

School Readiness among Young Children of Asian and Hispanic Immigrant Mothers

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Submitted in partial fulfillment of
the requirements for the degree of
Doctor of Philosophy under
The Executive Committee of
the Graduate School of Arts and Sciences

COLUMBIA UNIVERSITY

2014

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ABSTRACT

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More than one in four children under age 6 in the United State are children of immigrants, and the majority of these children are Asian and Hispanic. Despite this, there have been few studies on the early development of young children of immigrants. In particular, although healthy development in the early years of life is important in helping children get ready for school, little is known about school readiness among children in immigrant families. Therefore, this study examines school readiness among children of Asian and Hispanic immigrant mothers, with particular attention to two important characteristics of immigrant families: maternal language use and use of preschool.

This study is composed of five chapters, starting with Chapter 1 that introduces the background and purpose of this study. Chapter 2 reviews the theoretical backgrounds for the association between maternal language use and the development of young children in immigrant families, and then for the role of preschool in children's school readiness. Using a nationally representative sample of children of Asian and Hispanic immigrant mothers from the Early Childhood Longitudinal Study-Birth Cohort (ECLS-B), Chapters 3 and 4 examine whether maternal language use is associated with school readiness and whether preschool plays a protective role in promoting school readiness, respectively. Finally, Chapter 5 concludes by summarizing the findings and providing implications for theory and methodology, future research, and social work and policy.

In Chapter 3, this study finds generally advantages of maternal use of English and bilingualism for children's cognitive development at kindergarten entry in both Asian and Hispanic groups. It also finds, compared to children of home language Asian mothers, higher levels of pro-social behavior among those of English dominant and bilingual Asian mothers, but also higher levels of behavior problems among those of English dominant Asian mothers. Furthermore, in additional analyses, this study finds that longer residency in the U.S. is associated with higher levels of approaches to learning for children of bilingual Asian mothers and lower levels of behavior problems for children of bilingual Hispanic mothers.

In Chapter 4, this study finds that attending preschool (mostly prekindergarten or other center-based care) is associated with better academic school readiness at kindergarten entry among children of Asian immigrant mothers, but not children of Hispanic immigrant mothers. This study also finds higher levels of behavior problems and lower levels of approaches to learning among children in Head Start compared to those in parental care in both Asian and Hispanic groups. In addition, this study finds beneficial associations between preschool and academic school readiness at the year of participation among children of both Asian and Hispanic immigrant mothers, but these beneficial associations do not hold up at kindergarten entry among children of Hispanic mothers, while such associations are still found at kindergarten entry among children of Asian mothers. This study also finds more pronounced beneficial influences of preschool on academic school readiness at the year of participation among children of mothers who speak their home language in both Asian and Hispanic groups, but such more pronounced benefits are gone at kindergarten entry in both groups.

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ACKNOWLEDGEMENTS

Although I am the sole author of this work and individually responsible for all content contained herein, in truth this dissertation has been realized through the collective energy of numerous people, without whom this milestone in my academic journey would be an unattainable dream.

First and foremost, I would like to thank Prof. Jane Waldfogel, who has been a wonderful advisor and mentor from the beginning to the end of my doctoral program. I am deeply indebted to her unique talent to blend a tremendous intellect with a warm heart. She has always been there for me in each and every step. I felt supported by her kindness and encouragements and her approach to supervision with which she was sharing her knowledge with me, and she continues to be a source of support and inspiration. She also has always given me great freedom to pursue independent work and taken time to help me meet people who were helpful to my academic growth. What I have learned from her will stay with me throughout my entire career.

I am also very grateful to all other members of my dissertation committee. I truly thank Prof. Jeanne Brooks-Gunn for making me discover the importance of research in child development, Prof. Wen-Jui Han for giving me the opportunity to do my research tutorial with her that helped me specify my research interest to child development in immigrant families, Prof. Julien Teitler for guiding me in every step of my doctoral life, and Prof. Neeraj Kaushal for offering painstaking comments on this dissertation.

I could not have successfully completed my doctoral study and earned my degree without my former teachers' support and encouragements. My wholehearted gratitudes go to Prof. Chang-Soon Hwang, Prof. Hea-Jong Shin, Prof. Her Sun, Prof. Sung-Hee Cho, Prof. Gi-Duk Kim, Prof. Sung-Chun Kim, Prof. Hae-Lim Chang, Prof. Soon-Woo Park, Prof. Yeon-Myung

Kim, Prof. Kyo-Seong Kim, Prof. Young Choi, Prof. Sul-Ki Chung, Prof. Soon-Ock Choi, and Prof. Jae-Wan Lee.

Many other professors and colleagues have provided me with strength and confidence to deal with all the stress and difficulty during my entire doctoral program. I am deeply thankful to Prof. Young-Mi Kim, Kyeong-Mo Kim, Prof. Fuhua Zhai, Prof. Robin Gearing, Prof. Craig Schwalbe, Prof. Joyce Yong-Hee Shim, Jae-Seung Kim, Dr. Natasha Pilkauskas, Dr. Liana Fox, Dr. Ofira Schwartz-Soicher, Valentina Duque, Karen Chatfield, Hyo-Jung Lee, and Jae-Hyun Nam in the United States; and Prof. Sun-Hee Baek, Prof. Jong-Gun Kim, Dr. Jae-Kyoung Lee, Eun-Joung Lee, Yoon-Mo Yang, Su-Young Lee, Jung-Myun Lee, Min-Jung Shin, and Hyuk-Soo Lee in Korea. I am also thankful to my lifelong buddies, Dong-Gyun Baek, Jae-Yeong Kim, and Bong-Sik Kim, who are a crucial part of my life.

Last but not least, I would like to thank my family. I feel deeply indebted to my beloved mom, Mrs. Sung-Ja Park, who has provided endless support and unchanging love whenever I needed her throughout my whole life. I also believe that my beloved dad, Dr. Kyung-Soon Lee, who passed away in 2004 when I just started my academic journey, is looking at this work from the heaven. Finally, I am also grateful to my beloved older sister, Joo-Whee Lee, who is the best listener and adviser for me. My doctoral study could not have been completed without her unconditional love and help.

DEDICATION

To my beloved mom, dad, and sister.

사랑하는 엄마, 아빠, 그리고 누나에게.

CHAPTER I: INTRODUCTION

Over the past three decades, children living in immigrant families have been the fastest growing proportion of the young child population in the United States, and the majority of these children are Asian and Hispanic (Hernandez, 1999, 2004; Hernandez, Denton, & Macartney, 2008a; Shields & Behrman, 2004). One in four children under age 6 in the United State are children of immigrants (Fortuny, Capps, Simms, & Chaudry, 2009), and by 2020, about 30% of all children will be living in families composed of at least one immigrant parent (Capps, Fix, Ost, Reardon-Anderson, & Passel, 2005). Despite this rapid change, there have been few studies on the early development of young children of immigrants (Chase-Lansdale, Valdovinos D'Angelo, & Palacios, 2007; Glick, Bates, & Yabiku, 2009; Yoshikawa, 2011). In particular, although healthy development in the early years of life is important in helping children get ready for school, little is known about the school readiness of children in immigrant families. Therefore, this study examines school readiness among children of Asian and Hispanic immigrant mothers, with particular attention to two important characteristics of immigrant families: maternal language use and use of preschool.

In Chapter 3, this study examines how maternal language use is associated with school readiness at kindergarten entry among children of Asian or Hispanic immigrant mothers. The language environment provided by parents is one of the important factors in the early years of young children in immigrant families and one that is closely related to developmental outcomes (Glick, Walker, & Luz, 2013; Han, Lee, & Waldfogel, 2012; Hernandez, Takanishi, & Marotz, 2009; Waldfogel, 2012; Washbrook, Waldfogel, Bradbury, Corak, & Ghanghro, 2012). For example, immigrant parents with fluent English skills may have better opportunities to provide their children with enhanced developmental environments (e.g., creating a better home

environment, facilitating access to American school systems and public institutional resources, and forming relationship ties outside of the ethnic community) (Garcia Coll et al., 2002; Hernandez et al., 2009; Turney & Kao, 2009). In addition, immigrant parents' native language maintenance may also be associated with the development of their young children. Young children of bilingual immigrant parents may benefit from their cultural heritage (e.g., support from immigrant families and resources in ethnic neighborhoods) (Alba & Nee, 2003; Portes & Rumbaut, 2006).

Therefore, given that the development of young children is directly affected by parents' characteristics (Bronfenbrenner, 1979; Chase-Lansdale et al., 2007), it is important to understand how maternal language use influences early child development and school readiness. However, surprisingly, very little is known about the association between maternal language use and the development of young children in immigrant families. In particular, almost no prior research exists about school readiness among preschool age children of Asian or Hispanic immigrant mothers. Therefore, using a sample of children of Asian and Hispanic immigrant mothers from the Early Childhood Longitudinal Study-Birth Cohort (ECLS-B), this study examines how maternal language use is associated with a wide set of child school readiness outcomes (i.e., cognitive and socio-emotional outcomes) at kindergarten entry.

In Chapter 4, this study examines the association between preschool (as defined in this study as a Head Start program, a state-funded prekindergarten [hereafter, prekindergarten] program, or other type of center-based care) and school readiness at kindergarten entry among children of Asian or Hispanic immigrant mothers. With a growing concern about child care due to demographic changes in American society, such as an increase in female-headed households and maternal employment, the majority of children under the age of five participated in non-

parental care arrangements (Burchinal, 1999; Spain & Bianchi, 1996; Waldfogel, 2006); in 2010, over 50% of 3-year-olds and over 70% of 4-year-olds received some types of center-based care, such as child care centers, Head Start programs, or prekindergarten programs (Barnett, Carolan, Fitzgerald, & Squires, 2011). In addition, as described above, young children of immigrants are the most rapidly growing segment of the child population in the United States. With these radical demographic changes, policy concerns have focused on how to meet developmental needs of children of immigrants and promote their school readiness (Magnuson, Lahaie, & Waldfogel, 2006; Park & McHugh, 2014).

However, children in immigrant families are less likely to use center-based care and more likely to use home-based care (i.e., care from relatives or non-relatives) than those of U.S.-born parents; the pattern is more salient among children in low-income immigrant families (Brandon, 2004). Factors affecting participation in center-based child care among children of immigrants have been well documented. Children in immigrant families often come from disadvantaged backgrounds, such as living in low-income families, having parents with less formal education, and having parents without jobs or with unstable employment, all of which are financial factors that are likely to influence participation rates in preschool settings (Capps et al., 2005; Capps, Fix, Passel, Ost, & Perez-Lopez, 2003; Matthews & Ewen, 2006). In addition, there are some immigration-related factors that are associated with the selection of child care arrangements. Over half of young children of immigrants have at least one parent with limited English proficiency, which makes it difficult for parents to find opportunities for preschool (Capps et al., 2003, 2005). Also, immigrant families are often unaware of the availability of preschool settings, such as Head Start and prekindergarten programs as well as licensed child care centers; many of immigrant parents who are aware of such settings are likely to be misinformed about eligibility

criteria (Matthews & Jang, 2007). Furthermore, immigrant parents often tend to be reluctant to enroll their children in preschool due to fears over disclosure of sensitive immigration information (Capps et al., 2005). Finally, immigrant parents who prefer cultural consistency between home and preschool settings are often more likely to choose home-based care for their children rather than center-based care (Lowe & Weisner, 2004).

While children of immigrants are less likely to be enrolled, they might be a group that would particularly benefit from preschool, given that such programs especially benefit socio-economically disadvantaged children (Magnuson et al., 2006; NICHD Early Child Care Research Network [NICHD ECCRN] & Duncan, 2003). Several authors have noted the promise that attending those programs offers in terms of promoting healthy development and school readiness among children of immigrants (Brandon, 2004; Hernandez, 2004). Nonetheless, only a few studies have to date examined the association between preschool and school readiness among children of immigrants. Most of these studies utilize small samples or a national sample from the ECLS-Kindergarten Class (ECLS-K), which provides only retrospective information about preschool participation. Also, studies tend to focus on academic school readiness, while socio-emotional and behavioral outcomes remain understudied. In addition, these studies pay little attention to how the association between preschool and school readiness differs by characteristics of immigrant parents (e.g., maternal language use). Therefore, using a nationwide sample from the ECLS-B and employing a wide set of school readiness outcomes (i.e., academic achievement and socio-emotional and behavioral development), this study examines how preschool experiences at age 4 are associated with school readiness at kindergarten entry among children of Asian or Hispanic immigrant mothers. In addition, this study investigates how the association between preschool and school readiness at kindergarten entry compares to such

association at age 4 (i.e., the year of participation in preschool), and whether the association between preschool and school readiness differs by maternal language use. Given that, as described above, children of Asian and Hispanic immigrants are by far the largest groups, this study focuses on studying young children of Asian and Hispanic immigrants.

CHAPTER II: THEORETICAL BACKGROUND

This study examines school readiness among young children of Asian or Hispanic immigrant mothers, with particular attention to the roles of two important characteristics of immigrant families, maternal language use and use of preschool. This chapter aims to review the theoretical backgrounds on the association between maternal language use and children's school readiness and the role of preschool in children's school readiness, which are empirically studied in Chapters 3 and 4, respectively. As detailed below in the Method section of Chapter 3, school readiness is defined as a broad concept describing how prepared a child is to be successful in school, cognitively, behaviorally, and socio-emotionally; young children of immigrant mothers are preschool age children who were born in the United States but have immigrant mothers; and immigrant mothers are those who were foreign-born and immigrated to the United States before the birth of their focal child.

The Role of Maternal Language Use in the Development of Young Children

There has been strong evidence that early language experiences at home for young children are an essential factor for their language skills, cognitive development, and social and emotional skills (Brinton & Fujiki, 1993; Carpendale & Lewis, 2006; Hart & Risley, 1995). Therefore, early language environments provided by parents are also important for young children in immigrant families. Immigrant parents of young children play a crucial role as their first teacher and caregiver at home, and language use of immigrant parents is closely related to their ability and preference to provide their young children with learning and development resources and environments (Glick et al., 2013; Park & McHugh, 2014). Theoretical and empirical explanations about the role of maternal language use in the development of young children in immigrant families are discussed below.

Theoretical Frameworks

Child development theory suggests that maternal language use should influence child development in immigrant families, as it does in native-born families. In particular, ecological theory emphasizes that child development is an unfolding process over time through interactions between a child's individual characteristics and the contexts in which the child belongs (Bronfenbrenner, 1979, 1986). In the ecological framework, the microsystem provides the major pathway through which maternal language use would influence child development because parents are included in a child's microsystem and their characteristics directly influence the child's developmental environment and outcome. Similarly, drawing on the ecological framework, Chase-Lansdale and colleagues (2007) proposed a multidisciplinary model explaining the development of young children in immigrant families. Emphasizing the role of immigrant parents in positive development for young children from birth through school entry, the multidisciplinary model integrates multiple aspects related to young immigrant children's development, including parental characteristics (e.g., age, immigration status, country of origin, and acculturation); family socioeconomic status (e.g., education, household income, and employment); family structure (e.g., marital status and family size); social injustice and segregation (e.g., discrimination and residential isolation); family process (e.g., marital quality and parenting practices); extra-familial environment (e.g., extended family and child care); and child characteristics (e.g., age, gender, and temperament) (Chase-Lansdale et al., 2007). This model also provides the theoretical relevance of maternal language use for the development of young children in immigrant families in that it considers parental characteristics as an important determinant of the environments that parents create for children.

In summary, within developmental psychology, the development of young children in

immigrant families is viewed as the result of continuous interactions between children and the diverse environments by which they are surrounded. Although each theoretical explanation has a slightly different focus, they all provide theoretical links between maternal language use and child development, pointing out that there are diverse contexts through which maternal immigration experiences are delivered to children. In particular, parents are a pivotal factor in the development of young children in immigrant families since, compared to adolescents or school-age children, young children have not yet developed their own interpersonal relationships (e.g., peer networks), ethnic identities (e.g., perception of having an immigrant parent), and extra-familial environments (e.g., school) (Yoshikawa, 2011). Furthermore, differences in the early development of young children in immigrant families are associated with the language environment to which they are exposed in the home (Alba, Logan, Lutz, & Stults, 2002; Cobo-Lewis, Pearson, Eilers, & Umbel, 2002). Therefore, this study expects that maternal language use may play an important role in predicting the development of young children in immigrant families, by having a direct influence on children's development outcomes and by affecting family processes with which they interact.

Associations between Maternal Language Use and Child Development

Based on the theoretical frameworks described above, there would be several mechanisms linking maternal language use with child development in immigrant families. First, maternal English proficiency may be an influential factor for child development. Studies on immigrants have shown that parental English use is associated with better developmental outcomes for young children (Glick et al., 2013; Han et al., 2012; Washbrook et al., 2012). Immigrant parents with proficient English may have better ability to have access to American school systems and public institutions and to help their children have an English-speaking

environment, all of which could be beneficial for their children's school readiness. Second, bilingual parents may provide a beneficial home environment for young children in immigrant families. Bilingualism early in development has cognitive advantages for young children and preschoolers, such as cognitive flexibility and memory generalization (Bialystok, Craik, Green, & Gollan, 2009; Brito & Barr, 2012), and thus children of bilingual parents may have better cognitive skills. However, given that children learn to behave culturally appropriately through language (Ochs & Schieffelin, 1984; Schieffelin & Ochs, 1986), it is not clear how bilingualism is associated with children's socio-emotional development since children living in a bilingual home environment have to learn to behave and socialize through the use of more than one language. Nonetheless, given that bilingualism may enable young children to have greater access to their cultural capital in their immigrant families as well as ethnic neighborhoods (Portes & Rumbaut, 2006; Portes & Zhou, 1993) and that relevant research has shown cognitive and socio-emotional advantages of bilingualism among school-age immigrant children (Han, 2010, 2012; Han & Huang, 2010), bilingual immigrant parents may play a protective role in their children's socio-emotional development.

In addition to these two direct mechanisms, maternal language use may also be associated with the early development of young children in immigrant families in other ways. For example, maternal English use is closely related to maternal acculturation, which refers to diverse patterns resulting from maintenance of the origin culture and contact with the new culture (Berry, 1997). Maternal acculturation is important in children's early development since it directly affects parental functioning (e.g., parental roles, cognitions, and practices) which is closely related to child rearing (Bornstein & Lansford, 2009). Also, English proficiency raises the probability of intermarriage (i.e., having a U.S.-born spouse), which might help immigrants be more educated

and be more likely to work (Meng & Gregory, 2005; Stevens & Swicegood, 1987) and thus may provide better opportunities for their young children. Furthermore, parental language use is related to the formation of social networks (e.g., social ties and acquisition of resources) that play a critical role in children's development in immigrant families (Kao, 2004; Mendez, 2010). Finally, given that parental language use is one of the determinants of ethnic identity among young children in immigrant families (Portes & Rumbaut, 2001), this might be another reason why the home language environment may be important for their early development.

Associations between maternal language use and children's early development are also supported by limited empirical evidence. Using data from the ECLS-B, Washbrook and colleagues (2012) compared cognitive and behavioral developmental outcomes between 4-year-old children of immigrant mothers and their peers of native-born mothers. They found that, compared to children of native-born mothers, those of immigrant mothers had lower vocabulary test scores, and the differences were greater for those whose primary home language was other than English; but, no differences in externalizing behavior were found. In contrast, two other studies, using data from the ECLS-B, found that the linguistic environment of the family (i.e., whether children are primarily exposed to English) was not associated with cognitive scores among 2-year-old children of immigrants (Fuller et al., 2009; Glick et al., 2013). In addition, some relevant evidence is available from studies using samples of school-age children. Using a small sample of 108 grade 1 to 4 children of Puerto Rican American mothers, Colon-Parazoglou (1999) found that maternal English language usage was associated with higher vocabulary test scores, but was not associated with mathematics performance. In another study, using a small sample of 273 grade 9 to 12 children of Mexican parents, Plunkett and Bamaca-Gomez (2003) reported that parental English language use at home was positively associated with children's

educational aspirations. Finally, using a small sample of 206 12- to 16-year-old Southeast Asian children, Go (1999) reported that parental English use at home was associated with children's higher levels of depressive symptoms and delinquent attitudes.

Taken together, the theoretical frameworks reviewed above suggest that maternal language use may have direct influences on children's early development in immigrant families. In addition, maternal language use may also affect children's development through other mechanisms, such as maternal acculturation, paternal immigration status, maternal social networks, and a child's ethnic identity development. Accordingly, empirical evidence from one study using a sample of preschool age children of immigrants and two other studies using samples of school-age Hispanic or Mexican children also suggests parental use of English may improve children's cognitive development, but up to now this association has not been studied in preschool age children of Asian or Hispanic immigrants. Furthermore, evidence from a study using a sample of school-age Asian children suggests that parental English skills may be associated with lower socio-emotional development, but again this association has not been studied in preschool age children of Asian or Hispanic immigrants. Similarly, although there is suggestive evidence on developmental advantages of bilingualism, little is known about how parental bilingualism is associated with the development of preschool age children of Asian or Hispanic immigrants.

Differences between Asians and Hispanics

Given that patterns of English acquisition and home language retention are different between Asian and Hispanic groups (Rumbaut, Massey, & Bean, 2006), there could be differences in the association between maternal language use and children's development between the two groups. For example, Asian immigrants show a more rapid shift toward English

monolingualism compared to Hispanic immigrants (Rumbaut et al., 2006). Asian immigrants tend to have a strong motivation to be integrated into American society not only by obtaining legal citizenship, but also by fully adapting to English language (Jo, 2007; Portes & Hao, 1998). In contrast, Hispanic immigrants use a common language, and thus they are much less likely to speak English than Asian immigrants (Huntington, 2004). In addition, due to sharing an important part of culture (i.e., Spanish), Hispanic immigrants are more likely to be segregated within Spanish-speaking enclaves, which may also hinder English acquisition (Huntington, 2004). Furthermore, immigrants from Asian countries often enter under employment preferences and thus tend to have higher socioeconomic status than those from Latin countries who are mainly admitted under family reunification (Fuligni & Yoshikawa, 2003; Hernandez & Napierala, 2012; Portes & Rumbaut, 2006). This differential selection between Asian and Hispanic groups may contribute to differences in English acquisition and home language retention between the two groups. For example, lower educational attainment and family income among Hispanic immigrants are negatively associated with English monolingualism (Alba et al., 2002; Lutz, 2006).

In a word, with respect to English acquisition, whereas Asian immigrants are more likely to be English monolingual, Hispanic immigrants are more likely to be bilingual (Portes & Hao, 1998; Rumbaut et al., 2006; Tran, 2010). Therefore, English acquisition may be more related to the process of being integrated into American society for Asian immigrant mothers, but more related to the process of maintaining the origin culture and at the same time acquiring the new culture for Hispanic immigrant mothers. These differences suggest that English acquisition and home language retention may influence children's early development differently in the two groups.

The Role of Preschool in School Readiness

Theoretical Frameworks

To understand how preschool is associated with children's school readiness, this study is grounded in several complementary theoretical perspectives, including the ecological model, a life course perspective of development, and a constructionist perspective of development, all of which explain that preschool is an important environment that directly influences and interacts with young children. According to the ecological model (Bronfenbrenner, 1979; Bronfenbrenner & Morris, 1998), the development of young children is an unfolding process through children's lasting interactions with diverse environmental contexts. A life course perspective of development considers children's development as a changeable process over time; it signifies that developmental trajectories can be altered by various changes over time that children experience through diverse environments and events (Brooks-Gunn, 2004; Rutter, 2000). In addition, a constructionist perspective of development explains that young children construct their own development through interactions with their natural environments (Bodrova & Leong, 2006; Piaget, 2007; Vygotsky, 1978). Therefore, these perspectives suggest that preschool as an important proximal environment may play a protective role in young children's early development by facilitating positive academic, socio-emotional, and behavioral skills (Crosnoe, Leventhal, Wirth, Pierce, & Pianta, 2010; Shonkoff & Phillips, 2000).

When it comes to preschool experiences among children of immigrants, a socio-cultural perspective of development is also relevant. According to this perspective, cultural and socio-demographic differences may lead to diversity in preschool experiences among children of immigrants, and may in turn explain heterogeneity in their early development (Bornstein, 1991; Bornstein & Cheah, 2006; LeVine, 1977). For instance, immigrant parents from the same region

of origin may share cultural beliefs that may relate to non-parental child care selection as well as children's development (Holloway, Fuller, Rambaud, & Eggers-Pierola, 1997; LeVine, Miller, Richman, & LeVine, 1996; Whiting & Edwards, 1988). Therefore, this study examines the association between preschool and school readiness separately for children of Asian and Hispanic immigrant mothers, and investigates whether the association differs by maternal language use (i.e., home language mothers vs. bilingual or English dominant mothers).

Within these theoretical frameworks, there would be several potential mechanisms connecting preschool to school readiness among children of immigrants. First, preschool may improve children's school readiness by directly providing them with more resources for learning and development (e.g., high-quality interactions and learning opportunities). Second, preschool may also influence children's school readiness by helping to promote integration for them and their parents into American society and its education system. Third, children's school readiness may be influenced by encouraging parental involvement in child learning and development at preschool settings as well as at home. Finally, given that the influences of environmental experiences differ by children's characteristics (Bronfenbrenner & Ceci, 1994; Bronfenbrenner & Morris, 1998), the beneficial influences of preschool on school readiness, if any, may be more pronounced for children at risk, such as those whose mothers speak a language other than English at home.

Prior Research on Preschool and School Readiness

Six studies have to date provided evidence that participation in preschool programs is associated with school readiness among children of immigrants. These studies can be divided into two types: the first studying children of immigrants and the other studying children of Hispanic immigrants specifically. The first type includes only two studies that used a national

sample to compare school readiness of children of immigrants and those of U.S.-born parents. Using data from the ECLS-K, Magnuson and colleagues (2006) examined whether preschool experiences are associated with school readiness among children of immigrants. Comparing parental care to three types of child care arrangements (i.e., center care, Head Start, and other types of care), they found that attending center-based care yielded similar reading and math scores and better English proficiency for children of immigrants compared to those of native-born parents. They further examined whether the effects of preschool participation differed by mother's language and education level and reported that the effects of center-based care on English proficiency were more salient for children whose mothers spoke a language other than English at home. They also found that Head Start participation had greater effects on English proficiency and math scores for children of immigrants whose mothers had less than a high school education.

Turney and Kao (2009), using data from the ECLS-K, investigated how child care experiences are associated with behavior outcomes at the beginning of kindergarten among children of immigrants. Paying attention to mothers' race/ethnicity (i.e., White, Black, Hispanic, or Asian) and immigration status (i.e., foreign-born vs. native-born), they found some evidence that center-based care (not including Head Start) tended to be more beneficial for approaches to learning and social interactions among children of immigrants compared to those of native-born White parents. However, they also reported some evidence that Head Start participation was associated with lower levels of self-control and higher levels of impulsive/overactive behavior among children of foreign-born Asians and with lower levels of social interactions among children of foreign-born Hispanics compared to those of native-born White parents.

The second group of studies includes four that focused on the association between

preschool experiences and school readiness among children of Hispanic immigrants (Ansari & Winsler, 2011; Crosnoe, 2007; Currie & Thomas, 1999; Gormley, 2008). Crosnoe (2007), using data from the ECLS-K, compared school readiness (as measured by math scores and externalizing symptoms) of children of Mexican immigrants and three groups of native-born peers (i.e., White, Black, and other Hispanic), and found some evidence that attending preschool and center care reduced gaps in academic school readiness between children of Mexican immigrants and native-born White peers.

The other three studies examined whether school readiness among children of Hispanic parents is promoted by attending Head Start, prekindergarten, and child-subsidy-supported center care respectively. First, using data from the National Longitudinal Survey of Youth, Currie and Thomas (1999) examined the effect of Head Start participation on Hispanic children by comparing the participants with their siblings who did not attend the program. They found that the children whose mothers were foreign-born and interviewed in Spanish tended to have significantly better scores in the PPVT than their siblings who did not attend the program. Although Hispanic children of foreign-born mothers tended to obtain fewer benefits from Head Start participation than Hispanic children of native-born mothers, this study showed how effective Head Start programs were for children of immigrants, in particular for Hispanic children. Next, using data from student tests and parent surveys conducted in public schools in Tulsa, Oklahoma, and a regression discontinuity design to compare prekindergarten graduates with prekindergarten entrants, Gormley (2008) found that the participation in Tulsa public school prekindergarten programs substantially improved Hispanic graduates' reading, writing, and math skills. Furthermore, among the graduates, children whose parents were immigrants from Mexico or whose parents used Spanish at home as the primary language benefited most from the

program. Finally, Ansari and Winsler (2011)'s recent study used a sample of Hispanic children whose parents received child subsidies to attend either center-based or home-based child care in Miami-Dade County, Florida and found that children in center-base child care showed an improvement over time in their school readiness (e.g., cognitive, language, and social skills), whereas children in home-based child care did not show such an improvement over time.

Taken together, in line with well-documented evidence showing the important role of center-based care in promoting early academic skills (Burchinal, 1999; Loeb, Fuller, Kagan, & Carrol, 2004; Magnuson, Meyers, Ruhm, & Waldfogel, 2004; NICHD ECCRN, 2000), the results of previous studies reviewed above show that preschool experiences (i.e., Head Start, prekindergarten, or other center-based care) are beneficial in promoting academic school readiness among children of immigrants as well as children of Hispanic parents; but, there is no prior research on this topic using a sample of children of Asian immigrants. With respect to socio-emotional and behavioral development, only one study showed that center-based care was associated with higher levels of social skills among children of immigrants, whereas Head Start was associated with lower levels of social skills and higher levels of behavior problems; and a study using a sample of Hispanic children provided suggestive evidence on higher levels of social skills among participants in center-based care. In contrast, nothing is known about participation in preschool and its association with approaches to learning and social skills among children of Hispanic immigrants as well as with social skills and behavior problems among children of Asian immigrants. In sum, we know little about how preschool experiences are associated with school readiness outcomes among children of Asian or Hispanic immigrants, and thus more research is needed to obtain a deeper understanding.

CHAPTER III: MATERNAL LANGUAGE USE AND SCHOOL READINESS

As reviewed above in Chapter 2, theoretical evidence has suggested that maternal language use might affect children's school readiness. This chapter examines whether maternal language use is associated with a wide set of school readiness outcomes at kindergarten entry among children of Asian and Hispanic immigrant mothers. This chapter starts with introducing the research questions and how this study advances the literature on this topic, then describes methods and results, and finally concludes by summarizing and discussing the main findings.

The Aims of the Chapter

This study aims to examine school readiness among children of Asian and Hispanic immigrant mothers, with particular attention to the influence of maternal language use. This study addresses the following two research questions. The first research question is: Do children of English dominant mothers show better school readiness compared to those of home language mothers? Based on the theoretical and empirical evidence discussed above, this study expects that children of English dominant mothers may have better cognitive development compared to those of home language mothers in both Asian and Hispanic groups. Given that studies have shown that immigrant mothers' language use at home tends to be associated with children's verbal related outcomes, but not non-verbal ones (Colon-Parazoglou, 1999; Washbrook et al., 2012), this study also expects that influences on language related outcomes may be greater than influences on math. Due to lack of prior evidence, how mothers' English use is associated with children's socio-emotional development is exploratory; but, based on the theoretical background reviewed above, this study expects that mothers' English use might also be beneficial for children's socio-emotional development.

The second research question is: Do children of bilingual mothers show better school

readiness compared to those of home language mothers? As in the first question, based on the theoretical and empirical evidence, this study expects that children of bilingual mothers may have better cognitive development compared to those of home language mothers in both Asian and Hispanic groups; and there may be greater influences on language related outcomes than math. In addition, although the theoretical explanations reviewed above suggest that mothers' bilingualism might be beneficial for children's socio-emotional development, whether mothers' bilingualism is associated with children's socio-emotional development is exploratory due to lack of empirical evidence. However, given that bilingualism is more closely related to maintaining the culture of origin for Hispanic immigrants than Asian immigrants (Rumbaut et al., 2006), bilingual Hispanic mothers might be more beneficial for children's socio-emotional development in that the mothers could utilize advantages of holding both cultures for their child rearing and for their behavior in parental roles; particularly, when they have stayed in the U.S. for longer years.

In addressing these two research questions, this study extends the literature in several important respects. First and most importantly, although preschool years are a critical period for children's early cognitive, social, and emotional development as well as later achievement (Duncan et al., 2007; Hagan, Shaw, & Duncan, 2008; LaCrosse et al., 1970), there is very limited evidence on the association between maternal language use and school readiness, and all of the studies of children of Asian or Hispanic immigrants are based on very small and non-representative samples. Findings on school-age children may not be relevant to preschool age children because key aspects of children's environments (e.g., parenting practices, family resources, and child care) change when they enter formal schooling (Bradley, 2009; Glick, Hanish, Yabiku, & Bradley, 2012). Therefore, using a sample of children of foreign-born Asian

and Hispanic mothers from the large and nationally representative ECLS-B, this study examines the associations between maternal language use and school readiness outcomes at kindergarten entry. In particular, given that maternal immigration experiences and child development outcomes differ by ethnic group (Chase-Lansdale et al., 2007; Greenman & Xie, 2008; Hernandez, Nguyen, Saetermoe, & Suarez-Orozco, 2013), this study does not compare children of foreign-born mothers to those of native-born mothers as much of the prior research has done, but instead conducts all analyses among children of foreign-born mothers, carrying out separate analyses for children of Asian and Hispanic immigrant mothers.

Second, this study uses a wide set of school readiness outcomes. Variability in associations between maternal language use and school readiness outcomes may be confounded by possible variability across both outcome measures and small ethnic samples (Greenman & Xie, 2008). Therefore, to better understand the association between maternal language use and school readiness, it is necessary to study a wide range of school readiness outcomes for children from the same ethnic group.

Finally, this study defines maternal language use as diverse patterns of acquiring English and maintaining the home language to understand separate influences of maternal English monolingualism and bilingualism on children's school readiness. As detailed below in the Method section, this study examines children's school readiness across three groups of immigrant mothers (i.e., English dominant, bilingual, and home language mothers).

Method

Data and Sample

Data come from the ECLS-B, which tracked a nationally representative sample of about 10,700 children born in the U.S. in 2001 from birth through kindergarten entry (Nord et al.,

2004). The ECLS-B collected data at the child's birth and 9 months after birth, followed by follow-up interviews when the child was approximately 2, 4 (preschool age), and 5 or 6 (kindergarten entry) years old. This study uses information for maternal language use and child and family background covariates from data collected at birth or the 9-month survey; variables for maternal employment, child care arrangements, and parenting behavior from the preschool survey; and children's school readiness outcomes from the kindergarten survey. The 2006 kindergarten survey followed about 75% of children who entered kindergarten in 2006 and the 2007 kindergarten survey assessed the rest 25% who entered kindergarten in 2007. Therefore, to measure children's school readiness outcomes, this study combines the 2006 and 2007 surveys. All sample sizes reported in this study are rounded to the nearest 50 in compliance with NCES guidelines for the use of restricted-data (Snow et al., 2009).

The ECLS-B only followed about 7,700 cases at the kindergarten survey due to financial constraints (Snow et al., 2009), and, of these, about 7,000 children and their parents completed child direct assessments and parent interviews, respectively. Of these, this study selected mothers who were foreign-born, leaving about 1,800 cases. Foreign-born mothers who were born in countries other than Asian and Latin American countries were excluded, leaving about 1,500 cases. In addition, a very small number of children (under 0.2% of the kindergarten sample) who did not have valid information in at least one of the school readiness outcomes at the kindergarten survey were excluded. Thus, the analytic sample for this study includes about 1,500 children whose foreign-born mothers came from Asian countries ($n \approx 850$; about 40% from China and the rest from Japan, Philippine, India, Korea, Vietnam, and other Asia or Pacific Island) or Latin American countries ($n \approx 650$; about 70% from Mexico and the rest from Puerto Rico, Cuba, and other Central or South America). All analyses use sampling weights provided in

the ECLS-B to account for the sampling structure of the ECLS-B (which oversampled for twins, low birth weight infants, and certain ethnic groups), as well as the reduced sample size at the kindergarten survey.

Measures

Maternal language use. To measure maternal language use among Asian and Hispanic foreign-born mothers, this study uses information about two aspects of language: their primary language at home and their English proficiency. Mothers reported at the 9-month survey whether their primary language at home was English or other language. About 73% of mothers in the analytic sample reported this information at the 9-month survey, and thus this information for the rest was substituted from the 2-year survey. Therefore, in this study, maternal *primary language at home* is measured as a binary variable with a value of 1 if English is the primary language at home and 0 otherwise. Mothers answered four questions asking how well the mother speaks, reads, writes, and understands English, with a 4-point Likert scale (0 = “not well at all” to 3 = “very well”) at the 9-month survey. Using this information, maternal *English proficiency* is measured as the total score (ranged from 0 to 12) of the four questions. Next, *three language groups* of Asian and Hispanic immigrant mothers are created based on these two language measures: 1) mothers who primarily used English at home (hereafter, English dominant mothers); 2) mothers who primarily used their home language at home but also had high English proficiency (i.e., speaking, reading, writing, and understanding English very well or pretty well; hereafter, bilingual mothers); and 3) mothers who primarily used their home language at home and had low English proficiency (i.e., speaking, reading, writing, or understanding English not very well or not well at all; hereafter, home language mothers). In the analytic sample, these three groups were 27%, 46%, and 27%, respectively, among Asian mothers, and 9%, 22%, and

68%, respectively, among Hispanic mothers.

In addition, since the extent of English acquisition is closely related to the length of stay (Bleakley & Chin, 2010), this study also controls for mothers' length of stay in the United States in all analyses. Mothers were asked about the age when they arrived in the U.S. at the 2-year survey. About 97% of mothers in the analytic sample answered this question at the 2-year survey, and the information for the rest was substituted from the preschool survey. Using this information, mothers' *length of residency in the U.S.* is measured by subtracting their current age from their age at arrival in the United States. In the analytic sample, Asian and Hispanic mothers' average length of years in U.S. residency was about 12 and 11, respectively.

School readiness. This study uses a comprehensive definition of school readiness, that is how ready a child is for school, cognitively, socially, and emotionally (Lewit & Baker, 1995). Therefore, this study analyzes three cognitive (i.e., early reading, expressive language, and mathematics) and four socio-emotional (i.e., approaches to learning, pro-social behavior, externalizing problems, and attention problems) outcome variables that were all measured at the kindergarten survey.

Early reading. To measure children's early reading skills, this study uses early reading scores developed for the ECLS-B. The early reading scale includes 53 items for basic skills, 10 items for initial understanding, 2 items for developing interpretation, 2 items for demonstrating a critical stance, and 7 items for vocabulary (Najarian, Snow, Lennon, & Kinsey, 2010). This study transforms the overall scale scores to z-scores by standardizing it to have a mean of 0 and a standard deviation of 1, with higher scores indicating better early reading skills; in the analytic sample, the mean of the standardized scores for Asian and Hispanic groups was 0.73 and -0.15, respectively.

Expressive language. Children's expressive language ability is measured using the Let's Tell Stories scores. The ECLS-B provides the average scores of two items from the Let's Tell Stories of the Preschool Language Assessment Scale (PreLAS) (Duncan & De Avila, 1998). To assess a child's ability to construct a grammatically accurate, consistent story, field interviews read two stories to the child, and then trained coders rated the response of the child with five response values (0 = "no response" to 5 = "articulate, detailed sentences, vivid vocabulary, and complex constructions") (Najarian et al., 2010). This study standardizes the average scores provided in the ECLS-B with higher scores indicating better expressive language skills; in the analytic sample, the mean of the standardized z -scores for Asian and Hispanic groups was 0.36 and -0.08, respectively.

Mathematics. To measure children's mathematics skills, this study uses mathematics scores developed for the ECLS-B. The mathematics scale includes 41 items for number sense, properties, and operations, 3 items for measurement, 4 items for geometry and spatial sense, 3 items for data analysis, statistics, and probability, and 7 items for patterns, algebra, and functions (Najarian et al., 2010). This study standardizes the overall scale scores, with higher scores indicating better mathematics skills; in the analytic sample, the mean of the standardized z -scores for Asian and Hispanic groups was 0.75 and -0.16, respectively.

Approaches to learning. Children's approaches to learning is measured using four items from the Social Skills Rating System (SRS; Gresham & Elliott, 1990). Teachers answered four questions regarding children's eagerness to learn, attentiveness, learning independence, and task persistence with a 5-point Likert scale (1 = "never" to 5 "very often") (Najarian et al., 2010). This study sums all four items ($\alpha = 0.86$ in Asians and $\alpha = 0.87$ in Hispanics) and then standardizes the total score, with higher scores reflecting better approaches to learning. In the

analytic sample, the mean of the standardized z -scores for Asian and Hispanic groups was 0.16 and -0.03, respectively.

Pro-social behavior. To measure children's pro-social behavior, this study employs six items from the Preschool and Kindergarten Behavior Scales (PKBS-2; Merrell, 2003). Teachers answered these six items regarding children's forming friendships, being accepted by others, sharing belongings with others, standing up for others' rights, comforting others, and trying to understand others with a 5-point Likert scale (1 = "never" to 5 "very often") (Najarian et al., 2010). This study creates standardized z -scores by summing and standardizing all six items ($\alpha = 0.86$ in Asians and $\alpha = 0.87$ in Hispanics), with higher scores reflecting better pro-social behavior. In the analytic sample, the mean of the standardized z -scores for Asian and Hispanic groups was -0.13 and 0.03, respectively.

Externalizing problems. Children's externalizing problems is measured using four items from the PKBS-2 (Merrell, 2003). Teachers answered four questions regarding children's restlessness, aggressiveness, disturbing ongoing activities, and annoying others with a 5-point Likert scale (1 = "never" to 5 "very often") (Najarian et al., 2010). This study reverse-codes each item, sums all items ($\alpha = 0.84$ in Asians and $\alpha = 0.87$ in Hispanics), and then standardizes the total score, with higher scores indicating lower levels of externalizing problems. In the analytic sample, the mean of the standardized z -scores for Asian and Hispanic groups was 0.14 and -0.03, respectively.

Attention problems. To measure children's attention problems, this study employs four items from the PKBS-2 (Merrell, 2003). Teachers answered these four items regarding children's acting impulsively, being overly active, having difficulty concentrating, and having temper tantrums (1 = "never" to 5 "very often") (Najarian et al., 2010). This study creates standardized

z-scores by reverse-coding each item and then summing and standardizing all six items ($\alpha = 0.81$ in Asians and $\alpha = 0.83$ in Hispanics), with higher scores reflecting lower levels of attention problems. In the analytic sample, the mean of the standardized z-scores for Asian and Hispanic groups was 0.13 and -0.03, respectively.

Control variables. All analyses include an extensive set of covariates. These covariates are selected based on their theoretical and empirical relevance for maternal language use and child school readiness (Chase-Lansdale et al., 2007; Fuller et al., 2009; Glick et al., 2009, 2012).

Child and family characteristics. Child characteristics include gender (boy = 1), multiple birth (twin or higher order = 1), low birth weight (< 2.5 kg = 1), and age in months at the 9-month survey. Family background characteristics include mothers' age, marital status (married = 1), and education (less than high school; high school graduate; or some college or more) at birth. Also included are family income (less than \$20,000; \$20,001-\$35,000; \$35,001-50,000; or \$50,001 or more) and the number of siblings (none; one; or two or more) at the 9-month survey.

Maternal employment and child care arrangements. Maternal employment is measured with three groups at the preschool survey: not working; working part-time (< 35 hr per week); and working fulltime (\geq 35 hr per week). This study also defines five child care groups at the preschool survey: parental care as exclusively receiving care from parents; relative care as receiving care from sibling, grandparent, or other relatives; non-relative care as receiving care from someone other than relatives; other center-based care as attending center-based programs, such as nursery school, day care center, prekindergarten, and other preschool; and Head Start.

Parenting behaviors. This study includes four parenting behavior variables collected at the preschool survey. First, mothers' cognitively stimulating activities variable is measured as the total score (ranging from 3 to 12; $\alpha = 0.54$ in Asians and $\alpha = 0.64$ in Hispanics) of the three

items (i.e., reading books, telling stories, and singing songs), with higher scores indicating more activities (Rodriguez et al., 2009). Second, mothers' use of spanking is measured as a binary variable with a value of 1 if mothers spanked their child in the past week and 0 otherwise. Third, a sleeping routine measure is a binary variable with a value of 1 if a family had a regular routine for bed time and 0 otherwise. Fourth, the frequency of eating dinner together per week is a continuous variable ranging from 0 to 7.

Missing information on covariates. To address missing data on covariates, this study employs multiple imputation. Missing rates in most covariates were low (ranging from 0% to 2.6%), but such rates were slightly higher in some covariates, such as cognitively stimulating activities. Using the ICE command in Stata, this study creates ten imputed data sets to increase the expected relative efficiency (i.e., the recovery rate of missing data), which resulted in 99.9% (Royston, 2005a, 2005b; Rubin, 1987). Also, this study includes all outcome variables in the multiple imputation to increase the accuracy of imputation (Moons, Donders, Stijnen, & Herrell, 2006), but uses the original outcome variables, not the imputed ones, in the analysis. Using the MICOMBINE command in Stata, this study estimates the final average coefficients from ten separate regressions and standard errors adjusted across the imputed data sets (Royston, 2005a, 2005b).

Analytic Strategies

To address the research questions stated above, this study specifies three models relying on Ordinary Least Squares (OLS) regressions. These three models predict children's school readiness, increasingly controlling for covariates closely related to maternal language use as well as children's school readiness, separately for children of Asian and Hispanic immigrant mothers.

Model 1 estimates basic variations in children's school readiness outcomes according to

maternal language groups, only including the measures of maternal language groups and child characteristics:

$$Outcome_{itk} = \beta_0 + \beta_1 Lan_{it1} + \beta_2 C_{it1} + \varepsilon_i$$

where $Outcome_{itk}$ represents the outcome measure for the i th child of an Asian or Hispanic mother at the kindergarten survey (time tk); Lan_{it1} indicates maternal use of English or bilingualism for the mother of the i th child at the 9-month survey (time $t1$); and C_{it1} is a vector of child characteristics (i.e., age, gender, low birth weight, and multiple birth) at time $t1$. Also, Model 1 includes two binary indicators for children who entered kindergarten in 2006 vs. 2007 and for mothers' country of origin.

Model 2 is the same as Model 1 but adds mothers' length of U.S. residency to see if including the variable makes changes in coefficients for maternal language groups:

$$Outcome_{itk} = \beta_0 + \beta_1 Lan_{it1} + \beta_2 C_{it1} + \beta_3 Year_{it1} + \varepsilon_i$$

where $Year_{it1}$ represents average years in length of U.S. residency for an Asian or Hispanic mother of the i th child at time $t1$.

Model 3, the full model, is the same as Model 2 but adds variables for family characteristics at the 9-month survey and for factors related to family process—maternal employment, child care arrangements, and parenting behavior at the preschool survey—which may be associated with both maternal language use and child outcomes:

$$Outcome_{itk} = \beta_0 + \beta_1 Lan_{it1} + \beta_2 C_{it1} + \beta_3 Year_{it1} + \beta_4 F_{it1} + \beta_5 P_{itp} + \varepsilon_i$$

where F_{it1} represents a vector of family background characteristics at time $t1$, including the number of siblings, family income, and mothers' age, marital status, and education; and P_{itp} indicates a vector of family process variables at the preschool survey (time tp), including maternal employment, child care arrangements, and parenting behaviors. The full model also includes a binary indicator for the presence of fathers at home at the 9-month survey.

All models include controls for length of U.S. residency. In addition, supplemental models are estimated adding interaction terms of maternal language groups with length of U.S. residency to Model 3. Like the main analyses, these additional ones are also conducted separately for Asian and Hispanic groups. Post-estimation tests are conducted to see whether the coefficients of English dominant mothers are statistically different to those of bilingual mothers and whether the coefficients of interaction terms are statistically different to each other.

Results

Descriptive Statistics

Table 1 shows descriptive statistics for all variables used in this study by maternal language use, separately for Asian mothers and Hispanic mothers. First, regarding maternal language use, home language, bilingual, and English dominant mothers were 27%, 46%, and 27%, respectively, among Asian immigrant mothers, and 68%, 22%, and 9%, respectively, among Hispanic immigrant mothers. This indicates that, whereas only one third of Hispanic mothers used English at home dominantly or together with their home language, two thirds of Asian mothers did. The average length in years of U.S. residency for home language, bilingual, and English dominant mothers was about 8, 11, and 18, respectively, among Asian mothers, and about 9, 16, and 18, respectively, among Hispanic mothers. This suggests that, whereas Asian mothers were more likely to use English when staying in the U.S. for longer times, Hispanic mothers were more likely to use their home language as well as English.

Second, as for children's school readiness, in both Asian and Hispanic groups, children of bilingual and English dominant mothers tended to have better reading and expressive language skills than those of home language mothers, but such differences were not found in math skills. Also, children of bilingual Asian mothers tended to show better approaches to learning and pro-

social behavior and fewer externalizing problems than those of home language Asian mothers, but no such differences were found among children of Hispanic mothers.

Finally, regarding control variables, compared to home language Asian mothers, both bilingual and English dominant Asian mothers were more likely to be more-educated, high income, working full-time, and doing cognitively stimulating activities with their child. Similarly, compared to home language Hispanic mothers, both bilingual and English dominant mothers were more likely to be more-educated, high income, and choosing center-based child care. In addition, compared to home language Hispanic mothers, English dominant Hispanic mothers were more likely to be doing cognitively stimulating activities with their child and having sleeping routines.

Associations between Maternal Language Use and Child Cognitive Development

Table 2 presents the summary results of cognitive development outcomes (i.e., early reading, expressive language, and mathematics) with the main (Model 3) and interaction models, separately for Asian and Hispanic groups. The full results for each of the three cognitive outcome measures with all models (i.e., Model 1 only including maternal language use measures and child characteristics; Model 2 further adding mothers' length of U.S. residency; Model 3, the main model, further adding family background and process variables; and Model 4, the interaction model, further adding interaction terms of maternal language groups with length of U.S. residency) are presented in Appendix Tables A1 to A3, respectively, for the Asian group and Appendix Tables A4 to A6, respectively, for the Hispanic group.

As shown in Table 2, overall, this study finds beneficial associations between mothers' use of English or bilingualism and children's cognitive development at kindergarten entry. As expected, children of English dominant or bilingual mothers showed better cognitive

development compared to those of home language mothers, in both Asian and Hispanic groups. In addition, beneficial effects of maternal language use are found in language related outcomes, early reading and expressive language scores, but not in math scores. The specific results for each outcome measure are as follows.

Maternal use of English or bilingualism tends to be associated with improved early reading skills among children of Hispanic mothers, but not among those of Asian mothers (see Panel A of Table 2). Children of bilingual and English dominant Asian mothers had higher scores in Models 1 and 2 than those of home language Asian mothers, but the differences disappeared after including family background and process variables in the main model (see Appendix Table A1). In contrast, whereas children of bilingual Hispanic mothers tended to have higher scores in early reading than those of home language Hispanic mothers in Model 2 but the difference vanished after controlling for family background and process variables in the main model, children of English dominant Hispanic mothers still tended to have higher scores in early reading (0.28 *SDs*, $p < 0.10$) than those of home language Hispanic mothers after controlling for both family background and process variables in the main model (see Appendix Table A4).

As shown in Panel B of Table 2, as expected, maternal use of English or bilingualism is associated with improved expressive language skills among children of both Asian and Hispanic mothers. Children of bilingual and English dominant Asian mothers had higher scores in expressive language (0.33 *SDs* and 0.43 *SDs*, respectively, $p < 0.001$) than those of home language Asian mothers in the main model. Similarly, children of bilingual and English dominant Hispanic mothers had higher scores in expressive language (0.43 *SDs*, $p < 0.001$ and 0.44 *SDs*, $p < 0.05$, respectively) than those of home language Hispanic mothers in the main model.

In contrast, maternal use of English or bilingualism is not associated with math skills among children of both Asian and Hispanic mothers (see Panel C of Table 2). As shown in Appendix Table A3, children of bilingual and English dominant Asian mothers had higher math scores than those of home language Asian mothers in Models 1 and 2, but the differences were fully explained by including family background and process variables in the main model. Similarly, as shown in Appendix Table A6, children of bilingual Hispanic mothers tended to have higher math scores than those of home language Hispanic mothers in Model 2, but the difference disappeared after including family background and process variables in the main model.

Associations between Maternal Language Use and Child Socio-emotional Development

The summary results of socio-emotional outcomes (i.e., approaches to learning, pro-social behavior, externalizing problems, and attention problems) with the main (Model 3) and interaction models are presented in Table 3, separately for Asian and Hispanic groups. The full results for each of the four socio-emotional outcome measures with all models (i.e., Model 1 only including maternal language use measures and child characteristics; Model 2 further adding mothers' length of U.S. residency; Model 3, the main model, further adding family background and process variables; and Model 4, the interaction model, further adding interaction terms of maternal language groups with length of U.S. residency) are presented in Appendix Tables B1 to B4, respectively, for the Asian group and Appendix Tables B5 to B8, respectively, for the Hispanic group.

This study overall finds beneficial associations between maternal use of English or bilingualism and children's social skills, but also beneficial or detrimental associations between maternal use of English or bilingualism and children's behavior problems (see Table 3). As

expected, children of English dominant and bilingual mothers had better social skills compared to those of home language mothers in the Asian group. In addition, beneficial effects of maternal language use on social skills are more pronounced among children of Asian mothers; particularly, among those of bilingual Asian mothers who had stayed in the U.S. for longer years. In addition, contrary to the expectation, children of English dominant mothers had higher levels of behavior problems compared to those of home language mothers in the Asian group. In contrast, as expected, children of bilingual mothers had lower levels of behavior problems compared to those of home language mothers in the Hispanic group; particularly when the bilingual Hispanic mothers had stayed in the U.S. for longer years. Below are the specific results for each socio-emotional outcome measure.

Maternal bilingualism is associated with approaches to learning among children of Asian mothers, but not those of Hispanic mothers (see Panel A of Table 3). As shown in Appendix Table B1, children of bilingual Asian mothers tended to show higher levels of approaches to learning compared to those of home language Asian mothers in Model 2, but the difference vanished after including family background and process variables in the main model. However, as maternal length of U.S. residency increased, children of home language Asian mothers had lower levels of approaches to learning, but children of bilingual Asian mothers had higher levels of approaches to learning. These two opposite patterns are statistically significantly different to each other (see Panel A of Table 3). In contrast, no differences are found among children of Hispanic mothers in all three models (see Appendix Table B5).

As shown Panel B of Table 3, maternal use of English and bilingualism are associated with higher levels of pro-social behavior among children of Asian mothers, but not those of Hispanic mothers. In the main model including all control variables, children of bilingual and

English dominant Asian mothers showed higher levels of pro-social behavior than those of home language Asian mothers (0.23 *SDs* and 0.30 *SDs*, respectively, $p < 0.05$). In contrast, in all three models, there are no differences in pro-social behavior among children of Hispanic mothers (see Appendix Table B6).

Maternal use of English or bilingualism tends to be associated with higher levels of externalizing problems among children of Asian mothers but also is associated with lower levels of externalizing problems among children of Hispanic mothers (see Panel C of Table 3); higher scores of the reverse-coded externalizing problems indicate lower levels of problems. As shown in Appendix Table B3, whereas children of bilingual Asian mothers showed lower levels of externalizing problems compared to those of home language Asian mothers in Models 1 and 2 but the differences were fully explained by controlling for family background and process variables in the main model, children of English dominant Asian mothers tended to show higher levels of externalizing problems (-0.19 *SDs*, $p < 0.10$) in the main model. In contrast, in the interaction model, as maternal years in the length of U.S. residency increased, children of home language Hispanic mothers showed higher levels of externalizing problems, but children of bilingual Hispanic mothers showed lower levels of externalizing problems (see Panel C of Table 3); these opposite patterns are statistically significantly different to each other.

Finally, as shown in Panel D of Table 3, maternal language use is associated with attention problems among children of both Asian and Hispanic mothers; the attention problems measure is also reverse-coded with higher scores indicating lower levels of problems. As shown in Appendix Table B4, there are no differences in attention problems between children of home language and bilingual Asian mothers in all three models. But, children of English dominant Asian mothers showed higher levels of attention problems (-0.29 *SDs*, $p < 0.05$) compared to

those of home language Asian mothers in the main model. In contrast, as shown in Panel D of Table 3, as maternal years in the length of U.S. residency increased, children of home language Hispanic mothers showed higher levels of attention problems, but children of bilingual Hispanic mothers showed lower levels of attention problems. These opposite patterns are statistically significantly different to each other.

Conclusion and Discussion

Using a contemporary and nationally representative sample of children of Asian and Hispanic immigrant mothers, this study examines the associations between maternal language use and children's school readiness outcomes at kindergarten entry. To better measure diverse patterns of language use among recent Asian and Hispanic immigrant mothers, this study defines three language groups (i.e., English dominant mothers who primarily use English at home, bilingual mothers who primarily use their home language at home but also have high English proficiency, and home language mothers who primarily use their home language at home and have low English proficiency), and compares children's school readiness outcomes across these three language groups, separately for Asians and Hispanics.

As expected based on theoretical and empirical evidence, since maternal language use plays an important role in the development of young children, this study finds significant associations of maternal use of English or bilingualism with school readiness outcomes at kindergarten entry, in both Asian and Hispanic groups. The main findings indicate that children of English dominant or bilingual mothers have better expressive language skills compared to those of home language mothers in both Asian and Hispanic groups. Also, compared to children of home language Asian mothers, children of English dominant and bilingual Asian mothers have higher levels of pro-social behavior, but also children of English dominant Asian mothers

have higher levels of behavior problems. Additionally, this study finds that, as maternal years in the length of U.S. residency increase, whereas children of home language Asian mothers have lower levels of approaches to learning, those of bilingual Asian mothers have higher levels of approaches to learning, and whereas children of home language Hispanic mothers have higher levels of externalizing and attention problems, those of bilingual Hispanic mothers have lower levels of externalizing and attention problems.

The main findings of this study extend previous research by showing the beneficial associations between maternal use of English or bilingualism and a wide set of school readiness outcomes at kindergarten entry among a nationally representative sample of children of Asian and Hispanic immigrant mothers. As expected, the main findings provide evidence showing better expressive language skills among children of English dominant and bilingual mothers in both Asian and Hispanic groups, which is consistent with prior research on beneficial influences of parental English proficiency or bilingualism on cognitive development among preschool- and school-age children of immigrant families (Colon-Parazoglou, 1999; Han, 2012; Plunkett & Bamaca-Gomez, 2003; Washbrook et al., 2012). These results suggest that the acquisition of the host society's language (i.e., English) among immigrant mothers may play a protective role in their children's language development (Hart & Risley, 1995; Portes & Rumbaut, 2006). For example, immigrant mothers who are proficient in English may be more likely to interact with American school systems (e.g., communicating with teachers and reading letters from school) and to obtain opportunities in their community (e.g., resources for child care and information about child rearing), both activities which are related to children's academic school readiness. In addition, immigrant mothers with proficient English skills may be more likely to assist their children with school work in subjects such as English and history.

Furthermore, this study finds beneficial effects of maternal use of English or bilingualism only for language related outcomes, but not math scores, which complements prior research (Colon-Papazoglou, 1999; Washbrook et al., 2012). As expected, this is likely due to the fact that mother's language characteristics (i.e., primary language at home and English proficiency) would be expected to have stronger effects on children's language related outcomes than their math outcomes. In addition, given that Asian parents tend to have very strict criteria for their children's math skills since they believe that early education for math and science is one of the key factors for their children's later success (Crystal & Stevenson, 1991; Woodrow, 1996), Asian immigrant parents may do their best to help their children with math learning regardless of their English ability. In contrast, many Hispanic immigrant mothers may have difficulties in assisting their children's learning due to their own limited English ability (Moreno & Lopez, 1999; Ramirez, 2003; Zarate, 2007), and therefore Hispanic mothers who are learning English or primarily using English may put more focus on teaching their children reading than math.

As expected, this study also finds higher levels of pro-social behavior among children of English dominant and bilingual Asian mothers. Given that adopting the host country's language is a well-established proxy measure for acculturation (Lara et al., 2005; Salant & Lauderdale, 2003), this finding complements prior studies showing maternal acculturation's positive influence on social skills among school-age Asian immigrant children (Kim, 2001; Pawliuk et al., 1996). One explanation of this finding is that English dominant and bilingual Asian immigrant mothers who are more likely to be integrated into the American society than home language Asian mothers may have less resistance to their children's interactions with native-born peers, and therefore these mothers may be more likely to encourage their children to participate in diverse extracurricular activities that are beneficial in developing social and emotional skills;

also, to locate such activities, bilingual Asian mothers may utilize cultural resources in their ethnic communities. Furthermore, given that Asian parents have strong beliefs in emotional reservedness, and thus tend to belittle their children's expression of feelings and thoughts (Chao, 1994; Cheah, Leung, Tahseen, & Schultz, 2009; Matthews, 2000), Asian mothers who are more integrated into American culture may be less likely to use their traditional parenting practices, and therefore they may help their children to develop social and emotional skills.

Additionally, this study finds, when maternal length of U.S. residency increases, higher levels of approaches to learning among children of bilingual Asian immigrant mothers, but lower levels of approaches to learning among those of home language Asian immigrant mothers. While only speculating due to there being no studies on bilingual parents and its influence on children's approaches to learning, this finding suggests that bilingual Asian mothers may be beneficial in developing their children's behaviors and characteristics that facilitate their learning. In addition, this finding may be in line with prior studies showing how improved parent-child interaction through language congruence could enhance children's motivation for better academic achievement (Fuligni, 1997, 1998; Tseng & Fuligni, 2000).

With respect to children's behavior problems, contrary to as expected, this study finds higher levels of attention problems among children of English dominant Asian mothers compared to those of home language Asian mothers; children of English dominant Asian mothers also tended to show higher levels of externalizing problems. Given that studies have shown that harsh parenting among American parents is associated with children's increased behavior problems (Cheah & Leung, 2011; Simons, Whitbeck, Beaman, & Conger, 1994; Weiss, Dodge, Bates, & Pettit, 1992), these results suggest that children of English dominant Asian immigrant mothers may have more behavior problems perhaps because their mothers still adhere

to using their traditional strict and harsh parenting styles. Also, these results indicate that Asian mothers' English proficiency may not enhance their ability to detect and address their children's behavior problems. Furthermore, this study also finds, when maternal length of U.S. residency increases, lower levels of externalizing and attention problems among children of bilingual Hispanic mothers, but higher levels of externalizing and attention problems among those of home language Hispanic mothers. These results may be in line with prior research showing that consistent discipline practices of Mexican American mothers who are more integrated into American culture are beneficial to reducing children's behavior problems (Dumka, Roosa, & Jackson, 1997). In addition, as expected, these findings suggest that bilingual Hispanic mothers who have stayed in the U.S. for longer time may have adjusted their child rearing values and attitudes in a way that harmonizes positive aspects of both cultures, and therefore they may play a more protective role in addressing their children's behavior problems.

The findings of this study should be interpreted in light of several limitations. First, the information about maternal English proficiency was reported by mothers and thus may be inaccurate. If mothers over-reported or misreported their English skills, the results could be biased. Second, although this study examined children's school readiness separately for Asians and Hispanics—two major recent immigrant groups—it is not able to further investigate variations by country of origin within the Asian and Hispanic groups due to sample size limitations. As recommended by Hernandez and colleagues (2013), future work needs to take into account the heterogeneity within ethnic groups.

Despite these limitations, the findings of this study provide empirical evidence in support of the important role of maternal language use in school readiness at kindergarten entry among children of Asian and Hispanic immigrant mothers. Given that there has been very limited

evidence on this topic, this study is the first one showing how maternal language use influences numerous aspects of early development among children in immigrant families.

Table 1 Descriptive Statistics for All Variables by Maternal Ethnicity and Language Use

	Asian immigrant mothers				Hispanic immigrant mothers			
	Total (<i>n</i> ≈ 850)	Home language (<i>n</i> ≈ 250)	Bilingual (<i>n</i> ≈ 400)	English dominant (<i>n</i> ≈ 200)	Total (<i>n</i> ≈ 650)	Home language (<i>n</i> ≈ 450)	Bilingual (<i>n</i> ≈ 150)	English dominant (<i>n</i> ≈ 100)
Maternal language use								
Home language mothers	0.27	1.00	–	–	0.68	1.00	–	–
Bilingual mothers	0.46	–	1.00	–	0.22	–	1.00	–
English dominant mothers	0.27	–	–	1.00	0.09	–	–	1.00
Years of US residency	12.05	8.08	10.91***	18.04*** ^d	11.05	8.65	15.75***	17.78*** ^a
Cognitive outcomes at kindergarten								
Early reading	0.73	0.47	0.89***	0.76*	–0.15	–0.25	0.04**	0.19**
Expressive language	0.36	0.06	0.44***	0.56***	–0.08	–0.27	0.33***	0.41***
Mathematics	0.75	0.59	0.83	0.79	–0.16	–0.22	0.00†	0.03
Socio-emotional outcomes at kindergarten								
Approaches to learning	0.16	0.11	0.24*	0.07	–0.03	0.00	–0.07	–0.21
Pro-social behavior	–0.13	–0.35	–0.08*	–0.03*	0.03	0.03	–0.05	0.20
Externalizing problems	0.14	0.08	0.27†	–0.03	–0.03	0.01	–0.14	–0.08
Attention problems	0.13	0.12	0.27	–0.08	–0.03	0.01	–0.09	–0.25
Child characteristics								
Age in months at 9-month	10.45	10.53	10.42	10.45	10.28	10.32	10.23	10.26
Boys	0.53	0.55	0.53	0.54	0.52	0.54	0.47	0.47
Low birth weight at birth	0.06	0.08	0.05	0.05	0.06	0.05	0.05	0.12†
Family background characteristics								
Age at birth	30.45	30.99	30.45	29.74*	27.05	27.44	26.65	25.81†
Married at birth	0.92	0.96	0.95	0.84*** ^d	0.63	0.63	0.63	0.61
Maternal education at birth								
Less than high school	0.09	0.24	0.03***	0.05***	0.56	0.67	0.31***	0.36***
High school graduate	0.21	0.33	0.16***	0.16***	0.26	0.22	0.36**	0.29
Some college or more	0.70	0.42	0.81***	0.79***	0.18	0.10	0.33***	0.35***
Family income at 9-month								
\$0-\$20,000	0.12	0.25	0.06***	0.09***	0.39	0.47	0.21***	0.29*
\$20,001-\$35,000	0.18	0.28	0.15***	0.14**	0.39	0.41	0.38	0.24*

\$35,001-\$50,000	0.34	0.34	0.34	0.33	0.18	0.11	0.36***	0.24* ^a
\$50,000 or more	0.36	0.12	0.44***	0.43***	0.04	0.01	0.05†	0.22*** ^d
Number of siblings at 9-month								
None	0.46	0.46	0.47	0.44	0.41	0.38	0.49†	0.46
One	0.38	0.36	0.40	0.37	0.27	0.27	0.29	0.28
Two or more	0.16	0.18	0.13	0.19	0.32	0.35	0.23*	0.26
Maternal employment, child care, and parenting								
Maternal employment at preschool								
Not working	0.41	0.52	0.36***	0.39*	0.54	0.60	0.40***	0.48
Part-time	0.16	0.19	0.13	0.18	0.11	0.10	0.10	0.16
Full-time	0.43	0.29	0.52***	0.43*	0.35	0.30	0.50***	0.36
Child care arrangements at preschool								
Parental care	0.17	0.22	0.13**	0.16	0.32	0.40	0.16***	0.11***
Relative care	0.14	0.08	0.18**	0.16†	0.14	0.12	0.19	0.16
Non-relative care	0.04	0.03	0.04	0.05	0.06	0.07	0.03	0.05
Other center-based care	0.58	0.52	0.62*	0.58	0.23	0.17	0.37***	0.36**
Head Start	0.07	0.14	0.03***	0.06**	0.25	0.25	0.25	0.32
Parenting behaviors at preschool								
Cognitive stimulating activities	8.85	8.35	8.93**	9.28***	8.01	7.83	8.20	9.07*** ^b
Use of spanking	0.22	0.21	0.22	0.24	0.23	0.22	0.24	0.32
Having sleeping routines	0.87	0.88	0.84	0.91 ^a	0.77	0.74	0.79	0.89*
Eating dinner together a week	5.42	5.37	5.66	5.07 ^c	4.43	4.49	4.25	4.49

Note. All mean scores were weighted using 9-month (W1R0), 2-year (W2R0), preschool (W31R0), or kindergarten (WK1R0) sampling weights. Descriptive statistics for the multiple birth variable were not presented due to small cell sizes. Sample sizes were rounded to the nearest 50, due to IES reporting rules. Basically, significance tests were conducted to compare mean scores for children of home language mothers to those for children of bilingual and English dominant mothers, separately for Asian and Hispanic groups. Additionally, significance tests were conducted to compare mean scores between children of bilingual and English dominant mothers:

^a for $p < 0.10$, ^b for $p < 0.05$, ^c for $p < 0.01$, and ^d for $p < 0.001$.

*** $p < 0.001$. ** $p < 0.01$. * $p < 0.05$. † $p < 0.10$.

Table 2 Maternal Language Use and Cognitive Development among Children of Asian and Hispanic Immigrant Mothers

	Children of Asian mothers				Children of Hispanic mothers			
	Main model		Interaction model		Main model		Interaction model	
	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>
<i>Panel A: Early reading</i>								
Maternal language use								
Bilingual mothers (Bil)	0.112	(0.089)	0.249†	(0.146)	0.077	(0.106)	-0.106	(0.194)
English dominant mothers (Eng)	0.162	(0.106)	0.031	(0.175)	0.281†	(0.156)	0.642†	(0.328)
Maternal years of US residency	-0.007	(0.005)	-0.006	(0.011)	0.001	(0.007)	-0.000	(0.009)
Bil * years of US residency			-0.012	(0.013)			0.013	(0.014)
Eng * years of US residency			0.007	(0.013)			-0.019	(0.019)
<i>Panel B: Expressive language</i>								
Maternal language use								
Bilingual mothers (Bil)	0.326***	(0.075)	0.368**	(0.123)	0.425***	(0.116)	0.701***	(0.208)
English dominant mothers (Eng)	0.429***	(0.089)	0.381*	(0.148)	0.435*	(0.169)	0.596†	(0.360)
Maternal years of US residency	-0.003	(0.004)	-0.003	(0.009)	0.004	(0.007)	0.014	(0.010)
Bil * years of US residency			-0.004	(0.011)			-0.024	(0.014)
Eng * years of US residency			0.003	(0.011)			-0.016	(0.020)
<i>Panel C: Mathematics</i>								
Maternal language use								
Bilingual mothers (Bil)	-0.067	(0.085)	0.073	(0.139)	0.088	(0.105)	0.078	(0.193)
English dominant mothers (Eng)	0.121	(0.101)	0.095	(0.166)	0.160	(0.155)	0.240	(0.326)
Maternal years of US residency	-0.009*	(0.005)	-0.004	(0.010)	-0.011	(0.007)	-0.010	(0.009)
Bil * years of US residency			-0.014	(0.012)			0.000	(0.013)
Eng * years of US residency			-0.001	(0.012)			-0.005	(0.019)

Note. Reference language group was home language mothers. All regressions were adjusted using the kindergarten sampling weights (WK1R0). The main model included all covariates, and the interaction model was the same with the main model but further added interaction terms between maternal language groups and years of U.S. residency. Sample sizes were rounded to the nearest 50, due to IES reporting rules. Sample sizes for children of Asian and Hispanic mothers were about 800 and 600, respectively, in all three outcomes. *Coef* = Coefficient. *SE* = Standard error of the coefficient.

*** $p < 0.001$. ** $p < 0.01$. * $p < 0.05$. † $p < 0.10$.

Table 3 Maternal Language Use and Socio-emotional Development among Children of Asian and Hispanic Immigrant Mothers

	Children of Asian mothers				Children of Hispanic mothers			
	Main model		Interaction model		Main model		Interaction model	
	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>
<i>Panel A: Approaches to learning</i>								
Maternal language use								
Bilingual mothers (Bil)	-0.097	(0.105)	-0.403*	(0.178)	-0.137	(0.150)	-0.289	(0.281)
English dominant mothers (Eng)	-0.127	(0.126)	-0.255	(0.212)	-0.165	(0.213)	-0.019	(0.445)
Maternal years of US residency	-0.015**	(0.006)	-0.035** ^a	(0.014)	-0.007	(0.010)	-0.010	(0.013)
Bil * years of US residency			0.033** ^a	(0.016)			0.012	(0.020)
Eng * years of US residency			0.018	(0.016)			-0.008	(0.028)
<i>Panel B: Pro-social behavior</i>								
Maternal language use								
Bilingual mothers (Bil)	0.234*	(0.112)	0.199	(0.187)	-0.126	(0.154)	-0.397	(0.291)
English dominant mothers (Eng)	0.298*	(0.137)	0.131	(0.230)	0.303	(0.217)	0.153	(0.451)
Maternal years of US residency	-0.004	(0.006)	-0.013	(0.014)	-0.003	(0.010)	-0.012	(0.013)
Bil * years of US residency			0.006	(0.016)			0.022	(0.020)
Eng * years of US residency			0.014	(0.016)			0.014	(0.028)
<i>Panel C: Externalizing problems</i>								
Maternal language use								
Bilingual mothers (Bil)	0.014	(0.094)	-0.118	(0.158)	-0.093	(0.150)	-0.659*	(0.284)
English dominant mothers (Eng)	-0.193†	(0.113)	-0.430*	(0.190)	0.157	(0.213)	-0.108	(0.443)
Maternal years of US residency	-0.006	(0.005)	-0.023†	(0.012)	-0.013	(0.010)	-0.031** ^a	(0.013)
Bil * years of US residency			0.017	(0.014)			0.047** ^a	(0.020)
Eng * years of US residency			0.022	(0.014)			0.027	(0.027)
<i>Panel D: Attention problems</i>								
Maternal language use								
Bilingual mothers (Bil)	-0.025	(0.099)	-0.177	(0.172)	-0.031	(0.151)	-0.618*	(0.284)
English dominant mothers (Eng)	-0.290*	(0.121)	-0.298	(0.209)	0.087	(0.217)	-0.289	(0.446)
Maternal years of US residency	-0.007	(0.006)	-0.015	(0.014)	-0.013	(0.010)	-0.032** ^a	(0.012)
Bil * years of US residency			0.016	(0.016)			0.049** ^a	(0.020)
Eng * years of US residency			0.004	(0.015)			0.035	(0.027)

Note. Reference language group was home language mothers. All regressions were adjusted using the ECLS-B sampling weights (WK1R0). The main model included all covariates, and the interaction model was the same with the main model but further added interaction terms between maternal language groups and years of U.S. residency. Sample sizes were rounded to the nearest 50, due to IES reporting rules. Sample sizes for children of Asian mothers were about 600 in externalizing problems and 550 in the other three outcomes, and those for children of Hispanic mothers were about 450 in all four outcomes. Groups with shared superscript letters were statistically significantly different from each other ($p < 0.05$). *Coef* = Coefficient. *SE* = Standard error of the coefficient.

** $p < 0.01$. * $p < 0.05$. † $p < 0.10$.

CHAPTER IV: PRESCHOOL AND SCHOOL READINESS

This chapter examines whether preschool experiences at age 4 are associated with a wide set of school readiness outcomes at kindergarten entry among children of Asian or Hispanic immigrant mothers. This chapter starts with introducing the research questions and how this study advances the literature, then describes methods and results, and finally concludes by discussing the main findings.

The Aims of the Chapter

To extend prior research, based on the theoretical frameworks and empirical evidence reviewed above, this study addresses the following research questions. The first research question is: How does participation in preschool at age 4 affect school readiness at kindergarten entry among children of Asian or Hispanic immigrant mothers? This study expects that children in preschool (i.e., Head Start, prekindergarten, or other center-based care) will have better academic school readiness and social skills but also more behavior problems compared to those in parental care in both Asian and Hispanic groups; due to lack of prior evidence, whether participation in preschool promotes approaches to learning among children of Asian or Hispanic immigrant mothers is exploratory.

In addressing this main research question, this study extends prior research in the following ways. First, this study uses a nationally representative sample of young children of Asian and Hispanic immigrant mothers from the ECLS-B. The ECLS-B is a better source to examine the association between preschool and school readiness among children of immigrants than the ECLS-K. Although the ECLS-K includes more children of immigrants than the ECLS-B, the ECLS-K obtains only limited information about children before kindergarten entry because the first wave of the ECLS-K was conducted when children entered kindergarten; thus,

in the ECLS-K, parents provided retrospective information about child care participation in the year before kindergarten entry. In contrast, the ECLS-B is a birth cohort study that assessed a sample of young children at ages 9 months, 2 years, 4 years, and the first year of kindergarten. Thus, the ECLS-B makes it possible to control for diverse contextual factors at 9 months and/or 2 years, which may affect parents' selection of child care arrangements at 4 years as well as children's school readiness at kindergarten entry. In addition, differences in children's cognitive and socio-emotional development at 2 years can be taken into account in the ECLS-B, which is important considering that those initial differences may be connected both with child care usage and with school readiness at kindergarten entry.

Second, unlike prior studies examining the association between preschool and school readiness among children of immigrants compared to those of native-born parents, this study investigates the association within a sample of young children of foreign-born mothers, conducting separate analyses for children of Asian and Hispanic immigrant mothers. This is particularly important in that there is considerable heterogeneity within recent ethnic groups, which may be related to both immigrant parents' selection of child care and children's school readiness (Bornstein & Cheah, 2006; Hernandez et al., 2013).

Third, this study employs a wide set of school readiness outcomes at kindergarten entry, which include academic school readiness outcomes (i.e., early reading, expressive language, and math) and socio-emotional and behavioral development outcomes (i.e., approaches to learning, pro-social behavior, attention problems, and externalizing problems). In addition, given that measures of children's social functioning and behavior problems tend to reflect a considerable amount of variance that can be influenced by the primary source used to obtain the observations (Konold & Pianta, 2007; McConaughy, 1993), this study examines children's socio-emotional

and behavioral development, using both teacher-rated and parent-rated measures.

Finally, this study distinguishes Head Start and prekindergarten from other types of center-based care to examine their separate associations with children's school readiness. Head Start and prekindergarten are two important public preschool programs available for children of immigrants (Takanishi, 2004). Therefore, understanding how such programs are associated with school readiness among children of immigrants will provide important policy implications.

To have a deeper understanding of how participation in preschool is associated with school readiness among children of Asian or Hispanic immigrant mothers, this study investigates two more research questions. The second research question addressed in this study is: How does the association between preschool and school readiness at kindergarten entry (i.e., one year after the participation) compare to such association at age 4 (i.e., the year of participation)? This question is aimed to investigate, if there are beneficial associations between participation in preschool and school readiness outcomes at the year of participation, whether such beneficial associations hold up at kindergarten entry.

The third research question is: Does the association between preschool and school readiness differ by maternal language use? Immigrant parents may have constraints on their ability to nurture their children in their new environment; for example, their own customs, language, and values may not be translated into what they really need in the destination country to help their children's education and socialization (Bornstein & Bohr, 2011; Falicov, 2007). Therefore, preschool settings can be a place to help the healthy development of children of immigrants through interactions with care providers or teachers as well as native-born peers (Bradley, 2011). Given that children of mothers who speak their home language may have more opportunities for such interactions in preschool settings compared to at home (e.g., being

exposed to English, acquiring social skills, and interacting with peers), the third question is added to examine whether beneficial associations between preschool and school readiness are more pronounced among children of home language mothers in both Asian and Hispanic groups as well as whether such more pronounced associations are consistently found at both preschool and kindergarten entry.

Method

Data and Sample

Data used in this study are drawn from the ECLS-B, which provides a rich stock of information about children of immigrants and their developmental outcomes. The ECLS-B tracked a nationally representative sample of approximately 10,700 children born in the U.S. in 2001 from birth through kindergarten entry, collecting data at birth, 9 months after birth, 24 months, preschool, and the start of kindergarten (Nord et al., 2004). At the kindergarten survey, about 7,000 parents completed the parent interview and about 6,900 children at kindergarten took part in the assessments. Because about 75% of children in the kindergarten survey entered kindergarten in fall 2006, whereas the remaining children entered kindergarten in 2007, the 2006 and 2007 surveys are combined to measure the outcomes at kindergarten year. Approximately 27% of the children in the ECLS-B were children of immigrants. By design, the survey does not include children who were born outside the United States themselves, but this is not a problem for this study since most young children of immigrants in the United States were themselves born in the United States.

The analytic sample of this study consists of about 1,550 children. Because this study focuses on the associations between preschool and school readiness outcomes at the beginning of kindergarten, this study primarily employs data from the kindergarten survey in which a reduced

sample of about 7,000 children and their parents were assessed due to financial constraints (Snow et al., 2009). Of these, this study selected about 1,550 children whose mothers were born in Asian or Latin American countries. Of these, this study also excluded a very small number of observations (under 0.2% of the kindergarten sample) missing child care arrangements or school readiness outcomes, leaving about 1,550 children whose mothers were born in Asian countries ($n \approx 850$; about 40% from China and the rest from Japan, Philippine, India, Korea, Vietnam, and other Asia or Pacific Island) or Latin American countries ($n \approx 700$; about 70% from Mexico and the rest from Puerto Rico, Cuba, and other Central or South America). This study rounds all sample sizes reported in this study to the nearest 50 due to NCES regulations for using restricted-data use. All analyses are adjusted using sampling weights provided in the ECLS-B to account for the sampling structure (e.g., oversampling and sampling reduction). The rate of missing data for covariates detailed below ranged from 0% to 11% in the analytic sample. To impute missing data, this study creates ten imputed datasets by employing the ICE command in Stata (Royston, 2005a, 2005b). For all analyses, this study combines these ten imputed datasets by using the MICOMBINE command.

Measures

Child care arrangements at preschool. Parents reported the type of child care arrangements their child participated in when the child was approximately 4 years of age. To create mutually exclusive child care groups, this study first identifies children who attended Head Start on a regular basis. And then, among children not in the Head Start group, this study identifies a group of children who attended prekindergarten on a regular basis. And then, among children not in the Head Start or prekindergarten groups, this study distinguishes a group of children who attended other center-based care (e.g., day care centers, nursery schools, or other

preschool programs) on a regular basis. Next, among the rest of children, this study identifies children who received home-based care (i.e., care from relatives or non-relatives in the child's home or another person's home) on a regular basis for at least five hours a week. Finally, the rest of children who did not receive any non-parental care defined above or who received home-based care less than five hours a week are grouped into a category of exclusive parental care.

School readiness outcomes. This study employs three measures of academic school readiness and four of socio-emotional and behavioral development; all assessed at the kindergarten survey. To make it convenient to interpret the results, this study standardizes all the outcome measures to have a mean of 0 and a standard deviation of 1. Three academic school readiness outcomes are the *early reading* scale, which was developed by the ECLS-B to measure early literacy and language skills, including basic skills, initial understanding, developing interpretation, demonstrating a critical stance, and vocabulary (Najarian et al., 2010); the *expressive language* scale, which was the average scores of two items from the Let's Tell Stories subset of the Preschool Language Assessment Scale (PreLAS; Duncan & De Avila, 1998) to measure a child's ability to construct a grammatically accurate, consistent story; and the *mathematics* scale, which was developed by the ECLS-B to measure math skills, including number sense, properties, operations, measurement, geometry, spatial sense, data analysis, statistics, probability, patterns, algebra, and functions (Najarian et al., 2010). In addition, for analyses of the second and third research questions, this study uses the same set of three academic school readiness outcomes that were assessed at the preschool survey.

Two sets of socio-emotional and behavioral development outcomes are constructed: one rated by teachers and the other by parents. Using a series of questions by which both teachers and parents were asked with a 5-point Likert scale (1 = "never" to 5 "very often") at the

kindergarten survey, this study constructs two sets of the following four outcome measures: the *approaches to learning* scale, which is the average scores of four questions from the Social Skills Rating System (SRS; Gresham & Elliott, 1990) that were asked of both teachers ($\alpha = 0.86$ in Asians and $\alpha = 0.87$ in Hispanics) and parents ($\alpha = 0.68$ in Asians and $\alpha = 0.67$ in Hispanics) to assess children's eagerness to learn, attentiveness, learning independence, and task persistence; the *pro-social behavior* scale, which is the average score of six questions from the Preschool and Kindergarten Behavior Scales (PKBS-2; Merrell, 2003) that were asked of both teachers ($\alpha = 0.86$ in Asians and $\alpha = 0.87$ in Hispanics) and parents ($\alpha = 0.74$ in Asians and $\alpha = 0.75$ in Hispanics) to measure children's forming friendships, being accepted by others, sharing belongings with others, standing up for others' rights, comforting others, and trying to understand others; the *attention problems* scale, which is the average scores of four teacher-rated ($\alpha = 0.81$ in Asians and $\alpha = 0.83$ in Hispanics) or three parent-rated questions ($\alpha = 0.60$ in Asians and $\alpha = 0.50$ in Hispanics) from the PKBS-2 to measure children's acting impulsively, being overly active, and having temper tantrums; and the *externalizing problems* scale, which is the average scores of four items from the PKBS-2 that were asked of both teachers ($\alpha = 0.84$ in Asians and $\alpha = 0.87$ in Hispanics) and parents ($\alpha = 0.66$ in Asians and $\alpha = 0.64$ in Hispanics) to assess children's restlessness, aggressiveness, disturbing ongoing activities, and annoying others.

Additionally, for analyses of the second and third research questions, using a series of questions which parents were asked with a 5-point Likert scale (1 = "never" to 5 "very often") at the preschool survey, this study constructs the same set of four parent-rated socio-emotional and behavioral development outcomes: the *approaches to learning* scale, which is the average scores of four questions ($\alpha = 0.65$ in Asians and $\alpha = 0.61$ in Hispanics); the *pro-social behavior* scale, which is the average score of eight questions ($\alpha = 0.78$ in Asians and $\alpha = 0.75$ in Hispanics); the

attention problems scale, which is the average scores of four questions ($\alpha = 0.59$ in Asians and $\alpha = 0.56$ in Hispanics); and the *externalizing problems* scale, which is the average scores of four items ($\alpha = 0.64$ in Asians and $\alpha = 0.68$ in Hispanics). All teacher- and parent-rated measures of attention and externalizing problems are reverse-coded, with higher scores indicating lower levels of behavioral problems.

Maternal immigration characteristics. This study uses three variables to proxy maternal immigration characteristics: country of origin (China vs. other Asian countries in the Asian group and Mexico vs. other Latin countries in the Hispanic group), language use (English dominant mothers who primarily used English at home, bilingual mothers who primarily used their home language at home but also had high English proficiency, or home language mothers who primarily used their home language at home and had low English proficiency), and length of stay in the US (as measured by subtracting their current age from their age at arrival in the US). For analyses of the third research question, the indicator for maternal language use is re-coded as a binary variable with a value of 1 if a mother used her home language at home and 0 otherwise (i.e., home language mothers vs. bilingual or English dominant mothers).

Other covariates. This study controls for an extensive set of covariates that may be associated with child care arrangements and/or school readiness outcomes. Child characteristics, which were measured at the 9 month survey unless otherwise noted, include gender, age in months at assessment, low birth weight (< 2.5 kg), multiple births, number of siblings, child language (only English vs. another language), and child health reported by parents at the 2-year survey; in addition, a binary indicator of whether the child entered kindergarten during 2006 or 2007 is included. Maternal characteristics are age and marital status at the birth of the child and employment status at the 2-year survey. Family characteristics collected at the 9-month survey

include parental education (whichever parent held the highest education degree) and family income. Family characteristics measured at the 2-year survey are family income, child care arrangements, urbanicity, region of country, and an indicator for the presence of father's presence at home. Parenting behavior variables include the Knowledge of Infant Development Inventory (KIDI) scores at the 9-month survey, with higher scores indicating greater knowledge of infant-related behaviors; cognitively stimulating activities at the 2-year survey, which is the total scores of three items—reading books, singing songs, and telling stories; and mother's spanking behavior at the 2-year survey, which is a binary indicator with a value of 1 if the mother never spanked her child and 0 otherwise.

Earlier cognitive and socio-emotional scores. To account for possible differences in children's cognitive and socio-emotional development prior to entry into child care arrangements at age 4, this study uses the total mental scores of the Bayley Short Form-Research Edition (BSF-R; Bayley, 1993) as an earlier cognitive outcome and the total scores of the Infant/Toddler Symptoms Checklist (ITSC; Nord et al., 2004) as an earlier socio-emotional and behavioral outcome, both assessed at the 2-year survey.

Analytic Strategies

To address the research questions stated above, it is important to reduce omitted variable bias that may be correlated with both child care arrangements and school readiness outcomes. The strategy selected in this study is Ordinary Least Squares (OLS) regressions with a rich set of covariates. This study specifies three OLS regression models increasingly controlling for covariates. These three models are estimated separately for children of Asian and Hispanic immigrant mothers. This study starts with Model 1, which only includes child care group dummies and child characteristics variables to estimate basic variations in school readiness

outcomes across child care arrangements when children started kindergarten.

$$Outcome_{itk} = \beta_0 + \beta_1 HS_{itp} + \beta_2 Pre_{itp} + \beta_3 Oth_{itp} + \beta_4 Home_{itp} + \beta_5 C_{it1} + \varepsilon_i$$

where $Outcome_{itk}$ indicates the outcome measure for the i th child of an Asian or Hispanic mother at the kindergarten survey (time tk); HS_{itp} , Pre_{itp} , Oth_{itp} , and $Home_{itp}$ represent indicators of whether the i th child of an Asian or Hispanic mother attended Head Start, prekindergarten, other center-based care, and home-based care, respectively, at the preschool survey (time tp); and C_{it1} is a vector of child characteristics at the 9-month or 2-year survey (time $t1$).

This study then specifies Model 2, which is the same as Model 1 but adds a wide set of additional covariates that may be associated with child care arrangements as well as school readiness outcomes.

$$Outcome_{itk} = \beta_0 + \beta_1 HS_{itp} + \beta_2 Pre_{itp} + \beta_3 Oth_{itp} + \beta_4 Home_{itp} + \beta_5 C_{it1} + \beta_6 X_{it1} + \varepsilon_i$$

where X_{it1} is a vector of all other characteristics at the 9-month or 2-year survey (time $t1$), including maternal immigration characteristics (i.e., country of origin, language use, and length of U.S. residency), maternal other characteristics (i.e., age, marital status, and employment status), parenting behaviors (i.e., KIDI scores, cognitively stimulating activities, and use of spanking), and family characteristics (i.e., earlier child care arrangements, parental education, family income, urbanicity, and region of country).

The full model, Model 3, is the same as Model 2 but adds earlier cognitive or socio-emotional outcome scores. This model, known as the residualized change model or lagged dependent variable model, can reduce unobserved heterogeneity by controlling for the prior level of the outcome, which may have been affected by unobserved child, maternal, and family characteristics (McCartney, Bub, & Burchinal, 2006; NICHD ECCRN & Duncan, 2003).

$$Outcome_{itk} = \beta_0 + \beta_1 HS_{itp} + \beta_2 Pre_{itp} + \beta_3 Oth_{itp} + \beta_4 Home_{itp} + \beta_5 C_{it1} + \beta_6 X_{it1} + \beta_7 Outcome_{it1} + \varepsilon_i$$

where $Outcome_{it1}$ represents the outcome for the i th child at the 2-year survey (time $t1$). To control for cognitive and socio-emotional development at time $t1$, this study uses the BSF-R mental scores as a cognitive outcome at time $t1$ and the ITSC scores as a socio-emotional outcome at time $t1$.

After running every regression, post-estimation tests are conducted to see whether the coefficients of four child care group dummies are statistically different to each other. Additionally, due to small cell sizes of the 5-category child care indicator used above, using Model 3 and a three-category child care indicator that groups Head Start, prekindergarten, and other center-based care as one category (i.e., center-based, home-based, and parental care), this study examines again the association between preschool and school readiness at kindergarten entry (and found similar results; see Appendix Tables C1 and C2).

In addition, using Model 3 and restricting the analytic sample to children who have valid information on an outcome measure at the both preschool and kindergarten surveys, this study estimates two more sets of regressions, separately for Asian and Hispanic groups. First, to examine how the association between preschool and school readiness at kindergarten entry compares to such association at age 4 (i.e., the year of participation), this study conducts two regressions for each of the academic and parent-rated socio-emotional and behavioral outcome measures—one using an outcome variable assessed at the preschool survey and the other using the same outcome variable assessed at the kindergarten survey. Second, to investigate whether the association between preschool and school readiness differs by maternal language use, this study conducts sub-group analyses—one for children of mothers who only used their home language at home and the other for children of mothers who primarily used English at home or were bilingual—for each of the academic and parent-rated socio-emotional and behavioral

outcome measures at the both preschool and kindergarten surveys.

Results

Descriptive Statistics

Descriptive statistics for all variables by child care arrangements are presented separately in Table 4 for the Asian group and in Table 5 for the Hispanic group. The results of comparing means between children in parental care and other children who belong to each specific type of care arrangement are also presented in each table. First, consistent to the literature, children of Asian immigrant mothers were more likely to be enrolled in preschool than those of Hispanic immigrant mothers (see Tables 4 and 5). About 75% of Asian immigrant mothers enrolled their children in preschool, but about 55% of Hispanic immigrant mothers did; children in Head Start, prekindergarten, and other center-based care were 8%, 17%, and 50%, respectively, in the Asian group; and 28%, 11%, and 16%, respectively, in the Hispanic group. In particular, whereas most Asian immigrant mothers used other center-based care for their children, most Hispanic immigrant mothers used Head Start. In addition, whereas only 18% of children of Asian immigrant mothers received care exclusively from parents, 33% of children of Hispanic immigrant mothers did.

Second, regarding school readiness outcomes, in the both Asian and Hispanic groups, children in prekindergarten or other center-based care tended to have better academic school readiness, approaches to learning, and pro-social behavior compared to those in parental care. In the Asian group (see Table 4), compared to children in parental care, children in prekindergarten and other center-based care were more likely to have better reading and math skills at the both preschool and kindergarten surveys; in addition, children in prekindergarten were more likely to have higher scores in parent-rated approaches to learning and pro-social behavior at the

preschool survey. In the Hispanic group (see Table 5), compared to children in parental care, children in prekindergarten tended to have better expressive language at the kindergarten survey, and children in other center-based care tended to have better reading, expressive language, and math skills at the preschool survey; moreover, children in prekindergarten and other center-based care tended to have higher scores in parent-rated approaches to learning at the preschool survey.

Third, as for maternal language use, children of home language Asian mothers tended to be less likely to be enrolled in prekindergarten or other center-based care (see Table 4). Similarly, children of home language Hispanic mothers were less likely to be enrolled in Head Start, prekindergarten, or other center-based care (see Table 5). Furthermore, children of bilingual or English dominant Hispanic mothers were more likely to be enrolled in Head Start, prekindergarten, or other center-based care. Also, Hispanic immigrant mothers who had stayed longer in the U.S. were more likely to enroll their children in other center-based care.

Finally, regarding other characteristics, as shown in Table 4, compared to Asian immigrant mothers of children in parental care, those of children in prekindergarten or other center-based care were more likely to be older, married at birth, more-educated, and higher income. In contrast, as shown in Table 5, compared to Hispanic immigrant mothers of children in parental care, those of children in prekindergarten or other center-based care were more likely to be unemployed or working fulltime, more-educated, higher income, and living in Northeast region.

Preschool and Academic School Readiness at Kindergarten Entry

Using three models described above, this study examines the association between preschool and academic school readiness at kindergarten entry, separately for children of Asian and Hispanic immigrant mothers. Beneficial associations between participation in

prekindergarten or other center-based care and all three academic outcomes (i.e., early reading, expressive language, and mathematics) are found in Model 1 in both Asian and Hispanic groups; however, whereas such associations for early reading and math are still found after adding all child, maternal, and family covariates and earlier outcome scores in Model 3 in the Asian group, such associations for all three outcomes are gone after taking all covariates into account in Model 2 in the Hispanic group (see Appendix Tables D1 to D6).

In short, after including all covariates and earlier outcome scores (Model 3), overall, this study finds beneficial associations between preschool and academic school readiness outcomes at kindergarten entry among children of Asian immigrant mothers, which is consistent to the expectation, but not among children of Hispanic immigrant mothers (see Table 6). Specifically, in the Asian group, regarding early reading, compared to those in parental care, children in prekindergarten had higher scores (0.28 *SDs*, $p < .01$) and children in other center-based care tended to have higher scores (0.17 *SDs*, $p < .10$); in contrast, children in home-based care had lower scores (-0.48 *SDs*, $p < .001$). In addition, children in prekindergarten and other center-based care scored higher than those in Head Start or home-based care, but also children in Head Start scored higher than those in home-based care. As for mathematics, compared to children in parental care, children in other center-based care had higher scores (0.22 *SDs*, $p < .05$) and children in prekindergarten tended to have higher scores (0.20 *SDs*, $p < .10$); in contrast, children in home-based care had lower scores (-0.31 *SDs*, $p < .05$). Also, children in prekindergarten and other center-based care scored higher than those in Head Start or home-based care. In contrast, in the Hispanic group, after taking all covariates and earlier outcome scores into account (Model 3), children in preschool, regardless of types of care arrangement, had similar scores in all three outcomes compared to those in parental care.

Preschool and Socio-emotional and Behavioral Development at Kindergarten Entry

To examine how preschool is associated with socio-emotional and behavioral outcomes at kindergarten entry, this study estimates three models detailed above for a set of teacher-rated outcomes as well as the same set of parent-rated outcomes, separately for children of Asian and Hispanic immigrant mothers. Few negative associations between Head Start and teacher-rated approaches to learning, attention problems, and externalizing problems are shown in Model 1 in both Asian and Hispanic groups, and such associations are still found after including all child, maternal, and family covariates as well as earlier outcome scores in Model 3 in both groups (see Appendix Tables E1 to E8). In addition, negative associations between Head Start and parent-rated approaches to learning are shown in Model 1 in both groups; however, whereas such association disappears after adding all covariates in Model 2 in the Asian group, such association is still found in Model 3 in the Hispanic group (Appendix Tables E9 and E13). Also, in the Hispanic group, a detrimental association between prekindergarten and parent-rated attention problems as well as a beneficial association between Head Start and parent-rated externalizing problems are shown in Model 1 and such associations are still found in Model 3 (see Appendix Tables E15 and E16).

Taken together, after accounting for all covariates and earlier outcome scores (Model 3), this study finds detrimental associations between preschool (mostly Head Start) and socio-emotional and behavioral development at kindergarten entry among children of both Asian and Hispanic immigrant mothers. Specifically, in the Asian group, this study finds that Head Start is associated with lower levels of teacher-rated approaches to learning ($-0.39 SDs, p < .05$) and higher levels of teacher-rated attention and externalizing problems ($-0.38 SDs, p < .05$ and $-0.41 SDs, p < .01$) compared to parental care; similarly, other center-based care is associated with

higher levels of externalizing behaviors (-0.21 *SDs*, $p < .05$) compared to parental care (see Panels A and B of Table 7). In addition, among preschool care arrangements, other center-based care shows higher levels of teacher-rated approaches to learning and pro-social behavior and lower levels of teacher-rated attention and externalizing problems, compared to Head Start (see Panel B of Table 7). In the Hispanic group, this study similarly finds that, compared to parental care, Head Start is associated with lower levels of teacher-rated approaches to learning (-0.25 *SDs*, $p < .05$) and higher levels of teacher-rated attention and externalizing problems (-0.35 *SDs*, $p < .01$ and -0.28 *SDs*, $p < .05$); in addition, compared to parental care, Head Start is also associated with lower levels of parent-rated approaches to learning and pro-social behavior (-0.31 *SDs*, $p < .01$ and -0.25 *SDs*, $p < .05$) and prekindergarten is associated with higher levels of parent-rated attention problems (-0.30 *SDs*, $p < .05$) (see Panels C and D of Table 7). Finally, among preschool care arrangements, compared to Head Start, prekindergarten is associated with higher levels of teacher-rated approaches to learning and lower levels of attention and externalizing problems (see Panel C of Table 7).

How Do the Associations between Preschool and School Readiness at Kindergarten Entry Compare to Such Associations at Age 4?

The results of analyses to examine whether, if there are concurrent beneficial associations between preschool and school readiness outcomes at age 4 (i.e., the year of participation), the beneficial associations hold up at kindergarten entry (i.e., one year after the participation) are presented separately in Table 8 for academic school readiness outcomes and in Table 9 for parent-rated socio-emotional and behavioral development outcomes. All these analyses are based on Model 3, which is the full model including all covariates (i.e., maternal, parenting, and family characteristics) and earlier outcome scores, and are conducted using a sample of children who

have valid information on the outcome measure at both the preschool and kindergarten surveys.

Overall, this study finds beneficial associations between preschool and academic school readiness outcomes at age 4 among children of both Asian and Hispanic immigrant mothers (see Table 8). However, whereas the beneficial associations are still found at kindergarten entry among children of Asian immigrant mothers, the beneficial associations do not hold up at kindergarten entry among children of Hispanic immigrant mothers. As shown in Panels A and B of Table 8, in the Asian group, children in Head Start, prekindergarten, and other center-based care had higher early reading scores at age 4 than those in parental care (0.36 *SDs*, $p < .05$; 0.62 *SDs*, $p < .001$; and 0.34 *SDs*, $p < .01$, respectively), and the prekindergarten association held up (and the beneficial association in other center-based care tended to hold up) at kindergarten entry. In addition, children in Head Start, prekindergarten, and other center-based care had higher math scores at age 4 than those in parental care (0.43 *SDs*, $p < .01$; 0.45 *SDs*, $p < .001$; and 0.33 *SDs*, $p < .001$, respectively), and the beneficial associations in prekindergarten and other center-based care (but not in Head Start) were still found at kindergarten entry. Similarly, as shown in Panels C and D of Table 8, in the Hispanic group, children in Head Start had (and those in other center-based care tended to have) higher early reading scores at age 4 than those in parental care (0.24 *SDs*, $p < .05$ and 0.21 *SDs*, $p < .10$, respectively), but the beneficial associations did not hold up at kindergarten entry. Also, children in Head Start tended to have higher expressive language scores at age 4 than those in parental care (0.22 *SDs*, $p < .10$), but again the beneficial association was not found at kindergarten entry. Similarly, children in Head Start and other center-based care had (and those in prekindergarten tended to have) higher math scores at age 4 than those in parental care (0.30 *SDs*, $p < .01$; 0.29 *SDs*, $p < .05$; and 0.25 *SDs*, $p < .10$, respectively), but the beneficial associations were gone at kindergarten entry.

In addition, this study also finds some beneficial associations between preschool and parent-rated socio-emotional and behavioral development outcomes at age 4 among children of both Asian and Hispanic immigrant mothers, but the beneficial associations do not hold up at kindergarten entry (see Table 9). Specifically, as shown in Panels A and B of Table 9, children in prekindergarten had higher levels of approaches to learning at age 4 than those in parental care (0.33 *SDs*, $p < .01$) in the Asian group, but the beneficial association was not found at kindergarten entry. Similarly, children in Head Start and prekindergarten had (and those in other center-based care tended to have) higher levels of pro-social behavior at age 4 than those in parental care (0.32 *SDs*, $p < .05$; 0.44 *SDs*, $p < .001$; and 0.21 *SDs*, $p < .10$, respectively) in the Asian group, but these beneficial associations did not hold up at kindergarten entry. Also, as shown in Panels C and D of Table 9, children in prekindergarten and other center-based care tended to have higher levels of approaches to learning at age 4 than those in parental care (0.26 *SDs* and 0.24 *SDs*, respectively, $p < .10$) in the Hispanic group, but the beneficial associations were no longer apparent at kindergarten entry. Similarly, children in prekindergarten and other center-based care had lower levels of attention problems at age 4 than those in parental care (0.33 *SDs* and 0.32 *SDs*, respectively, $p < .05$) in the Hispanic group, but the beneficial associations did not hold up at kindergarten entry.

Do the Associations between Preschool and School Readiness Differ by Maternal Language Use?

Turning to the question of whether the association between preschool and school readiness differs by maternal language use, this study conducts sub-group analyses, based on the full model and a sample of children who have valid information on the outcome measure at the both preschool and kindergarten surveys. Overall, this study finds more beneficial associations in

academic outcomes at age 4 (i.e., the year of participation) among children of home language mothers in both Asian and Hispanic groups, but such more pronounced beneficial associations are not found at kindergarten entry in both groups (see Tables 10 and 11). In contrast, no notable patterns are found with regard to parent-rated socio-emotional and behavioral outcomes (see Appendix Tables F1 and F2).

Specifically, as shown in Panels C and D of Table 10, among children of home language Asian mothers, participation in other center-based care is (and participation in Head Start and prekindergarten tended to be) associated with higher early reading scores, and participation in these three types of preschool is associated with higher math scores at age 4; however, these more pronounced associations are gone at kindergarten entry. Similarly, as shown in Panels C and D of Table 11, among children of home language Hispanic mothers, participation in Head Start and other center-based care is association with higher early reading scores and tends to be associated with higher math scores at age 4, but again these more pronounced associations are not found at kindergarten entry.

Conclusion and Discussion

Using a contemporary and nationally representative sample of children of Asian and Hispanic immigrant mothers, this study examines the association between preschool and school readiness. Consistent with prior research (e.g., Chiswick & DebBurman, 2006; Santhiveeran, 2010), this study finds that children of Asian immigrant mothers are more likely to be enrolled in preschool than those of Hispanic immigrant mothers; in the analytic sample used in this study, the gap in preschool enrollment between the two groups is about 20 percentage points. Furthermore, as expected based on theoretical frameworks described above, this study finds that attending preschool (mostly prekindergarten or other center-based care) is associated with better

academic school readiness at kindergarten entry among children of Asian immigrant mothers. This finding suggests that attending preschool may play a role in improving their academic achievement. However, consistent with prior research showing higher levels of behavior problems among children who attended center-based care (e.g., Love et al., 2003; NICHD ECCRN, 2003, 2005), this study also finds that preschool (in particular, Head Start) is associated with higher levels of behavior problems at kindergarten entry among children of both Asian and Hispanic immigrant mothers. In addition, this study finds that preschool (again, in particular Head Start) is associated with lower levels of approaches to learning at kindergarten entry among children of both Asian and Hispanic immigrant mothers.

Taken together, the main findings of this study indicate that preschool is beneficial to academic achievement at kindergarten entry among children of Asian immigrant mothers, but not children of Hispanic immigrant mothers. Why would there be such differences between the two groups? The findings from the second research question, which is how the associations between preschool and school readiness at kindergarten entry compare to such associations at age 4, provide part of the answer for this question. This study finds that preschool is associated with better academic school readiness at age 4 among children of both Asian and Hispanic immigrant mothers, but the beneficial associations do not hold up at kindergarten entry among children of Hispanic immigrant mothers, while such associations are still found at kindergarten entry among children of Asian immigrant mothers. These findings suggest that benefits from attending preschool on children's academic school readiness at the year of attendance might not be large enough to last over time (i.e., one year after the attendance) for children of Hispanic immigrant mothers, rather than that attending preschool does not affect academic school readiness among children of Hispanic immigrant mothers at all. One possible explanation of

these findings may be in line with gaps in attitudes between Asian and Hispanic immigrant parents about the use of preschool. For example, Asian immigrant parents consider preschool settings as a helpful venue for their children's education and care, and thus they may put a bigger emphasis on enrolling their children in high-quality preschool, particularly in preschool settings with high-quality teachers or caregivers (Ng, Lee, & Pack, 2007; Stevenson & Stigler, 1992). In contrast, Hispanic immigrants parents tend to have cultural reluctance to use American preschool settings, and moreover, they are likely to have multiple barriers to access high-quality preschool, such as limited English proficiency, lack of information, and fear of exposure of immigration status (Crosnoe, 2007; Garcia & Jensen, 2009; Holloway, Rambaud, Fuller, & Eggers-Pierola, 1995; Liang, Fuller, & Singer, 2000; Yoshikawa, 2011).

Furthermore, the findings from the third research question, which is whether the association between preschool and school readiness differs by maternal language use, may also shed light on why no beneficial associations are found in academic school readiness outcomes at kindergarten entry among children of Hispanic immigrant mothers. As expected, this study finds more pronounced beneficial influences of preschool on academic school readiness among children of home language mothers at the year of participation in the both Asian and Hispanic groups, but such more pronounced influences are gone at kindergarten entry in both groups. This finding suggests that children of immigrant parents who speak their home language may benefit more from preschool in term of improving academic skills since they may have more opportunities in preschool settings, such as learning English, interacting with native-born peers, and receiving help from caregivers or teachers. However, these more pronounced associations are not sustained at kindergarten entry, perhaps suggesting that home language mothers may provide their children with less optimal home environments to maintain the benefits from

preschool (e.g., less interaction with children and less support for children' learning).

Disentangling associations between preschool, parenting behavior, and school readiness among children of immigrant parents who speak their home language would be a useful direction for future research.

In addition, another notable finding is that, whereas beneficial influences of prekindergarten and other center-based care on academic school readiness at age 4 among children of Asian immigrant mothers are still found at kindergarten entry, the beneficial influence of Head Start at age 4 does not hold up at kindergarten entry. Given prior research showing better academic achievement among children who attended prekindergarten or other center-based care than those who attended Head Start (e.g., Lee, Zhai, Brooks-Gunn, Han, & Waldfogel, 2014; Loeb, Bridges, Bassok, Fuller, & Rumberger, 2007; Magnuson, Ruhm, & Waldfogel, 2007), this finding suggests that it may be critical in terms of boosting academic school readiness to help children of immigrants attend preschool settings that can provide them with better education and care. In contrast, the beneficial influences of participation in Head Start as well as prekindergarten or other center-based care on academic school readiness at age 4 among children of Hispanic immigrant mothers are not found at kindergarten entry. While I can only speculate, this may be because children of Hispanic immigrant mothers are more likely to attend poorer quality preschool settings than those of Asian immigrant mothers. Another possible explanation is that Hispanic immigrant mothers (i.e., those who mostly speak their home language) may be less likely to be of help to their children at home than Asian immigrant mothers (i.e., those who are mostly English dominant or bilingual). Therefore, another important venue for future research would lie in examining school readiness among children of immigrants in terms of the quality of preschool settings.

As expected, in both the Asian and Hispanic groups, this study finds higher levels of teacher-rated behavior problems among children in Head Start compared to those in parental care, which is consistent with prior research (e.g., Belsky et al., 2007; Lee et al., 2014). However, this study also finds that other center-based care in the Asian group and prekindergarten in the Hispanic group are associated with lower levels of teacher-rated behavior problems than Head Start, which may be in line with prior research showing lower levels of behavior problems among children who attended high-quality preschool programs (e.g., Brooks-Gunn et al., 1994; Love et al., 2003). Therefore, these findings suggest that quality improvements in preschool programs (in particular, Head Start) may be needed to support children of immigrants' healthy socio-motional and behavior development (Love et al., 2003; MaCartney et al., 2010).

Some limitations of this study should be noted. First, the estimates of this study may not be free from omitted variable bias. Although all regression models used in this study included an extensive set of covariates as well as earlier outcome scores, they cannot account for unobserved characteristics that may be associated with both parents' selection of preschool and children's school readiness. Second, as is common in research using survey data, the estimates of this study may be biased due to the potential inaccuracy in parent-reported child care arrangements. Third, the size of the analytic sample used in this study may not be enough to distinguish diverse forms of preschool, separately among children of Asian and Hispanic groups. Therefore, this study additionally provided results categorizing all forms of preschool as one group. Future research using a larger sample (e.g., the National Children's Study) might provide more detailed information about the associations between preschool and school readiness within a sample of children of immigrants, particularly by parents' country of origin. Finally, the ECLS-B does not provide direct measures of child care quality for all children, which is an important omission that

future research should address given that the influence of preschool likely differs by the quality of preschool.

Despite these limitations, the findings of this study add to the growing evidence on the important role of preschool in boosting school readiness among children of immigrants. In particular, this study is the first to examine how different types of preschool affect academic school readiness as well as socio-emotional and behavioral development at kindergarten entry among a nationally representative sample of children of Asian and Hispanic immigrant mothers. The findings of this study call attention to the need for more research on this topic to permit better understanding among researchers, educators, and policymakers.

Table 4 Descriptive Statistics for All Variables by Child Care Arrangements among Children of Asian Immigrant Mothers

	Total (<i>n</i> ≈ 850)	Head Start (<i>n</i> ≈ 50)	Pre-K (<i>n</i> ≈ 150)	Other center- based care (<i>n</i> ≈ 450)	Home-based care (<i>n</i> ≈ 50)	Parental care (<i>n</i> ≈ 100)
Child care arrangements at preschool						
Head Start	0.08	1.00	–	–	–	–
Prekindergarten	0.17	–	1.00	–	–	–
Other center-based care	0.50	–	–	1.00	–	–
Home-based care	0.08	–	–	–	1.00	–
Parental care	0.18	–	–	–	–	1.00
Academic outcomes at kindergarten						
Early reading	0.73	0.13	0.99**	0.94**	–0.00*	0.53
Expressive language	0.36	0.09	0.45	0.42	0.32	0.28
Mathematics	0.75	0.16	0.86*	1.00***	0.21	0.49
Academic outcomes at preschool						
Early reading	0.80	0.46	1.21***	1.00***	–0.01	0.28
Expressive language	0.17	–0.13	0.39	0.19	0.03	0.05
Mathematics	0.73	0.57	1.00***	0.95***	–0.07	0.23
Teacher-rated socio-emotional and behavioral outcomes at kindergarten						
Approaches to learning	0.16	–0.32†	0.19	0.22	0.12	0.19
Pro-social behavior	–0.12	–0.41	–0.12	–0.06	–0.15	–0.17
Attention problems	0.13	–0.23†	0.05	0.19	–0.09	0.28
Externalizing problems	0.14	–0.15	0.07	0.17	0.02	0.28
Parent-rated socio-emotional and behavioral outcomes at kindergarten						
Approaches to learning	0.07	–0.23	0.13	0.16	–0.15	0.02
Pro-social behavior	–0.07	–0.25	–0.07	–0.02	–0.11	–0.09
Attention problems	–0.30	–0.28	–0.22	–0.34	–0.03	–0.36
Externalizing problems	0.03	–0.01	0.07	–0.05	0.34	0.07
Parent-rated socio-emotional and behavioral outcomes at preschool						
Approaches to learning	0.01	0.02	0.23*	0.05	–0.40	–0.15
Pro-social behavior	–0.10	–0.11	0.17*	–0.10	–0.37	–0.24
Attention problems	0.21	0.20	0.16	0.27	–0.07	0.18
Externalizing problems	–0.02	–0.08	–0.05	–0.08	0.41	0.02

Earlier outcome scores at 2 years						
Bayley Short Form-Research Edition	49.22	47.10	49.36	50.20	46.61	48.23
Infant/Toddler symptom Checklist	8.83	9.57	8.76	9.05	8.27	8.16
Child characteristics						
Boys	0.53	0.60	0.50	0.54	0.49	0.54
Age in months at 9 months	10.45	10.25	10.43	10.47	10.57	10.46
Low birth weight at birth	0.06	0.06	0.06	0.06	0.07	0.07
Health reported by parents at 2 years						
Fair/good	0.16	0.11	0.18	0.14	0.20	0.17
Very good	0.32	0.35	0.26	0.36	0.23	0.30
Excellent	0.52	0.54	0.56	0.50	0.57	0.53
Number of siblings						
None	0.46	0.28	0.45	0.51	0.33	0.47
One	0.38	0.47	0.41	0.38	0.42	0.30
Two or more	0.16	0.26	0.15	0.12*	0.26	0.24
English primary language at home	0.31	0.34	0.26	0.31	0.33	0.34
Maternal immigration characteristics						
Chinese (vs. other Asian)	0.24	0.14	0.26*	0.32***	0.11	0.08
Language use						
Home language	0.27	0.51	0.22†	0.23†	0.20	0.37
English only	0.27	0.25	0.26	0.28	0.29	0.25
Bilingual	0.46	0.24	0.52	0.49	0.51	0.38
Years of US residency	12.05	12.00	11.39	12.29	13.59	11.42
Maternal other characteristics						
Age at birth	30.45	30.35	30.26	31.10*	29.59	29.09
Married at birth	0.92	0.90	0.94†	0.96**	0.83	0.85
Employment status at 2 years						
Not working	0.49	0.56	0.50	0.47	0.26**	0.60
Full-time	0.39	0.28	0.39	0.40	0.70***	0.31
Part-time	0.11	0.16	0.11	0.13	0.05	0.09
Parenting behaviors						
KIDI at 9 months	5.63	5.21	5.75	5.80	5.25	5.33
Cognitively stimulating activities at 2 years	9.26	9.10	9.27	9.38	8.22*	9.38

No spanking at 2 years	0.76	0.71	0.77	0.78	0.66	0.75
Family characteristics						
Child care arrangements at 2 years						
Parental care	0.55	0.66	0.56*	0.49***	0.32***	0.77
Relative care	0.24	0.20	0.21	0.24	0.60***	0.15
Nonrelative care	0.10	0.09	0.10	0.12	0.05	0.06
Center-based care	0.11	0.05	0.14†	0.16**	0.03	0.02
Parent's education at birth						
Less than high school	0.06	0.19**	0.03	0.04	0.13	0.05
High school	0.10	0.17	0.06**	0.06***	0.17	0.21
Some college	0.17	0.23	0.15	0.14	0.26	0.21
Above college	0.67	0.41	0.75**	0.76***	0.44	0.52
Family income at 9 months						
\$0-\$20,000	0.12	0.35	0.07**	0.08***	0.03**	0.23
\$20,001-\$35,000	0.18	0.31	0.14	0.14	0.31	0.25
\$35,001-\$50,000	0.34	0.20	0.33	0.32	0.44	0.41
\$50,000 or more	0.36	0.14	0.46***	0.46***	0.22	0.11
Family income at 2 years						
\$0-\$20,000	0.12	0.24	0.06**	0.08**	0.14	0.21
\$20,001-\$35,000	0.15	0.31	0.14	0.10**	0.11	0.23
\$35,001-\$50,000	0.37	0.28	0.37	0.34	0.57	0.40
\$50,000 or more	0.37	0.17	0.44***	0.48***	0.18	0.15
Lived in urban area at 2 years	0.97	1.00	0.98	0.98	0.96	0.94
Region of country at 2 years						
Northeast	0.18	0.18	0.23	0.18	0.14	0.13
Midwest	0.17	0.15	0.14	0.17	0.18	0.16
South	0.22	0.15	0.35	0.19	0.15	0.25
West	0.44	0.52	0.28	0.46	0.52	0.45

Note. All mean scores were weighted using 9-month (W1R0), 2-year (W2R0), preschool (W31R0), or kindergarten (WK1R0) sampling weights. Descriptive statistics for the multiple birth variable were not presented due to small cell sizes. Sample sizes were rounded to the nearest 50, due to IES reporting rules. Significance tests were conducted to compare means between children in parental care and other children who belonged to each specific type of care arrangement. KIDI = Knowledge of Infant Development Inventory; Pre-K = prekindergarten. *** $p < 0.001$. ** $p < 0.01$. * $p < 0.05$. † $p < 0.10$.

Table 5 Descriptive Statistics for All Variables by Child Care Arrangements among Children of Hispanic Immigrant Mothers

	Total (<i>n</i> ≈ 700)	Head Start (<i>n</i> ≈ 200)	Pre-K (<i>n</i> ≈ 50)	Other center- based care (<i>n</i> ≈ 150)	Home-based care (<i>n</i> ≈ 100)	Parental care (<i>n</i> ≈ 200)
Child care arrangements at preschool						
Head Start	0.28	1.00	–	–	–	–
Prekindergarten	0.11	–	1.00	–	–	–
Other center-based care	0.16	–	–	1.00	–	–
Home-based care	0.12	–	–	–	1.00	–
Parental care	0.33	–	–	–	–	1.00
Academic outcomes at kindergarten						
Early reading	–0.15	–0.18	0.11	–0.05	–0.37	–0.18
Expressive language	–0.08	–0.10	0.22†	0.10	–0.20	–0.21
Mathematics	–0.16	–0.23	0.03	–0.03	–0.29	–0.17
Academic outcomes at preschool						
Early reading	–0.22	–0.20	–0.05	–0.01*	–0.51	–0.36
Expressive language	–0.05	–0.04	0.14	0.22†	–0.42	–0.18
Mathematics	–0.19	–0.13	–0.05	0.09**	–0.52	–0.38
Teacher-rated socio-emotional and behavioral outcomes at kindergarten						
Approaches to learning	–0.04	–0.23	0.01	0.03	0.01	0.07
Pro-social behavior	0.03	–0.01	0.18	–0.10	0.10	0.04
Externalizing problems	–0.03	–0.19	0.03	0.03	–0.14	0.09
Attention problems	–0.03	–0.25*	0.04	0.03	–0.09	0.14
Parent-rated socio-emotional and behavioral outcomes at kindergarten						
Approaches to learning	–0.01	–0.17	0.07	0.11	0.01	0.03
Pro-social behavior	0.01	–0.10	0.08	0.19	–0.05	0.03
Externalizing problems	–0.01	0.16	–0.27	0.01	–0.07	–0.05
Attention problems	0.06	0.10	–0.24†	0.04	–0.03	0.15
Parent-rated socio-emotional and behavioral outcomes at preschool						
Approaches to learning	0.00	–0.14	0.27†	0.21†	0.15	–0.12
Pro-social behavior	0.02	0.00	0.08	0.03	0.16	–0.03
Externalizing problems	0.00	0.08	–0.14	–0.13	–0.05	0.06
Attention problems	–0.04	–0.11	0.19	0.17†	–0.06	–0.15

Earlier outcome scores at 2 years						
Bayley Short Form-Research Edition	45.10	45.00	43.65	46.46	43.03	45.75
Infant/Toddler symptom Checklist	8.86	9.28	9.17	8.65	8.71	8.55
Child characteristics						
Boys	0.52	0.54	0.49	0.53	0.62	0.47
Age in months at 9 months	10.28	10.28	10.26	10.46	10.09	10.27
Low birth weight at birth	0.06	0.06	0.04	0.09	0.06	0.04
Health reported by parents at 2 years						
Fair/good	0.24	0.24	0.22	0.21	0.23	0.27
Very good	0.28	0.30	0.19	0.24	0.31	0.29
Excellent	0.48	0.46	0.59	0.56	0.46	0.44
Number of siblings						
None	0.41	0.41	0.44	0.52*	0.44	0.34
One	0.27	0.24	0.30	0.25	0.27	0.30
Two or more	0.32	0.36	0.27	0.23	0.28	0.35
English primary language at home	0.12	0.13	0.22**	0.18*	0.10	0.06
Maternal immigration characteristics						
Mexican (vs. other Hispanic)	0.70	0.75	0.52***	0.54***	0.68	0.80
Language use						
Home language	0.68	0.64***	0.49***	0.48***	0.72	0.86
English only	0.10	0.12	0.12	0.17**	0.10	0.04
Bilingual	0.22	0.24*	0.38***	0.35***	0.18	0.11
Years of US residency	11.11	11.08	11.85	12.87*	11.67	9.89
Maternal other characteristics						
Age at birth	27.02	26.33	27.78	27.28	26.61	27.37
Married at birth	0.63	0.62	0.64	0.60	0.58	0.66
Employment status at 2 years						
Not working	0.61	0.68	0.47**	0.46***	0.38***	0.74
Full-time	0.28	0.26	0.37*	0.34*	0.47***	0.18
Part-time	0.11	0.07	0.16	0.20*	0.15	0.08
Parenting behaviors						
KIDI at 9 months	4.64	4.34	5.05	5.19†	4.61	4.51
Cognitively stimulating activities at 2 years	8.45	8.66	8.53	8.65	8.19	8.25

No spanking at 2 years	0.82	0.84	0.82	0.89†	0.83	0.77
Family characteristics						
Child care arrangements at 2 years						
Parental care	0.65	0.70	0.49***	0.51***	0.42***	0.80
Relative care	0.19	0.16	0.24†	0.26**	0.37***	0.09
Nonrelative care	0.10	0.08	0.13	0.09	0.19	0.09
Center-based care	0.06	0.06	0.14**	0.14**	0.02	0.02
Parent's education at birth						
Less than high school	0.33	0.37	0.23	0.27	0.27	0.38
High school	0.34	0.38	0.30	0.29	0.38	0.34
Some college	0.22	0.19	0.25	0.24	0.28	0.20
Above college	0.11	0.07	0.22*	0.20**	0.07	0.07
Family income at 9 months						
\$0-\$20,000	0.39	0.46	0.36	0.22**	0.35	0.43
\$20,001-\$35,000	0.39	0.38	0.24†	0.42	0.40	0.44
\$35,001-\$50,000	0.18	0.14	0.34**	0.27*	0.22	0.11
\$50,000 or more	0.04	0.02	0.06	0.10*	0.02	0.02
Family income at 2 years						
\$0-\$20,000	0.37	0.42	0.23	0.30	0.39	0.39
\$20,001-\$35,000	0.37	0.39	0.38	0.26	0.43	0.37
\$35,001-\$50,000	0.22	0.18	0.32	0.33	0.14	0.20
\$50,000 or more	0.05	0.02	0.06	0.11*	0.05	0.04
Lived in urban area at 2 years	0.97	0.97	1.00	0.92	0.97	0.97
Region of country at 2 years						
Northeast	0.14	0.17**	0.27***	0.25***	0.07	0.03
Midwest	0.09	0.09	0.02	0.06	0.13	0.13
South	0.33	0.27	0.42	0.19**	0.38	0.40
West	0.44	0.46	0.29	0.51	0.43	0.44

Note. All mean scores were weighted using 9-month (W1R0), 2-year (W2R0), preschool (W31R0), or kindergarten (WK1R0) sampling weights. Descriptive statistics for the multiple birth variable were not presented due to small cell sizes. Sample sizes were rounded to the nearest 50, due to IES reporting rules. Significance tests were conducted to compare means between children in parental care and other children who belonged to each specific type of care arrangement. KIDI = Knowledge of Infant Development Inventory; Pre-K = prekindergarten. *** $p < 0.001$. ** $p < 0.01$. * $p < 0.05$. † $p < 0.10$.

Table 6 Preschool and Academic School Readiness at Kindergarten Entry

	Early reading		Expressive language		Math	
	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>
<i>Panel A: Children of Asian immigrant mothers</i>						
Head Start	-0.16 _{abc}	(0.13)	-0.07	(0.11)	-0.16 _{ab}	(0.13)
Prekindergarten	0.28** _{ad}	(0.11)	0.06	(0.09)	0.20† _{ac}	(0.11)
Other center-based care	0.17† _{be}	(0.09)	0.01	(0.08)	0.22* _{bd}	(0.09)
Home-based care	-0.48*** _{cde}	(0.13)	-0.05	(0.12)	-0.31* _{cd}	(0.13)
<i>R</i> ²	0.31		0.19		0.34	
<i>N</i>	800		800		800	
<i>Panel B: Children of Hispanic immigrant mothers</i>						
Head Start	0.10	(0.09)	0.06	(0.10)	0.02	(0.09)
Prekindergarten	0.12	(0.13)	0.16	(0.14)	0.05	(0.13)
Other center-based care	0.07	(0.12)	0.11	(0.13)	0.09	(0.12)
Home-based care	-0.08	(0.12)	-0.01	(0.14)	-0.05	(0.13)
<i>R</i> ²	0.19		0.21		0.14	
<i>N</i>	650		650		650	

Note. Children in parental care were the reference group. All regressions were adjusted using the kindergarten sampling weights, and estimated using Model 3, which includes all covariates (i.e., child, maternal, parenting, and family characteristics as well as pre-treatment outcomes). Sample sizes were rounded to the nearest 50. Within each column of each panel, common subscripts indicate significant differences across types of child care at least at the .05 significance level. *Coef* = Coefficient. *SE* = Standard error of the coefficient.

*** $p < 0.001$. ** $p < 0.01$. * $p < 0.05$. † $p < 0.10$.

Table 7 Preschool and Socio-emotional and Behavioral Development at Kindergarten Entry

	Approaches to learning		Pro-social behavior		Attention problems		Externalizing problems	
	Coef	SE	Coef	SE	Coef	SE	Coef	SE
<i>Panel A: Teacher-rated scores among children of Asian immigrant mothers</i>								
Head Start	-0.39* ^a _b ^c	(0.17)	-0.23 ^a _b	(0.18)	-0.38* _a	(0.16)	-0.41** _a	(0.15)
Prekindergarten	-0.05 ^a	(0.14)	0.05	(0.14)	-0.17 ^b	(0.13)	-0.21†	(0.12)
Other center-based care	0.01 _b	(0.12)	0.16 _a	(0.12)	-0.00 ^a _{bc}	(0.11)	-0.08 _a	(0.10)
Home-based care	0.02 ^c	(0.17)	0.19 ^b	(0.17)	-0.29† ^c	(0.16)	-0.16	(0.15)
<i>R</i> ²	0.09		0.10		0.13		0.11	
<i>N</i>	600		600		600		600	
<i>Panel B: Parent-rated scores among children of Asian immigrant mothers</i>								
Head Start	-0.05	(0.14)	0.08	(0.14)	0.02	(0.14)	-0.16	(0.15)
Prekindergarten	0.05	(0.11)	-0.02	(0.12)	0.08 ^a	(0.12)	-0.01 _a	(0.12)
Other center-based care	0.17† ^a	(0.10)	0.12	(0.10)	-0.10 ^a _b	(0.10)	-0.21* _a ^b	(0.10)
Home-based care	-0.09 ^a	(0.14)	0.12	(0.15)	0.18 _b	(0.15)	0.04 ^b	(0.15)
<i>R</i> ²	0.15		0.11		0.13		0.15	
<i>N</i>	800		800		850		800	
<i>Panel C: Teacher-rated scores among children of Hispanic immigrant mothers</i>								
Head Start	-0.25* ^a	(0.13)	-0.05	(0.13)	-0.35** _a	(0.12)	-0.28* ^a	(0.13)
Prekindergarten	0.07 ^a	(0.18)	0.18	(0.19)	0.06 _a	(0.18)	0.03 ^a	(0.18)
Other center-based care	-0.09	(0.16)	-0.10	(0.16)	-0.15	(0.16)	-0.11	(0.16)
Home-based care	-0.08	(0.17)	-0.00	(0.17)	-0.12	(0.17)	-0.16	(0.17)
<i>R</i> ²	0.08		0.04		0.12		0.10	
<i>N</i>	450		450		450		450	
<i>Panel D: Parent-rated scores among children of Hispanic immigrant mothers</i>								
Head Start	-0.31** ^{ab} _c	(0.10)	-0.25* ^a	(0.10)	-0.05 ^a	(0.10)	0.18† _a ^b	(0.10)
Prekindergarten	-0.06 ^a	(0.14)	-0.12	(0.14)	-0.30* ^a _b	(0.14)	-0.22 _{ac}	(0.14)
Other center-based care	-0.08 ^b	(0.12)	-0.02 ^a	(0.13)	0.07 _{bc}	(0.13)	0.14 _c	(0.13)
Home-based care	0.06 _c	(0.13)	-0.07	(0.14)	-0.24† _c	(0.14)	-0.09 ^b	(0.14)
<i>R</i> ²	0.14		0.09		0.10		0.09	
<i>N</i>	650		650		650		650	

Note. Attention and externalizing problems measures were reverse-coded, with higher scores indicating lower levels of problems.

Children in parental care were the reference group. All regressions were adjusted using the kindergarten sampling weights, and estimated using Model 3, which includes all covariates (i.e., child, maternal, parenting, and family characteristics as well as pre-treatment outcomes). Sample sizes were rounded to the nearest 50. Within each column of each panel, common subscripts and superscripts indicate significant differences across types of child care at least at the .05 and .10 significance levels, respectively. *Coef* = Coefficient. *SE* = Standard error of the coefficient.
** $p < 0.01$. * $p < 0.05$. † $p < 0.10$.

Table 8 Preschool and Academic School Readiness at Age 4 and Kindergarten Entry

	Early reading		Expressive language		Math	
	Coef	SE	Coef	SE	Coef	SE
<i>Panel A: Children of Asian immigrant mothers at age 4</i>						
Head Start	0.36* _a	(0.15)	-0.06	(0.17)	0.43** _a	(0.14)
Prekindergarten	0.62*** _{bc}	(0.12)	0.17 _a	(0.13)	0.45*** _b	(0.11)
Other center-based care	0.34** _{bd}	(0.11)	-0.07 _a	(0.11)	0.33*** _c	(0.10)
Home-based care	-0.22 _{acd}	(0.16)	-0.09	(0.17)	-0.29* _{abc}	(0.14)
<i>R</i> ²	0.34		0.10		0.34	
<i>N</i>	800		750		800	
<i>Panel B: Children of Asian immigrant mothers at kindergarten entry</i>						
Head Start	-0.10 _{abc}	(0.14)	-0.14	(0.12)	-0.08 _{ab}	(0.13)
Prekindergarten	0.30** _{ad}	(0.11)	0.00	(0.09)	0.21* _{ac}	(0.11)
Other center-based care	0.16† _{be}	(0.09)	-0.06	(0.08)	0.21* _{bd}	(0.09)
Home-based care	-0.50*** _{cde}	(0.14)	-0.13	(0.12)	-0.33* _{cd}	(0.13)
<i>R</i> ²	0.30		0.16		0.33	
<i>N</i>	800		750		800	
<i>Panel C: Children of Hispanic immigrant mothers at age 4</i>						
Head Start	0.24* _a	(0.10)	0.22† _a	(0.13)	0.30** _a	(0.11)
Prekindergarten	0.21	(0.13)	0.17 _b	(0.16)	0.25† _b	(0.14)
Other center-based care	0.21† _b	(0.11)	0.22 _c	(0.14)	0.29* _c	(0.13)
Home-based care	-0.03 _a ^b	(0.13)	-0.14 _a ^b _c	(0.16)	-0.08 _a ^b _c	(0.14)
<i>R</i> ²	0.17		0.16		0.11	
<i>N</i>	500		450		500	
<i>Panel D: Children of Hispanic immigrant mothers at kindergarten entry</i>						
Head Start	0.17	(0.11)	0.00	(0.12)	-0.03	(0.11)
Prekindergarten	0.14	(0.15)	0.06	(0.14)	0.04	(0.14)
Other center-based care	0.04	(0.13)	-0.07	(0.13)	-0.01	(0.13)
Home-based care	-0.03	(0.16)	-0.08	(0.15)	-0.17	(0.15)
<i>R</i> ²	0.17		0.17		0.14	
<i>N</i>	500		450		500	

Note. Children in parental care were the reference group. Regression models at preschool and kindergarten were adjusted using the preschool and kindergarten sampling weights, respectively. All models were estimated using Model 3, which includes all covariates

(i.e., child, maternal, parenting, and family characteristics as well as pre-treatment outcomes). Sample sizes were rounded to the nearest 50. Within each column of each panel, common subscripts and superscripts indicate significant differences across types of child care at least at the .05 and .10 significance levels, respectively. *Coef* = Coefficient. *SE* = Standard error of the coefficient. *** $p < 0.001$. ** $p < 0.01$. * $p < 0.05$. † $p < 0.10$.

Table 9 Preschool and Parent-rated Socio-emotional and Behavioral Development at Age 4 and Kindergarten Entry

	Approaches to learning		Pro-social behavior		Attention problems		Externalizing problems	
	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>
<i>Panel A: Children of Asian immigrant mothers at age 4</i>								
Head Start	0.22 _a	(0.14)	0.32*	(0.16)	0.05	(0.14)	-0.18 _a	(0.14)
Prekindergarten	0.33** _{bc}	(0.11)	0.44*** _{ab}	(0.13)	-0.08	(0.11)	-0.04 _b	(0.12)
Other center-based care	0.14 _{bd}	(0.10)	0.21† _a	(0.11)	0.06	(0.10)	-0.10 _c	(0.10)
Home-based care	-0.30* _{acd}	(0.15)	0.00 _b	(0.17)	-0.16	(0.15)	0.21 _{a c}	(0.15)
<i>R</i> ²	0.08		0.09		0.10		0.11	
<i>N</i>	800		750		800		800	
<i>Panel B: Children of Asian immigrant mothers at kindergarten entry</i>								
Head Start	-0.05	(0.14)	0.13	(0.15)	0.03	(0.14)	-0.16	(0.15)
Prekindergarten	0.06	(0.12)	-0.00	(0.12)	0.07 ^a	(0.12)	-0.01 _a	(0.12)
Other center-based care	0.17† ^a	(0.10)	0.14	(0.10)	-0.11 ^{a b}	(0.10)	-0.21* _{a b}	(0.10)
Home-based care	-0.09 ^a	(0.14)	0.11	(0.16)	0.18 _b	(0.15)	0.04 _b	(0.15)
<i>R</i> ²	0.14		0.09		0.12		0.15	
<i>N</i>	800		750		800		800	
<i>Panel C: Children of Hispanic immigrant mothers at age 4</i>								
Head Start	-0.10 _{abc}	(0.10)	-0.04 _a	(0.10)	0.06 _{ab}	(0.10)	-0.03	(0.10)
Prekindergarten	0.26† _a	(0.14)	0.01	(0.14)	0.33* _a	(0.14)	-0.19	(0.14)
Other center-based care	0.24† _b	(0.12)	-0.06 _b	(0.13)	0.32* _b	(0.13)	-0.16	(0.13)
Home-based care	0.29* _c	(0.13)	0.23† _{a b}	(0.13)	0.26†	(0.13)	-0.17	(0.13)
<i>R</i> ²	0.11		0.08		0.07		0.08	
<i>N</i>	650		650		650		650	
<i>Panel D: Children of Hispanic immigrant mothers at kindergarten entry</i>								
Head Start	-0.32** _{ab c}	(0.10)	-0.25*	(0.10)	-0.07 ^a	(0.10)	0.18† _{a b}	(0.10)
Prekindergarten	-0.06 ^a	(0.14)	-0.12	(0.14)	-0.32* ^{a b}	(0.14)	-0.22 _{ac}	(0.14)
Other center-based care	-0.09 _b	(0.12)	-0.05	(0.13)	0.05 _{bc}	(0.13)	0.15 _c	(0.13)
Home-based care	0.04 _c	(0.13)	-0.06	(0.14)	-0.27* _c	(0.14)	-0.09 _b	(0.14)
<i>R</i> ²	0.14		0.10		0.10		0.09	
<i>N</i>	650		650		650		650	

Note. Attention and externalizing problems measures were reverse-coded, with higher scores indicating lower levels of problems.

Children in parental care were the reference group. Regression models at preschool and kindergarten were adjusted using the preschool and kindergarten sampling weights, respectively. All models were estimated using Model 3, which includes all covariates (i.e., child, maternal, parenting, and family characteristics as well as pre-treatment outcomes). Sample sizes were rounded to the nearest 50. Within each column of each panel, common subscripts and superscripts indicate significant differences across types of child care at least at the .05 and .10 significance levels, respectively. *Coef* = Coefficient. *SE* = Standard error of the coefficient. *** $p < 0.001$. ** $p < 0.01$. * $p < 0.05$. † $p < 0.10$.

Table 10 Preschool and Academic School Readiness among Children of Asian Immigrant Mothers at Age 4 and Kindergarten Entry, by Maternal Language Use

	Early reading		Expressive language		Math	
	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>
<i>Panel A: Children of bilingual or English dominant mothers at age 4</i>						
Head Start	0.25	(0.23)	-0.22	(0.23)	0.08	(0.20)
Prekindergarten	0.56***	(0.15)	0.06	(0.15)	0.24†	(0.13)
Other center-based care	0.13	(0.14)	-0.22	(0.14)	0.06	(0.12)
Home-based care	-0.29	(0.20)	-0.12	(0.20)	-0.46**	(0.17)
<i>Panel B: Children of bilingual or English dominant mothers at kindergarten entry</i>						
Head Start	-0.11	(0.19)	0.17	(0.15)	-0.28	(0.17)
Prekindergarten	0.28*	(0.13)	-0.03	(0.10)	0.09	(0.12)
Other center-based care	0.08	(0.12)	-0.04	(0.09)	0.06	(0.10)
Home-based care	-0.51**	(0.17)	-0.26*	(0.13)	-0.39*	(0.15)
<i>Panel C: Children of home language mothers at age 4</i>						
Head Start	0.42†	(0.22)	0.05	(0.27)	0.77***	(0.23)
Prekindergarten	0.39†	(0.22)	0.26	(0.25)	0.69**	(0.23)
Other center-based care	0.52**	(0.18)	0.17	(0.21)	0.70***	(0.19)
Home-based care	-0.74*	(0.31)	-0.39	(0.37)	-0.26	(0.32)
<i>Panel D: Children of home language mothers at kindergarten entry</i>						
Head Start	-0.09	(0.25)	-0.31	(0.23)	0.18	(0.25)
Prekindergarten	0.27	(0.25)	0.17	(0.22)	0.27	(0.25)
Other center-based care	0.09	(0.20)	-0.08	(0.18)	0.34†	(0.20)
Home-based care	-0.75*	(0.33)	0.47	(0.31)	-0.27	(0.33)

Note. Children in parental care were the reference group. Regression models at preschool and kindergarten were adjusted using the preschool and kindergarten sampling weights, respectively. All models were estimated using Model 3, which includes all covariates (i.e., child, maternal, parenting, and family characteristics as well as pre-treatment outcomes). Sample sizes were rounded to the nearest 50. Sample sizes for all three outcomes were 550 in Panels A and B and 200 in Panels C and D. *Coef* = Coefficient. *SE* = Standard error of the coefficient.

*** $p < 0.001$. ** $p < 0.01$. * $p < 0.05$. † $p < 0.10$.

Table 11 Preschool and Academic School Readiness among Children of Hispanic Immigrant Mothers at Age 4 and Kindergarten Entry, by Maternal Language Use

	Early reading		Expressive language		Math	
	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>
<i>Panel A: Children of bilingual or English dominant mothers at age 4</i>						
Head Start	-0.24	(0.21)	-0.05	(0.26)	0.44†	(0.24)
Prekindergarten	-0.22	(0.24)	0.09	(0.29)	0.42	(0.27)
Other center-based care	-0.26	(0.23)	0.31	(0.27)	0.40	(0.25)
Home-based care	-0.09	(0.27)	-0.37	(0.33)	0.42	(0.30)
<i>Panel B: Children of bilingual or English dominant mothers at kindergarten entry</i>						
Head Start	-0.06	(0.23)	0.11	(0.18)	0.01	(0.22)
Prekindergarten	0.18*	(0.25)	0.37†	(0.20)	0.47†	(0.25)
Other center-based care	0.23	(0.25)	0.52**	(0.19)	0.55*	(0.24)
Home-based care	0.72*	(0.31)	0.37	(0.23)	0.61*	(0.31)
<i>Panel C: Children of home language mothers at age 4</i>						
Head Start	0.34**	(0.12)	0.27	(0.16)	0.25†	(0.14)
Prekindergarten	0.09	(0.19)	-0.08	(0.24)	-0.19	(0.21)
Other center-based care	0.43**	(0.15)	0.28	(0.19)	0.31†	(0.17)
Home-based care	-0.01	(0.16)	0.13	(0.22)	-0.22	(0.18)
<i>Panel D: Children of home language at kindergarten entry</i>						
Head Start	0.19	(0.15)	-0.02	(0.17)	-0.04	(0.14)
Prekindergarten	0.12	(0.23)	-0.07	(0.25)	-0.18	(0.22)
Other center-based care	-0.13	(0.18)	-0.11	(0.20)	-0.17	(0.17)
Home-based care	-0.34†	(0.20)	-0.02	(0.22)	-0.42*	(0.19)

Note. Children in parental care were the reference group. Regression models at preschool and kindergarten were adjusted using the preschool and kindergarten sampling weights, respectively. All models were estimated using Model 3, which includes all covariates (i.e., child, maternal, parenting, and family characteristics as well as pre-treatment outcomes). Sample sizes were rounded to the nearest 50. In Panels A and B, sample sizes were 200 for all three outcomes; and, in Panels C and D, sample sizes were 250 for the early reading and expressive language outcomes and 300 for the math outcome. *Coef* = Coefficient. *SE* = Standard error of the coefficient.

** $p < 0.01$. * $p < 0.05$. † $p < 0.10$.

CHAPTER V: CONCLUSION

This study aims to understand school readiness among young children of Asian and Hispanic immigrant mothers, with particular attention to two important characteristics: maternal language use and use of preschool. Based on the theoretical review of maternal language use and its association with the development of young children in Chapter 2, this study, in Chapter 3, examines how maternal language use is associated with school readiness at kindergarten entry, separately for children of Asian and Hispanic immigrant mothers. In Chapter 4, based on the theoretical and empirical evidence reviewed in Chapter 2, this study conducts a more policy-oriented empirical study to examine how participation in preschool is associated with school readiness at kindergarten entry, separately for children of Asian and Hispanic immigrant mothers.

Summary of Main Findings

In Chapter 3, this study finds beneficial associations between maternal use of English or bilingualism and cognitive development at kindergarten entry among children of both Asian and Hispanic immigrant mothers. Children of bilingual and English dominant mothers had better expressive language skills than children of home language mothers in both Asian and Hispanic groups. In addition, this study also finds that, compared to children of home language Asian mothers, children of bilingual and English dominant Asian mothers had higher levels of pro-social behavior, but also children of English dominant mothers had higher levels of behavior problems. Furthermore, in additional analyses, this study finds that longer residency in the U.S. is associated with higher levels of approaches to learning for children of bilingual Asian mothers and lower levels of behavior problems for children of bilingual Hispanic mothers.

In Chapter 4, this study finds that attending preschool (mostly prekindergarten or other center-based care) is associated with better academic school readiness at age 4 among children of

both Asian and Hispanic immigrant mothers, but the beneficial associations do not hold up at kindergarten entry among children of Hispanic immigrant mothers, while such associations are still found at kindergarten entry among children of Asian immigrant mothers. In addition, this study finds more pronounced beneficial influences of preschool on academic school readiness among children of mothers who speak their home language at the year of participation in both Asian and Hispanic groups, but such more pronounced influences are not found at kindergarten entry in both groups. Finally, this study finds higher levels of teacher-rated behavior problems and lower levels of teacher-rated approaches to learning among children in Head Start compared to those in parental care in both Asian and Hispanic groups.

Implications for Theory and Methodology

The two topics of this study, maternal language use and use of preschool, were supported by several theoretical models. In Chapter 3, as expected based on the ecological model and the multidisciplinary model (Bronfenbrenner, 1979, 1986; Chase-Lansdale et al., 2007), this study provides empirical evidence on the associations between maternal language use and school readiness among children of Asian and Hispanic immigrant mothers. In addition, in Chapter 4, as expected based on the ecological model, the life course model, the constructionist model, and the socio-cultural model (Bodrova & Leong, 2006; Bronfenbrenner, 1979; Bronfenbrenner & Morris, 1998; Brooks-Gunn, 2004; Piaget, 2007; Rutter, 2000; Vygotsky, 1978), the empirical work of this study shows how preschool experiences are associated with school readiness among children of Asian and Hispanic immigrant mothers. These findings highlight the importance of environmental contexts as determinants of developmental outcomes for children of immigrants. Therefore, the findings of this study suggest that school readiness among children of immigrants is promoted in ecological and socio-cultural contexts, with several aspects of the surrounding

environments (e.g., maternal language use and participation in preschool) influencing the children's experiences and learning every day.

Determining the appropriate comparison group is an important methodological issue in studies using samples of children of immigrants (Syed, 2012). There has been an ardent debate on including a White comparison group in studies examining the developmental outcomes of children of a single ethnic group in that it is implicitly based on a deficit perspective and thus may contribute to negative stereotypes about children of the ethnic group (McLoyd, 1990, 2006; Wong & Rowley, 2000). Therefore, as recommended in studies emphasizing considerable heterogeneity within recent ethnic groups (Bornstein & Cheah, 2006; Hernandez et al., 2013), unlike much of prior research comparing children of foreign-born parents to those of native-born parents, this study examines school readiness among children of immigrants, separately for those of Asian and Hispanic immigrant mothers. As presented in this study, the separate analyses for Asian and Hispanic groups find mostly positive associations between maternal language use and school readiness and between preschool and school readiness in both groups. In that sense, future research may adopt this methodological approach to examine individual differences in developmental outcomes within an ethnic group.

Implications for Future Research

In Chapter 3, the findings of this study suggest that maternal language use (i.e., use of English or bilingualism) may play an important role in promoting school readiness among children of Asian and Hispanic immigrant mothers. The findings also highlight the need for future research in several areas. First, more efforts are needed to better measure language use among immigrant parents. Although this study used two types of information (i.e., maternal primary language at home and English proficiency) to measure maternal language use, the

ECLS-B does not provide detailed information about language patterns of mother-child interactions. For example, if an immigrant mother speaks English very well but communicates with her child in her home language, this case may not be captured by the measures of the ECLS-B. Therefore, future research may adopt other strategies to better measure maternal language use, such as naturalistic observation in normal everyday language used in parent-child interactions (e.g., Walle & Campos, 2014).

Second, future research may provide a deeper understanding of the association between maternal language use and children's school readiness by investigating the role of fathers in immigrant families. Given that immigrant fathers are more likely than U.S.-born fathers to live with their children (Capps, 2001; Hernandez, Denton, & Macartney, 2008b), they may play a critical role in directly affecting their children's development as well as in the association between maternal language use and children's development. In addition, immigrant fathers may face more stressors than U.S.-born fathers (e.g., unemployment and language barriers), all of which can be related to parenting abilities and resources (Capps, Bronte-Tinkew, & Horowitz, 2010). Therefore, father engagement with young children in immigrant families might also differ by foreign-born versus native-born fathers. Unfortunately, this study was unable to examine the role of fathers due to sample size limitations, and therefore further studies are needed to understand how fathers in immigrant families interact with young children.

Third, more research is needed to understand mechanisms behind the association between maternal language use and school readiness among children of immigrants. Due to lack of prior research on this topic, the focus of this study is on examining the direct associations of maternal language use with school readiness outcomes, controlling for a wide set of covariates, including child and maternal characteristics and factors related to family process. However, given that the

early development of young children takes place through complex interactions between the children and their immediate environments (Bronfenbrenner & Morris, 1998), further studies examining the mechanisms that might explain the direct associations found in this study are necessary. For example, as discussed above, parenting behavior may be an important mechanism delivering the influence of maternal language use to school readiness among children in immigrant families. In addition, to understand complex mechanisms, particularly those related to cultural environments, it would be helpful to integrate qualitative and quantitative approaches (e.g., Hughes et al., 2008).

In Chapter 4, this study provides empirical evidence suggesting that preschool may play a protective role in promoting school readiness among children of Asian and Hispanic immigrant mothers. The findings of this study also have some implications for future research. First, future research needs to examine whether children's school readiness outcomes vary by preschool quality. Given that high-quality child care can enhance the development of young children, particularly those from low-income families (NICHD ECCRN & Duncan, 2003), it is also important to examine how preschool quality is associated with outcomes for children of immigrants. Going forward, nationally representative datasets might consider including information about child care quality so that such future research can further be conducted.

Second, more detailed analyses by different groups among children of immigrants would be another important point for future research. This study examined the association between preschool and school readiness, separately for children of Asian and Hispanic immigrant mothers. In addition, this study further investigated whether the associations differ by maternal language use. Future research might consider whether the association between preschool and school readiness is moderated by other characteristics of immigrant families (e.g., parents' country of

origin, immigration status, or region of residence in the U.S.). For these sub-group analyses, it is essential to use a data set with a large enough sample of children of immigrants. In that sense, future efforts might be needed to build datasets that oversample children of immigrants.

Third, whether the association between preschool and school readiness differs by child gender may be examined in future research. Emerging evidence has shown that child gender plays an important role in shaping the development of young children of immigrants in a way that embodies norms and practices to which the children need to adapt in the new cultural agents of socialization, such as family and school (Portes & Rumbaut, 2001; Prieur, 2002; Williams, Alvarez, & Hauck, 2002). In addition, in the process of incorporation into American society, immigrant boys tend to have more difficulty in developing bicultural competencies than immigrant girls, which may contribute to lower levels of developmental adaptation and future mobility among boys (Qin, 2006). Therefore, given that, as shown in this study, preschool can be an important developmental context for young children of immigrants, further studies may explore whether there are gender differences in the influence of preschool on school readiness.

Implications for Social Work and Policy

The findings of this study have several important implications for social work and policy. In Chapter 3, one finding of this study is generally better school readiness outcomes among children of English dominant or bilingual mothers in both Asian and Hispanic groups. Therefore, there may be benefits of providing English language programs to Asian and Hispanic mothers (e.g., subsidized language-instruction programs), as stronger English skills for them improve mothers' ability to interact in English with their children, other parents, and teachers, and enable mothers to serve as role models for their children. In addition, bilingual programs for Asian and Hispanic mothers may also be beneficial since those programs can be a source of helping their

children use cultural resources and maintain familial ties, although it should be noted that these programs need to be tailored to ethnic and cultural differences.

In Chapter 4, this study provides empirical evidence showing how participation in preschool influences school readiness among children of Asian and Hispanic immigrant mothers. Based on the findings, this study may suggest some policy implications to ensure that young children in immigrant families receive quality preschool. First, policymakers need to make more efforts to increase awareness and accessibility to preschool among immigrant parents, particularly those who speak a language other than English (Matthews & Jang, 2007). For example, states might make contracts between states and providers to supply preschool programs to specific neighborhoods concentrated by immigrant families. Second, policymakers need to pay more attention to the quality of preschool settings attended by children of immigrants, especially Head Start (Matthews & Jang, 2007; Takanishi, 2004). Finally, the findings showing that beneficial influences of preschool at the year of participation are not found at kindergarten entry among children of Hispanic immigrant mothers as well as among those of mothers who speak their home language should be of high interest to policymakers. If preschool programs enhance services to help parents provide their children with home environments that support maintaining the benefits from preschool, we may expect to see greater and more sustainable influences of preschool.

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APPENDIX

Table A1 Maternal Language Use and Early Reading among Children of Asian Immigrant Mothers

	Model 1		Model 2		Model 3		Model 4	
	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>
Maternal language use								
Bilingual mothers (Bil)	0.434***	(0.081)	0.469***	(0.082)	0.112	(0.089)	0.249†	(0.146)
English dominant mothers (Eng)	0.337***	(0.091)	0.449***	(0.101)	0.162	(0.106)	0.031	(0.175)
Maternal years of US residency								
Bil * years of US residency			-0.012*	(0.005)	-0.007	(0.005)	-0.006	(0.011)
Eng * years of US residency							0.007	(0.013)
Child characteristics								
Chinese (vs. other Asian)	0.518***	(0.084)	0.511***	(0.084)	0.211*	(0.087)	0.212*	(0.087)
Age in months at 9-month	0.016	(0.020)	0.014	(0.020)	0.022	(0.018)	0.022	(0.018)
Boys	-0.178**	(0.069)	-0.175*	(0.069)	-0.116†	(0.066)	-0.123†	(0.066)
Low birth weight at birth	-0.274*	(0.139)	-0.283*	(0.139)	-0.307*	(0.134)	-0.312*	(0.134)
Multiple birth at birth	0.090	(0.231)	0.197	(0.234)	0.221	(0.231)	0.215	(0.234)
Family background characteristics								
Maternal age at birth					-0.004	(0.007)	-0.003	(0.007)
Married at birth					0.325*	(0.127)	0.324*	(0.127)
Maternal education at 9-month (vs. less than HS)								
HS graduate					0.157	(0.119)	0.149	(0.119)
Some college or more					0.348**	(0.120)	0.336**	(0.120)
Family income at 9-month (vs. \$0-\$20,000)								
\$20,001-\$35,000					0.200†	(0.118)	0.199†	(0.118)
\$35,001-\$50,000					0.307**	(0.114)	0.306**	(0.114)
\$50,000 or more					0.587***	(0.127)	0.582***	(0.127)
Number of siblings at 9-month (vs. none)								
One					0.014	(0.075)	0.020	(0.075)
Two or more					-0.237*	(0.101)	-0.226*	(0.102)
Maternal employment, child care, and parenting at preschool								
Maternal employment (vs. not working)								
Part-time					0.068	(0.101)	0.082	(0.101)

Full-time			0.077	(0.078)	0.091	(0.078)
Child care arrangements (vs. parental care)						
Relative care			-0.301*	(0.123)	-0.316*	(0.124)
Non-relative care			-0.505**	(0.178)	-0.519**	(0.178)
Other center-based care			0.069	(0.096)	0.055	(0.096)
Head Start			-0.258†	(0.155)	-0.271†	(0.155)
Parenting behaviors						
Cognitively stimulating activities			0.024	(0.016)	0.023	(0.016)
Use of spanking			-0.144†	(0.078)	-0.149†	(0.078)
Having sleeping routines			-0.150	(0.098)	-0.143	(0.098)
Eating dinner together per week			0.015	(0.017)	0.012	(0.017)
Constant	0.202	(0.227)	0.322	(0.231)	-0.666†	(0.364)
Adjusted R-squared	0.097		0.104		0.237	0.238

Note. Reference language group was home language mothers. All regressions were adjusted using the kindergarten sampling weights (WK1R0). Model 1 included maternal language groups and child characteristics; Model 2 was the same as Model 1 but added maternal years of U.S. residency; Model 3 was the same as Model 2 but added family background and process variables; and Model 4 was the same as Model 3 but further added interaction terms of maternal language groups with maternal years of U.S. residency. Sample sizes were rounded to the nearest 50, due to IES reporting rules. Sample sizes were about 800 in all models. *Coef* = Coefficient. *SE* = Standard error of the coefficient.

*** $p < 0.001$. ** $p < 0.01$. * $p < 0.05$. † $p < 0.10$.

Table A2 Maternal Language Use and Expressive Language among Children of Asian Immigrant Mothers

	Model 1		Model 2		Model 3		Model 4	
	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>
Maternal language use								
Bilingual mothers (Bil)	0.393***	(0.065)	0.408***	(0.067)	0.326***	(0.075)	0.368**	(0.123)
English dominant mothers (Eng)	0.498***	(0.073)	0.542***	(0.082)	0.429***	(0.089)	0.381*	(0.148)
Maternal years of US residency								
Bil * years of US residency			-0.005	(0.004)	-0.003	(0.004)	-0.003	(0.009)
Eng * years of US residency							0.003	(0.011)
Child characteristics								
Chinese (vs. other Asian)	0.071	(0.068)	0.069	(0.068)	-0.031	(0.073)	-0.032	(0.074)
Age in months at 9-month	0.031*	(0.016)	0.030†	(0.016)	0.034*	(0.016)	0.034*	(0.016)
Boys	-0.012	(0.055)	-0.011	(0.055)	0.004	(0.055)	0.002	(0.055)
Low birth weight at birth	-0.200†	(0.112)	-0.203†	(0.112)	-0.221*	(0.112)	-0.224*	(0.112)
Multiple birth at birth	-0.088	(0.187)	-0.046	(0.190)	-0.024	(0.194)	-0.024	(0.197)
Family background characteristics								
Maternal age at birth					0.003	(0.006)	0.004	(0.006)
Married at birth					0.057	(0.106)	0.057	(0.106)
Maternal education at 9-month (vs. less than HS)								
HS graduate					0.002	(0.100)	-0.001	(0.100)
Some college or more					0.039	(0.100)	0.035	(0.101)
Family income at 9-month (vs. \$0-\$20,000)								
\$20,001-\$35,000					0.274**	(0.100)	0.273**	(0.100)
\$35,001-\$50,000					0.338***	(0.096)	0.337***	(0.096)
\$50,000 or more					0.380***	(0.107)	0.378***	(0.108)
Number of siblings at 9-month (vs. none)								
One					-0.072	(0.063)	-0.070	(0.063)
Two or more					-0.139	(0.085)	-0.135	(0.085)
Maternal employment, child care, and parenting at preschool								
Maternal employment (vs. not working)								
Part-time					0.054	(0.090)	0.058	(0.090)
Full-time					0.026	(0.067)	0.031	(0.068)
Child care arrangements (vs. parental care)								

Relative care				-0.147	(0.104)	-0.151	(0.104)	
Non-relative care				-0.023	(0.149)	-0.027	(0.149)	
Other center-based care				-0.005	(0.081)	-0.009	(0.081)	
Head Start				-0.077	(0.130)	-0.081	(0.130)	
Parenting behaviors								
Cognitively stimulating activities				0.010	(0.014)	0.010	(0.014)	
Use of spanking				-0.266***	(0.066)	-0.267***	(0.066)	
Having sleeping routines				0.102	(0.083)	0.104	(0.083)	
Eating dinner together per week				-0.012	(0.014)	-0.013	(0.014)	
Constant	-0.318†	(0.181)	-0.267	(0.185)	-0.456	(0.309)	-0.457	(0.314)
Adjusted R-squared	0.075		0.075		0.114		0.113	

Note. Reference language group was home language mothers. All regressions were adjusted using the kindergarten sampling weights (WK1R0). Model 1 included maternal language groups and child characteristics; Model 2 was the same as Model 1 but added maternal years of U.S. residency; Model 3 was the same as Model 2 but added family background and process variables; and Model 4 was the same as Model 3 but further added interaction terms of maternal language groups with maternal years of U.S. residency.

Sample sizes were rounded to the nearest 50, due to IES reporting rules. Sample sizes were about 800 in all models. *Coef* =

Coefficient. *SE* = Standard error of the coefficient.

*** $p < 0.001$. ** $p < 0.01$. * $p < 0.05$. † $p < 0.10$.

Table A3 Maternal Language Use and Mathematics among Children of Asian Immigrant Mothers

	Model 1		Model 2		Model 3		Model 4	
	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>
Maternal language use								
Bilingual mothers (Bil)	0.276***	(0.079)	0.311***	(0.080)	-0.067	(0.085)	0.073	(0.139)
English dominant mothers (Eng)	0.277**	(0.088)	0.388***	(0.098)	0.121	(0.101)	0.095	(0.166)
Maternal years of US residency								
Bil * years of US residency			-0.012*	(0.005)	-0.009*	(0.005)	-0.004	(0.010)
Eng * years of US residency							-0.014	(0.012)
							-0.001	(0.012)
Child characteristics								
Chinese (vs. other Asian)	0.708***	(0.082)	0.701***	(0.082)	0.339***	(0.083)	0.342***	(0.083)
Age in months at 9-month	0.006	(0.020)	0.004	(0.020)	0.021	(0.018)	0.020	(0.018)
Boys	-0.030	(0.067)	-0.029	(0.067)	0.033	(0.062)	0.031	(0.063)
Low birth weight at birth	-0.293*	(0.135)	-0.303*	(0.135)	-0.383**	(0.127)	-0.380**	(0.128)
Multiple birth at birth	0.015	(0.224)	0.120	(0.227)	0.141	(0.219)	0.118	(0.222)
Family background characteristics								
Maternal age at birth					0.006	(0.007)	0.006	(0.007)
Married at birth					0.263*	(0.120)	0.264*	(0.120)
Maternal education at 9-month (vs. less than HS)								
HS graduate					0.421***	(0.113)	0.416***	(0.113)
Some college or more					0.610***	(0.114)	0.605***	(0.114)
Family income at 9-month (vs. \$0-\$20,000)								
\$20,001-\$35,000					0.228*	(0.112)	0.227*	(0.112)
\$35,001-\$50,000					0.316**	(0.108)	0.315**	(0.108)
\$50,000 or more					0.507***	(0.121)	0.504***	(0.121)
Number of siblings at 9-month (vs. none)								
One					0.060	(0.072)	0.063	(0.072)
Two or more					-0.247*	(0.096)	-0.245*	(0.097)
Maternal employment, child care, and parenting at preschool								
Maternal employment (vs. not working)								
Part-time					0.080	(0.096)	0.089	(0.096)
Full-time					0.207**	(0.074)	0.215**	(0.074)
Child care arrangements (vs. parental care)								

Relative care					-0.223†	(0.117)	-0.228†	(0.117)
Non-relative care					-0.519**	(0.169)	-0.534**	(0.169)
Other center-based care					0.010	(0.091)	0.001	(0.091)
Head Start					-0.170	(0.147)	-0.178	(0.147)
Parenting behaviors								
Cognitively stimulating activities					0.001	(0.016)	0.001	(0.016)
Use of spanking					-0.332***	(0.074)	-0.336***	(0.074)
Having sleeping routines					-0.093	(0.093)	-0.086	(0.093)
Eating dinner together per week					0.028†	(0.016)	0.026	(0.016)
Constant	0.254	(0.231)	0.374	(0.236)	-1.166***	(0.346)	-1.202***	(0.351)
Adjusted R-squared	0.139		0.146		0.304		0.304	

Note. Reference language group was home language mothers. All regressions were adjusted using the kindergarten sampling weights (WK1R0). Model 1 included maternal language groups and child characteristics; Model 2 was the same as Model 1 but added maternal years of U.S. residency; Model 3 was the same as Model 2 but added family background and process variables; and Model 4 was the same as Model 3 but further added interaction terms of maternal language groups with maternal years of U.S. residency.

Sample sizes were rounded to the nearest 50, due to IES reporting rules. Sample sizes were about 800 in all models. *Coef* =

Coefficient. *SE* = Standard error of the coefficient.

*** $p < 0.001$. ** $p < 0.01$. * $p < 0.05$. † $p < 0.10$.

Table A4 Maternal Language Use and Early Reading among Children of Hispanic Immigrant Mothers

	Model 1		Model 2		Model 3		Model 4	
	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>
Maternal language use								
Bilingual mothers (Bil)	0.254**	(0.088)	0.179†	(0.096)	0.077	(0.106)	-0.106	(0.194)
English dominant mothers (Eng)	0.396**	(0.129)	0.284*	(0.141)	0.281†	(0.156)	0.642†	(0.328)
Maternal years of US residency								
Bil * years of US residency			0.012†	(0.006)	0.001	(0.007)	-0.000	(0.009)
Eng * years of US residency							0.013	(0.014)
							-0.019	(0.019)
Child characteristics								
Mexican (vs. other Hispanic)	-0.280***	(0.082)	-0.288***	(0.081)	-0.096	(0.090)	-0.088	(0.090)
Age in months at 9-month	0.003	(0.020)	0.008	(0.020)	0.014	(0.019)	0.015	(0.019)
Boys	-0.089	(0.073)	-0.098	(0.073)	-0.099	(0.073)	-0.097	(0.073)
Low birth weight at birth	-0.238	(0.150)	-0.233	(0.149)	-0.241	(0.147)	-0.241	(0.147)
Multiple birth at birth	-0.049	(0.251)	-0.068	(0.251)	-0.146	(0.246)	-0.140	(0.247)
Family background characteristics								
Maternal age at birth					0.020**	(0.008)	0.020**	(0.008)
Married at birth					0.086	(0.080)	0.091	(0.080)
Maternal education at 9-month (vs. less than HS)								
HS graduate					0.180*	(0.090)	0.176†	(0.090)
Some college or more					0.595***	(0.119)	0.588***	(0.121)
Family income at 9-month (vs. \$0-\$20,000)								
\$20,001-\$35,000					0.064	(0.082)	0.060	(0.082)
\$35,001-\$50,000					0.153	(0.114)	0.132	(0.114)
\$50,000 or more					-0.137	(0.226)	-0.126	(0.227)
Number of siblings at 9-month (vs. none)								
One					0.096	(0.092)	0.091	(0.092)
Two or more					-0.007	(0.101)	-0.011	(0.101)
Maternal employment, child care, and parenting at preschool								
Maternal employment (vs. not working)								
Part-time					0.057	(0.128)	0.062	(0.128)
Full-time					0.177*	(0.088)	0.183*	(0.088)
Child care arrangements (vs. parental care)								

Relative care					-0.121	(0.127)	-0.136	(0.127)
Non-relative care					-0.057	(0.180)	-0.069	(0.180)
Other center-based care					0.037	(0.109)	0.041	(0.109)
Head Start					-0.039	(0.098)	-0.034	(0.099)
Parenting behaviors								
Cognitively stimulating activities					0.013	(0.019)	0.013	(0.019)
Use of spanking					0.110	(0.087)	0.107	(0.087)
Having sleeping routines					0.050	(0.092)	0.043	(0.093)
Eating dinner together per week					-0.006	(0.015)	-0.006	(0.015)
Constant	-0.094	(0.228)	-0.238	(0.239)	-1.184***	(0.355)	-1.177**	(0.356)
Adjusted R-squared	0.071		0.077		0.151		0.152	

Note. Reference language group was home language mothers. All regressions were adjusted using the kindergarten sampling weights (WK1R0). Model 1 included maternal language groups and child characteristics; Model 2 was the same as Model 1 but added maternal years of U.S. residency; Model 3 was the same as Model 2 but added family background and process variables; and Model 4 was the same as Model 3 but further added interaction terms of maternal language groups with maternal years of U.S. residency.

Sample sizes were rounded to the nearest 50, due to IES reporting rules. Sample sizes were about 600 in all models. *Coef* =

Coefficient. *SE* = Standard error of the coefficient.

*** $p < 0.001$. ** $p < 0.01$. * $p < 0.05$. † $p < 0.10$.

Table A5 Maternal Language Use and Expressive Language among Children of Hispanic Immigrant Mothers

	Model 1		Model 2		Model 3		Model 4	
	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>
Maternal language use								
Bilingual mothers (Bil)	0.556***	(0.094)	0.426***	(0.102)	0.425***	(0.116)	0.701***	(0.208)
English dominant mothers (Eng)	0.623***	(0.138)	0.429**	(0.150)	0.435*	(0.169)	0.596†	(0.360)
Maternal years of US residency								
Bil * years of US residency			0.020**	(0.006)	0.004	(0.007)	0.014	(0.010)
Eng * years of US residency							-0.024	(0.014)
							-0.016	(0.020)
Child characteristics								
Mexican (vs. other Hispanic)	-0.387***	(0.087)	-0.400***	(0.087)	-0.352***	(0.096)	-0.357***	(0.096)
Age in months at 9-month	-0.013	(0.021)	-0.005	(0.021)	-0.003	(0.020)	-0.002	(0.021)
Boys	0.073	(0.078)	0.059	(0.078)	0.069	(0.078)	0.060	(0.078)
Low birth weight at birth	-0.192	(0.159)	-0.186	(0.158)	-0.169	(0.155)	-0.164	(0.155)
Multiple birth at birth	-0.537*	(0.264)	-0.569*	(0.262)	-0.760**	(0.258)	-0.739**	(0.258)
Family background characteristics								
Maternal age at birth					0.004	(0.008)	0.003	(0.008)
Married at birth					0.065	(0.086)	0.058	(0.086)
Maternal education at 9-month (vs. less than HS)								
HS graduate					0.123	(0.097)	0.126	(0.097)
Some college or more					0.367**	(0.129)	0.403**	(0.130)
Family income at 9-month (vs. \$0-\$20,000)								
\$20,001-\$35,000					0.064	(0.088)	0.060	(0.088)
\$35,001-\$50,000					0.118	(0.122)	0.125	(0.123)
\$50,000 or more					-0.017	(0.240)	0.012	(0.241)
Number of siblings at 9-month (vs. none)								
One					0.332***	(0.099)	0.332***	(0.099)
Two or more					0.501***	(0.109)	0.491***	(0.109)
Maternal employment, child care, and parenting at preschool								
Maternal employment (vs. not working)								
Part-time					0.081	(0.140)	0.070	(0.140)
Full-time					0.044	(0.094)	0.041	(0.094)
Child care arrangements (vs. parental care)								

Relative care				0.019	(0.135)	0.046	(0.136)	
Non-relative care				0.122	(0.193)	0.124	(0.193)	
Other center-based care				0.244*	(0.116)	0.246*	(0.116)	
Head Start				0.010	(0.107)	0.025	(0.107)	
Parenting behaviors								
Cognitively stimulating activities				0.024	(0.020)	0.021	(0.020)	
Use of spanking				0.041	(0.093)	0.039	(0.093)	
Having sleeping routines				0.107	(0.100)	0.128	(0.101)	
Eating dinner together per week				-0.008	(0.016)	-0.009	(0.016)	
Constant	0.084	(0.242)	-0.159	(0.254)	-0.780*	(0.377)	-0.837*	(0.379)
Adjusted R-squared	0.124		0.138		0.194		0.196	

Note. Reference language group was home language mothers. All regressions were adjusted using the kindergarten sampling weights (WK1R0). Model 1 included maternal language groups and child characteristics; Model 2 was the same as Model 1 but added maternal years of U.S. residency; Model 3 was the same as Model 2 but added family background and process variables; and Model 4 was the same as Model 3 but further added interaction terms of maternal language groups with maternal years of U.S. residency.

Sample sizes were rounded to the nearest 50, due to IES reporting rules. Sample sizes were about 600 in all models. *Coef* =

Coefficient. *SE* = Standard error of the coefficient.

*** $p < 0.001$. ** $p < 0.01$. * $p < 0.05$. † $p < 0.10$.

Table A6 Maternal Language Use and Mathematics among Children of Hispanic Immigrant Mothers

	Model 1		Model 2		Model 3		Model 4	
	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>
Maternal language use								
Bilingual mothers (Bil)	0.186*	(0.088)	0.167†	(0.096)	0.088	(0.105)	0.078	(0.193)
English dominant mothers (Eng)	0.202	(0.129)	0.175	(0.142)	0.160	(0.155)	0.240	(0.326)
Maternal years of US residency								
Bil * years of US residency			0.003	(0.006)	-0.011	(0.007)	-0.010	(0.009)
Eng * years of US residency							0.000	(0.013)
							-0.005	(0.019)
Child characteristics								
Mexican (vs. other Hispanic)	-0.300***	(0.082)	-0.302***	(0.082)	-0.133	(0.089)	-0.133	(0.090)
Age in months at 9-month	0.003	(0.020)	0.004	(0.020)	0.013	(0.019)	0.013	(0.019)
Boys	0.038	(0.073)	0.036	(0.073)	0.018	(0.072)	0.017	(0.072)
Low birth weight at birth	-0.254†	(0.149)	-0.252†	(0.149)	-0.227	(0.145)	-0.226	(0.145)
Multiple birth at birth	-0.184	(0.251)	-0.189	(0.252)	-0.270	(0.245)	-0.267	(0.246)
Family background characteristics								
Maternal age at birth					0.017*	(0.008)	0.017*	(0.008)
Married at birth					0.063	(0.080)	0.063	(0.080)
Maternal education at 9-month (vs. less than HS)								
HS graduate					0.133	(0.090)	0.132	(0.090)
Some college or more					0.452***	(0.118)	0.453***	(0.120)
Family income at 9-month (vs. \$0-\$20,000)								
\$20,001-\$35,000					0.175*	(0.082)	0.174*	(0.082)
\$35,001-\$50,000					0.200†	(0.113)	0.196†	(0.114)
\$50,000 or more					0.249	(0.225)	0.253	(0.227)
Number of siblings at 9-month (vs. none)								
One					0.216*	(0.092)	0.216*	(0.092)
Two or more					0.106	(0.100)	0.105	(0.101)
Maternal employment, child care, and parenting at preschool								
Maternal employment (vs. not working)								
Part-time					0.114	(0.127)	0.114	(0.127)
Full-time					0.283**	(0.088)	0.284**	(0.088)
Child care arrangements (vs. parental care)								

Relative care					-0.069	(0.125)	-0.069	(0.127)
Non-relative care					-0.126	(0.179)	-0.128	(0.179)
Other center-based care					-0.047	(0.108)	-0.046	(0.109)
Head Start					-0.093	(0.098)	-0.091	(0.099)
Parenting behaviors								
Cognitively stimulating activities					0.032†	(0.019)	0.032†	(0.019)
Use of spanking					0.111	(0.087)	0.110	(0.087)
Having sleeping routines					0.034	(0.092)	0.035	(0.093)
Eating dinner together per week					0.008	(0.015)	0.008	(0.015)
Constant	-0.093	(0.230)	-0.129	(0.241)	-1.262***	(0.354)	-1.266***	(0.356)
Adjusted R-squared	0.048		0.047		0.129		0.127	

Note. Reference language group was home language mothers. All regressions were adjusted using the kindergarten sampling weights (WK1R0). Model 1 included maternal language groups and child characteristics; Model 2 was the same as Model 1 but added maternal years of U.S. residency; Model 3 was the same as Model 2 but added family background and process variables; and Model 4 was the same as Model 3 but further added interaction terms of maternal language groups with maternal years of U.S. residency.

Sample sizes were rounded to the nearest 50, due to IES reporting rules. Sample sizes were about 600 in all models. *Coef* =

Coefficient. *SE* = Standard error of the coefficient.

*** $p < 0.001$. ** $p < 0.01$. * $p < 0.05$. † $p < 0.10$.

Table B1 Maternal Language Use and Approaches to Learning among Children of Asian Immigrant Mothers

	Model 1		Model 2		Model 3		Model 4	
	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>
Maternal language use								
Bilingual mothers (Bil)	0.123	(0.093)	0.159†	(0.094)	-0.097	(0.105)	-0.403*	(0.178)
English dominant mothers (Eng)	-0.029	(0.103)	0.088	(0.115)	-0.127	(0.126)	-0.255	(0.212)
Maternal years of US residency								
Bil * years of US residency			-0.013*	(0.005)	-0.015**	(0.006)	-0.035*	(0.014)
Eng * years of US residency							0.033*	(0.016)
							0.018	(0.016)
Child characteristics								
Chinese (vs. other Asian)	0.098	(0.095)	0.088	(0.094)	-0.030	(0.100)	-0.037	(0.100)
Age in months at 9-month	-0.013	(0.023)	-0.016	(0.023)	-0.001	(0.022)	0.002	(0.021)
Boys	-0.375***	(0.078)	-0.369***	(0.078)	-0.306***	(0.078)	-0.308***	(0.078)
Low birth weight at birth	-0.308†	(0.166)	-0.334*	(0.166)	-0.311†	(0.170)	-0.322†	(0.171)
Multiple birth at birth	-0.258	(0.327)	-0.154	(0.329)	-0.373	(0.354)	-0.381	(0.353)
Family background characteristics								
Maternal age at birth					-0.004	(0.008)	-0.003	(0.008)
Married at birth					0.036	(0.164)	0.019	(0.164)
Maternal education at 9-month (vs. less than HS)								
HS graduate					0.528***	(0.139)	0.530***	(0.138)
Some college or more					0.642***	(0.141)	0.649***	(0.141)
Family income at 9-month (vs. \$0-\$20,000)								
\$20,001-\$35,000					0.168	(0.143)	0.157	(0.143)
\$35,001-\$50,000					0.172	(0.135)	0.170	(0.135)
\$50,000 or more					0.208	(0.151)	0.200	(0.151)
Number of siblings at 9-month (vs. none)								
One					0.094	(0.090)	0.097	(0.090)
Two or more					0.133	(0.116)	0.149	(0.117)
Maternal employment, child care, and parenting at preschool								
Maternal employment (vs. not working)								
Part-time					-0.067	(0.124)	-0.088	(0.124)
Full-time					0.090	(0.090)	0.079	(0.090)
Child care arrangements (vs. parental care)								

Relative care				-0.232	(0.141)	-0.236†	(0.141)	
Non-relative care				-0.178	(0.204)	-0.143	(0.204)	
Other center-based care				-0.244*	(0.110)	-0.236*	(0.110)	
Head Start				-0.513**	(0.185)	-0.491**	(0.185)	
Parenting behaviors								
Cognitively stimulating activities				-0.003	(0.020)	0.001	(0.020)	
Use of spanking				-0.285**	(0.090)	-0.275**	(0.090)	
Having sleeping routines				0.215†	(0.113)	0.204†	(0.113)	
Eating dinner together per week				0.019	(0.020)	0.018	(0.020)	
Constant	0.442†	(0.264)	0.583*	(0.271)	-0.405	(0.434)	-0.262	(0.442)
Adjusted R-squared	0.045		0.052		0.135		0.140	

Note. Reference language group was home language mothers. All regressions were adjusted using the kindergarten sampling weights (WK1R0). Model 1 included maternal language groups and child characteristics; Model 2 was the same as Model 1 but added maternal years of U.S. residency; Model 3 was the same as Model 2 but added family background and process variables; and Model 4 was the same as Model 3 but further added interaction terms of maternal language groups with maternal years of U.S. residency.

Sample sizes were rounded to the nearest 50, due to IES reporting rules. Sample sizes were about 550 in all models. *Coef* =

Coefficient. *SE* = Standard error of the coefficient.

*** $p < 0.001$. ** $p < 0.01$. * $p < 0.05$. † $p < 0.10$.

Table B2 Maternal Language Use and Pro-social Behavior among Children of Asian Immigrant Mothers

	Model 1		Model 2		Model 3		Model 4	
	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>
Maternal language use								
Bilingual mothers (Bil)	0.267**	(0.097)	0.283**	(0.098)	0.234*	(0.112)	0.199	(0.187)
English dominant mothers (Eng)	0.334**	(0.107)	0.386**	(0.120)	0.298*	(0.137)	0.131	(0.230)
Maternal years of US residency								
Bil * years of US residency			-0.006	(0.006)	-0.004	(0.006)	0.006	(0.016)
Eng * years of US residency							0.014	(0.016)
Child characteristics								
Chinese (vs. other Asian)	0.030	(0.098)	0.025	(0.098)	0.069	(0.108)	0.061	(0.109)
Age in months at 9-month	0.008	(0.023)	0.006	(0.023)	0.017	(0.023)	0.018	(0.023)
Boys	-0.369***	(0.081)	-0.366***	(0.081)	-0.385***	(0.085)	-0.390***	(0.085)
Low birth weight at birth	-0.175	(0.171)	-0.188	(0.171)	-0.244	(0.183)	-0.262	(0.185)
Multiple birth at birth	-0.129	(0.335)	-0.083	(0.338)	-0.156	(0.380)	-0.161	(0.380)
Family background characteristics								
Maternal age at birth					-0.015†	(0.009)	-0.014	(0.009)
Married at birth					-0.057	(0.176)	-0.062	(0.177)
Maternal education at 9-month (vs. less than HS)								
HS graduate					0.019	(0.151)	0.018	(0.151)
Some college or more					0.163	(0.152)	0.160	(0.152)
Family income at 9-month (vs. \$0-\$20,000)								
\$20,001-\$35,000					0.059	(0.155)	0.057	(0.155)
\$35,001-\$50,000					-0.048	(0.147)	-0.050	(0.147)
\$50,000 or more					-0.136	(0.165)	-0.144	(0.165)
Number of siblings at 9-month (vs. none)								
One					0.129	(0.098)	0.127	(0.098)
Two or more					0.250*	(0.127)	0.259*	(0.128)
Maternal employment, child care, and parenting at preschool								
Maternal employment (vs. not working)								
Part-time					0.072	(0.133)	0.068	(0.133)
Full-time					-0.063	(0.098)	-0.061	(0.099)
Child care arrangements (vs. parental care)								

Relative care					-0.099	(0.153)	-0.108	(0.154)
Non-relative care					0.137	(0.217)	0.142	(0.218)
Other center-based care					-0.001	(0.120)	-0.005	(0.120)
Head Start					-0.348†	(0.202)	-0.345†	(0.202)
Parenting behaviors								
Cognitively stimulating activities					0.026	(0.021)	0.026	(0.021)
Use of spanking					-0.176†	(0.098)	-0.180†	(0.098)
Having sleeping routines					0.073	(0.122)	0.071	(0.122)
Eating dinner together per week					-0.019	(0.022)	-0.021	(0.022)
Constant	-0.228	(0.266)	-0.164	(0.275)	-0.197	(0.467)	-0.148	(0.474)
Adjusted R-squared	0.043		0.042		0.053		0.052	

Note. Reference language group was home language mothers. All regressions were adjusted using the kindergarten sampling weights (WK1R0). Model 1 included maternal language groups and child characteristics; Model 2 was the same as Model 1 but added maternal years of U.S. residency; Model 3 was the same as Model 2 but added family background and process variables; and Model 4 was the same as Model 3 but further added interaction terms of maternal language groups with maternal years of U.S. residency.

Sample sizes were rounded to the nearest 50, due to IES reporting rules. Sample sizes were about 550 in all models. *Coef* =

Coefficient. *SE* = Standard error of the coefficient.

*** $p < 0.001$. ** $p < 0.01$. * $p < 0.05$. † $p < 0.10$.

Table B3 Maternal Language Use and Externalizing Problems among Children of Asian Immigrant Mothers

	Model 1		Model 2		Model 3		Model 4	
	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>
Maternal language use								
Bilingual mothers (Bil)	0.158*	(0.080)	0.176*	(0.082)	0.014	(0.094)	-0.118	(0.158)
English dominant mothers (Eng)	-0.146	(0.089)	-0.089	(0.099)	-0.193†	(0.113)	-0.430*	(0.190)
Maternal years of US residency								
Bil * years of US residency			-0.006	(0.005)	-0.006	(0.005)	-0.023†	(0.012)
Eng * years of US residency							0.017	(0.014)
							0.022	(0.014)
Child characteristics								
Chinese (vs. other Asian)	-0.158†	(0.082)	-0.163*	(0.082)	-0.165†	(0.090)	-0.177*	(0.090)
Age in months at 9-month	-0.025	(0.021)	-0.027	(0.021)	-0.018	(0.020)	-0.016	(0.020)
Boys	-0.421***	(0.067)	-0.417***	(0.067)	-0.390***	(0.070)	-0.397***	(0.070)
Low birth weight at birth	-0.120	(0.138)	-0.134	(0.138)	-0.125	(0.146)	-0.153	(0.147)
Multiple birth at birth	-0.010	(0.282)	0.043	(0.285)	-0.038	(0.317)	-0.043	(0.317)
Family background characteristics								
Maternal age at birth					-0.010	(0.007)	-0.008	(0.007)
Married at birth					0.194	(0.148)	0.185	(0.148)
Maternal education at 9-month (vs. less than HS)								
HS graduate					0.422***	(0.125)	0.422***	(0.125)
Some college or more					0.490***	(0.127)	0.489***	(0.126)
Family income at 9-month (vs. \$0-\$20,000)								
\$20,001-\$35,000					0.095	(0.128)	0.089	(0.128)
\$35,001-\$50,000					0.053	(0.121)	0.051	(0.121)
\$50,000 or more					0.161	(0.136)	0.149	(0.136)
Number of siblings at 9-month (vs. none)								
One					0.086	(0.081)	0.085	(0.081)
Two or more					0.128	(0.105)	0.145	(0.105)
Maternal employment, child care, and parenting at preschool								
Maternal employment (vs. not working)								
Part-time					0.034	(0.110)	0.024	(0.110)
Full-time					-0.045	(0.081)	-0.046	(0.081)
Child care arrangements (vs. parental care)								

Relative care				-0.130	(0.126)	-0.143	(0.127)	
Non-relative care				-0.263	(0.180)	-0.245	(0.180)	
Other center-based care				-0.267**	(0.099)	-0.268**	(0.099)	
Head Start				-0.474**	(0.168)	-0.462**	(0.168)	
Parenting behaviors								
Cognitively stimulating activities				-0.002	(0.018)	-0.001	(0.018)	
Use of spanking				-0.100	(0.081)	-0.101	(0.081)	
Having sleeping routines				0.029	(0.101)	0.024	(0.101)	
Eating dinner together per week				-0.004	(0.018)	-0.006	(0.018)	
Constant	0.642**	(0.239)	0.712**	(0.246)	0.167	(0.395)	0.269	(0.403)
Adjusted R-squared	0.084		0.083		0.133		0.136	

Note. Reference language group was home language mothers. All regressions were adjusted using the kindergarten sampling weights (WK1R0). Model 1 included maternal language groups and child characteristics; Model 2 was the same as Model 1 but added maternal years of U.S. residency; Model 3 was the same as Model 2 but added family background and process variables; and Model 4 was the same as Model 3 but further added interaction terms of maternal language groups with maternal years of U.S. residency.

Sample sizes were rounded to the nearest 50, due to IES reporting rules. Sample sizes were about 550 in all models. *Coef* =

Coefficient. *SE* = Standard error of the coefficient.

*** $p < 0.001$. ** $p < 0.01$. * $p < 0.05$. † $p < 0.10$.

Table B4 Maternal Language Use and Attention Problems among Children of Asian Immigrant Mothers

	Model 1		Model 2		Model 3		Model 4	
	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>
Maternal language use								
Bilingual mothers (Bil)	0.112	(0.086)	0.136	(0.087)	-0.025	(0.099)	-0.177	(0.172)
English dominant mothers (Eng)	-0.236*	(0.095)	-0.149	(0.108)	-0.290*	(0.121)	-0.298	(0.209)
Maternal years of US residency								
Bil * years of US residency			-0.009†	(0.005)	-0.007	(0.006)	0.016	(0.016)
Eng * years of US residency							0.004	(0.015)
Child characteristics								
Chinese (vs. other Asian)	-0.117	(0.088)	-0.123	(0.088)	-0.174†	(0.096)	-0.174†	(0.096)
Age in months at 9-month	-0.026	(0.021)	-0.028	(0.021)	-0.023	(0.021)	-0.022	(0.021)
Boys	-0.447***	(0.072)	-0.441***	(0.072)	-0.406***	(0.075)	-0.405***	(0.075)
Low birth weight at birth	-0.332*	(0.147)	-0.353*	(0.147)	-0.352*	(0.155)	-0.355*	(0.157)
Multiple birth at birth	0.075	(0.296)	0.151	(0.299)	0.045	(0.332)	0.043	(0.332)
Family background characteristics								
Maternal age at birth					-0.010	(0.008)	-0.010	(0.008)
Married at birth					-0.030	(0.155)	-0.038	(0.155)
Maternal education at 9-month (vs. less than HS)								
HS graduate					0.163	(0.134)	0.166	(0.134)
Some college or more					0.402**	(0.135)	0.407**	(0.135)
Family income at 9-month (vs. \$0-\$20,000)								
\$20,001-\$35,000					0.079	(0.139)	0.073	(0.139)
\$35,001-\$50,000					0.080	(0.131)	0.080	(0.131)
\$50,000 or more					0.180	(0.146)	0.177	(0.146)
Number of siblings at 9-month (vs. none)								
One					0.002	(0.086)	0.005	(0.086)
Two or more					0.111	(0.112)	0.119	(0.113)
Maternal employment, child care, and parenting at preschool								
Maternal employment (vs. not working)								
Part-time					-0.019	(0.116)	-0.030	(0.117)
Full-time					0.000	(0.085)	-0.007	(0.086)
Child care arrangements (vs. parental care)								

Relative care				-0.316*	(0.136)	-0.307*	(0.137)	
Non-relative care				-0.291	(0.191)	-0.274	(0.192)	
Other center-based care				-0.304**	(0.105)	-0.296**	(0.105)	
Head Start				-0.645***	(0.183)	-0.626***	(0.184)	
Parenting behaviors								
Cognitively stimulating activities				-0.013	(0.019)	-0.011	(0.019)	
Use of spanking				-0.158†	(0.085)	-0.153†	(0.086)	
Having sleeping routines				-0.026	(0.110)	-0.038	(0.111)	
Eating dinner together per week				0.022	(0.019)	0.022	(0.019)	
Constant	0.701**	(0.242)	0.805**	(0.251)	0.744†	(0.411)	0.799†	(0.419)
Adjusted R-squared	0.091		0.092		0.139		0.138	

Note. Reference language group was home language mothers. All regressions were adjusted using the kindergarten sampling weights (WK1R0). Model 1 included maternal language groups and child characteristics; Model 2 was the same as Model 1 but added maternal years of U.S. residency; Model 3 was the same as Model 2 but added family background and process variables; and Model 4 was the same as Model 3 but further added interaction terms of maternal language groups with maternal years of U.S. residency.

Sample sizes were rounded to the nearest 50, due to IES reporting rules. Sample sizes were about 550 in all models. *Coef* =

Coefficient. *SE* = Standard error of the coefficient.

*** $p < 0.001$. ** $p < 0.01$. * $p < 0.05$. † $p < 0.10$.

Table B5 Maternal Language Use and Approaches to Learning among Children of Hispanic Immigrant Mothers

	Model 1		Model 2		Model 3		Model 4	
	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>
Maternal language use								
Bilingual mothers (Bil)	-0.068	(0.122)	-0.102	(0.132)	-0.137	(0.150)	-0.289	(0.281)
English dominant mothers (Eng)	-0.207	(0.178)	-0.254	(0.191)	-0.165	(0.213)	-0.019	(0.445)
Maternal years of US residency								
Bil * years of US residency			0.006	(0.008)	-0.007	(0.010)	-0.010	(0.013)
Eng * years of US residency							0.012	(0.020)
							-0.008	(0.028)
Child characteristics								
Mexican (vs. other Hispanic)	0.002	(0.111)	-0.002	(0.111)	0.133	(0.121)	0.135	(0.121)
Age in months at 9-month	-0.000	(0.028)	0.001	(0.029)	0.008	(0.028)	0.007	(0.029)
Boys	-0.219*	(0.096)	-0.222*	(0.096)	-0.292**	(0.099)	-0.283**	(0.100)
Low birth weight at birth	-0.338†	(0.202)	-0.335†	(0.202)	-0.394*	(0.200)	-0.392†	(0.201)
Multiple birth at birth	0.051	(0.327)	0.038	(0.328)	-0.037	(0.324)	-0.046	(0.326)
Family background characteristics								
Maternal age at birth					0.020†	(0.011)	0.020†	(0.011)
Married at birth					-0.105	(0.109)	-0.101	(0.110)
Maternal education at 9-month (vs. less than HS)								
HS graduate					0.318*	(0.126)	0.313*	(0.127)
Some college or more					0.392*	(0.165)	0.387*	(0.167)
Family income at 9-month (vs. \$0-\$20,000)								
\$20,001-\$35,000					0.018	(0.112)	0.012	(0.112)
\$35,001-\$50,000					-0.165	(0.152)	-0.175	(0.153)
\$50,000 or more					-0.137	(0.295)	-0.123	(0.303)
Number of siblings at 9-month (vs. none)								
One					0.176	(0.128)	0.172	(0.128)
Two or more					0.189	(0.136)	0.189	(0.136)
Maternal employment, child care, and parenting at preschool								
Maternal employment (vs. not working)								
Part-time					0.066	(0.180)	0.078	(0.181)
Full-time					0.123	(0.114)	0.119	(0.115)
Child care arrangements (vs. parental care)								

Relative care				0.161	(0.170)	0.145	(0.173)	
Non-relative care				-0.315	(0.220)	-0.313	(0.221)	
Other center-based care				0.058	(0.144)	0.057	(0.144)	
Head Start				-0.269*	(0.131)	-0.271*	(0.133)	
Parenting behaviors								
Cognitively stimulating activities				-0.019	(0.026)	-0.020	(0.026)	
Use of spanking				0.144	(0.122)	0.144	(0.123)	
Having sleeping routines				0.267*	(0.123)	0.261*	(0.124)	
Eating dinner together per week				-0.009	(0.022)	-0.008	(0.022)	
Constant	0.077	(0.321)	0.019	(0.331)	-0.869†	(0.493)	-0.824†	(0.499)
Adjusted R-squared	0.014		0.015		0.068		0.065	

Note. Reference language group was home language mothers. All regressions were adjusted using the kindergarten sampling weights (WK1R0). Model 1 included maternal language groups and child characteristics; Model 2 was the same as Model 1 but added maternal years of U.S. residency; Model 3 was the same as Model 2 but added family background and process variables; and Model 4 was the same as Model 3 but further added interaction terms of maternal language groups with maternal years of U.S. residency.

Sample sizes were rounded to the nearest 50, due to IES reporting rules. Sample sizes were about 450 in all models. *Coef* = Coefficient. *SE* = Standard error of the coefficient.

** $p < 0.01$. * $p < 0.05$. † $p < 0.10$.

Table B6 Maternal Language Use and Pro-social Behavior among Children of Hispanic Immigrant Mothers

	Model 1		Model 2		Model 3		Model 4	
	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>
Maternal language use								
Bilingual mothers (Bil)	-0.060	(0.123)	-0.080	(0.134)	-0.126	(0.154)	-0.397	(0.291)
English dominant mothers (Eng)	0.182	(0.180)	0.158	(0.192)	0.303	(0.217)	0.153	(0.451)
Maternal years of US residency								
Bil * years of US residency			0.003	(0.008)	-0.003	(0.010)	-0.012	(0.013)
Eng * years of US residency							0.022	(0.020)
							0.014	(0.028)
Child characteristics								
Mexican (vs. other Hispanic)	0.053	(0.110)	0.051	(0.110)	0.033	(0.120)	0.040	(0.121)
Age in months at 9-month	0.028	(0.028)	0.029	(0.028)	0.023	(0.029)	0.019	(0.029)
Boys	-0.224*	(0.096)	-0.226*	(0.096)	-0.273**	(0.101)	-0.257*	(0.102)
Low birth weight at birth	-0.158	(0.204)	-0.158	(0.204)	-0.228	(0.207)	-0.242	(0.208)
Multiple birth at birth	-0.124	(0.328)	-0.131	(0.329)	-0.139	(0.333)	-0.171	(0.334)
Family background characteristics								
Maternal age at birth					0.010	(0.011)	0.011	(0.011)
Married at birth					0.089	(0.113)	0.101	(0.113)
Maternal education at 9-month (vs. less than HS)								
HS graduate					0.311*	(0.130)	0.316*	(0.130)
Some college or more					0.154	(0.170)	0.135	(0.171)
Family income at 9-month (vs. \$0-\$20,000)								
\$20,001-\$35,000					-0.162	(0.115)	-0.163	(0.116)
\$35,001-\$50,000					-0.204	(0.156)	-0.205	(0.157)
\$50,000 or more					-0.436	(0.309)	-0.480	(0.316)
Number of siblings at 9-month (vs. none)								
One					0.063	(0.132)	0.065	(0.132)
Two or more					0.078	(0.140)	0.087	(0.140)
Maternal employment, child care, and parenting at preschool								
Maternal employment (vs. not working)								
Part-time					-0.243	(0.183)	-0.224	(0.184)
Full-time					0.104	(0.120)	0.095	(0.120)
Child care arrangements (vs. parental care)								

Relative care				0.210	(0.178)	0.185	(0.180)	
Non-relative care				-0.095	(0.226)	-0.084	(0.226)	
Other center-based care				0.059	(0.148)	0.056	(0.149)	
Head Start				-0.050	(0.136)	-0.064	(0.137)	
Parenting behaviors								
Cognitively stimulating activities				0.006	(0.026)	0.007	(0.026)	
Use of spanking				-0.057	(0.126)	-0.048	(0.126)	
Having sleeping routines				0.063	(0.126)	0.049	(0.127)	
Eating dinner together per week				0.002	(0.022)	0.002	(0.022)	
Constant	-0.217	(0.316)	-0.247	(0.328)	-0.676	(0.500)	-0.613	(0.504)
Adjusted R-squared	0.007		0.006		0.005		0.002	

Note. Reference language group was home language mothers. All regressions were adjusted using the kindergarten sampling weights (WK1R0). Model 1 included maternal language groups and child characteristics; Model 2 was the same as Model 1 but added maternal years of U.S. residency; Model 3 was the same as Model 2 but added family background and process variables; and Model 4 was the same as Model 3 but further added interaction terms of maternal language groups with maternal years of U.S. residency.

Sample sizes were rounded to the nearest 50, due to IES reporting rules. Sample sizes were about 450 in all models. *Coef* = Coefficient. *SE* = Standard error of the coefficient.

** $p < 0.01$. * $p < 0.05$.

Table B7 Maternal Language Use and Externalizing Problems among Children of Hispanic Immigrant Mothers

	Model 1		Model 2		Model 3		Model 4	
	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>
Maternal language use								
Bilingual mothers (Bil)	-0.155	(0.122)	-0.145	(0.132)	-0.093	(0.150)	-0.659*	(0.284)
English dominant mothers (Eng)	-0.117	(0.178)	-0.103	(0.190)	0.157	(0.213)	-0.108	(0.443)
Maternal years of US residency								
Bil * years of US residency			-0.002	(0.008)	-0.013	(0.010)	-0.031*	(0.013)
Eng * years of US residency							0.047*	(0.020)
							0.027	(0.027)
Child characteristics								
Mexican (vs. other Hispanic)	0.126	(0.111)	0.126	(0.111)	0.178	(0.119)	0.196†	(0.119)
Age in months at 9-month	-0.018	(0.027)	-0.019	(0.027)	-0.023	(0.028)	-0.031	(0.028)
Boys	-0.432***	(0.096)	-0.431***	(0.096)	-0.494***	(0.099)	-0.460***	(0.100)
Low birth weight at birth	0.202	(0.201)	0.201	(0.201)	0.135	(0.201)	0.106	(0.201)
Multiple birth at birth	0.247	(0.327)	0.250	(0.328)	0.185	(0.325)	0.125	(0.324)
Family background characteristics								
Maternal age at birth					0.024*	(0.011)	0.025*	(0.011)
Married at birth					-0.130	(0.112)	-0.106	(0.112)
Maternal education at 9-month (vs. less than HS)								
HS graduate					0.334**	(0.129)	0.336**	(0.128)
Some college or more					0.186	(0.165)	0.143	(0.165)
Family income at 9-month (vs. \$0-\$20,000)								
\$20,001-\$35,000					0.065	(0.113)	0.062	(0.113)
\$35,001-\$50,000					-0.237	(0.152)	-0.240	(0.152)
\$50,000 or more					-0.322	(0.296)	-0.403	(0.303)
Number of siblings at 9-month (vs. none)								
One					0.100	(0.128)	0.100	(0.128)
Two or more					0.147	(0.138)	0.160	(0.138)
Maternal employment, child care, and parenting at preschool								
Maternal employment (vs. not working)								
Part-time					-0.380*	(0.177)	-0.337†	(0.177)
Full-time					-0.011	(0.116)	-0.020	(0.116)
Child care arrangements (vs. parental care)								

Relative care				0.226	(0.174)	0.164	(0.175)	
Non-relative care				-0.586**	(0.221)	-0.575**	(0.220)	
Other center-based care				0.028	(0.142)	0.012	(0.142)	
Head Start				-0.155	(0.132)	-0.188	(0.132)	
Parenting behaviors								
Cognitively stimulating activities				-0.015	(0.025)	-0.014	(0.025)	
Use of spanking				-0.111	(0.123)	-0.097	(0.123)	
Having sleeping routines				0.233†	(0.123)	0.204†	(0.124)	
Eating dinner together per week				-0.002	(0.022)	-0.001	(0.022)	
Constant	0.291	(0.307)	0.310	(0.320)	-0.246	(0.482)	-0.086	(0.483)
Adjusted R-squared	0.038		0.036		0.091		0.095	

Note. Reference language group was home language mothers. All regressions were adjusted using the kindergarten sampling weights (WK1R0). Model 1 included maternal language groups and child characteristics; Model 2 was the same as Model 1 but added maternal years of U.S. residency; Model 3 was the same as Model 2 but added family background and process variables; and Model 4 was the same as Model 3 but further added interaction terms of maternal language groups with maternal years of U.S. residency.

Sample sizes were rounded to the nearest 50, due to IES reporting rules. Sample sizes were about 450 in all models. *Coef* =

Coefficient. *SE* = Standard error of the coefficient.

*** $p < 0.001$. ** $p < 0.01$. * $p < 0.05$. † $p < 0.10$.

Table B8 Maternal Language Use and Attention Problems among Children of Hispanic Immigrant Mothers

	Model 1		Model 2		Model 3		Model 4	
	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>
Maternal language use								
Bilingual mothers (Bil)	-0.102	(0.124)	-0.103	(0.135)	-0.031	(0.151)	-0.618*	(0.284)
English dominant mothers (Eng)	-0.268	(0.181)	-0.270	(0.194)	0.087	(0.217)	-0.289	(0.446)
Maternal years of US residency								
Bil * years of US residency			0.000	(0.008)	-0.013	(0.010)	-0.032**	(0.012)
Eng * years of US residency							0.049*	(0.020)
							0.035	(0.027)
Child characteristics								
Mexican (vs. other Hispanic)	0.131	(0.112)	0.131	(0.112)	0.191	(0.119)	0.207†	(0.119)
Age in months at 9-month	-0.031	(0.028)	-0.031	(0.028)	-0.034	(0.028)	-0.042	(0.028)
Boys	-0.386***	(0.096)	-0.386***	(0.096)	-0.426***	(0.099)	-0.391***	(0.099)
Low birth weight at birth	0.069	(0.209)	0.069	(0.209)	0.030	(0.207)	-0.004	(0.206)
Multiple birth at birth	0.173	(0.331)	0.172	(0.331)	0.123	(0.327)	0.057	(0.326)
Family background characteristics								
Maternal age at birth					0.026*	(0.011)	0.028**	(0.011)
Married at birth					-0.095	(0.109)	-0.076	(0.109)
Maternal education at 9-month (vs. less than HS)								
HS graduate					0.336**	(0.126)	0.337**	(0.125)
Some college or more					0.166	(0.167)	0.119	(0.167)
Family income at 9-month (vs. \$0-\$20,000)								
\$20,001-\$35,000					0.084	(0.112)	0.087	(0.111)
\$35,001-\$50,000					-0.357*	(0.154)	-0.356*	(0.154)
\$50,000 or more					-0.532†	(0.321)	-0.647†	(0.333)
Number of siblings at 9-month (vs. none)								
One					0.179	(0.128)	0.177	(0.128)
Two or more					0.113	(0.136)	0.128	(0.135)
Maternal employment, child care, and parenting at preschool								
Maternal employment (vs. not working)								
Part-time					-0.476**	(0.182)	-0.440*	(0.182)
Full-time					0.002	(0.115)	-0.012	(0.115)
Child care arrangements (vs. parental care)								

Relative care				0.146	(0.172)	0.088	(0.173)	
Non-relative care				-0.491*	(0.221)	-0.471*	(0.220)	
Other center-based care				0.031	(0.145)	0.018	(0.144)	
Head Start				-0.277*	(0.132)	-0.310*	(0.132)	
Parenting behaviors								
Cognitively stimulating activities				0.001	(0.025)	0.004	(0.025)	
Use of spanking				-0.011	(0.122)	0.003	(0.122)	
Having sleeping routines				0.266*	(0.123)	0.231†	(0.123)	
Eating dinner together per week				-0.020	(0.022)	-0.019	(0.022)	
Constant	0.405	(0.311)	0.403	(0.324)	-0.403	(0.484)	-0.258	(0.484)
Adjusted R-squared	0.033		0.031		0.105		0.111	

Note. Reference language group was home language mothers. All regressions were adjusted using the kindergarten sampling weights (WK1R0). Model 1 included maternal language groups and child characteristics; Model 2 was the same as Model 1 but added maternal years of U.S. residency; Model 3 was the same as Model 2 but added family background and process variables; and Model 4 was the same as Model 3 but further added interaction terms of maternal language groups with maternal years of U.S. residency.

Sample sizes were rounded to the nearest 50, due to IES reporting rules. Sample sizes were about 450 in all models. *Coef* =

Coefficient. *SE* = Standard error of the coefficient.

*** $p < 0.001$. ** $p < 0.01$. * $p < 0.05$. † $p < 0.10$.

Table C1 Academic School Readiness at Kindergarten Entry, Center-based Care vs. Home-based Care

	Early reading		Expressive language		Math	
	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>
<i>Panel A: Children of Asian immigrant mothers</i>						
Center-based care	0.14† _a	(0.09)	0.01	(0.07)	0.16† _a	(0.08)
Home-based care	-0.49*** _a	(0.14)	-0.05	(0.12)	-0.32* _a	(0.13)
<i>R</i> ²	0.30		0.19		0.33	
<i>N</i>	800		800		800	
<i>Panel B: Children of Hispanic immigrant mothers</i>						
Center-based care	0.10	(0.08)	0.09	(0.09)	0.04	(0.08)
Home-based care	-0.08	(0.12)	-0.01	(0.14)	-0.05	(0.13)
<i>R</i> ²	0.19		0.22		0.15	
<i>N</i>	650		650		650	

Note. Children in parental care were the reference group. All regressions were adjusted using the kindergarten sampling weights, and estimated using Model 3, which includes all covariates (i.e., child, maternal, parenting, and family characteristics as well as pre-treatment outcomes). Sample sizes were rounded to the nearest 50. Within each column of each panel, common subscripts indicate significant differences from each other at least at the .05 significance level. *Coef* = Coefficient. *SE* = Standard error of the coefficient. *** $p < .001$. ** $p < 0.01$. † $p < 0.10$.

Table C2 Socio-emotional and Behavioral Development at Kindergarten Entry, Center-based Care vs. Home-based Care

	Approaches to learning		Pro-social behavior		Attention problems		Externalizing problems	
	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>
<i>Panel A: Teacher-rated scores among children of Asian immigrant mothers</i>								
Center-based care	-0.07	(0.11)	0.07	(0.11)	-0.11	(0.10)	-0.16†	(0.09)
Home-based care	-0.01	(0.17)	0.16	(0.17)	-0.31†	(0.16)	-0.17	(0.15)
<i>R</i> ²	0.09		0.09		0.12		0.10	
<i>N</i>	600		600		600		600	
<i>Panel B: Parent-rated scores among children of Asian immigrant mothers</i>								
Center-based care	0.10	(0.09)	0.08	(0.09)	-0.04 ^a	(0.09)	-0.15	(0.10)
Home-based care	-0.09	(0.14)	0.12	(0.15)	0.19 ^a	(0.15)	0.04	(0.15)
<i>R</i> ²	0.14		0.11		0.12		0.15	
<i>N</i>	800		800		850		800	
<i>Panel C: Teacher-rated scores among children of Hispanic immigrant mothers</i>								
Center-based care	-0.16	(0.11)	-0.03	(0.12)	-0.24*	(0.11)	-0.18	(0.11)
Home-based care	-0.08	(0.17)	-0.01	(0.17)	-0.12	(0.17)	-0.16	(0.17)
<i>R</i> ²	0.08		0.04		0.12		0.10	
<i>N</i>	450		450		450		450	
<i>Panel D: Parent-rated scores among children of Hispanic immigrant mothers</i>								
Center-based care	-0.21* _a	(0.09)	-0.17†	(0.09)	-0.06	(0.09)	0.10	(0.09)
Home-based care	0.05 _a	(0.13)	-0.07	(0.14)	-0.25†	(0.14)	-0.08	(0.14)
<i>R</i> ²	0.14		0.09		0.09		0.08	
<i>N</i>	650		650		650		650	

Note. Attention and externalizing problems measures were reverse-coded, with higher scores indicating lower levels of problems. Children in parental care were the reference group. All regressions were adjusted using the kindergarten sampling weights, and estimated using Model 3, which includes all covariates (i.e., child, maternal, parenting, and family characteristics as well as pre-treatment outcomes). Sample sizes were rounded to the nearest 50. Within each column of each panel, common subscripts and superscripts indicate significant differences across types of child care at least at the .05 and .10 significance levels, respectively. *Coef* = Coefficient. *SE* = Standard error of the coefficient.

* $p < 0.05$. † $p < 0.10$.

Table D1 Preschool and Early Reading at Kindergarten Entry among Children of Asian Immigrant Mothers

	Model 1		Model 2		Model 3	
	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>
Preschool care arrangements (vs. parental care)						
Head Start	-0.317*	(0.140)	-0.170	(0.133)	-0.157	(0.132)
Prekindergarten	0.521***	(0.112)	0.274*	(0.108)	0.279**	(0.107)
Other center-based care	0.404***	(0.091)	0.172†	(0.091)	0.171†	(0.090)
Home-based care	-0.541***	(0.139)	-0.500***	(0.135)	-0.484***	(0.134)
Child characteristics						
Boy	-0.169*	(0.067)	-0.131*	(0.062)	-0.103†	(0.062)
Age in months at 9 months	0.015	(0.019)	0.024	(0.017)	0.033†	(0.017)
Low birth weight at birth	-0.232†	(0.133)	-0.142	(0.124)	-0.134	(0.123)
Multiple birth at birth	-0.075	(0.226)	0.053	(0.215)	0.153	(0.214)
Health status (vs. excellent)						
Fair/good	-0.002	(0.095)	0.007	(0.089)	0.033	(0.088)
Very good	-0.018	(0.075)	0.020	(0.069)	0.034	(0.069)
Number of siblings (vs. none)						
One	0.034	(0.074)	0.081	(0.070)	0.074	(0.070)
Two or more	-0.284**	(0.094)	-0.070	(0.095)	-0.043	(0.095)
English primary home language	0.088	(0.072)	0.150†	(0.090)	0.116	(0.090)
Maternal characteristics						
Chinese (vs. other Asian)			0.270**	(0.084)	0.195*	(0.085)
Maternal language use (vs. home language)						
English only			-0.028	(0.118)	-0.035	(0.117)
Bilingual			0.118	(0.084)	0.129	(0.084)
Years of US residency			-0.005	(0.005)	-0.004	(0.005)
Maternal age at birth			-0.011†	(0.007)	-0.011†	(0.007)
Married at birth			0.244*	(0.119)	0.211†	(0.118)
Employment status at 2 years (vs. not working)						
Full-time			0.202*	(0.085)	0.185*	(0.085)
Part-time			-0.096	(0.106)	-0.089	(0.105)
Parenting behaviors						
KIDI at 9 months			-0.006	(0.017)	-0.008	(0.017)

Cognitively stimulating activities at 2 years	0.052***	(0.016)	0.039*	(0.016)
No spanking at 2 years	0.171*	(0.074)	0.152*	(0.073)
Family characteristics				
Child care arrangements at 2 years (vs. parental care)				
Relative care	-0.122	(0.091)	-0.127	(0.091)
Nonrelative care	-0.147	(0.118)	-0.164	(0.117)
Center-based care	-0.150	(0.114)	-0.152	(0.113)
Parent's education at birth (vs. less than high school)				
High school	-0.265†	(0.145)	-0.284*	(0.144)
Some college	-0.051	(0.141)	-0.099	(0.141)
Above college	0.189	(0.143)	0.128	(0.143)
Family income at 9 months (vs. \$0-\$20,000)				
\$20,001-\$35,000	0.068	(0.119)	0.063	(0.118)
\$35,001-\$50,000	0.202†	(0.121)	0.206†	(0.120)
\$50,000 or more	0.282*	(0.143)	0.270†	(0.142)
Family income at 2 years (vs. \$0-\$20,000)				
\$20,001-\$35,000	0.008	(0.120)	0.020	(0.119)
\$35,001-\$50,000	0.103	(0.122)	0.107	(0.121)
\$50,000 or more	0.221	(0.145)	0.235	(0.143)
Lived in urban area at 2 years	0.264	(0.188)	0.343†	(0.188)
Region of country at 2 years (vs. Northeast)				
Midwest	0.118	(0.107)	0.092	(0.106)
South	0.499***	(0.100)	0.492***	(0.099)
West	0.230**	(0.088)	0.201*	(0.087)
Earlier cognitive scores (BSF-R) at 2 years				
Constant	0.826***	(0.214)	-0.538	(0.447)
Adjusted R-squared	0.147		0.295	
			0.015***	(0.004)
			-1.238**	(0.468)

Note. Sample sizes were rounded to the nearest 50. Sample sizes were about 800 in all models. All models were adjusted using the kindergarten sampling weights. Model 1 only including care arrangement groups and child characteristics; Model 2 adding maternal, and family characteristics and parenting behaviors; Model 3 adding earlier outcome scores. BSF-R = Bayley Short Form-Research Edition; KIDI = Knowledge of Infant Development Inventory; *Coef* = Coefficient. *SE* = Standard error of the coefficient.

*** $p < .001$. ** $p < 0.01$. * $p < 0.05$. † $p < 0.10$.

Table D2 Preschool and Expressive Language at Kindergarten Entry among Children of Asian Immigrant Mothers

	Model 1		Model 2		Model 3	
	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>
Preschool care arrangements (vs. parental care)						
Head Start	-0.128	(0.116)	-0.090	(0.115)	-0.074	(0.114)
Prekindergarten	0.223*	(0.092)	0.061	(0.092)	0.064	(0.091)
Other center-based care	0.154*	(0.075)	0.010	(0.078)	0.006	(0.077)
Home-based care	0.035	(0.115)	-0.064	(0.116)	-0.049	(0.115)
Child characteristics						
Boy	-0.015	(0.055)	0.024	(0.053)	0.050	(0.052)
Age in months at 9 months	0.028†	(0.016)	0.026	(0.016)	0.034*	(0.015)
Low birth weight at birth	-0.194†	(0.109)	-0.203†	(0.106)	-0.192†	(0.105)
Multiple birth at birth	-0.118	(0.188)	0.011	(0.186)	0.119	(0.184)
Health status (vs. excellent)						
Fair/good	0.089	(0.079)	0.098	(0.077)	0.124	(0.076)
Very good	-0.065	(0.062)	-0.011	(0.059)	0.007	(0.059)
Number of siblings (vs. none)						
One	-0.068	(0.061)	-0.050	(0.060)	-0.056	(0.060)
Two or more	-0.172*	(0.078)	-0.084	(0.082)	-0.056	(0.081)
English primary home language	0.315***	(0.060)	0.199*	(0.078)	0.165*	(0.077)
Maternal characteristics						
Chinese (vs. other Asian)			-0.057	(0.073)	-0.136†	(0.073)
Maternal language use (vs. home language)						
English only			0.217*	(0.103)	0.206*	(0.101)
Bilingual			0.219**	(0.073)	0.230**	(0.072)
Years of US residency			-0.001	(0.004)	-0.000	(0.004)
Maternal age at birth			0.002	(0.006)	0.001	(0.006)
Married at birth			-0.043	(0.101)	-0.082	(0.100)
Employment status at 2 years (vs. not working)						
Full-time			0.051	(0.074)	0.035	(0.073)
Part-time			0.011	(0.092)	0.017	(0.091)
Parenting behaviors						
KIDI at 9 months			-0.028†	(0.015)	-0.031*	(0.014)

Cognitively stimulating activities at 2 years			0.050***	(0.014)	0.036**	(0.014)
No spanking at 2 years			-0.074	(0.064)	-0.093	(0.063)
Family characteristics						
Child care arrangements at 2 years (vs. parental care)						
Relative care			-0.035	(0.078)	-0.044	(0.078)
Nonrelative care			0.027	(0.103)	0.004	(0.101)
Center-based care			0.057	(0.100)	0.047	(0.099)
Parent's education at birth (vs. less than high school)						
High school			-0.465***	(0.126)	-0.481***	(0.125)
Some college			-0.385**	(0.123)	-0.432***	(0.123)
Above college			-0.235†	(0.125)	-0.295*	(0.124)
Family income at 9 months (vs. \$0-\$20,000)						
\$20,001-\$35,000			0.185†	(0.104)	0.182†	(0.102)
\$35,001-\$50,000			0.214*	(0.105)	0.221*	(0.103)
\$50,000 or more			0.084	(0.124)	0.074	(0.122)
Family income at 2 years (vs. \$0-\$20,000)						
\$20,001-\$35,000			0.080	(0.104)	0.087	(0.103)
\$35,001-\$50,000			0.287**	(0.106)	0.287**	(0.104)
\$50,000 or more			0.468***	(0.125)	0.480***	(0.123)
Lived in urban area at 2 years			-0.143	(0.167)	-0.050	(0.166)
Region of country at 2 years (vs. Northeast)						
Midwest			0.025	(0.091)	0.005	(0.090)
South			0.150†	(0.086)	0.148†	(0.085)
West			0.018	(0.076)	-0.010	(0.075)
Cognitive scores (BSF-R) at 2 years					0.016***	(0.003)
Constant	0.137	(0.181)	0.223	(0.388)	-0.520	(0.407)
Adjusted R-squared	0.063		0.164		0.192	

Note. Sample sizes were rounded to the nearest 50. Sample sizes were about 800 in all models. All models were adjusted using the kindergarten sampling weights. Model 1 only including care arrangement groups and child characteristics; Model 2 adding maternal, and family characteristics and parenting behaviors; Model 3 adding earlier outcome scores. BSF-R = Bayley Short Form-Research Edition; KIDI = Knowledge of Infant Development Inventory; *Coef* = Coefficient. *SE* = Standard error of the coefficient.

*** $p < .001$. ** $p < 0.01$. * $p < 0.05$. † $p < 0.10$.

Table D3 Preschool and Mathematics at Kindergarten Entry among Children of Asian Immigrant Mothers

	Model 1		Model 2		Model 3	
	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>
Preschool care arrangements (vs. parental care)						
Head Start	-0.244†	(0.139)	-0.181	(0.132)	-0.164	(0.131)
Prekindergarten	0.473***	(0.111)	0.196†	(0.107)	0.203†	(0.105)
Other center-based care	0.514***	(0.090)	0.226*	(0.090)	0.224*	(0.089)
Home-based care	-0.291*	(0.138)	-0.334*	(0.134)	-0.313*	(0.133)
Child characteristics						
Boy	-0.012	(0.066)	0.005	(0.061)	0.039	(0.061)
Age in months at 9 months	0.004	(0.020)	0.013	(0.018)	0.025	(0.018)
Low birth weight at birth	-0.277*	(0.132)	-0.191	(0.123)	-0.181	(0.121)
Multiple birth at birth	-0.151	(0.225)	0.002	(0.214)	0.135	(0.212)
Health status (vs. excellent)						
Fair/good	0.020	(0.095)	-0.000	(0.089)	0.033	(0.087)
Very good	0.015	(0.074)	0.028	(0.069)	0.049	(0.068)
Number of siblings (vs. none)						
One	0.136†	(0.073)	0.149*	(0.070)	0.141*	(0.069)
Two or more	-0.224*	(0.094)	-0.087	(0.095)	-0.050	(0.094)
English primary home language	0.132†	(0.072)	0.213*	(0.090)	0.168†	(0.089)
Maternal characteristics						
Chinese (vs. other Asian)			0.410***	(0.084)	0.308***	(0.084)
Maternal language use (vs. home language)						
English only			-0.072	(0.119)	-0.084	(0.117)
Bilingual			-0.059	(0.085)	-0.044	(0.084)
Years of US residency			-0.012*	(0.005)	-0.010*	(0.005)
Maternal age at birth			0.002	(0.007)	0.001	(0.007)
Married at birth			0.265*	(0.118)	0.215†	(0.116)
Employment status at 2 years (vs. not working)						
Full-time			0.218*	(0.085)	0.195*	(0.084)
Part-time			-0.079	(0.106)	-0.069	(0.103)
Parenting behaviors						
KIDI at 9 months			0.014	(0.017)	0.010	(0.017)

Cognitively stimulating activities at 2 years	0.035*	(0.016)	0.018	(0.016)
No spanking at 2 years	0.077	(0.073)	0.053	(0.072)
Family characteristics				
Child care arrangements at 2 years (vs. parental care)				
Relative care	0.011	(0.090)	0.006	(0.090)
Nonrelative care	-0.094	(0.118)	-0.114	(0.116)
Center-based care	-0.098	(0.114)	-0.101	(0.112)
Parent's education at birth (vs. less than high school)				
High school	-0.207	(0.144)	-0.234	(0.143)
Some college	0.159	(0.141)	0.091	(0.140)
Above college	0.284*	(0.143)	0.200	(0.142)
Family income at 9 months (vs. \$0-\$20,000)				
\$20,001-\$35,000	0.124	(0.119)	0.114	(0.116)
\$35,001-\$50,000	0.278*	(0.120)	0.283*	(0.118)
\$50,000 or more	0.345*	(0.142)	0.326*	(0.140)
Family income at 2 years (vs. \$0-\$20,000)				
\$20,001-\$35,000	0.177	(0.120)	0.190	(0.118)
\$35,001-\$50,000	0.153	(0.122)	0.157	(0.120)
\$50,000 or more	0.200	(0.144)	0.217	(0.142)
Lived in urban area at 2 years	-0.084	(0.187)	0.022	(0.186)
Region of country at 2 years (vs. Northeast)				
Midwest	0.024	(0.106)	-0.007	(0.104)
South	0.178†	(0.100)	0.170†	(0.098)
West	0.115	(0.087)	0.076	(0.086)
Cognitive scores (BSF-R) at 2 years				
Constant	0.845***	(0.221)	-0.059	(0.449)
Adjusted R-squared	0.159		0.304	

Note. Sample sizes were rounded to the nearest 50. Sample sizes were about 800 in all models. All models were adjusted using the kindergarten sampling weights. Model 1 only including care arrangement groups and child characteristics; Model 2 adding maternal, and family characteristics and parenting behaviors; Model 3 adding earlier outcome scores. BSF-R = Bayley Short Form-Research Edition; KIDI = Knowledge of Infant Development Inventory; *Coef* = Coefficient. *SE* = Standard error of the coefficient.

*** $p < .001$. ** $p < 0.01$. * $p < 0.05$. † $p < 0.10$.

Table D4 Preschool and Early Reading at Kindergarten Entry among Children of Hispanic Immigrant Mothers

	Model 1		Model 2		Model 3	
	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>
Preschool care arrangements (vs. parental care)						
Head Start	0.081	(0.091)	0.089	(0.091)	0.104	(0.091)
Prekindergarten	0.326*	(0.126)	0.080	(0.129)	0.123	(0.129)
Other center-based care	0.221*	(0.112)	0.067	(0.115)	0.072	(0.115)
Home-based care	-0.149	(0.124)	-0.120	(0.124)	-0.079	(0.124)
Child characteristics						
Boy	-0.100	(0.072)	-0.131†	(0.070)	-0.104	(0.070)
Age in months at 9 months	0.010	(0.019)	0.015	(0.019)	0.010	(0.019)
Low birth weight at birth	-0.166	(0.146)	-0.173	(0.140)	-0.144	(0.139)
Multiple birth at birth	-0.064	(0.243)	-0.113	(0.231)	-0.076	(0.230)
Health status (vs. excellent)						
Fair/good	-0.280**	(0.089)	-0.206*	(0.089)	-0.194*	(0.088)
Very good	-0.297***	(0.086)	-0.279**	(0.084)	-0.275**	(0.084)
Number of siblings (vs. none)						
One	0.118	(0.089)	0.095	(0.091)	0.092	(0.090)
Two or more	0.010	(0.085)	0.014	(0.096)	0.002	(0.096)
English primary home language	0.109	(0.113)	-0.239†	(0.133)	-0.251†	(0.132)
Maternal characteristics						
Mexican (vs. other Hispanic)			-0.108	(0.102)	-0.123	(0.101)
Maternal language use (vs. home language)						
English only			0.339*	(0.165)	0.312†	(0.165)
Bilingual			0.162	(0.107)	0.156	(0.106)
Years of US residency			0.003	(0.007)	0.003	(0.007)
Maternal age at birth			0.022**	(0.008)	0.020**	(0.008)
Married at birth			0.070	(0.077)	0.060	(0.077)
Employment status at 2 years (vs. not working)						
Full-time			0.100	(0.116)	0.061	(0.117)
Part-time			0.127	(0.137)	0.113	(0.137)
Parenting behaviors						
KIDI at 9 months			-0.018	(0.019)	-0.023	(0.019)

Cognitively stimulating activities at 2 years			-0.014	(0.017)	-0.019	(0.017)
No spanking at 2 years			-0.294**	(0.093)	-0.306**	(0.093)
Family characteristics						
Child care arrangements at 2 years (vs. parental care)						
Relative care			-0.159	(0.130)	-0.151	(0.129)
Nonrelative care			0.022	(0.144)	0.055	(0.144)
Center-based care			0.264	(0.166)	0.250	(0.165)
Parent's education at birth (vs. less than high school)						
High school			0.264**	(0.083)	0.244**	(0.083)
Some college			0.272*	(0.106)	0.268*	(0.106)
Above college			0.538***	(0.155)	0.504**	(0.154)
Family income at 9 months (vs. \$0-\$20,000)						
\$20,001-\$35,000			0.044	(0.082)	0.057	(0.082)
\$35,001-\$50,000			0.066	(0.117)	0.057	(0.116)
\$50,000 or more			-0.030	(0.252)	0.028	(0.251)
Family income at 2 years (vs. \$0-\$20,000)						
\$20,001-\$35,000			-0.095	(0.083)	-0.095	(0.083)
\$35,001-\$50,000			0.164	(0.109)	0.172	(0.109)
\$50,000 or more			-0.043	(0.220)	-0.087	(0.219)
Lived in urban area at 2 years			-0.040	(0.199)	-0.080	(0.199)
Region of country at 2 years (vs. Northeast)						
Midwest			-0.132	(0.166)	-0.114	(0.165)
South			0.038	(0.129)	0.062	(0.129)
West			-0.046	(0.133)	-0.041	(0.132)
Cognitive scores (BSF-R) at 2 years					0.013**	(0.004)
Constant	0.181	(0.210)	-0.260	(0.420)	-0.624	(0.438)
Adjusted R-squared	0.072		0.173		0.186	

Note. Sample sizes were rounded to the nearest 50. Sample sizes were about 650 in all models. All models were adjusted using the kindergarten sampling weights. Model 1 only including care arrangement groups and child characteristics; Model 2 adding maternal, and family characteristics and parenting behaviors; Model 3 adding earlier outcome scores. BSF-R = Bayley Short Form-Research Edition; KIDI = Knowledge of Infant Development Inventory; *Coef* = Coefficient. *SE* = Standard error of the coefficient.

*** $p < .001$. ** $p < 0.01$. * $p < 0.05$. † $p < 0.10$.

Table D5 Preschool and Expressive Language at Kindergarten Entry among Children of Hispanic Immigrant Mothers

	Model 1		Model 2		Model 3	
	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>
Preschool care arrangements (vs. parental care)						
Head Start	0.159	(0.102)	0.040	(0.101)	0.059	(0.101)
Prekindergarten	0.460***	(0.137)	0.100	(0.139)	0.160	(0.138)
Other center-based care	0.424***	(0.124)	0.111	(0.126)	0.112	(0.125)
Home-based care	0.065	(0.138)	-0.060	(0.137)	-0.006	(0.136)
Child characteristics						
Boy	-0.044	(0.079)	-0.001	(0.077)	0.037	(0.077)
Age in months at 9 months	0.006	(0.021)	0.012	(0.020)	0.004	(0.020)
Low birth weight at birth	-0.124	(0.160)	-0.159	(0.151)	-0.123	(0.150)
Multiple birth at birth	-0.681**	(0.263)	-0.671**	(0.247)	-0.620*	(0.245)
Health status (vs. excellent)						
Fair/good	-0.306**	(0.100)	-0.141	(0.098)	-0.116	(0.097)
Very good	-0.133	(0.095)	-0.063	(0.092)	-0.053	(0.091)
Number of siblings (vs. none)						
One	0.280**	(0.099)	0.285**	(0.099)	0.283**	(0.098)
Two or more	0.349***	(0.094)	0.464***	(0.105)	0.440***	(0.104)
English primary home language	0.342**	(0.125)	-0.152	(0.146)	-0.165	(0.145)
Maternal characteristics						
Mexican (vs. other Hispanic)			-0.175	(0.110)	-0.193†	(0.109)
Maternal language use (vs. home language)						
English only			0.530**	(0.188)	0.501**	(0.188)
Bilingual			0.400***	(0.119)	0.395***	(0.118)
Years of US residency			0.007	(0.007)	0.007	(0.007)
Maternal age at birth			0.004	(0.008)	0.001	(0.008)
Married at birth			0.064	(0.086)	0.053	(0.085)
Employment status at 2 years (vs. not working)						
Full-time			0.453***	(0.125)	0.403**	(0.125)
Part-time			0.305*	(0.148)	0.287*	(0.146)
Parenting behaviors						
KIDI at 9 months			0.026	(0.020)	0.019	(0.020)

Cognitively stimulating activities at 2 years	0.009	(0.019)	0.002	(0.019)
No spanking at 2 years	-0.251*	(0.103)	-0.259*	(0.102)
Family characteristics				
Child care arrangements at 2 years (vs. parental care)				
Relative care	-0.288*	(0.140)	-0.274*	(0.139)
Nonrelative care	-0.220	(0.158)	-0.178	(0.156)
Center-based care	-0.168	(0.176)	-0.185	(0.174)
Parent's education at birth (vs. less than high school)				
High school	0.006	(0.092)	-0.022	(0.092)
Some college	0.068	(0.116)	0.069	(0.115)
Above college	0.249	(0.169)	0.204	(0.168)
Family income at 9 months (vs. \$0-\$20,000)				
\$20,001-\$35,000	-0.008	(0.090)	0.004	(0.090)
\$35,001-\$50,000	0.034	(0.129)	0.013	(0.128)
\$50,000 or more	-0.237	(0.272)	-0.165	(0.270)
Family income at 2 years (vs. \$0-\$20,000)				
\$20,001-\$35,000	-0.031	(0.091)	-0.028	(0.090)
\$35,001-\$50,000	0.240*	(0.119)	0.246*	(0.118)
\$50,000 or more	0.289	(0.236)	0.227	(0.234)
Lived in urban area at 2 years	-0.155	(0.226)	-0.216	(0.224)
Region of country at 2 years (vs. Northeast)				
Midwest	-0.270	(0.183)	-0.251	(0.181)
South	-0.466***	(0.140)	-0.431**	(0.139)
West	-0.404**	(0.146)	-0.398**	(0.144)
Cognitive scores (BSF-R) at 2 years			0.018***	(0.005)
Constant	-0.127	(0.232)	0.016	(0.462)
Adjusted R-squared	0.079		0.199	

Note. Sample sizes were rounded to the nearest 50. Sample sizes were about 650 in all models. All models were adjusted using the kindergarten sampling weights. Model 1 only including care arrangement groups and child characteristics; Model 2 adding maternal, and family characteristics and parenting behaviors; Model 3 adding earlier outcome scores. BSF-R = Bayley Short Form-Research Edition; KIDI = Knowledge of Infant Development Inventory; *Coef* = Coefficient. *SE* = Standard error of the coefficient.

*** $p < .001$. ** $p < 0.01$. * $p < 0.05$. † $p < 0.10$.

Table D6 Preschool and Mathematics at Kindergarten Entry among Children of Hispanic Immigrant Mothers

	Model 1		Model 2		Model 3	
	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>
Preschool care arrangements (vs. parental care)						
Head Start	0.013	(0.091)	0.007	(0.093)	0.023	(0.093)
Prekindergarten	0.229†	(0.126)	0.003	(0.131)	0.051	(0.131)
Other center-based care	0.232*	(0.113)	0.085	(0.118)	0.090	(0.117)
Home-based care	-0.096	(0.124)	-0.097	(0.126)	-0.052	(0.126)
Child characteristics						
Boy	0.016	(0.072)	0.006	(0.071)	0.036	(0.071)
Age in months at 9 months	0.011	(0.019)	0.020	(0.019)	0.014	(0.019)
Low birth weight at birth	-0.194	(0.145)	-0.176	(0.141)	-0.144	(0.140)
Multiple birth at birth	-0.232	(0.243)	-0.259	(0.235)	-0.218	(0.234)
Health status (vs. excellent)						
Fair/good	-0.297***	(0.089)	-0.262**	(0.091)	-0.249**	(0.090)
Very good	-0.276**	(0.086)	-0.243**	(0.086)	-0.239**	(0.086)
Number of siblings (vs. none)						
One	0.223*	(0.089)	0.236*	(0.093)	0.232*	(0.092)
Two or more	0.066	(0.085)	0.116	(0.098)	0.103	(0.098)
English primary home language	0.038	(0.113)	-0.215	(0.135)	-0.229†	(0.134)
Maternal characteristics						
Mexican (vs. other Hispanic)			-0.132	(0.104)	-0.150	(0.103)
Maternal language use (vs. home language)						
English only			0.190	(0.173)	0.160	(0.174)
Bilingual			0.115	(0.111)	0.108	(0.110)
Years of US residency			-0.006	(0.007)	-0.006	(0.007)
Maternal age at birth			0.014†	(0.008)	0.012	(0.008)
Married at birth			0.074	(0.079)	0.064	(0.078)
Employment status at 2 years (vs. not working)						
Full-time			0.222†	(0.120)	0.178	(0.120)
Part-time			0.138	(0.139)	0.122	(0.139)
Parenting behaviors						
KIDI at 9 months			0.004	(0.019)	-0.001	(0.019)

Cognitively stimulating activities at 2 years			0.006	(0.018)	0.000	(0.018)
No spanking at 2 years			-0.167†	(0.096)	-0.180†	(0.095)
Family characteristics						
Child care arrangements at 2 years (vs. parental care)						
Relative care			-0.145	(0.133)	-0.137	(0.132)
Nonrelative care			-0.201	(0.147)	-0.164	(0.147)
Center-based care			0.167	(0.170)	0.152	(0.169)
Parent's education at birth (vs. less than high school)						
High school			0.230**	(0.085)	0.207*	(0.085)
Some college			0.165	(0.109)	0.160	(0.108)
Above college			0.542***	(0.157)	0.504**	(0.157)
Family income at 9 months (vs. \$0-\$20,000)						
\$20,001-\$35,000			0.156†	(0.084)	0.170*	(0.084)
\$35,001-\$50,000			0.131	(0.119)	0.121	(0.118)
\$50,000 or more			0.337	(0.256)	0.401	(0.255)
Family income at 2 years (vs. \$0-\$20,000)						
\$20,001-\$35,000			0.014	(0.085)	0.014	(0.085)
\$35,001-\$50,000			0.101	(0.111)	0.111	(0.111)
\$50,000 or more			-0.254	(0.222)	-0.303	(0.220)
Lived in urban area at 2 years			-0.066	(0.203)	-0.110	(0.202)
Region of country at 2 years (vs. Northeast)						
Midwest			0.049	(0.169)	0.070	(0.168)
South			-0.025	(0.132)	0.002	(0.131)
West			-0.173	(0.135)	-0.167	(0.134)
Cognitive scores (BSF-R) at 2 years					0.015**	(0.005)
Constant	0.033	(0.210)	-0.408	(0.427)	-0.810†	(0.443)
Adjusted R-squared	0.058		0.130		0.143	

Note. Sample sizes were rounded to the nearest 50. Sample sizes were about 650 in all models. All models were adjusted using the kindergarten sampling weights. Model 1 only including care arrangement groups and child characteristics; Model 2 adding maternal, and family characteristics and parenting behaviors; Model 3 adding earlier outcome scores. BSF-R = Bayley Short Form-Research Edition; KIDI = Knowledge of Infant Development Inventory; *Coef* = Coefficient. *SE* = Standard error of the coefficient.

*** $p < .001$. ** $p < 0.01$. * $p < 0.05$. † $p < 0.10$.

Table E1 Preschool and Teacher-rated Approaches to Learning at Kindergarten Entry among Children of Asian Immigrant Mothers

	Model 1		Model 2		Model 3	
	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>
Preschool care arrangements (vs. parental care)						
Head Start	-0.515**	(0.165)	-0.391*	(0.169)	-0.390*	(0.170)
Prekindergarten	0.011	(0.129)	-0.051	(0.136)	-0.051	(0.136)
Other center-based care	0.044	(0.105)	0.003	(0.115)	0.005	(0.115)
Home-based care	-0.099	(0.158)	0.017	(0.170)	0.017	(0.170)
Child characteristics						
Boy	-0.365***	(0.077)	-0.316***	(0.078)	-0.315***	(0.078)
Age in months at 9 months	-0.018	(0.023)	-0.015	(0.022)	-0.015	(0.023)
Low birth weight at birth	-0.291†	(0.161)	-0.219	(0.167)	-0.222	(0.168)
Multiple birth at birth	-0.337	(0.327)	-0.232	(0.338)	-0.229	(0.339)
Health status (vs. excellent)						
Fair/good	-0.028	(0.113)	-0.042	(0.113)	-0.041	(0.114)
Very good	0.088	(0.086)	0.069	(0.087)	0.070	(0.087)
Number of siblings (vs. none)						
One	0.163†	(0.086)	0.181*	(0.091)	0.180*	(0.091)
Two or more	0.166	(0.106)	0.269*	(0.118)	0.267*	(0.119)
English primary home language	-0.040	(0.084)	0.077	(0.115)	0.077	(0.115)
Maternal characteristics						
Chinese (vs. other Asian)			0.001	(0.104)	0.001	(0.104)
Maternal language use (vs. home language)						
English only			-0.153	(0.152)	-0.154	(0.153)
Bilingual			-0.060	(0.108)	-0.061	(0.108)
Years of US residency			-0.018**	(0.006)	-0.018**	(0.006)
Maternal age at birth			-0.002	(0.008)	-0.002	(0.008)
Married at birth			0.077	(0.164)	0.074	(0.167)
Employment status at 2 years (vs. not working)						
Full-time			0.196†	(0.105)	0.197†	(0.105)
Part-time			-0.007	(0.131)	-0.006	(0.131)
Parenting behaviors						

KIDI at 9 months	0.010	(0.022)	0.010	(0.022)
Cognitively stimulating activities at 2 years	0.002	(0.020)	0.002	(0.020)
No spanking at 2 years	-0.065	(0.092)	-0.067	(0.093)
Family characteristics				
Child care arrangements at 2 years (vs. parental care)				
Relative care	-0.041	(0.114)	-0.042	(0.114)
Nonrelative care	-0.013	(0.144)	-0.015	(0.145)
Center-based care	0.014	(0.143)	0.014	(0.143)
Parent's education at birth (vs. less than high school)				
High school	0.497**	(0.185)	0.495**	(0.185)
Some college	0.541**	(0.179)	0.541**	(0.179)
Above college	0.698***	(0.178)	0.699***	(0.179)
Family income at 9 months (vs. \$0-\$20,000)				
\$20,001-\$35,000	0.239	(0.156)	0.239	(0.156)
\$35,001-\$50,000	0.261	(0.159)	0.260	(0.159)
\$50,000 or more	0.216	(0.190)	0.216	(0.190)
Family income at 2 years (vs. \$0-\$20,000)				
\$20,001-\$35,000	-0.138	(0.154)	-0.138	(0.154)
\$35,001-\$50,000	-0.217	(0.158)	-0.218	(0.158)
\$50,000 or more	-0.120	(0.186)	-0.121	(0.186)
Lived in urban area at 2 years	-0.050	(0.216)	-0.049	(0.216)
Region of country at 2 years (vs. Northeast)				
Midwest	0.028	(0.132)	0.027	(0.132)
South	0.014	(0.125)	0.015	(0.126)
West	-0.073	(0.111)	-0.073	(0.111)
Socio-emotional scores (ITSC) at 2 years				
Constant	0.525*	(0.262)	-0.238	(0.580)
Adjusted R-squared	0.055		0.096	0.094

Note. Sample sizes were rounded to the nearest 50. Sample sizes were about 600 in all models. All models were adjusted using the kindergarten sampling weights. Model 1 only including care arrangement groups and child characteristics; Model 2 adding maternal, and family characteristics and parenting behaviors; Model 3 adding earlier outcome scores. ITSC = Infant/Toddler symptom Checklist; KIDI = Knowledge of Infant Development Inventory; *Coef* = Coefficient. *SE* = Standard error of the coefficient.

*** $p < .001$. ** $p < 0.01$. * $p < 0.05$. † $p < 0.10$.

Table E2 Preschool and Teacher-rated Pro-social Behavior at Kindergarten Entry among Children of Asian Immigrant Mothers

	Model 1		Model 2		Model 3	
	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>
Preschool care arrangements (vs. parental care)						
Head Start	-0.245	(0.176)	-0.223	(0.180)	-0.233	(0.180)
Prekindergarten	0.099	(0.134)	0.055	(0.142)	0.051	(0.142)
Other center-based care	0.149	(0.109)	0.169	(0.118)	0.157	(0.119)
Home-based care	0.049	(0.161)	0.189	(0.171)	0.186	(0.171)
Child characteristics						
Boy	-0.396***	(0.080)	-0.358***	(0.081)	-0.365***	(0.081)
Age in months at 9 months	0.001	(0.023)	-0.008	(0.023)	-0.008	(0.023)
Low birth weight at birth	-0.065	(0.167)	0.067	(0.171)	0.088	(0.171)
Multiple birth at birth	-0.306	(0.337)	-0.537	(0.347)	-0.561	(0.348)
Health status (vs. excellent)						
Fair/good	-0.027	(0.117)	-0.006	(0.117)	-0.011	(0.117)
Very good	-0.045	(0.090)	-0.056	(0.090)	-0.060	(0.090)
Number of siblings (vs. none)						
One	0.090	(0.090)	0.204*	(0.095)	0.206*	(0.095)
Two or more	0.163	(0.111)	0.361**	(0.123)	0.377**	(0.124)
English primary home language	0.263**	(0.087)	0.303*	(0.121)	0.298*	(0.121)
Maternal characteristics						
Chinese (vs. other Asian)			0.119	(0.109)	0.120	(0.109)
Maternal language use (vs. home language)						
English only			0.044	(0.161)	0.055	(0.161)
Bilingual			0.199†	(0.111)	0.209†	(0.111)
Years of US residency			-0.005	(0.006)	-0.005	(0.006)
Maternal age at birth			-0.019*	(0.009)	-0.019*	(0.009)
Married at birth			-0.121	(0.170)	-0.090	(0.172)
Employment status at 2 years (vs. not working)						
Full-time			0.073	(0.108)	0.069	(0.108)
Part-time			-0.082	(0.135)	-0.086	(0.135)
Parenting behaviors						

KIDI at 9 months			0.022	(0.022)	0.024	(0.022)	
Cognitively stimulating activities at 2 years			0.051*	(0.021)	0.050*	(0.021)	
No spanking at 2 years			-0.191*	(0.095)	-0.176†	(0.096)	
Family characteristics							
Child care arrangements at 2 years (vs. parental care)							
Relative care			-0.180	(0.117)	-0.179	(0.117)	
Nonrelative care			0.199	(0.153)	0.223	(0.155)	
Center-based care			-0.153	(0.149)	-0.147	(0.149)	
Parent's education at birth (vs. less than high school)							
High school			-0.048	(0.198)	-0.032	(0.199)	
Some college			0.142	(0.190)	0.151	(0.191)	
Above college			0.222	(0.190)	0.212	(0.190)	
Family income at 9 months (vs. \$0-\$20,000)							
\$20,001-\$35,000			-0.182	(0.161)	-0.184	(0.161)	
\$35,001-\$50,000			-0.275†	(0.165)	-0.268	(0.166)	
\$50,000 or more			-0.433*	(0.197)	-0.431*	(0.197)	
Family income at 2 years (vs. \$0-\$20,000)							
\$20,001-\$35,000			0.039	(0.162)	0.038	(0.162)	
\$35,001-\$50,000			0.185	(0.165)	0.193	(0.165)	
\$50,000 or more			0.233	(0.193)	0.244	(0.193)	
Lived in urban area at 2 years			-0.007	(0.221)	-0.020	(0.222)	
Region of country at 2 years (vs. Northeast)							
Midwest			0.229†	(0.139)	0.242†	(0.139)	
South			0.324*	(0.130)	0.308*	(0.131)	
West			-0.030	(0.116)	-0.031	(0.116)	
Socio-emotional scores (ITSC) at 2 years							
Constant		-0.077	(0.257)	-0.647	(0.619)	-0.786	(0.630)
Adjusted R-squared		0.049		0.096		0.097	

Note. Sample sizes were rounded to the nearest 50. Sample sizes were about 600 in all models. All models were adjusted using the kindergarten sampling weights. Model 1 only including care arrangement groups and child characteristics; Model 2 adding maternal, and family characteristics and parenting behaviors; Model 3 adding earlier outcome scores. ITSC = Infant/Toddler symptom Checklist; KIDI = Knowledge of Infant Development Inventory; *Coef* = Coefficient. *SE* = Standard error of the coefficient.

*** $p < .001$. ** $p < 0.01$. * $p < 0.05$. † $p < 0.10$.

Table E3 Preschool and Teacher-rated Attention Problems at Kindergarten Entry among Children of Asian Immigrant Mothers

	Model 1		Model 2		Model 3	
	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>
Preschool care arrangements (vs. parental care)						
Head Start	-0.487**	(0.157)	-0.396*	(0.162)	-0.380*	(0.163)
Prekindergarten	-0.236*	(0.119)	-0.179	(0.126)	-0.172	(0.126)
Other center-based care	-0.065	(0.097)	-0.017	(0.107)	-0.003	(0.107)
Home-based care	-0.358*	(0.150)	-0.298†	(0.162)	-0.290†	(0.162)
Child characteristics						
Boy	-0.450***	(0.072)	-0.428***	(0.072)	-0.423***	(0.072)
Age in months at 9 months	-0.028	(0.022)	-0.023	(0.021)	-0.022	(0.022)
Low birth weight at birth	-0.271†	(0.144)	-0.309*	(0.148)	-0.334*	(0.149)
Multiple birth at birth	0.005	(0.299)	0.291	(0.309)	0.316	(0.310)
Health status (vs. excellent)						
Fair/good	-0.052	(0.105)	-0.035	(0.106)	-0.028	(0.106)
Very good	0.059	(0.080)	0.086	(0.080)	0.089	(0.080)
Number of siblings (vs. none)						
One	0.047	(0.080)	0.057	(0.085)	0.054	(0.085)
Two or more	0.134	(0.099)	0.172	(0.110)	0.161	(0.111)
English primary home language	-0.195*	(0.078)	-0.006	(0.107)	-0.003	(0.107)
Maternal characteristics						
Chinese (vs. other Asian)			-0.173†	(0.098)	-0.176†	(0.098)
Maternal language use (vs. home language)						
English only			-0.197	(0.143)	-0.209	(0.144)
Bilingual			0.052	(0.100)	0.042	(0.100)
Years of US residency			-0.008	(0.006)	-0.008	(0.006)
Maternal age at birth			-0.004	(0.008)	-0.004	(0.008)
Married at birth			0.066	(0.149)	0.036	(0.151)
Employment status at 2 years (vs. not working)						
Full-time			0.061	(0.097)	0.066	(0.097)
Part-time			0.030	(0.119)	0.036	(0.119)
Parenting behaviors						

KIDI at 9 months		-0.043*	(0.020)	-0.045*	(0.020)	
Cognitively stimulating activities at 2 years		0.018	(0.019)	0.018	(0.019)	
No spanking at 2 years		-0.049	(0.086)	-0.062	(0.087)	
Family characteristics						
Child care arrangements at 2 years (vs. parental care)						
Relative care		0.022	(0.107)	0.019	(0.107)	
Nonrelative care		-0.154	(0.133)	-0.177	(0.135)	
Center-based care		-0.019	(0.134)	-0.024	(0.134)	
Parent's education at birth (vs. less than high school)						
High school		0.354*	(0.171)	0.344*	(0.171)	
Some college		0.186	(0.169)	0.186	(0.169)	
Above college		0.281†	(0.167)	0.296†	(0.168)	
Family income at 9 months (vs. \$0-\$20,000)						
\$20,001-\$35,000		0.233	(0.146)	0.235	(0.146)	
\$35,001-\$50,000		0.347*	(0.150)	0.341*	(0.150)	
\$50,000 or more		0.438*	(0.178)	0.438*	(0.178)	
Family income at 2 years (vs. \$0-\$20,000)						
\$20,001-\$35,000		-0.283†	(0.145)	-0.284†	(0.145)	
\$35,001-\$50,000		-0.413**	(0.150)	-0.421**	(0.150)	
\$50,000 or more		-0.292†	(0.175)	-0.304†	(0.175)	
Lived in urban area at 2 years		-0.186	(0.199)	-0.174	(0.199)	
Region of country at 2 years (vs. Northeast)						
Midwest		-0.099	(0.123)	-0.110	(0.124)	
South		-0.238*	(0.116)	-0.223†	(0.117)	
West		-0.183†	(0.104)	-0.184†	(0.104)	
Socio-emotional scores (ITSC) at 2 years						
Constant	0.835***	(0.247)	1.149*	(0.539)	1.285*	(0.551)
Adjusted R-squared	0.087		0.126		0.126	

Note. Sample sizes were rounded to the nearest 50. Sample sizes were about 600 in all models. All models were adjusted using the kindergarten sampling weights. Model 1 only including care arrangement groups and child characteristics; Model 2 adding maternal, and family characteristics and parenting behaviors; Model 3 adding earlier outcome scores. ITSC = Infant/Toddler symptom Checklist; KIDI = Knowledge of Infant Development Inventory; *Coef* = Coefficient. *SE* = Standard error of the coefficient.

*** $p < .001$. ** $p < 0.01$. * $p < 0.05$. † $p < 0.10$.

Table E4 Preschool and Teacher-rated Externalizing Problems at Kindergarten Entry among Children of Asian Immigrant Mothers

	Model 1		Model 2		Model 3	
	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>
Preschool care arrangements (vs. parental care)						
Head Start	-0.428**	(0.145)	-0.414**	(0.149)	-0.409**	(0.149)
Prekindergarten	-0.205†	(0.112)	-0.212†	(0.118)	-0.210†	(0.118)
Other center-based care	-0.090	(0.091)	-0.085	(0.100)	-0.080	(0.100)
Home-based care	-0.258†	(0.136)	-0.157	(0.146)	-0.156	(0.146)
Child characteristics						
Boy	-0.432***	(0.067)	-0.410***	(0.068)	-0.407***	(0.068)
Age in months at 9 months	-0.029	(0.021)	-0.024	(0.021)	-0.024	(0.021)
Low birth weight at birth	-0.079	(0.135)	-0.063	(0.139)	-0.076	(0.140)
Multiple birth at birth	-0.077	(0.285)	-0.021	(0.295)	-0.007	(0.295)
Health status (vs. excellent)						
Fair/good	0.073	(0.098)	0.072	(0.099)	0.076	(0.099)
Very good	0.145†	(0.075)	0.183*	(0.075)	0.185*	(0.076)
Number of siblings (vs. none)						
One	0.121	(0.075)	0.151†	(0.079)	0.149†	(0.079)
Two or more	0.170†	(0.093)	0.253*	(0.103)	0.245*	(0.104)
English primary home language						
	-0.071	(0.073)	0.086	(0.100)	0.089	(0.100)
Maternal characteristics						
Chinese (vs. other Asian)			-0.199*	(0.091)	-0.201*	(0.091)
Maternal language use (vs. home language)						
English only			-0.192	(0.132)	-0.199	(0.133)
Bilingual			0.069	(0.093)	0.064	(0.094)
Years of US residency			-0.010†	(0.005)	-0.010†	(0.005)
Maternal age at birth			-0.005	(0.007)	-0.005	(0.007)
Married at birth			0.218	(0.142)	0.201	(0.144)
Employment status at 2 years (vs. not working)						
Full-time			0.120	(0.092)	0.121	(0.092)
Part-time			0.201†	(0.113)	0.203†	(0.113)
Parenting behaviors						

KIDI at 9 months			-0.008	(0.019)	-0.009	(0.019)
Cognitively stimulating activities at 2 years			0.031†	(0.018)	0.031†	(0.018)
No spanking at 2 years			-0.083	(0.080)	-0.090	(0.081)
Family characteristics						
Child care arrangements at 2 years (vs. parental care)						
Relative care			-0.050	(0.099)	-0.050	(0.099)
Nonrelative care			-0.068	(0.127)	-0.080	(0.128)
Center-based care			-0.010	(0.124)	-0.011	(0.124)
Parent's education at birth (vs. less than high school)						
High school			0.328*	(0.162)	0.322*	(0.162)
Some college			0.170	(0.157)	0.166	(0.157)
Above college			0.279†	(0.156)	0.284†	(0.156)
Family income at 9 months (vs. \$0-\$20,000)						
\$20,001-\$35,000			0.121	(0.136)	0.123	(0.136)
\$35,001-\$50,000			0.199	(0.139)	0.196	(0.139)
\$50,000 or more			0.314†	(0.166)	0.314†	(0.166)
Family income at 2 years (vs. \$0-\$20,000)						
\$20,001-\$35,000			-0.100	(0.135)	-0.099	(0.135)
\$35,001-\$50,000			-0.162	(0.138)	-0.165	(0.138)
\$50,000 or more			-0.186	(0.162)	-0.190	(0.162)
Lived in urban area at 2 years			0.165	(0.190)	0.171	(0.190)
Region of country at 2 years (vs. Northeast)						
Midwest			-0.129	(0.116)	-0.136	(0.116)
South			-0.174	(0.109)	-0.166	(0.109)
West			-0.143	(0.097)	-0.143	(0.098)
Socio-emotional scores (ITSC) at 2 years						
Constant	0.682**	(0.234)	-0.087	(0.512)	-0.013	(0.524)
Adjusted R-squared	0.077		0.112		0.111	

Note. Sample sizes were rounded to the nearest 50. Sample sizes were about 600 in all models. All models were adjusted using the kindergarten sampling weights. Model 1 only including care arrangement groups and child characteristics; Model 2 adding maternal, and family characteristics and parenting behaviors; Model 3 adding earlier outcome scores. ITSC = Infant/Toddler symptom Checklist; KIDI = Knowledge of Infant Development Inventory; *Coef* = Coefficient. *SE* = Standard error of the coefficient.

*** $p < .001$. ** $p < 0.01$. * $p < 0.05$. † $p < 0.10$.

Table E5 Preschool and Parent-rated Approaches to Learning at Kindergarten Entry among Children of Asian Immigrant Mothers

	Model 1		Model 2		Model 3	
	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>
Preschool care arrangements (vs. parental care)						
Head Start	-0.277*	(0.140)	-0.098	(0.141)	-0.045	(0.140)
Prekindergarten	0.098	(0.113)	0.023	(0.115)	0.048	(0.114)
Other center-based care	0.137	(0.092)	0.125	(0.097)	0.166†	(0.096)
Home-based care	-0.201	(0.142)	-0.098	(0.146)	-0.088	(0.144)
Child characteristics						
Boy	-0.313***	(0.067)	-0.264***	(0.066)	-0.243***	(0.065)
Age in months at 9 months	-0.024	(0.020)	-0.024	(0.019)	-0.023	(0.019)
Low birth weight at birth	-0.245†	(0.134)	-0.248†	(0.132)	-0.286*	(0.132)
Multiple birth at birth	0.253	(0.230)	0.294	(0.231)	0.268	(0.229)
Health status (vs. excellent)						
Fair/good	-0.340***	(0.096)	-0.302**	(0.095)	-0.270**	(0.094)
Very good	-0.119	(0.075)	-0.082	(0.074)	-0.073	(0.074)
Number of siblings (vs. none)						
One	0.222**	(0.074)	0.255***	(0.076)	0.243**	(0.075)
Two or more	0.160†	(0.096)	0.220*	(0.102)	0.175†	(0.102)
English primary home language						
	0.009	(0.073)	-0.110	(0.097)	-0.101	(0.096)
Maternal characteristics						
Chinese (vs. other Asian)			-0.288**	(0.090)	-0.297***	(0.089)
Maternal language use (vs. home language)						
English only			0.275*	(0.127)	0.255*	(0.126)
Bilingual			0.235**	(0.090)	0.224*	(0.089)
Years of US residency			-0.013*	(0.005)	-0.013*	(0.005)
Maternal age at birth			0.009	(0.007)	0.010	(0.007)
Married at birth			-0.060	(0.126)	-0.135	(0.127)
Employment status at 2 years (vs. not working)						
Full-time			-0.022	(0.092)	-0.007	(0.091)
Part-time			-0.222†	(0.114)	-0.206†	(0.113)
Parenting behaviors						

KIDI at 9 months			-0.011	(0.018)	-0.016	(0.018)
Cognitively stimulating activities at 2 years			0.065***	(0.017)	0.065***	(0.017)
No spanking at 2 years			0.130	(0.079)	0.089	(0.079)
Family characteristics						
Child care arrangements at 2 years (vs. parental care)						
Relative care			-0.077	(0.098)	-0.081	(0.097)
Nonrelative care			-0.065	(0.127)	-0.107	(0.126)
Center-based care			0.231†	(0.122)	0.232†	(0.121)
Parent's education at birth (vs. less than high school)						
High school			0.285†	(0.155)	0.293†	(0.154)
Some college			0.291†	(0.152)	0.301*	(0.151)
Above college			0.195	(0.154)	0.241	(0.153)
Family income at 9 months (vs. \$0-\$20,000)						
\$20,001-\$35,000			-0.086	(0.128)	-0.091	(0.127)
\$35,001-\$50,000			0.138	(0.130)	0.098	(0.129)
\$50,000 or more			0.131	(0.155)	0.096	(0.154)
Family income at 2 years (vs. \$0-\$20,000)						
\$20,001-\$35,000			0.081	(0.129)	0.097	(0.128)
\$35,001-\$50,000			0.184	(0.132)	0.197	(0.131)
\$50,000 or more			0.139	(0.156)	0.146	(0.155)
Lived in urban area at 2 years			-0.243	(0.202)	-0.208	(0.200)
Region of country at 2 years (vs. Northeast)						
Midwest			-0.157	(0.114)	-0.185	(0.113)
South			0.013	(0.107)	0.050	(0.106)
West			-0.159†	(0.094)	-0.160†	(0.093)
Socio-emotional scores (ITSC) at 2 years						
Constant	0.487*	(0.225)	-0.371	(0.482)	-0.080	(0.483)
Adjusted R-squared	0.059		0.129		0.145	

Note. Sample sizes were rounded to the nearest 50. Sample sizes were about 800 in all models. All models were adjusted using the kindergarten sampling weights. Model 1 only including care arrangement groups and child characteristics; Model 2 adding maternal, and family characteristics and parenting behaviors; Model 3 adding earlier outcome scores. ITSC = Infant/Toddler symptom Checklist; KIDI = Knowledge of Infant Development Inventory; *Coef* = Coefficient. *SE* = Standard error of the coefficient.

*** $p < .001$. ** $p < 0.01$. * $p < 0.05$. † $p < 0.10$.

Table E6 Preschool and Parent-rated Pro-social Behavior at Kindergarten Entry among Children of Asian Immigrant Mothers

	Model 1		Model 2		Model 3	
	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>
Preschool care arrangements (vs. parental care)						
Head Start	-0.145	(0.143)	0.060	(0.142)	0.083	(0.143)
Prekindergarten	0.011	(0.116)	-0.029	(0.117)	-0.017	(0.117)
Other center-based care	0.072	(0.094)	0.104	(0.099)	0.123	(0.099)
Home-based care	-0.011	(0.147)	0.109	(0.151)	0.119	(0.151)
Child characteristics						
Boy	-0.288***	(0.069)	-0.253***	(0.067)	-0.244***	(0.067)
Age in months at 9 months	-0.003	(0.020)	-0.007	(0.020)	-0.006	(0.020)
Low birth weight at birth	-0.133	(0.137)	-0.110	(0.134)	-0.127	(0.135)
Multiple birth at birth	0.098	(0.241)	0.014	(0.240)	-0.001	(0.240)
Health status (vs. excellent)						
Fair/good	-0.020	(0.099)	-0.025	(0.097)	-0.011	(0.097)
Very good	-0.096	(0.077)	-0.073	(0.075)	-0.069	(0.075)
Number of siblings (vs. none)						
One	-0.022	(0.077)	0.034	(0.077)	0.029	(0.077)
Two or more	-0.005	(0.099)	0.098	(0.105)	0.082	(0.106)
English primary home language	0.162*	(0.075)	0.014	(0.099)	0.017	(0.099)
Maternal characteristics						
Chinese (vs. other Asian)			-0.532***	(0.092)	-0.537***	(0.092)
Maternal language use (vs. home language)						
English only			0.176	(0.129)	0.168	(0.129)
Bilingual			0.073	(0.092)	0.069	(0.091)
Years of US residency			-0.016**	(0.005)	-0.015**	(0.005)
Maternal age at birth			-0.005	(0.007)	-0.005	(0.007)
Married at birth			-0.045	(0.130)	-0.078	(0.132)
Employment status at 2 years (vs. not working)						
Full-time			-0.067	(0.093)	-0.059	(0.093)
Part-time			-0.241*	(0.115)	-0.232*	(0.115)
Parenting behaviors						

KIDI at 9 months			0.018	(0.018)	0.016	(0.018)
Cognitively stimulating activities at 2 years			0.039*	(0.017)	0.039*	(0.017)
No spanking at 2 years			0.037	(0.081)	0.019	(0.082)
Family characteristics						
Child care arrangements at 2 years (vs. parental care)						
Relative care			0.027	(0.100)	0.023	(0.100)
Nonrelative care			0.232†	(0.132)	0.212	(0.132)
Center-based care			0.241†	(0.125)	0.239†	(0.124)
Parent's education at birth (vs. less than high school)						
High school			0.281†	(0.158)	0.285†	(0.158)
Some college			0.367*	(0.154)	0.373*	(0.154)
Above college			0.412**	(0.156)	0.431**	(0.156)
Family income at 9 months (vs. \$0-\$20,000)						
\$20,001-\$35,000			-0.010	(0.130)	-0.016	(0.130)
\$35,001-\$50,000			0.123	(0.132)	0.105	(0.132)
\$50,000 or more			0.140	(0.158)	0.125	(0.158)
Family income at 2 years (vs. \$0-\$20,000)						
\$20,001-\$35,000			0.111	(0.131)	0.119	(0.131)
\$35,001-\$50,000			0.125	(0.136)	0.133	(0.136)
\$50,000 or more			0.072	(0.159)	0.075	(0.159)
Lived in urban area at 2 years			-0.287	(0.203)	-0.270	(0.203)
Region of country at 2 years (vs. Northeast)						
Midwest			0.097	(0.115)	0.084	(0.115)
South			0.237*	(0.108)	0.254*	(0.108)
West			0.088	(0.095)	0.087	(0.095)
Socio-emotional scores (ITSC) at 2 years						
Constant	0.057	(0.229)	-0.663	(0.491)	-0.538	(0.496)
Adjusted R-squared	0.018		0.108		0.110	

Note. Sample sizes were rounded to the nearest 50. Sample sizes were about 800 in all models. All models were adjusted using the kindergarten sampling weights. Model 1 only including care arrangement groups and child characteristics; Model 2 adding maternal, and family characteristics and parenting behaviors; Model 3 adding earlier outcome scores. ITSC = Infant/Toddler symptom Checklist; KIDI = Knowledge of Infant Development Inventory; *Coef* = Coefficient. *SE* = Standard error of the coefficient.

*** $p < .001$. ** $p < 0.01$. * $p < 0.05$. † $p < 0.10$.

Table E7 Preschool and Parent-rated Attention Problems at Kindergarten Entry among Children of Asian Immigrant Mothers

	Model 1		Model 2		Model 3	
	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>
Preschool care arrangements (vs. parental care)						
Head Start	0.067	(0.140)	0.114	(0.145)	0.024	(0.142)
Prekindergarten	0.161	(0.113)	0.118	(0.118)	0.076	(0.116)
Other center-based care	0.015	(0.091)	-0.032	(0.099)	-0.099	(0.097)
Home-based care	0.326*	(0.140)	0.206	(0.148)	0.183	(0.145)
Child characteristics						
Boy	0.391***	(0.067)	0.374***	(0.068)	0.341***	(0.066)
Age in months at 9 months	0.042*	(0.021)	0.047*	(0.021)	0.046*	(0.020)
Low birth weight at birth	0.209	(0.133)	0.234†	(0.136)	0.298*	(0.133)
Multiple birth at birth	-0.323	(0.228)	-0.542*	(0.236)	-0.498*	(0.230)
Health status (vs. excellent)						
Fair/good	0.249**	(0.096)	0.241*	(0.097)	0.188*	(0.095)
Very good	0.148*	(0.075)	0.131†	(0.076)	0.118	(0.074)
Number of siblings (vs. none)						
One	0.036	(0.074)	-0.007	(0.077)	0.016	(0.075)
Two or more	-0.096	(0.095)	-0.171	(0.105)	-0.095	(0.103)
English primary home language	0.180*	(0.073)	0.044	(0.099)	0.031	(0.097)
Maternal characteristics						
Chinese (vs. other Asian)			0.023	(0.092)	0.036	(0.089)
Maternal language use (vs. home language)						
English only			0.070	(0.130)	0.101	(0.126)
Bilingual			0.032	(0.092)	0.047	(0.090)
Years of US residency			0.014**	(0.005)	0.014**	(0.005)
Maternal age at birth			0.001	(0.007)	-0.001	(0.007)
Married at birth			-0.165	(0.130)	-0.040	(0.128)
Employment status at 2 years (vs. not working)						
Full-time			-0.174†	(0.094)	-0.197*	(0.091)
Part-time			-0.133	(0.116)	-0.157	(0.113)
Parenting behaviors						

KIDI at 9 months		0.011	(0.018)	0.018	(0.018)
Cognitively stimulating activities at 2 years		-0.053**	(0.017)	-0.053**	(0.017)
No spanking at 2 years		-0.136†	(0.081)	-0.068	(0.080)
Family characteristics					
Child care arrangements at 2 years (vs. parental care)					
Relative care		0.202*	(0.099)	0.209*	(0.097)
Nonrelative care		0.286*	(0.131)	0.367**	(0.129)
Center-based care		0.114	(0.125)	0.115	(0.122)
Parent's education at birth (vs. less than high school)					
High school		0.175	(0.160)	0.161	(0.156)
Some college		0.084	(0.156)	0.068	(0.152)
Above college		0.230	(0.158)	0.149	(0.154)
Family income at 9 months (vs. \$0-\$20,000)					
\$20,001-\$35,000		0.134	(0.131)	0.144	(0.128)
\$35,001-\$50,000		-0.002	(0.133)	0.065	(0.130)
\$50,000 or more		0.020	(0.157)	0.075	(0.153)
Family income at 2 years (vs. \$0-\$20,000)					
\$20,001-\$35,000		0.036	(0.132)	0.014	(0.129)
\$35,001-\$50,000		0.063	(0.135)	0.046	(0.132)
\$50,000 or more		-0.025	(0.159)	-0.028	(0.155)
Lived in urban area at 2 years		0.024	(0.207)	-0.037	(0.202)
Region of country at 2 years (vs. Northeast)					
Midwest		0.083	(0.117)	0.125	(0.114)
South		0.118	(0.110)	0.052	(0.108)
West		0.066	(0.097)	0.062	(0.094)
Socio-emotional scores (ITSC) at 2 years					
Constant	-1.134***	(0.234)	-1.187*	(0.501)	-1.657*** (0.495)
Adjusted R-squared	0.061		0.081		0.125

Note. Sample sizes were rounded to the nearest 50. Sample sizes were about 850 in all models. All models were adjusted using the kindergarten sampling weights. Model 1 only including care arrangement groups and child characteristics; Model 2 adding maternal, and family characteristics and parenting behaviors; Model 3 adding earlier outcome scores. ITSC = Infant/Toddler symptom Checklist; KIDI = Knowledge of Infant Development Inventory; *Coef* = Coefficient. *SE* = Standard error of the coefficient.

*** $p < .001$. ** $p < 0.01$. * $p < 0.05$. † $p < 0.10$.

Table E8 Preschool and Parent-rated Externalizing Problems at Kindergarten Entry among Children of Asian Immigrant Mothers

	Model 1		Model 2		Model 3	
	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>
Preschool care arrangements (vs. parental care)						
Head Start	-0.060	(0.146)	-0.081	(0.149)	-0.157	(0.147)
Prekindergarten	0.079	(0.118)	0.026	(0.122)	-0.008	(0.121)
Other center-based care	-0.084	(0.096)	-0.151	(0.102)	-0.207*	(0.101)
Home-based care	0.267†	(0.147)	0.059	(0.153)	0.040	(0.150)
Child characteristics						
Boy	0.447***	(0.070)	0.427***	(0.070)	0.397***	(0.069)
Age in months at 9 months	0.048*	(0.022)	0.059**	(0.021)	0.058**	(0.021)
Low birth weight at birth	0.155	(0.140)	0.198	(0.140)	0.251†	(0.138)
Multiple birth at birth	-0.395†	(0.239)	-0.509*	(0.243)	-0.471*	(0.239)
Health status (vs. excellent)						
Fair/good	0.326**	(0.101)	0.305**	(0.101)	0.262**	(0.100)
Very good	0.160*	(0.079)	0.122	(0.078)	0.110	(0.077)
Number of siblings (vs. none)						
One	0.002	(0.078)	-0.016	(0.080)	0.001	(0.079)
Two or more	0.106	(0.100)	0.074	(0.109)	0.138	(0.108)
English primary home language						
	0.110	(0.076)	-0.011	(0.102)	-0.021	(0.101)
Maternal characteristics						
Chinese (vs. other Asian)			0.167†	(0.095)	0.183†	(0.094)
Maternal language use (vs. home language)						
English only			0.095	(0.134)	0.124	(0.132)
Bilingual			-0.007	(0.095)	0.008	(0.094)
Years of US residency			0.015**	(0.005)	0.015**	(0.005)
Maternal age at birth			-0.001	(0.008)	-0.003	(0.008)
Married at birth			-0.233†	(0.134)	-0.126	(0.133)
Employment status at 2 years (vs. not working)						
Full-time			-0.044	(0.096)	-0.066	(0.095)
Part-time			0.014	(0.120)	-0.008	(0.118)
Parenting behaviors						

KIDI at 9 months			-0.020	(0.019)	-0.013	(0.019)	
Cognitively stimulating activities at 2 years			-0.055**	(0.018)	-0.055**	(0.018)	
No spanking at 2 years			-0.287***	(0.084)	-0.229**	(0.083)	
Family characteristics							
Child care arrangements at 2 years (vs. parental care)							
Relative care			0.276**	(0.102)	0.283**	(0.101)	
Nonrelative care			0.084	(0.135)	0.141	(0.133)	
Center-based care			-0.064	(0.129)	-0.066	(0.127)	
Parent's education at birth (vs. less than high school)							
High school			0.013	(0.166)	-0.007	(0.164)	
Some college			0.160	(0.162)	0.138	(0.159)	
Above college			0.214	(0.164)	0.140	(0.162)	
Family income at 9 months (vs. \$0-\$20,000)							
\$20,001-\$35,000			0.022	(0.136)	0.033	(0.133)	
\$35,001-\$50,000			-0.157	(0.137)	-0.103	(0.136)	
\$50,000 or more			-0.165	(0.162)	-0.122	(0.160)	
Family income at 2 years (vs. \$0-\$20,000)							
\$20,001-\$35,000			0.065	(0.137)	0.047	(0.135)	
\$35,001-\$50,000			0.097	(0.140)	0.079	(0.137)	
\$50,000 or more			0.154	(0.164)	0.148	(0.162)	
Lived in urban area at 2 years			0.250	(0.220)	0.183	(0.217)	
Region of country at 2 years (vs. Northeast)							
Midwest			0.107	(0.120)	0.145	(0.118)	
South			-0.007	(0.114)	-0.061	(0.112)	
West			-0.055	(0.099)	-0.054	(0.098)	
Socio-emotional scores (ITSC) at 2 years							
Constant		-0.773**	(0.240)	-0.658	(0.521)	-1.041*	(0.518)
Adjusted R-squared		0.071		0.121		0.148	

Note. Sample sizes were rounded to the nearest 50. Sample sizes were about 800 in all models. All models were adjusted using the kindergarten sampling weights. Model 1 only including care arrangement groups and child characteristics; Model 2 adding maternal, and family characteristics and parenting behaviors; Model 3 adding earlier outcome scores. ITSC = Infant/Toddler symptom Checklist; KIDI = Knowledge of Infant Development Inventory; *Coef* = Coefficient. *SE* = Standard error of the coefficient.

*** $p < .001$. ** $p < 0.01$. * $p < 0.05$. † $p < 0.10$.

Table E9 Preschool and Teacher-rated Approaches to Learning at Kindergarten Entry among Children of Hispanic Immigrant Mothers

	Model 1		Model 2		Model 3	
	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>
Preschool care arrangements (vs. parental care)						
Head Start	-0.211†	(0.120)	-0.254*	(0.124)	-0.254*	(0.125)
Prekindergarten	0.026	(0.171)	0.069	(0.182)	0.070	(0.182)
Other center-based care	0.082	(0.145)	-0.086	(0.156)	-0.088	(0.157)
Home-based care	-0.007	(0.162)	-0.077	(0.167)	-0.077	(0.167)
Child characteristics						
Boy	-0.229*	(0.096)	-0.167†	(0.098)	-0.166†	(0.098)
Age in months at 9 months	-0.004	(0.027)	0.014	(0.028)	0.014	(0.028)
Low birth weight at birth	-0.284	(0.195)	-0.400*	(0.192)	-0.398*	(0.193)
Multiple birth at birth	-0.038	(0.325)	-0.037	(0.318)	-0.036	(0.319)
Health status (vs. excellent)						
Fair/good	-0.007	(0.116)	-0.107	(0.118)	-0.105	(0.119)
Very good	0.051	(0.116)	0.101	(0.118)	0.102	(0.118)
Number of siblings (vs. none)						
One	0.168	(0.120)	0.139	(0.128)	0.138	(0.129)
Two or more	0.176	(0.111)	0.062	(0.130)	0.062	(0.130)
English primary home language	-0.171	(0.165)	-0.320	(0.198)	-0.320	(0.198)
Maternal characteristics						
Mexican (vs. other Hispanic)			0.004	(0.134)	0.002	(0.135)
Maternal language use (vs. home language)						
English only			0.165	(0.231)	0.163	(0.232)
Bilingual			0.014	(0.146)	0.014	(0.146)
Years of US residency			-0.006	(0.010)	-0.006	(0.010)
Maternal age at birth			0.019†	(0.011)	0.019†	(0.011)
Married at birth			0.017	(0.107)	0.018	(0.107)
Employment status at 2 years (vs. not working)						
Full-time			0.279†	(0.167)	0.277†	(0.167)
Part-time			-0.057	(0.183)	-0.057	(0.184)
Parenting behaviors						

KIDI at 9 months	0.001	(0.025)	0.001	(0.025)
Cognitively stimulating activities at 2 years	-0.026	(0.024)	-0.026	(0.024)
No spanking at 2 years	0.025	(0.134)	0.023	(0.135)
Family characteristics				
Child care arrangements at 2 years (vs. parental care)				
Relative care	0.182	(0.182)	0.181	(0.182)
Nonrelative care	-0.524*	(0.205)	-0.520*	(0.207)
Center-based care	0.236	(0.225)	0.235	(0.226)
Parent's education at birth (vs. less than high school)				
High school	0.234*	(0.117)	0.235*	(0.117)
Some college	0.094	(0.144)	0.095	(0.144)
Above college	0.416†	(0.224)	0.420†	(0.225)
Family income at 9 months (vs. \$0-\$20,000)				
\$20,001-\$35,000	-0.071	(0.112)	-0.070	(0.113)
\$35,001-\$50,000	-0.226	(0.158)	-0.226	(0.158)
\$50,000 or more	-0.226	(0.322)	-0.226	(0.322)
Family income at 2 years (vs. \$0-\$20,000)				
\$20,001-\$35,000	0.071	(0.114)	0.071	(0.114)
\$35,001-\$50,000	-0.074	(0.147)	-0.074	(0.147)
\$50,000 or more	0.086	(0.295)	0.083	(0.296)
Lived in urban area at 2 years	-0.277	(0.255)	-0.277	(0.255)
Region of country at 2 years (vs. Northeast)				
Midwest	0.117	(0.235)	0.115	(0.236)
South	-0.326†	(0.184)	-0.324†	(0.185)
West	0.003	(0.184)	0.003	(0.184)
Socio-emotional scores (ITSC) at 2 years				
Constant	0.250	(0.286)	-0.380	(0.567)
Adjusted R-squared	0.020		0.085	

Note. Sample sizes were rounded to the nearest 50. Sample sizes were about 450 in all models. All models were adjusted using the kindergarten sampling weights. Model 1 only including care arrangement groups and child characteristics; Model 2 adding maternal, and family characteristics and parenting behaviors; Model 3 adding earlier outcome scores. ITSC = Infant/Toddler symptom Checklist; KIDI = Knowledge of Infant Development Inventory; *Coef* = Coefficient. *SE* = Standard error of the coefficient.

*** $p < .001$. ** $p < 0.01$. * $p < 0.05$. † $p < 0.10$.

Table E10 Preschool and Teacher-rated Pro-social Behavior at Kindergarten Entry among Children of Hispanic Immigrant Mothers

	Model 1		Model 2		Model 3	
	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>
Preschool care arrangements (vs. parental care)						
Head Start	0.010	(0.122)	-0.049	(0.129)	-0.049	(0.129)
Prekindergarten	0.179	(0.172)	0.177	(0.187)	0.178	(0.187)
Other center-based care	-0.051	(0.148)	-0.093	(0.161)	-0.097	(0.161)
Home-based care	0.091	(0.166)	-0.004	(0.173)	-0.003	(0.174)
Child characteristics						
Boy	-0.254**	(0.097)	-0.207*	(0.100)	-0.205*	(0.101)
Age in months at 9 months	0.032	(0.029)	0.042	(0.029)	0.042	(0.029)
Low birth weight at birth	-0.141	(0.199)	-0.261	(0.199)	-0.258	(0.200)
Multiple birth at birth	-0.131	(0.328)	-0.077	(0.327)	-0.076	(0.328)
Health status (vs. excellent)						
Fair/good	0.068	(0.117)	-0.019	(0.121)	-0.015	(0.122)
Very good	0.148	(0.117)	0.160	(0.121)	0.162	(0.121)
Number of siblings (vs. none)						
One	0.026	(0.122)	0.010	(0.132)	0.008	(0.132)
Two or more	0.112	(0.113)	0.069	(0.134)	0.067	(0.134)
English primary home language	0.063	(0.167)	-0.152	(0.201)	-0.153	(0.201)
Maternal characteristics						
Mexican (vs. other Hispanic)			0.145	(0.136)	0.142	(0.137)
Maternal language use (vs. home language)						
English only			0.334	(0.235)	0.330	(0.236)
Bilingual			-0.086	(0.151)	-0.086	(0.152)
Years of US residency			-0.001	(0.010)	-0.000	(0.010)
Maternal age at birth			0.006	(0.011)	0.006	(0.011)
Married at birth			0.115	(0.110)	0.116	(0.111)
Employment status at 2 years (vs. not working)						
Full-time			0.470**	(0.173)	0.467**	(0.173)
Part-time			-0.139	(0.190)	-0.141	(0.191)
Parenting behaviors						

KIDI at 9 months	0.024	(0.026)	0.024	(0.026)
Cognitively stimulating activities at 2 years	-0.014	(0.024)	-0.014	(0.025)
No spanking at 2 years	-0.080	(0.138)	-0.083	(0.139)
Family characteristics				
Child care arrangements at 2 years (vs. parental care)				
Relative care	-0.066	(0.187)	-0.068	(0.187)
Nonrelative care	-0.325	(0.214)	-0.319	(0.216)
Center-based care	0.002	(0.244)	0.002	(0.244)
Parent's education at birth (vs. less than high school)				
High school	0.094	(0.120)	0.095	(0.120)
Some college	0.034	(0.150)	0.035	(0.151)
Above college	0.290	(0.227)	0.294	(0.228)
Family income at 9 months (vs. \$0-\$20,000)				
\$20,001-\$35,000	-0.213†	(0.115)	-0.211†	(0.116)
\$35,001-\$50,000	-0.253	(0.163)	-0.253	(0.163)
\$50,000 or more	-0.478	(0.330)	-0.477	(0.330)
Family income at 2 years (vs. \$0-\$20,000)				
\$20,001-\$35,000	0.201†	(0.117)	0.200†	(0.117)
\$35,001-\$50,000	0.007	(0.152)	0.005	(0.152)
\$50,000 or more	0.144	(0.305)	0.139	(0.306)
Lived in urban area at 2 years	-0.219	(0.266)	-0.219	(0.266)
Region of country at 2 years (vs. Northeast)				
Midwest	-0.346	(0.244)	-0.349	(0.245)
South	-0.548**	(0.188)	-0.545**	(0.189)
West	-0.408*	(0.188)	-0.408*	(0.188)
Socio-emotional scores (ITSC) at 2 years				
Constant	-0.150	(0.302)	-0.281	(0.588)
Adjusted R-squared	0.005		0.042	0.040

Note. Sample sizes were rounded to the nearest 50. Sample sizes were about 450 in all models. All models were adjusted using the kindergarten sampling weights. Model 1 only including care arrangement groups and child characteristics; Model 2 adding maternal, and family characteristics and parenting behaviors; Model 3 adding earlier outcome scores. ITSC = Infant/Toddler symptom Checklist; KIDI = Knowledge of Infant Development Inventory; *Coef* = Coefficient. *SE* = Standard error of the coefficient.

*** $p < .001$. ** $p < 0.01$. * $p < 0.05$. † $p < 0.10$.

Table E11 Preschool and Teacher-rated Attention Problems at Kindergarten Entry among Children of Hispanic Immigrant Mothers

	Model 1		Model 2		Model 3	
	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>
Preschool care arrangements (vs. parental care)						
Head Start	-0.316**	(0.120)	-0.357**	(0.124)	-0.354**	(0.124)
Prekindergarten	-0.037	(0.175)	0.053	(0.183)	0.063	(0.183)
Other center-based care	-0.019	(0.146)	-0.133	(0.157)	-0.147	(0.157)
Home-based care	-0.152	(0.162)	-0.125	(0.166)	-0.117	(0.166)
Child characteristics						
Boy	-0.361***	(0.096)	-0.314**	(0.098)	-0.305**	(0.098)
Age in months at 9 months	-0.036	(0.027)	-0.024	(0.028)	-0.024	(0.027)
Low birth weight at birth	0.105	(0.201)	-0.005	(0.198)	0.010	(0.198)
Multiple birth at birth	0.083	(0.327)	0.150	(0.318)	0.155	(0.318)
Health status (vs. excellent)						
Fair/good	-0.021	(0.116)	-0.124	(0.117)	-0.110	(0.118)
Very good	0.128	(0.116)	0.197†	(0.117)	0.206†	(0.117)
Number of siblings (vs. none)						
One	0.181	(0.120)	0.176	(0.128)	0.170	(0.128)
Two or more	0.225*	(0.111)	0.143	(0.128)	0.139	(0.128)
English primary home language						
	-0.280†	(0.167)	-0.365†	(0.201)	-0.370†	(0.201)
Maternal characteristics						
Mexican (vs. other Hispanic)			0.110	(0.131)	0.091	(0.132)
Maternal language use (vs. home language)						
English only			0.351	(0.234)	0.330	(0.235)
Bilingual			0.137	(0.148)	0.132	(0.148)
Years of US residency			-0.015	(0.010)	-0.015	(0.010)
Maternal age at birth			0.022*	(0.011)	0.021†	(0.011)
Married at birth			-0.044	(0.106)	-0.041	(0.106)
Employment status at 2 years (vs. not working)						
Full-time			0.343*	(0.168)	0.329†	(0.168)
Part-time			0.354†	(0.185)	0.346†	(0.185)
Parenting behaviors						

KIDI at 9 months			-0.051*	(0.025)	-0.052*	(0.025)
Cognitively stimulating activities at 2 years			-0.007	(0.024)	-0.009	(0.024)
No spanking at 2 years			-0.004	(0.136)	-0.022	(0.137)
Family characteristics						
Child care arrangements at 2 years (vs. parental care)						
Relative care			0.069	(0.182)	0.066	(0.182)
Nonrelative care			-0.643**	(0.206)	-0.618**	(0.207)
Center-based care			0.169	(0.236)	0.168	(0.236)
Parent's education at birth (vs. less than high school)						
High school			0.162	(0.116)	0.168	(0.116)
Some college			0.042	(0.144)	0.049	(0.144)
Above college			0.295	(0.228)	0.307	(0.228)
Family income at 9 months (vs. \$0-\$20,000)						
\$20,001-\$35,000			0.045	(0.112)	0.054	(0.112)
\$35,001-\$50,000			-0.429**	(0.159)	-0.425**	(0.159)
\$50,000 or more			-0.589	(0.370)	-0.557	(0.371)
Family income at 2 years (vs. \$0-\$20,000)						
\$20,001-\$35,000			0.010	(0.112)	0.006	(0.112)
\$35,001-\$50,000			0.104	(0.147)	0.097	(0.147)
\$50,000 or more			0.210	(0.317)	0.179	(0.317)
Lived in urban area at 2 years			-0.356	(0.252)	-0.358	(0.252)
Region of country at 2 years (vs. Northeast)						
Midwest			-0.149	(0.237)	-0.170	(0.237)
South			-0.499**	(0.185)	-0.484**	(0.185)
West			-0.150	(0.184)	-0.149	(0.183)
Socio-emotional scores (ITSC) at 2 years						
Constant	0.512†	(0.286)	0.343	(0.560)	0.537	(0.581)
Adjusted R-squared	0.048		0.123		0.124	

Note. Sample sizes were rounded to the nearest 50. Sample sizes were about 450 in all models. All models were adjusted using the kindergarten sampling weights. Model 1 only including care arrangement groups and child characteristics; Model 2 adding maternal, and family characteristics and parenting behaviors; Model 3 adding earlier outcome scores. ITSC = Infant/Toddler symptom Checklist; KIDI = Knowledge of Infant Development Inventory; *Coef* = Coefficient. *SE* = Standard error of the coefficient.

*** $p < .001$. ** $p < 0.01$. * $p < 0.05$. † $p < 0.10$.

Table E12 Preschool and Teacher-rated Externalizing Problems at Kindergarten Entry among Children of Hispanic Immigrant Mothers

	Model 1		Model 2		Model 3	
	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>
Preschool care arrangements (vs. parental care)						
Head Start	-0.213†	(0.120)	-0.282*	(0.126)	-0.280*	(0.126)
Prekindergarten	0.006	(0.170)	0.027	(0.181)	0.034	(0.181)
Other center-based care	0.010	(0.148)	-0.095	(0.159)	-0.106	(0.159)
Home-based care	-0.176	(0.164)	-0.164	(0.170)	-0.156	(0.170)
Child characteristics						
Boy	-0.421***	(0.096)	-0.385***	(0.099)	-0.373***	(0.099)
Age in months at 9 months	-0.016	(0.027)	-0.007	(0.028)	-0.007	(0.028)
Low birth weight at birth	0.234	(0.196)	0.183	(0.194)	0.201	(0.194)
Multiple birth at birth	0.180	(0.326)	0.263	(0.321)	0.267	(0.321)
Health status (vs. excellent)						
Fair/good	-0.062	(0.118)	-0.107	(0.121)	-0.088	(0.121)
Very good	0.108	(0.116)	0.209†	(0.119)	0.220†	(0.119)
Number of siblings (vs. none)						
One	0.066	(0.120)	0.061	(0.130)	0.054	(0.130)
Two or more	0.248*	(0.113)	0.168	(0.133)	0.167	(0.133)
English primary home language	-0.307†	(0.165)	-0.457*	(0.199)	-0.459*	(0.199)
Maternal characteristics						
Mexican (vs. other Hispanic)			0.181	(0.135)	0.160	(0.135)
Maternal language use (vs. home language)						
English only			0.417†	(0.235)	0.396†	(0.236)
Bilingual			0.052	(0.149)	0.049	(0.149)
Years of US residency			-0.016	(0.010)	-0.016	(0.010)
Maternal age at birth			0.020†	(0.011)	0.019†	(0.011)
Married at birth			-0.083	(0.109)	-0.082	(0.109)
Employment status at 2 years (vs. not working)						
Full-time			0.345*	(0.171)	0.331†	(0.171)
Part-time			0.367*	(0.186)	0.359†	(0.186)
Parenting behaviors						

KIDI at 9 months			-0.053*	(0.025)	-0.055*	(0.025)
Cognitively stimulating activities at 2 years			0.018	(0.024)	0.016	(0.024)
No spanking at 2 years			0.103	(0.136)	0.085	(0.136)
Family characteristics						
Child care arrangements at 2 years (vs. parental care)						
Relative care			0.115	(0.185)	0.111	(0.185)
Nonrelative care			-0.637**	(0.210)	-0.609**	(0.210)
Center-based care			0.092	(0.241)	0.091	(0.241)
Parent's education at birth (vs. less than high school)						
High school			0.013	(0.118)	0.019	(0.118)
Some college			0.048	(0.147)	0.060	(0.147)
Above college			0.214	(0.221)	0.238	(0.221)
Family income at 9 months (vs. \$0-\$20,000)						
\$20,001-\$35,000			0.050	(0.114)	0.059	(0.114)
\$35,001-\$50,000			-0.278†	(0.159)	-0.279†	(0.159)
\$50,000 or more			-0.335	(0.324)	-0.329	(0.324)
Family income at 2 years (vs. \$0-\$20,000)						
\$20,001-\$35,000			0.127	(0.116)	0.121	(0.116)
\$35,001-\$50,000			0.058	(0.148)	0.051	(0.148)
\$50,000 or more			0.112	(0.297)	0.087	(0.297)
Lived in urban area at 2 years			-0.324	(0.256)	-0.323	(0.256)
Region of country at 2 years (vs. Northeast)						
Midwest			-0.209	(0.240)	-0.226	(0.240)
South			-0.437*	(0.186)	-0.417*	(0.187)
West			-0.245	(0.185)	-0.240	(0.185)
Socio-emotional scores (ITSC) at 2 years						
Constant	0.360	(0.286)	0.234	(0.566)	0.447	(0.587)
Adjusted R-squared	0.047		0.097		0.099	

Note. Sample sizes were rounded to the nearest 50. Sample sizes were about 450 in all models. All models were adjusted using the kindergarten sampling weights. Model 1 only including care arrangement groups and child characteristics; Model 2 adding maternal, and family characteristics and parenting behaviors; Model 3 adding earlier outcome scores. ITSC = Infant/Toddler symptom Checklist; KIDI = Knowledge of Infant Development Inventory; *Coef* = Coefficient. *SE* = Standard error of the coefficient.

*** $p < .001$. ** $p < 0.01$. * $p < 0.05$. † $p < 0.10$.

Table E13 Preschool and Parent-rated Approaches to Learning at Kindergarten Entry among Children of Hispanic Immigrant Mothers

	Model 1		Model 2		Model 3	
	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>
Preschool care arrangements (vs. parental care)						
Head Start	-0.191*	(0.096)	-0.325**	(0.099)	-0.309**	(0.099)
Prekindergarten	0.003	(0.134)	-0.069	(0.139)	-0.058	(0.139)
Other center-based care	0.084	(0.117)	-0.094	(0.124)	-0.081	(0.124)
Home-based care	0.043	(0.130)	0.052	(0.132)	0.055	(0.132)
Child characteristics						
Boy	-0.249**	(0.075)	-0.186*	(0.076)	-0.182*	(0.075)
Age in months at 9 months	-0.010	(0.021)	-0.014	(0.021)	-0.012	(0.021)
Low birth weight at birth	0.054	(0.155)	0.047	(0.152)	0.061	(0.152)
Multiple birth at birth	-0.371	(0.256)	-0.346	(0.249)	-0.327	(0.249)
Health status (vs. excellent)						
Fair/good	-0.652***	(0.094)	-0.648***	(0.096)	-0.626***	(0.096)
Very good	-0.312***	(0.091)	-0.296**	(0.091)	-0.285**	(0.091)
Number of siblings (vs. none)						
One	0.070	(0.094)	0.090	(0.098)	0.087	(0.097)
Two or more	0.164†	(0.089)	0.153	(0.104)	0.148	(0.103)
English primary home language	0.001	(0.119)	-0.128	(0.145)	-0.121	(0.144)
Maternal characteristics						
Mexican (vs. other Hispanic)			0.109	(0.109)	0.085	(0.109)
Maternal language use (vs. home language)						
English only			0.349†	(0.180)	0.328†	(0.179)
Bilingual			0.420***	(0.116)	0.412***	(0.115)
Years of US residency			-0.013†	(0.007)	-0.012†	(0.007)
Maternal age at birth			0.010	(0.008)	0.010	(0.008)
Married at birth			0.075	(0.083)	0.070	(0.083)
Employment status at 2 years (vs. not working)						
Full-time			0.049	(0.125)	0.038	(0.124)
Part-time			-0.040	(0.143)	-0.048	(0.142)
Parenting behaviors						

KIDI at 9 months			-0.009	(0.020)	-0.009	(0.020)
Cognitively stimulating activities at 2 years			0.054**	(0.019)	0.052**	(0.019)
No spanking at 2 years			0.068	(0.101)	0.041	(0.102)
Family characteristics						
Child care arrangements at 2 years (vs. parental care)						
Relative care			0.085	(0.137)	0.086	(0.137)
Nonrelative care			-0.348*	(0.155)	-0.331*	(0.155)
Center-based care			0.137	(0.173)	0.132	(0.173)
Parent's education at birth (vs. less than high school)						
High school			0.058	(0.091)	0.076	(0.091)
Some college			0.042	(0.113)	0.053	(0.113)
Above college			0.213	(0.165)	0.227	(0.165)
Family income at 9 months (vs. \$0-\$20,000)						
\$20,001-\$35,000			0.061	(0.089)	0.071	(0.089)
\$35,001-\$50,000			-0.234†	(0.126)	-0.235†	(0.125)
\$50,000 or more			0.186	(0.273)	0.204	(0.273)
Family income at 2 years (vs. \$0-\$20,000)						
\$20,001-\$35,000			-0.177*	(0.090)	-0.175†	(0.089)
\$35,001-\$50,000			-0.164	(0.119)	-0.172	(0.119)
\$50,000 or more			-0.442†	(0.235)	-0.495*	(0.236)
Lived in urban area at 2 years			-0.158	(0.205)	-0.132	(0.205)
Region of country at 2 years (vs. Northeast)						
Midwest			-0.188	(0.182)	-0.196	(0.181)
South			-0.440**	(0.138)	-0.404**	(0.139)
West			-0.278†	(0.144)	-0.261†	(0.144)
Socio-emotional scores (ITSC) at 2 years						
Constant	0.498*	(0.229)	0.086	(0.444)	0.243	(0.449)
Adjusted R-squared	0.084		0.140		0.144	

Note. Sample sizes were rounded to the nearest 50. Sample sizes were about 650 in all models. All models were adjusted using the kindergarten sampling weights. Model 1 only including care arrangement groups and child characteristics; Model 2 adding maternal, and family characteristics and parenting behaviors; Model 3 adding earlier outcome scores. ITSC = Infant/Toddler symptom Checklist; KIDI = Knowledge of Infant Development Inventory; *Coef* = Coefficient. *SE* = Standard error of the coefficient.

*** $p < .001$. ** $p < 0.01$. * $p < 0.05$. † $p < 0.10$.

Table E14 Preschool and Parent-rated Pro-social Behavior at Kindergarten Entry among Children of Hispanic Immigrant Mothers

	Model 1		Model 2		Model 3	
	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>
Preschool care arrangements (vs. parental care)						
Head Start	-0.143	(0.098)	-0.248*	(0.102)	-0.253*	(0.103)
Prekindergarten	-0.023	(0.136)	-0.117	(0.143)	-0.120	(0.144)
Other center-based care	0.107	(0.119)	-0.014	(0.128)	-0.018	(0.128)
Home-based care	-0.048	(0.132)	-0.065	(0.136)	-0.067	(0.136)
Child characteristics						
Boy	-0.224**	(0.077)	-0.185*	(0.078)	-0.186*	(0.078)
Age in months at 9 months	0.033	(0.020)	0.021	(0.021)	0.020	(0.021)
Low birth weight at birth	0.075	(0.158)	0.075	(0.156)	0.071	(0.157)
Multiple birth at birth	-0.280	(0.260)	-0.264	(0.256)	-0.270	(0.257)
Health status (vs. excellent)						
Fair/good	-0.370***	(0.096)	-0.323**	(0.099)	-0.329***	(0.099)
Very good	-0.061	(0.092)	-0.049	(0.094)	-0.053	(0.094)
Number of siblings (vs. none)						
One	-0.150	(0.096)	-0.108	(0.101)	-0.108	(0.101)
Two or more	-0.076	(0.091)	0.047	(0.107)	0.048	(0.107)
English primary home language	0.440***	(0.121)	0.194	(0.149)	0.192	(0.149)
Maternal characteristics						
Mexican (vs. other Hispanic)			0.126	(0.112)	0.132	(0.113)
Maternal language use (vs. home language)						
English only			0.391*	(0.186)	0.397*	(0.187)
Bilingual			0.171	(0.119)	0.173	(0.119)
Years of US residency			-0.006	(0.007)	-0.006	(0.007)
Maternal age at birth			-0.012	(0.008)	-0.012	(0.008)
Married at birth			0.118	(0.086)	0.120	(0.086)
Employment status at 2 years (vs. not working)						
Full-time			-0.069	(0.128)	-0.066	(0.129)
Part-time			-0.020	(0.147)	-0.018	(0.147)
Parenting behaviors						

KIDI at 9 months			-0.012	(0.021)	-0.012	(0.021)
Cognitively stimulating activities at 2 years			0.057**	(0.019)	0.058**	(0.020)
No spanking at 2 years			-0.061	(0.104)	-0.053	(0.105)
Family characteristics						
Child care arrangements at 2 years (vs. parental care)						
Relative care			0.153	(0.142)	0.152	(0.142)
Nonrelative care			-0.021	(0.160)	-0.026	(0.161)
Center-based care			0.127	(0.178)	0.128	(0.178)
Parent's education at birth (vs. less than high school)						
High school			0.042	(0.093)	0.036	(0.094)
Some college			0.299*	(0.117)	0.297*	(0.117)
Above college			0.463**	(0.172)	0.460**	(0.172)
Family income at 9 months (vs. \$0-\$20,000)						
\$20,001-\$35,000			0.015	(0.092)	0.013	(0.092)
\$35,001-\$50,000			-0.167	(0.130)	-0.167	(0.130)
\$50,000 or more			-0.213	(0.282)	-0.219	(0.282)
Family income at 2 years (vs. \$0-\$20,000)						
\$20,001-\$35,000			-0.140	(0.092)	-0.140	(0.092)
\$35,001-\$50,000			-0.180	(0.123)	-0.178	(0.123)
\$50,000 or more			-0.045	(0.242)	-0.030	(0.244)
Lived in urban area at 2 years			-0.246	(0.211)	-0.253	(0.211)
Region of country at 2 years (vs. Northeast)						
Midwest			-0.276	(0.188)	-0.274	(0.188)
South			-0.268†	(0.143)	-0.278†	(0.144)
West			-0.275†	(0.149)	-0.280†	(0.149)
Socio-emotional scores (ITSC) at 2 years						
Constant	0.070	(0.226)	0.512	(0.454)	0.469	(0.461)
Adjusted R-squared	0.057		0.095		0.094	

Note. Sample sizes were rounded to the nearest 50. Sample sizes were about 650 in all models. All models were adjusted using the kindergarten sampling weights. Model 1 only including care arrangement groups and child characteristics; Model 2 adding maternal, and family characteristics and parenting behaviors; Model 3 adding earlier outcome scores. ITSC = Infant/Toddler symptom Checklist; KIDI = Knowledge of Infant Development Inventory; *Coef* = Coefficient. *SE* = Standard error of the coefficient.

*** $p < .001$. ** $p < 0.01$. * $p < 0.05$. † $p < 0.10$.

Table E15 Preschool and Parent-rated Attention Problems at Kindergarten Entry among Children of Hispanic Immigrant Mothers

	Model 1		Model 2		Model 3	
	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>
Preschool care arrangements (vs. parental care)						
Head Start	-0.042	(0.098)	-0.017	(0.101)	-0.045	(0.101)
Prekindergarten	-0.319*	(0.135)	-0.282*	(0.142)	-0.303*	(0.140)
Other center-based care	-0.045	(0.118)	0.092	(0.126)	0.070	(0.125)
Home-based care	-0.202	(0.133)	-0.240†	(0.136)	-0.242†	(0.135)
Child characteristics						
Boy	0.186*	(0.076)	0.153*	(0.077)	0.148†	(0.077)
Age in months at 9 months	-0.005	(0.020)	-0.011	(0.021)	-0.015	(0.021)
Low birth weight at birth	0.027	(0.158)	-0.003	(0.156)	-0.029	(0.154)
Multiple birth at birth	-0.090	(0.259)	-0.118	(0.255)	-0.152	(0.253)
Health status (vs. excellent)						
Fair/good	0.285**	(0.095)	0.283**	(0.098)	0.244*	(0.098)
Very good	0.224*	(0.092)	0.130	(0.093)	0.110	(0.092)
Number of siblings (vs. none)						
One	0.095	(0.095)	0.079	(0.100)	0.084	(0.099)
Two or more	0.177†	(0.091)	0.170	(0.106)	0.180†	(0.105)
English primary home language	-0.252*	(0.121)	-0.087	(0.148)	-0.100	(0.146)
Maternal characteristics						
Mexican (vs. other Hispanic)			-0.125	(0.112)	-0.085	(0.112)
Maternal language use (vs. home language)						
English only			-0.293	(0.188)	-0.259	(0.185)
Bilingual			-0.203†	(0.118)	-0.192	(0.118)
Years of US residency			0.014*	(0.007)	0.013†	(0.007)
Maternal age at birth			-0.021*	(0.008)	-0.020*	(0.008)
Married at birth			0.095	(0.085)	0.104	(0.084)
Employment status at 2 years (vs. not working)						
Full-time			-0.103	(0.128)	-0.085	(0.127)
Part-time			-0.210	(0.146)	-0.192	(0.145)
Parenting behaviors						

KIDI at 9 months			0.035†	(0.020)	0.034†	(0.020)	
Cognitively stimulating activities at 2 years			-0.035†	(0.019)	-0.031	(0.019)	
No spanking at 2 years			-0.183†	(0.103)	-0.136	(0.103)	
Family characteristics							
Child care arrangements at 2 years (vs. parental care)							
Relative care			0.153	(0.141)	0.155	(0.140)	
Nonrelative care			0.228	(0.159)	0.197	(0.158)	
Center-based care			0.007	(0.176)	0.015	(0.175)	
Parent's education at birth (vs. less than high school)							
High school			0.074	(0.093)	0.041	(0.092)	
Some college			0.104	(0.116)	0.086	(0.115)	
Above college			0.036	(0.171)	0.017	(0.169)	
Family income at 9 months (vs. \$0-\$20,000)							
\$20,001-\$35,000			-0.132	(0.091)	-0.150†	(0.090)	
\$35,001-\$50,000			0.040	(0.129)	0.043	(0.128)	
\$50,000 or more			0.006	(0.280)	-0.026	(0.277)	
Family income at 2 years (vs. \$0-\$20,000)							
\$20,001-\$35,000			-0.065	(0.092)	-0.068	(0.091)	
\$35,001-\$50,000			-0.362**	(0.122)	-0.348**	(0.120)	
\$50,000 or more			-0.430†	(0.241)	-0.340	(0.240)	
Lived in urban area at 2 years							
			0.329	(0.210)	0.286	(0.208)	
Region of country at 2 years (vs. Northeast)							
Midwest			-0.042	(0.186)	-0.027	(0.184)	
South			0.367**	(0.141)	0.308*	(0.141)	
West			0.382**	(0.147)	0.353*	(0.146)	
Socio-emotional scores (ITSC) at 2 years							
Constant		-0.147	(0.226)	0.307	(0.447)	0.032	(0.448)
Adjusted R-squared		0.036		0.078		0.095	

Note. Sample sizes were rounded to the nearest 50. Sample sizes were about 650 in all models. All models were adjusted using the kindergarten sampling weights. Model 1 only including care arrangement groups and child characteristics; Model 2 adding maternal, and family characteristics and parenting behaviors; Model 3 adding earlier outcome scores. ITSC = Infant/Toddler symptom Checklist; KIDI = Knowledge of Infant Development Inventory; *Coef* = Coefficient. *SE* = Standard error of the coefficient.

*** $p < .001$. ** $p < 0.01$. * $p < 0.05$. † $p < 0.10$.

Table E16 Preschool and Parent-rated Externalizing Problems at Kindergarten Entry among Children of Hispanic Immigrant Mothers

	Model 1		Model 2		Model 3	
	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>
Preschool care arrangements (vs. parental care)						
Head Start	0.207*	(0.099)	0.211*	(0.102)	0.177†	(0.101)
Prekindergarten	-0.191	(0.136)	-0.194	(0.143)	-0.218	(0.141)
Other center-based care	0.064	(0.119)	0.166	(0.127)	0.140	(0.126)
Home-based care	-0.079	(0.133)	-0.078	(0.137)	-0.086	(0.135)
Child characteristics						
Boy	0.186*	(0.077)	0.147†	(0.078)	0.139†	(0.077)
Age in months at 9 months	-0.010	(0.021)	-0.017	(0.021)	-0.022	(0.021)
Low birth weight at birth	0.113	(0.159)	0.108	(0.157)	0.078	(0.155)
Multiple birth at birth	0.009	(0.262)	-0.007	(0.257)	-0.046	(0.254)
Health status (vs. excellent)						
Fair/good	0.218*	(0.096)	0.220*	(0.099)	0.175†	(0.098)
Very good	0.066	(0.093)	-0.006	(0.094)	-0.028	(0.093)
Number of siblings (vs. none)						
One	-0.099	(0.096)	-0.050	(0.101)	-0.045	(0.099)
Two or more	-0.043	(0.091)	0.055	(0.106)	0.064	(0.105)
English primary home language	-0.221†	(0.122)	-0.106	(0.150)	-0.121	(0.149)
Maternal characteristics						
Mexican (vs. other Hispanic)			0.005	(0.112)	0.056	(0.112)
Maternal language use (vs. home language)						
English only			-0.264	(0.192)	-0.222	(0.190)
Bilingual			0.052	(0.120)	0.067	(0.119)
Years of US residency			0.015*	(0.007)	0.014*	(0.007)
Maternal age at birth			-0.028***	(0.008)	-0.028***	(0.008)
Married at birth			0.061	(0.086)	0.072	(0.085)
Employment status at 2 years (vs. not working)						
Full-time			-0.384**	(0.128)	-0.360**	(0.127)
Part-time			-0.219	(0.147)	-0.202	(0.145)
Parenting behaviors						

KIDI at 9 months		0.003	(0.021)	0.003	(0.020)
Cognitively stimulating activities at 2 years		-0.048*	(0.019)	-0.044*	(0.019)
No spanking at 2 years		-0.151	(0.104)	-0.095	(0.104)
Family characteristics					
Child care arrangements at 2 years (vs. parental care)					
Relative care		0.249†	(0.142)	0.247†	(0.140)
Nonrelative care		0.452**	(0.160)	0.416**	(0.158)
Center-based care		0.229	(0.178)	0.238	(0.175)
Parent's education at birth (vs. less than high school)					
High school		-0.128	(0.093)	-0.167†	(0.093)
Some college		0.045	(0.117)	0.023	(0.115)
Above college		-0.035	(0.170)	-0.065	(0.168)
Family income at 9 months (vs. \$0-\$20,000)					
\$20,001-\$35,000		-0.160†	(0.092)	-0.180*	(0.091)
\$35,001-\$50,000		0.041	(0.130)	0.041	(0.128)
\$50,000 or more		0.030	(0.282)	-0.008	(0.278)
Family income at 2 years (vs. \$0-\$20,000)					
\$20,001-\$35,000		-0.047	(0.092)	-0.051	(0.091)
\$35,001-\$50,000		-0.151	(0.122)	-0.133	(0.121)
\$50,000 or more		-0.122	(0.242)	-0.011	(0.241)
Lived in urban area at 2 years		0.101	(0.211)	0.047	(0.209)
Region of country at 2 years (vs. Northeast)					
Midwest		0.174	(0.187)	0.190	(0.185)
South		0.307*	(0.142)	0.231	(0.141)
West		0.206	(0.148)	0.168	(0.146)
Socio-emotional scores (ITSC) at 2 years					
Constant	-0.080	(0.229)	1.129*	(0.450)	0.803† (0.450)
Adjusted R-squared	0.021		0.064		0.088

Note. Sample sizes were rounded to the nearest 50. Sample sizes were about 650 in all models. All models were adjusted using the kindergarten sampling weights. Model 1 only including care arrangement groups and child characteristics; Model 2 adding maternal, and family characteristics and parenting behaviors; Model 3 adding earlier outcome scores. ITSC = Infant/Toddler symptom Checklist; KIDI = Knowledge of Infant Development Inventory; *Coef* = Coefficient. *SE* = Standard error of the coefficient.

*** $p < .001$. ** $p < 0.01$. * $p < 0.05$. † $p < 0.10$.

Table F1 Preschool and Parent-rated Socio-emotional and Behavioral Development among Children of Asian Immigrant Mothers at Age 4 and Kindergarten Entry, by Maternal Language Use

	Approaches to learning		Pro-social behavior		Attention problems		Externalizing problems	
	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>
<i>Panel A: Children of bilingual or English dominant mothers at age 4</i>								
Head Start	-0.21	(0.19)	-0.09	(0.22)	0.01	(0.19)	-0.27	(0.19)
Prekindergarten	0.24†	(0.13)	0.32*	(0.15)	-0.10	(0.14)	-0.09	(0.14)
Other center-based care	-0.04	(0.12)	0.14	(0.14)	0.07	(0.12)	-0.18	(0.12)
Home-based care	-0.30†	(0.17)	-0.07	(0.21)	-0.24	(0.18)	0.17	(0.18)
<i>Panel B: Children of bilingual or English dominant mothers at kindergarten entry</i>								
Head Start	-0.26	(0.19)	-0.10	(0.20)	-0.09	(0.20)	-0.39†	(0.21)
Prekindergarten	-0.00	(0.13)	-0.07	(0.14)	0.23†	(0.14)	0.15	(0.15)
Other center-based care	0.07	(0.12)	0.07	(0.13)	-0.03	(0.12)	-0.11	(0.13)
Home-based care	-0.08	(0.17)	0.27	(0.19)	0.13	(0.17)	0.24	(0.19)
<i>Panel C: Children of home language mothers at age 4</i>								
Head Start	0.54*	(0.26)	0.49†	(0.27)	0.13	(0.24)	0.23	(0.25)
Prekindergarten	0.31	(0.26)	0.41	(0.26)	-0.11	(0.24)	0.28	(0.25)
Other center-based care	0.43*	(0.20)	0.15	(0.21)	-0.18	(0.19)	0.16	(0.20)
Home-based care	-0.23	(0.36)	0.17	(0.37)	-0.07	(0.32)	0.24	(0.34)
<i>Panel D: Children of home language at kindergarten entry</i>								
Head Start	0.01	(0.24)	0.20	(0.24)	0.27	(0.24)	0.29	(0.23)
Prekindergarten	0.13	(0.25)	0.21	(0.24)	-0.23	(0.24)	-0.14	(0.24)
Other center-based care	0.23	(0.19)	0.31	(0.19)	-0.12	(0.19)	-0.25	(0.18)
Home-based care	-0.03	(0.34)	0.13	(0.33)	0.42	(0.31)	-0.29	(0.31)

Note. Attention and externalizing problems measures were reverse-coded, with higher scores indicating lower levels of problems. Children in parental care were the reference group. Regression models at each wave were adjusted using each wave's sampling weights. All models were estimated using Model 3, which includes all covariates (i.e., child, maternal, parenting, and family characteristics as well as pre-treatment outcomes). Sample sizes were rounded to the nearest 50. In Panels A and B, sample sizes were 600 for the approaches to learning, attention problems, and externalizing problems outcomes and 550 for the pro-social behavior outcome. In Panels C and D, sample sizes were 250 for the approaches to learning, attention problems, and externalizing problems outcomes and 200 for the pro-social behavior outcome. *Coef* = Coefficient. *SE* = Standard error of the coefficient.

* $p < 0.05$. † $p < 0.10$.

Table F2 Preschool and Parent-rated Socio-emotional and Behavioral Development among Children of Hispanic Immigrant Mothers at Age 4 and Kindergarten Entry, by Maternal Language Use

	Approaches to learning		Pro-social behavior		Attention problems		Externalizing problems	
	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>	<i>Coef</i>	<i>SE</i>
<i>Panel A: Children of bilingual or English dominant mothers at age 4</i>								
Head Start	-0.36†	(0.21)	-0.38*	(0.19)	-0.17	(0.23)	0.39†	(0.20)
Prekindergarten	0.11	(0.24)	-0.16	(0.22)	0.21	(0.26)	0.09	(0.23)
Other center-based care	0.11	(0.23)	0.01	(0.21)	0.13	(0.25)	0.08	(0.23)
Home-based care	-0.22	(0.28)	-0.31	(0.26)	-0.20	(0.30)	0.15	(0.27)
<i>Panel B: Children of bilingual or English dominant mothers at kindergarten entry</i>								
Head Start	-0.09	(0.21)	-0.51*	(0.21)	0.36	(0.23)	0.50*	(0.21)
Prekindergarten	0.44†	(0.24)	-0.00	(0.24)	0.13	(0.27)	-0.10	(0.24)
Other center-based care	0.56*	(0.23)	0.35	(0.23)	0.40	(0.26)	0.48*	(0.24)
Home-based care	0.35	(0.30)	-0.12	(0.30)	0.05	(0.34)	0.09	(0.31)
<i>Panel C: Children of home language mothers at age 4</i>								
Head Start	0.00	(0.12)	0.05	(0.12)	0.12	(0.12)	-0.17	(0.13)
Prekindergarten	0.23	(0.20)	0.05	(0.20)	0.15	(0.20)	-0.13	(0.20)
Other center-based care	0.41*	(0.16)	0.02	(0.17)	0.24	(0.17)	-0.25	(0.17)
Home-based care	0.52*	(0.16)	0.39*	(0.16)	0.43**	(0.16)	-0.24	(0.16)
<i>Panel D: Children of home language mothers at kindergarten entry</i>								
Head Start	-0.37**	(0.12)	-0.18	(0.13)	-0.20	(0.12)	0.07	(0.13)
Prekindergarten	-0.10	(0.19)	-0.08	(0.21)	-0.23	(0.19)	0.04	(0.20)
Other center-based care	-0.24	(0.16)	-0.31†	(0.17)	0.03	(0.16)	0.08	(0.17)
Home-based care	0.10	(0.15)	-0.02	(0.17)	-0.32*	(0.15)	-0.11	(0.16)

Note. Attention and externalizing problems measures were reverse-coded, with higher scores indicating lower levels of problems. Children in parental care were the reference group. Regression models at each wave were adjusted using each wave's sampling weights. All models were estimated using Model 3, which includes all covariates (i.e., child, maternal, parenting, and family characteristics as well as pre-treatment outcomes). Sample sizes were rounded to the nearest 50. Sample sizes for all outcomes were 200 in Panels A and B and 450 in Panels C and D. *Coef* = Coefficient. *SE* = Standard error of the coefficient.

** $p < 0.01$. * $p < 0.05$. † $p < 0.10$.