.19	-2.68*	1.19
Native Multiracial	-3.21*	1.43	-1.57	1.10	-1.51	1.10
Middle East	-2.69	3.40	-2.39	2.61	-1.79	2.54
Africa	0.45[a]	2.12	-0.15	1.93	0.89	1.74
Caribbean	-1.92[b]	1.76	1.34	1.64	1.97	1.74
East Asia	10.42***[f]	1.31	4.93***[a]	1.50	5.39***[a]	1.49
Indian Asia	13.91***[g]	1.65	8.63***[b]	1.52	9.47***[b]	1.53
Southeast Asia	2.29	1.36	2.48*	1.20	3.30*[c]	1.20
Mexico	-8.22***[d]	0.86	-1.96	1.12	-1.52	1.12
Latin America	-3.18*[c]	1.46	-0.45	1.57	-0.47	1.56
U.S. Territories	-4.43[e]	2.92	-2.44	2.45	-1.81	2.40
Europe	3.94*	1.75	1.70	1.55	1.41	1.52
Child & Family Characteristics						
9 month BSF-R			0.07***	0.02	0.07**	0.02
Age (months)			1.15***	0.07	1.13***	0.07
Kindergarten (2006)			7.13***	0.61	6.92***	0.60
Boy			-2.03***	0.41	-1.94***	0.41
Low birthweight			-1.47**	0.47	-1.39**	0.47
Ever fair/poor health			-2.59**	0.87	-2.34**	0.88
Income			0.51***	0.07	0.42***	0.07
Mother employed			0.89[+]	0.46	1.21*	0.53
Parental education						
Below high school			-2.52**	0.80	-2.02*	0.79
Vocational/technical			2.38***	0.58	1.98***	0.57
Bachelor's degree			4.96***	0.72	3.97***	0.71
Advanced degree			7.43***	0.88	6.28***	0.87

Stably married			1.74***	0.52	1.48**	0.52
Non-English speaking			0.21	0.94	0.80	0.94
More than 2 adults in home			-1.16**	0.49	-0.87^{+}	0.49
Number of children			-1.07***	0.24	-0.98***	0.25
Older sibling			-0.98***	0.54	-0.90^{+}	0.54
Home environment						
Cognitive stimulation					2.50***	0.67
Stimulation (Observed)					0.72*	0.34
Emotional supportiveness					0.27	0.35
Negative parenting					-1.78**	0.60
Child care type						
9 month home					-0.10	0.54
9 month center					0.47	0.93
2 year home					-0.09	0.59
2 year center					-0.74	0.74
Preschool home					-0.14	0.67
Preschool center					2.02***	0.56
Intercept	40.64***	0.38	-46.76***	4.70	-46.57***	4.95

Note. ***p < .001. **p < .01. *p < .05. +p < .10. Each racial/ethnic group is compared to the omitted category of native White. *N* ~= 6,850.

Table 4. Hierarchical Regression Analysis: Math

	Model 1		Model 2		Model 3	
	Point Est.	*Est. SE*	*Point Est.*	*Est. SE*	*Point Est.*	*Est. SE*
Race/Ethnicity						
Native African American	-6.42***[ab]	0.50	-1.61***[ab]	0.47	-1.12*[ab]	0.48
Native Hispanic	-4.01***[cde]	0.64	-1.34**[cde]	0.52	-1.30*[cde]	0.51
Native Asian	1.95[fg]	2.99	2.24[f]	1.51	2.61[fg]	1.53
Native American Indian	-8.41***	1.66	-4.07***	1.11	-3.83***	1.05
Native Multiracial	-2.93**	0.95	-1.64*	0.76	-1.61*	0.76
Middle East	-2.40	2.93	-2.29	1.97	-1.64	1.93
Africa	0.70[a]	1.30	0.31[a]	1.33	1.40[a]	1.29
Caribbean	-2.57[b]	1.26	-0.14[b]	1.20	0.64[b]	1.24
East Asia	7.19***[f]	1.13	3.31**[f]	1.18	3.77***[f]	1.17
Indian Asia	5.81***[g]	0.99	1.92	1.10	2.74*[g]	1.13
Southeast Asia	0.11	0.93	0.36	0.85	1.05	0.87
Mexico	-7.23***[d]	0.61	-2.66***[d]	0.78	-2.39**[d]	0.77
Latin America	-4.04***[c]	1.04	-1.77[c]	1.05	-1.75[c]	1.04
U.S. Territories	-5.33**[e]	2.07	-3.47[e]	1.79	-2.85[e]	1.73
Europe	1.51	1.26	-0.15	1.15	-0.38	1.14
Child & Family Characteristics						
9 month BSF-R			0.10***	0.02	0.09***	0.02
Age (months)			0.84***	0.05	0.83***	0.05
Kindergarten (2006)			3.93***	0.45	3.84***	0.44
Boy			-0.58*	0.29	-0.47[+]	0.29
Low birthweight			-1.83***	0.35	-1.76***	0.34
Ever fair/poor health			-2.43***	0.64	-2.16***	0.64
Income			0.44***	0.05	0.37***	0.05
Mother employed			0.36	0.32	0.38	0.38
Parental education						
Below high school			-2.25***	0.66	-1.76**	0.63

Vocational/technical			1.78***	0.42	1.38***	0.42
Bachelor's degree			3.77***	0.51	2.90***	0.51
Advanced degree			5.34***	0.61	4.31***	0.61
Stably married			0.88*	0.38	0.69+	0.38
Non-English speaking			0.53	0.67	1.06	0.67
More than 2 adults in home			-0.73*	0.35	-0.53	0.35
Number of children			-0.61***	0.18	-0.54**	0.18
Older sibling			0.18	0.39	0.28	0.39
Home environment						
Cognitive stimulation					2.05***	0.47
Stimulation (Observed)					0.76***	0.23
Emotional supportiveness					0.20	0.25
Negative parenting					-2.17***	0.46
Child care type						
9 month home					0.07	0.37
9 month center					0.43	0.63
2 year home					0.01	0.41
2 year center					-0.20	0.50
Preschool home					0.59	0.49
Preschool center					1.13**	0.40
Intercept	42.56***	0.26	-24.07***	3.42	-23.93***	3.53

Note. ***p < .001. **p < .01. *p < .05. +p < .10. Each racial/ethnic group is compared to the omitted category of native White. *N*~ = 6,850.

Table 5. Adjusted Differences in Home & ECE by Race/Ethnicity

	Cognitive Stimulation		Stimulation (Observed)		Negative Parenting		Preschool Center	
	Point Est.	*SE*	*Point Est.*	*SE*	*Point Est.*	*SE*	*Point Est.*	*SE*
Race/ethnicity								
Native African American	-0.12***	0.02	-0.07	0.04	0.12***	0.02	0.12***	0.03
Native Hispanic	-0.03	0.02	-0.02	0.05	-0.02	0.03	-0.02	0.03
Native Asian	-0.15*	0.07	-0.21	0.12	-0.07	0.07	-0.20**	0.08
Native American Indian	-0.09*	0.04	-0.06	0.14	-0.01	0.04	0.11	0.06
Native Multiracial	0.00	0.03	-0.07	0.07	-0.01	0.03	0.01	0.04
Middle East	-0.13	0.07	-0.43*	0.21	-0.02	0.08	0.06	0.1
Africa	-0.15*	0.06	-0.47***	0.12	0.19	0.1	0.05	0.08
Caribbean	-0.17***	0.05	-0.34**	0.13	0.14	0.08	0.23***	0.06
East Asia	-0.14***	0.03	-0.11	0.09	0.02	0.04	0.05	0.05
Indian Asia	-0.16***	0.04	-0.29**	0.09	0.11**	0.04	0.02	0.06
Southeast Asia	-0.11***	0.03	-0.30***	0.08	0.04	0.04	-0.10*	0.04
Mexico	-0.07*	0.03	-0.21**	0.07	-0.11**	0.04	-0.11**	0.04
Latin America	-0.04	0.04	0.04	0.09	-0.02	0.05	0.02	0.06
U.S. Territories	-0.17**	0.07	-0.32*	0.15	0.02	0.08	0.12	0.09
Europe	0.00	0.04	0.12	0.12	-0.05	0.04	0.04	0.06
Child & family								
9 month BSF-R	0.00***	0.00	0.00*	0.00	0.00[t]	0.00	0.00	0.00
Age	0.00*	0.00	0.01	0.00	0.00	0.00	0.01***	0.00
Kindergarten 2006	-0.01	0.02	-0.02	0.04	-0.02	0.02	0.10***	0.03
Boy	-0.03*	0.01	-0.05[t]	0.03	0.02	0.01	0.03[t]	0.02
Low birthweight	-0.02	0.01	0.00	0.03	0.02	0.02	0.00	0.02
Ever fair/poor health	-0.08***	0.02	-0.09	0.06	0.01	0.03	0.01	0.03
Household income	0.01**	0.00	0.03***	0.00	-0.01**	0.00	0.02***	0.00
Mother employed	-0.09***	0.01	0.06*	0.03	0.00	0.01	-0.01	0.02

Parental education								
Below high school	-0.01	0.02	-0.24***	0.07	0.08*	0.04	-0.06	0.04
Vocational/technical program	0.07***	0.02	0.13***	0.04	-0.05**	0.02	0.00	0.02
Bachelor's degree	0.14***	0.02	0.37***	0.05	-0.09***	0.02	0.07*	0.03
Advanced degree	0.22**	0.02	0.33***	0.06	-0.11***	0.02	0.07*	0.04
Stably married	0.02	0.01	0.13***	0.04	-0.04	0.02	-0.03	0.02
Non-English speaking	-0.16***	0.03	-0.28***	0.06	-0.02*	0.03	0.03	0.04
More than 2 adults in home	-0.03*	0.01	-0.07*	0.03	0.03	0.02	-0.05*	0.02
Number of children	-0.02**	0.01	0.00	0.02	0.00	0.01	-0.03***	0.01
Older sibling	-0.03*	0.01	-0.04	0.04	0.01	0.02	0.02	0.02
Intercept	0.24*	0.12	3.36***	0.32	1.50***	0.14	-0.16	0.18

Note. ***p < .001. **p < .01. *p < .05. +p < .10. Each racial/ethnic group is compared to the omitted category of native White. *N*~ = 6,850.

APPENDIX A

PARENTAL REGION OF ORIGIN GROUPINGS

Middle East (~*N* = 50): Afghanistan, Saudi Arabia, Armenia, Pakistan, Iraq, Iran, Israel, Turkey, Jerusalem, Jordan, Kuwait, Lebanon, Syria, West Bank, Yemen, Palestine

Africa (~*N* = 50): Africa, Algeria, Egypt, Ethiopia, Ghana, Kenya, Cape Verde, Burkina, Liberia, Morocco, Nigeria, Rwanda, Senegal, Somalia, Sudan, Uganda, Zaire, Zambia, Chad, Toga

East Asia (~*N* = 400): China, Korea, Japan, Hong Kong, Taiwan

Mexico (~*N* = 500): Mexico

Latin America (~*N* = 150): Argentina, Bolivia, Brazil, Chile, Columbia, Ecuador, Guyana, Peru, Venezuela, Uruguay, Costa Rica, South America, Central America, El Salvador, Guatemala, Honduras, Nicaragua, Panama

Southeast Asia (~*N* = 300): Vietnam, Indonesia, Cambodia, Burma, Philippines, Laos, Malaysia, New Guinea, Thailand, Singapore, Marshall Islands, Micronesia, Solomon Islands, Pacific Islander

Europe (~*N* = 150): Bulgaria, Romania, Ukraine, Uzbekistan, Finland, Russia, Czech Republic, Hungary, Poland, Serbia, Europe, Yugoslavia, Lithuania, Belgium, Denmark, England, France, Germany, Ireland, Italy, Portugal, Switzerland, Spain, the Netherlands, Canada, Australia, New Zealand

Caribbean (~*N* = 100): Bahamas, Dominican Republic, Haiti, West Indies, Santo Domingo, Cuba, Jamaica, Trinidad & Tobago, and Antigua

U.S. Territories (~*N* = 50): Puerto Rico & Guam

Indian Asia (~*N* = 150): India, Bangladesh, Nepal, Sri Lanka

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