



2016-06-01

Parental Involvement and Child Achievement in School Among Interracial Marriage and Same-race Marriage: Comparison of White-White, Asian-Asian, and White-Asian Families

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Parental Involvement and Child Achievement in School Among Interracial
Marriage and Same-race Marriage: Comparison of White-White,
Asian-Asian, and White-Asian Families

Can Cheng

A thesis submitted to the faculty of
Brigham Young University
in partial fulfillment of the requirements for the degree of
Master of Science

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June 2016

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ABSTRACT

Parental Involvement and Child Achievement in School Among Interracial Marriage and Same-race Marriage: Comparison of White-White, Asian-Asian, and White-Asian Families

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Does the parental involvement of interracial families have different effects on children's academic achievement compared to same-race families? This study compares parental involvement in children's education and the academic outcomes of White-Asian families and White and Asian families. Five dimensions of parental involvement are examined: educational expectations, school involvement, home involvement, parental control and parental social networks. Based on data from The Early Childhood Longitudinal Study, generalized estimating equations (GEEs) are used to analyze the variability of academic achievement produced by the interaction of involvement dimensions and family types. Asian mother-White father families rank the highest in most forms of involvement. They are most active in school and most frequent in interacting with their child at home, and they also show the highest level of contacts with parents of their child's friends. However, only home-based involvement is a stronger predictor of reading scores compared to White parents families. Asian parents generally expect their child to go much further in school and tend to express higher levels of parental control. But it is home involvement that has a stronger effect on reading achievement while school involvement is a stronger predictor of math achievement. Although White parents have the lowest educational expectations for their children, their expectations and school involvement tend to have stronger effects on children's reading achievement. What improves educational attainment for children from White mother-Asian father families is not significantly different from other families.

Keywords: parental involvement, academic achievement, family types, assimilation

ACKNOWLEDGEMENTS

I would first like to thank my thesis committee chair, Carol Ward, for all her help, guidance, and encouragement during the development of this thesis, and for helpful comments on the text. She consistently allowed this paper to be my own work, but steered me in the right direction whenever she thought I needed it. She also encouraged me to present my work at Pacific Sociological Association's 87th Annual Conference. I've learned a lot through the thesis process. I would also like to acknowledge the rest of my committee including Benjamin Gibbs for many insightful conversations during the process and helps with understanding the literature about parenting of different racial/ethnic groups, and Lance Erickson for guiding me on methods related tasks. The doors to their offices were always open whenever I ran into a trouble spot or had a question about my research. Besides my committee, I would like to thank my parents for their support in everything I do. And Michelle Lucier, my cohort and friend, who kindly volunteered to proof read my thesis and believed that I would do great.

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INTRODUCTION

As one of the most significant variables affecting children's performance, parental involvement has received considerable attention among education scholars (e.g. Huntsinger and Jose 2009a; Hoover-Dempsey et al. 2001). A substantial amount of the research findings reported indicates that parents' involvement in school is positively associated with educational outcomes of children (e.g. Kao and Rutherford 2007). Consequently, parental involvement in schooling has become a catchphrase in educational policy making. However, the general assertions made about parental involvement may be debated when taking race/ethnicity into consideration because research has shown that parents of different racial/ethnic groups have different levels of participation in their children's education (e.g., Huntsinger and Jose 2009a).

Among the racial/ethnic minority groups that are commonly discussed, Asians tend to receive positive stereotypes and are considered a "model minority" because of their economic and educational success. Asian educational attainment has clearly surpassed that of other minority groups (Kao and Thompson 2003; Lee and Zhou 2014). However, the level of parental involvement of Asians is usually found to be low because Asian parents are less present at school events and less likely to help with homework (Kao 1995; Robinson and Harris 2013). On the other hand, White parents typically have higher levels of involvement in children's education since they tend to be more engaged in a wide variety of school events (Huntsinger and Jose 2009b) and have more parent-child interactions such as telling stories, participating in academic planning, and visiting libraries (Robinson and Harris 2013). With regard to expectations for children's educational attainment, Asian parents generally expect their child to perform better and go further in school than White parents (Gibbs et al. 2016; Okagaki and Frensch 1998).

Interestingly, little is known about how parents participate in their children's education if one parent is White and the other is Asian. As White parents and Asian parents may have distinct educational ideals and utilize different parenting practices, an important question is, will the combined Asian and White parenting approaches in one family neutralize the level of involvement or enhance the effects of parental involvement? In other words, when mixed race parents get involved in their child's education, do they get more out of it? Asian Americans and Whites generally place great value on education and their children's educational achievement is higher than other major racial/ethnic groups (Kao 1995). Thus, it is reasonable to predict that an Asian-White married couple would make the best use of each of their cultures in parenting their biracial child, which would result in their child's outperformance of his/her counterparts from other groups. The goal of this study is to examine this probability and answer the questions posed above.

The answers to these questions are important because as a country with a long history of immigration, the United States includes an increasing number of families in which parents are from two different races or cultures (Lewis and Robertson 2010). Knowing how mixed-race marriage influences parental involvement will improve our understanding of the process of assimilation in the family unit. Results of this study also could provide educational policymakers and academics with a more adequate understanding of how diverse dimensions of parental involvement are related to race and, more practically, this research can provide evidence of the impact on children's achievement in schooling of interracial compared to same-race marriage in the United States.

In this study, I first examine five dimensions of parental involvement among four types of families, which include two same-race and two mixed race family types: White-White, Asian-

Asian, White mother-Asian father, and Asian mother-White father. The five dimensions of parental involvement include educational expectations, school involvement, home involvement, parental control, and parental social networks. Then I explore differences among the four family types in terms of the relationship between parental involvements and children's success in school. Correspondingly, my first hypothesis is that the level of parental involvement of White-Asian families is higher than that of White families and Asian families. Second, I predict a stronger effect¹ of parental involvement on academic achievement for children in White-Asian families than for children in White-White families and Asian-Asian families.

LITERATURE REVIEW

Parental Involvement and Academic Achievement

Inconsistency of previous research

Most parents, teachers, and educators in the United States believe that parental involvement is critical to improving educational outcomes for all children (Anderson and Minke 2007; Crosnoe 2001a; Chen and Gregory 2009). Ideally, an effective school is thought to be one in which parents and teachers share equal responsibility for educating children; teachers instruct and implement school curriculum while parents create a beneficial milieu outside of school to facilitate children's learning (Robinson and Harris 2013). In fact, recent research suggests that some educators believe parents should play an even greater role in children's educational development. For example, Bol and Berry (2005) found that teachers (grades 6-12) invoke family support as more important than curriculum and instruction or school characteristics for

¹ In this study, the word "effect" is used to indicate an association between two variables rather than causation.

youths' academic orientation. Moreover, some teachers attribute low achievement to factors at home and the extent to which parents value education (DeCastro-Ambrosetti and Cho 2005). However, in recent years, academic researchers studying the relationship between parental involvement and student performance have shown divergent findings: while the preponderance of evidence suggests a positive association of the two variables, some studies demonstrate that there may be no effect, or perhaps even a negative effect, of parental involvement on students' education outcomes. The debate is discussed more thoroughly in the following paragraphs.

Consistent with mainstream opinion, a substantial amount of the research has indicated that parents' involvement in schooling is positively associated with educational outcomes of children (Kao and Rutherford 2007; Dearing et al. 2006). Overall research findings indicate that parents who actively participate in their child's education are more likely to promote children's social, emotional, and academic growth (Green et al. 2007). Considered to be encouraging for youths throughout K-12 schooling careers, parents' involvement during early education is specifically thought to be important for promoting positive attitudes and behaviors toward learning as well as for improving student literacy and mathematics development (Englund et al. 2004; Jordan et al. 2009).

Some researchers have emphasized the significance of children's positive attitudes and behaviors for educational outcomes and explored their relation to parental involvement (e.g. Domina 2005). Nevertheless, academic achievement is the dominant consideration in research on the effects of parental involvement (Roksa and Potter 2011; Desimone 1999). Typically considered as a weathervane of children's performance, academic achievement is a primary concern of parents, teachers, and schools (Roksa and Potter 2011). Additionally, educators generally believe that poor achievement can be linked to inadequate involvement of the family or

lack of value placed on schooling by parents (e.g. Souto-Manning and Swick 2006). A considerable amount of research has shown that parent involvement makes a difference in achievement in general (e.g. Epstein 1991; Muller 1993; Stevenson and Baker 1987) and specifically in adolescents' mathematics performance (Muller 1998). Jeynes's research (2003) also shows the impact of parental involvement in mathematics achievement as well as reading achievement and other school subjects. Likewise, studies undertaken outside of the United States indicate that parental involvement has positive effects on the school outcomes of children as well (Deslandes et al. 1997; Mau 1997; Villas-Boas 1998).

Some other recent studies (Fan 2001; Domina 2005; Robinson and Harris 2013), however, have started to question this generally acknowledged relationship, suggesting that parental involvement has a non-significant effect or even a (counterintuitive) negative effect on student achievement. For instance, Domina (2005) queried the popularity of the perception of parental involvement by suggesting that the public faith in involvement may have been misplaced. His findings demonstrate that the effect of the parents' involvement on children's academic achievement is negative or non-significant after controlling for the type of child's school, family socioeconomic status, and prior academic achievement.

A study by Robinson and Harris (2013) presented another side of the story on involvement. They argue that, "There is no reason to assume that all forms of involvement will lead to better achievement or that the effects of particular involvement activities will be the same across groups, particularly given that members of different social class or racial groups can have substantially different life experiences within the United States" (2013:25). Their findings suggest that, in general, there is no clear, positive connection between parental involvement and academic outcomes, and there are a greater number of negative estimates across the two data sets

they utilized. More specifically, the effects of parental involvement vary in terms of the type of involvement, social class, and race/ethnicity. While parental involvement at school is related to increases in achievement for white and black students, parents' school involvement seems to have no discernible effects for Asian youth in reading, math, or grades. Therefore, the researchers conclude that, given the variation by types of involvement, social class and race/ethnicity, parental involvement may have little effect, detrimental or favorable effects on academic outcomes,

In spite of the divergence among academic perspectives, there is clear evidence that parental involvement, especially involvement at school, has become a catchphrase in educational policy at the state level as well as the national level. For example, West Virginia State Superintendent of Schools Steve Paine states that, "caring, involved parents, not income or social status, is the most accurate predictor of student achievement in school....Parents can make a difference in their children's achievement" (West Virginia DOE 2010). Additionally, increasing parental involvement in schools is one of the six central goals of the Bush administration's 2002 No Child Left Behind Act. Following the educational policies, school outreach efforts like open houses and PTAs have become increasingly common in American elementary school (Domina 2005). However, these school policies based on statements like parental involvement "can only lead to success" are not entirely supported by research findings as aforementioned. And this study contributes to clarifying the role of parental involvement by examining more forms of involvement, different school subjects, and diverse family types.

Conceptualizing parental involvement

While parental involvement may play an important role in predicting children's school performance, scholars have not reached agreement on the precise meaning, description, and

forms of parental involvement when estimating its effects on children's academic life. The items used to indicate parent's involvement in schooling vary by research designs. For example, in many studies, the most important forms of parental involvement at school include attendance at parent-teacher conferences, participation in PTA/PTO, volunteering in school events, and communication with school staff etc. (e.g. Fan, Williams, and Wolters 2012; Hill and Craft 2003; Chen and Gregory 2009). Other researchers (e.g., Mau 1997) treat parental supervision of homework as a more important form of involvement. Additionally, parental expectations (Museus, Harper, and Nichols 2010), the time parents spend with children (Hango 2007), and family and emotional support (Hoge, Smit, and Crist 1997) are thought to be influential components of parental involvement as well.

Acknowledging researchers' diverse opinions on the dimensions, forms, or types of parental involvement, Fan (2001) and Smith et al. (2000) suggest careful consideration of the multidimensional measurement of parental involvement and the need to avoid defining this construct in a nonspecific and broad manner. Based on previous research, modeling multiple dimensions of involvement is critical given that the types of parental involvement have differential influences on children's schooling (Hong and Ho 2005; Anderson and Minke 2007). In accordance with this literature, the current study incorporates multiple dimensions of parental involvement. Even though parental involvement is usually conceptualized as parents' direct behavior toward their children (Huntsinger and Jose 2009a), abstract ideals and beliefs that parents have about the significance of education also have proven to be important in understanding the strategies or approaches parents use in raising their children (Gibbs et al. 2016; Kordi and Baharudin 2010). Gibbs et al. (2016) state that Asian parents in particular favor abstract ideals over tangible behaviors when cultivating the next generation. Therefore, both

attitudes that parents exhibit in valuing education and behaviors they engage in to increase their child's academic outcomes are considered as aspects of parental involvement. Accordingly, parental involvement in this study primarily focuses on five dimensions of this construct: educational expectations, school-based involvement, home-based involvement, parental control, and parental social networks (Lareau 2003). Each of these is discussed below.

Educational expectations: Parental aspirations or expectations about education is usually conceptualized as how well parents expect their child to do in school and how far they expect their child to go in terms of pursuing academic credentials (Zimmerman, Bandura, and Martinez-Pons 1992). Previous research has found educational expectations to be positively related to overall academic achievement and to be strongly predictive of children's school success. For example, Hoge, Smit, and Crist (1997) revealed that high expectations about their children's achievement have a greater impact than being involved in school events or having open communication with the children. In fact, parental expectations were the most influential of all the variables studied. Similarly, the meta-analysis conducted by Fan and Chen (2001) concluded that parental aspirations/expectations for children's educational attainment had the strongest relationship with student academic achievement among all indicators of parental involvement applied in their study. In some cases, parents' expectations for their children were found to be the only aspect of habitus that significantly influenced the student's academic ability (Dumais 2006; Jacobsen 2010).

School-based involvement: Researchers have examined several types of parents' activities at school, including parental advising, parental participation in school functions, parent-school contact concerning student school problems, and parent-school contact concerning school issues (Fan et al. 2012). Other researchers simply assessed parental involvement relative to school

issues with measures of communication and volunteering at school (Huntsinger and Jose 2009a). Stevenson and Baker (1987) found a correlation of .34 between parents' involvement at school and children's school performance, and the involvement continued to be a significant predictor even after controlling for all other factors.

Home-based involvement: Most conceptions of parental involvement with young children have included learning at home as one of the types of parent involvement (e.g., Epstein 1995). However, there is some diversity in how learning at home is conceptualized. Epstein (1995) stated that help at home meant encouraging, listening, reacting, praising, guiding, monitoring, and discussing—not teaching school subjects, which suggests that parents' helping children at home may not relate to homework. For other researchers, involvement practices at home may include parents' active participation with children and their homework, e.g., assisting, reviewing, and monitoring homework (Tan and Goldberg 2009), and discussion with children of school activities and plans (Jacobsen 2010; Lareau 2003).

Parental control: Parental control is one of the two dimensions of parenting that have been investigated the most and has been shown to influence children's social development along with social acceptance (Huntsinger and Jose 2009b). Segregated into two constructs including behavioral control and psychological control (Aunola and Nurmi 2005), parental control is believed to have contradictory influence on children's development depending on the specific construct. Behavioral control, which includes providing rules and supervising the child's activities, has been found to facilitate children's growth, whereas psychological control seems to hinder children's development in an independence-oriented society (Steinberg 1990). Therefore, since even psychological control may be beneficial for children in a different cultural context, the parental control discussed in the current paper refers to behavioral control, which is primarily

rule-setting. Ridley-Johnson, Cooper, and Chance (1983) suggested that when parents have rules regarding TV watching, children tend to perform better at school. In later research, Bembenuity (2006) found that parents' control of TV watching is a positive predictor of math achievement. Generally, an authoritative parenting style (i.e., accepting and not too controlling) is linked to higher student achievement (Steinberg et al. 1992). However, this relationship may vary across racial-ethnic groups considering that parental control has different meanings to parents and children in different cultures (Huntsinger and Jose 2009a).

Parental social networks: Although some researchers have argued for the significance of parental involvement in general as a form of social capital (e.g., Dufur, Parcel, and Troutman 2013; Jacobsen 2010), this study only regards one dimension of parental involvement as social capital—social networks. Referring to the idea that individuals and groups can gain access to resources from their connections with one another, social capital is an individual, private good that can be used for economic gain or another private outcome such as educational attainment (e.g. Coleman 1988; Paxton 1999). Coleman (1998) identified one type of informal social network, a network among a child's parent and the parents of the child's friends, in which parents share information or resources and strengthen or support one another in their participation in the children's education. Building on Coleman's writings, Portes (1998) posited parental support as one of the three functions of social capital, and greater social capital² is associated with greater parental attention, more hours spent with children, and clearer achievement orientation among adolescents. Parents' social networks are a contributing factor in

² In Portes' view, greater social capital is found in families with two parents, those with fewer children, and those where parents have high aspirations for the young.

several aspects of children's schooling, and academic attainment is one of them (Kao and Rutherford 2007).

Parental Involvement among Same-race and Interracial Families

Assimilation and pluralism in same-race and interracial marriages

As a society undergoing unprecedented cultural changes in the current century, the United States has become more diverse both racially and ethnically, attracting the largest number of immigrants in the world, with 20 million individuals entering the country after the passage of the 1965 Immigration Act³ that reduced restrictions on non-European immigration (Suarez-Orozco and Suarez-Orozco, 2001). Almost one in four school-aged children is reported to have at least one immigrant parent (O'Hare 2004). This post-1965 immigration wave also accompanied by a tremendous increase in interracial marriage over the past several decades (Lewis and Robertson 2010). Lewis and Robertson (2010) argue that immigrants to the US since the 1960s have been encouraged to retain many aspects of their native cultures, unlike processes associated with European immigration in the mid- to late 1800s and early 1900s. Therefore, researchers have speculated that the 21st-century United States will experience a new racial hierarchy (Gans 1999) and also encounter new challenges of assimilation and pluralism from the growing number of immigrants.

Assimilation is a process by which a person's or group's distinct language, culture and/or social norms come to resemble those of another group (Healey 2012; Alba and Nee 2003) while pluralism refers to social conditions in which groups maintain their ethnic identities (Healey 2012). As an important representative of the study of traditional assimilation, Robert E. Park,

³ Hart-Celler Act, INS Act of 1965, Pub. L. 89-236 (1965).

who built his theory on European immigration, argued that race relations occur in a cycle in which racial groups first come into contact and engage in competition and conflict over resources. However, as they adjust to a new social situation, these groups tend to accommodate to the dominant society, and the process eventually moves the groups toward assimilation (Park and Burgess 1924). In the end, therefore, even racially subordinate groups are expected to assimilate and ethnic and racial group identities gradually lose their importance (Park and Burgess 1924; Feagin and Feagin 2007).

Following Park, Milton Gordon presented Anglo-conformity as the descriptive reality in the United States in which immigrant groups tended to give up their heritage for the Anglo-Saxon core culture and society (Gordon 1964). He also distinguished seven dimensions of adaptation⁴ to society. In Gordon's theory, cultural assimilation, or acculturation, is the first stage, as immigrant groups learn to adapt to the attitudes, values, and behaviors of the dominant culture of the host country (Berry, Trimble, and Olmedo 1986). Only after completing the first stage can one begin the second phase. This is what Gordon defined as social structural assimilation, or integration. The consequences of integration are to reorganize "the networks of social relationship, organizations, stratification systems, communities, and families, and connect individuals to one another and to the larger society" (Healey 2012). "Acculturation without integration," Gordon argued, is a common situation in the United States for many minority groups, especially racial minority groups, given their stress and hardships of competing for jobs

⁴ The seven subprocesses of assimilation include cultural assimilation, structural assimilation, marital assimilation, identification assimilation, attitude-receptional assimilation, behavior-receptional assimilation, and civic assimilation.

or other opportunities when they have acculturated but have not been socially accepted by the dominant group.

Since the experiences of contemporary immigrant groups differ greatly from prior European immigrants, some researchers assert that traditional assimilation has been gradually replaced by a new form known as “segmented assimilation.” For example, social research shows that ethnic and racial groups now assimilate in different ways and into various sectors of society (Portes and Zhou 1993; Portes and Rumbaut 2006; Cornell and Hartmann 2007). Portes and Zhou (1993) assert that rather than a common path toward integration there can be several distinct potential outcomes evolving out of adapting to the dominant society. They propose three social factors that influence different patterns of assimilation, including color (i.e., race), location, and the absence of mobility ladders (related to changes in the labor market). Other researchers identify differences in educational attainment, socioeconomic status, acquisition of language skills, human capital, legal status, and family structure as potential contexts that contribute to divergent assimilation (e.g. Portes and Rumbaut 2006; Salam 2014).

Accordingly, this new approach suggests that racial and ethnic groups perceived to be socially different from the dominant group may encounter more barriers to social acceptance and less success in achieving assimilation into the dominant group (Alba and Nee 2003). Specifically it helps us understand why children from immigrant families appear to perform in diverse ways at school. Portes and Rumbaut’s research in 2006 revealed that, although there is diversity, Asian immigrants have the highest household incomes and high average levels of education, and are most likely to hold families together, compared to their European, African, and Latin American counterparts. “The combination of high parental human capital and a neutral context of reception,” they assert, “led second-generation Chinese and other Asians to extraordinary levels

of educational achievement” (277). This finding also supports the social structural assimilation proposed by Gordon.

In addition to Portes and Rumbaut’s example, some researchers have offered evidence of the feasibility of reversing the order of the phases of assimilation among some minority groups and proposed “integration without acculturation” as the third type of pluralism (Abrahamson 1980; Gleason 1980; Healey 2012). Among newer immigrants, the “enclave minority group⁵” and “middleman minority group⁶” are exemplified as the groups that experience a transition to a more pluralistic society. Asians, such as Chinese, Japanese, Korean, Arabs, and Indians have been recognized as enclave or middleman minorities (Bonacich and Modell 1980; Kitano and Daniels 2001) in the first several generations. They have had some material success yet they have not become Americanized (fully adopted American values and norms). Some social scientists explain the economic success of the Asian “model minority groups” as related to the strong cultural bonds within their groups, which lead to cooperation and mutual aid; in fact, acculturation would only weaken that achievement (Healey 2012).

In order to clarify how parents of different cultural backgrounds cultivate their child and the principles guiding their practices, information on the cultural practices associated with the racial/ethnic identity of each family, especially interracial families, is useful. Transmitted from generations to generations, culture is the set of distinctive patterns of language, beliefs, customs,

⁵ An enclave minority group establishes its own neighborhood and relies on a set of interconnected business, each of which is usually small in scope, for its economic survival. The Cuban American community in South Florida and Chinatowns in many larger American cities are examples of ethnic enclaves (see Healey 2012).

⁶ Similar to enclave minority group, the middleman minority group also relies on small shops and retail firms, but the businesses are more dispersed throughout a large area rather than concentrated in a specific locale. Some Chinese American communities fit in this pattern, as do Korean American greengroceries, Arab American markets, and Indian-American owned motels (see Portes and Manning 1986).

rules of etiquette, values, ideas and behaviors that help mold a person and influence individuals' daily decisions (Hofstede 1981; Hong 2009; Oyserman and Sorensen 2009; Healey 2012).

Immigrant parents tend to adhere to their cultures of origin⁷ (Kim 2008), which may suggest why the first generation immigrants are less likely to be acculturated. The examples above are consistent with diverse paths of assimilation, as suggested by the the concept of segmented assimilation, which is useful in interpreting the “model minority” experiences of some Asians.

In contrast to migrant parents, the assimilation of children of immigrants may be distinct. As a second generation, the English-speaking children of immigrants tend to be more Americanized. Equipped with greater familiarity with the dominant society and language facility, they are more likely to be incorporated into the mainstream culture and value systems compared to their parents. Given the importance of communication competence, it is not surprising to find that immigrants who speak English well earn more money, do better in school, and have more career options than those who do not (Alba and Nee 2003). Nevertheless, the second generation also encounters a psychological or social dilemma that “they are partly ethnic and partly American but full members of neither group” (Healey 2012). Resulting from a marginalized identity, their world at school conflicts with what is cultivated at home in many ways. More often than not, the family values of the sending countries, especially the Asian ones, tend to expect children to subordinate their self-interests to the interests of their elders and of the family as a whole while American values emphasize individualism (Healey 2012; Suarez-Orozco and Suarez-Orozco 2001). Contradictions like this may possibly lead to different childrearing and

⁷ Some researchers predict this as the consequence of enculturation, which is a socialized process by which people learn the requirements of their surrounding culture and acquire values and behaviors appropriate or necessary in that culture (Leaper and Farkas 2007).

upbringing. How effective their parenting is would depend on whether the child is able to balance the two types of values in his/her schooling.

On the other hand, the child may not be able to benefit from resources of their immigrant parents' social network to the extent that there is a "considerable degree of friendship segregation...between immigrants and natives" (Windzio 2012). Windzio (2012) illustrated that social assimilation in the parents' generation can possibly affect assimilation in the children because the networks of children are socially embedded in networks of their parents. He also argued that immigrant parents tend to have lower levels of inter-ethnic contact and, thus, are slower in the process of social assimilation, which leads to slow social assimilation of the children. In earlier research, Rumbaut (1977) found that immigrant family bonds are sometimes negatively related to particular academic outcomes, including grades and standardized test scores, which might be explained by constraints on individual freedom (Portes 1998).

The effects are more perplexing when taking interracial couples into account, in which case the different stages or types of assimilation and pluralism are condensed and entangled in a family. In the view of traditional assimilation, primary structural integration typically precedes intermarriage and marital assimilation is characterized by an environment in which there is no difference in societal acceptance levels between interracial and same-race marriages (Gordon 1964). That is to say, wives and husbands with different ethnicities are already incorporated into one society; consequently, their parenting styles should not be extraordinarily distinctive. Ideally, their children would be expected to have much fewer barriers entering into the dominant society. Yet, in reality, marital assimilation, or intermarriage could possibly take place among immigrants of the first or second generation who have not completed the step of acculturation or integration (Healey 2012). Although it is reasonable to posit that there should be some kind of

compromise between the partners in interracial couples, they could also encounter family conflicts in raising their children considering the different cultural backgrounds and the difficulty of adjusting to a new culture. How couples coming from the same and different ethnicities are involved in childrearing in terms of education is discussed further in the next section.

Parental involvement across racial groups

Considering the possible impact of parental involvement related to cultural differences, it is reasonable to expect variance in the school achievement of children of immigrants from different cultural backgrounds. Several studies comparing ethnic groups (Kao 2004; Crosnoe 2001b) and cultural groups (Fan et al. 2012; Carreón, Drake, and Barton 2005) find evidence for this variation. For example, Steinberg et al. (1992) concluded that parental influence on school performance is weaker for Asians than for Hispanics and Whites. Parental advising and parent-school communication concerning school issues are positively related to Hispanic students' academic self-efficacy in English, but negatively related to Asian students' mathematics self-efficacy (Fan et al. 2012). Huntsinger and Jose (2009b) found that Chinese American children are rated as doing better than White children overall despite the fact that White parents volunteer more in schools. In general, Chinese American parents focus more on systematic teaching of their children at home rather than at school. Moreover, Asian Americans usually have higher expectations for their children's performance in school and for their overall educational achievement than other racial groups (Okagaki and Frensch 1998).

Although academic research generally agrees that parent involvement differs among racial/ethnic families and, thus, the meaning and impact of the involvement may also vary, the results fail to show consistent patterns for each racial/ethnic group. The preponderance of evidence suggests that compared to their counterparts of other racial identities, White parents

tend to exhibit higher levels of participation in schools which has positive effects in their children's education. However, some researchers have found evidence of exceptions. Muller and Kerbow (1993) found that White parents had lower levels of involvement at school along with Asian parents while Black and Hispanic parents were involved more in their children's school education. Moreover, Hill and Craft (2003) suggest that school involvement was negatively related to achievement for Euro-Americans while the relation was positive for African Americans. For African American parents, they argued, parental involvement, like volunteering at school, is more likely to improve achievement since they tend to have less informal social networks with other parents in the school (Lareau 1996), and their presence in the classroom may provide them with information and skills requested by teachers to assist their children. Nevertheless, the racial difference between Black parents and their White counterparts in parental involvement is only significant among students in the remedial track. Among Asian students in the same track, however, parents are more involved (Crosnoe 2001a).

In addition to participation at school, another effective factor predicting parental involvement is high parental control. Despite having different meanings to parents and children in different cultures, this factor appears to yield similar effects among diverse ethnic groups. For example, high parental control leads to positive outcomes in White children as well as in Chinese school children (Leung, Lau, and Lam 1998). Because of the emphasis on autonomy and independence in the United States, White mothers prefer to use suggestions (rather than commands) and other indirect means of structuring their children's behavior (Huntsinger and Jose 2009b). Their intention is to promote autonomy, assertiveness, verbal competence, and self-actualization in their children. The findings of Huntsinger and Jose (2009b) indicated that White parents rated themselves as being more accepting of their children and believed that creating an

enjoyable and satisfying climate helps parents to facilitate the school performance of their children (Leung et al. 1998).

By comparison, parental control means “to govern” (as in “guan”) in Chinese culture. Although as negative as it sounds from the literal interpretation, “guan” has a relatively positive connotation for Chinese parents because it implies the love or care of parents for their children as well (Huntsinger and Jose 2009b). It is traditionally believed by Asians that children cannot earn great achievement without firm control over them. Consistent with one of the common images of Asians related to the influence of Confucian ideology, Chinese people believe in the importance of parents teaching their children behaviors as well as giving them emotional and psychological directions. Accordingly, parental control in this culture denotes supervision and intervention in children’s values, beliefs, religion (Fung 1999; Olsen et al. 2002; Wu et al. 2002) and daily actions (Lin and Fu 1990; Wu et al. 2002) as well. Stated more specifically, Chinese parents tend to encourage harmony in interpersonal relationships by emphasizing the importance of modesty and cooperation (Wu et al., 2002). Also, they like to spend time with their children working on homework issues and academic-related activities especially during early schooling (e.g. Lin and Fu 1990; Jose et al. 2000). More importantly, Chinese children, with some exceptions, generally tend to comprehend this firm control as an expression of parents’ care and concern, which explains why greater control exerts a positive influence on the child’s psychological adjustment among Chinese American families (Huntsinger and Jose 2009b).

This review of relevant literature addresses a question concerning why Asian children are more likely to perform better academically even though their parents’ involvement at school tends to be lower. Educational and sociological studies suggest that one of the reasons is because of the value, “filial piety,” which requires children to prioritize family obligations over personal

interests in their culture (Park et al. 2010). In particular, Asian children on average are obligated to obey whatever they are requested to do by their parents due to filial piety. Since Asian cultures have been traditionally identified as having a collectivist orientation (Ferguson et al. 2013), education is viewed as a collective rather than an individual responsibility. Based on the collective value, Asian parents are very motivated to help their children learn academic subject matter (Huntsinger and Jose 2009b) and help them with homework (Stevenson and Lee 1990).

On the other hand, conflict between parents and children may occur when immigration status is introduced in the analysis of parenting, which may also affect educational outcomes. Living in an immigrant family has always been challenging for both children and parents, as individuals are torn by conflicting social and cultural demands while encountering the trials of incorporating into an unfamiliar and frequently hostile new society (Portes and Zhou 1993). As mentioned earlier, parents from another society as first generation immigrants, especially those from a very distinctive one, are more likely to remain committed to the culture into which they were born. Their children, however, tend to acculturate to the dominant society as they socialize with native peers (Windzio 2012). The incongruity between these two can cause conflict so that cultural values, like filial piety, may not operate as they do in the original culture. Park et al. (2010) revealed that for acculturated children, parental behaviors may conflict with children's need for autonomy, a development emphasized in the United States.

As the United States witnesses an increasing growth in interracial marriage over the past several decades (Lewis and Robertson 2010), how children raised in interracial families perform academically and socially has become an intriguing and important question. Parents from different origins could have different influence on the child (Lareau 2003). Lewis and Robertson (2010) revealed that larger percentages of Hispanics and Asian Americans are involved in

interracial marriages, supporting the notion that Hispanics and Asian Americans face less social and structural barriers in American society than African Americans. Based on color grading theory, lighter skinned racial and ethnic groups face fewer social barriers in comparison to darker skinned groups (Ransford 1970; Keith and Herring 1991). Accordingly, families comprised of White-Asian couples may be more likely to successfully manage their marriage and balance their parenting. If they succeed in acculturation and assimilation, parents in mixed race marriages, such as like White-Asian marriages, are more likely to integrate the beneficial aspects of two cultures and apply them to their child-raising strategies. Consequently, it is reasonable to assume that children from this type of family would enjoy the advantages of the adjusted strategy and perform much better in school. In other words, children should be satisfied with an autonomous and independent climate as well as be respectful and express filial piety for their parents, which would be positively influential in their academic study.

Figure 1 below presents the conceptual model for the current research. In this study, the four family types representing racial composition of married couples are treated as a moderator of the relationship of parental involvement and children's achievement, along with a set of control variables regarding family, children, and school characteristics that are potential predictors of children's school attainment. Accordingly, my first hypothesis is that the level of parental involvement of White-Asian families is higher than that of White families and Asian families. My second hypothesis is that the effect of parental involvement on academic achievement is stronger for children in White-Asian families than those in White-White families and Asian-Asian families. The measurement of the variables adopted in the conceptual model is discussed in greater detail in the next section.

[Insert Figure 1 about here]

DATA AND SAMPLE

I use data from the public-use version of The Early Childhood Longitudinal Study Kindergarten Class of 1998-1999 (ECLS-K), a survey designed to examine children's early school experiences and development. Collecting information from children, parents, teachers, and schools, the ECLS-K employed a multistage probability sample design to select a nationally representative sample of children attending kindergarten in the United States in 1998-1999. Researchers followed up with the children in first, third, fifth, and eighth grades. A total of 21,409 children throughout the nation participated for at least one of the rounds from fall-kindergarten to spring-eighth grade data collections⁸ (Tourangeau et al. 2009). As crucial periods for children's growth, elementary school years (including kindergarten) are the interest of the study. In order to make the variables used in each wave comparable, the current study only includes the waves that were in the full sample and were part of the original study design of ECLS-K. Accordingly, four waves, including spring-kindergarten, spring-first, third, and fifth grade, were selected for the study. Data from the fall-kindergarten wave were incorporated when certain variables were not available in spring-kindergarten.⁹

For this analysis, I limit the examination to children who were living with both parents throughout the four waves to minimize the potential influence of a change in family structure (Shim, Flener, and Shim 2000), leaving me with a sample of 4,400 children from 731 schools.

⁸ The base-year data set includes a nationally stratified sample of 21,260 students who began kindergarten in fall 1998. The combined K-8 full sample database has 7 rounds, including fall-kindergarten (1998-1999), spring-kindergarten (1998-1999), fall-first grade (1999-2000), spring-first grade (1999-2000), spring-third grade (2001-2002), spring-fifth grade (2003-2004) and spring-eighth grade (2006-2007).

⁹ The variables included parents' academic expectations and the eight items used to construct the scale of home involvement.

Although the missing values in the outcome variables comprise approximately six percent of the whole sample I chose not to drop those cases. This helped to maintain a higher number of observations for interracial families. In an effort to maintain a large sample size, multiple imputation procedures were used to address variables with missing data. In the present study, 20 data sets were created using multiple imputation by chained equations in Stata Statistical Software Release 14 (Royston 2005). Imputations were performed on all independent and dependent variables in each wave. The range for missing data on the independent and control variables is approximately one percent to three percent depending on the specific variable as well as the wave.

The finalized data are appropriate for addressing the research questions for the following reasons. First, ECLS-K is a nationally representative source of data on both students' and their parents' experiences in elementary school. Moreover, researchers sampled sufficient cases of parents with minority ethnic origins and/or foreign-born backgrounds,¹⁰ which made it feasible to analyze children born in interracial marriages. Last, I can utilize a longitudinal design to extend prior analyses of ethnicity and immigrant differences in parental involvement by taking students' academic performance of multiple time points into account (Kristin and Kao 2009).

¹⁰ More than 85% of Asian mothers were born outside of the US. The countries they were from include the following: Philippines (20.13%), India (15.97%), Laos (11.50%), Vietnam (7.99%), and others. Similarly, about 85% of Asian fathers were born outside of the US. The countries they were from include the following: India (18.47%), Philippines (17.77%), Laos (12.54%), Vietnam (9.76%), and others. Except for Laotians and Vietnamese who tend to be refugees, the other Asians in my sample generally fit the "model minority" category with higher socioeconomic achievement because of self-select immigration (Le 2016).

METHODS AND MEASURES

Dependent Variables

Educators and sociologists tend to analyze children's academic achievement using standardized test scores because they generally serve as a direct cognitive assessment of a student's school performance (Roksa and Potter 2011). In contrast, Fan and Chen (2001) suggest that since student grade point average (GPA) is a more comprehensive indicator of achievement, it may be more reliable in showing students' academic performance. However, since the sample focuses on elementary school academic performance as measured by standardized test scores, these test scores are used for measuring academic achievement in this study. Although ECLS-K staff administered three subject assessments, they did not collect data on science until third grade. Therefore, I focus on the general knowledge tests of reading and mathematics in this study.

Standardized scores (T-scores¹¹) are used to measure academic achievement over the IRT scale scores and proficiency scores because these scores are norm-referenced indicators of children's performance relative to their peers in the content domain. The T-scores measurement is well-suited for this research given that they provide an indicator of the extent to which an individual or a subgroup ranks higher or lower than the national average and how much this relative ranking changes over time. These scores are roughly normally distributed. Reliability of

¹¹ The standardized scores reported in the database are transformations of the IRT theta estimates, rescaled to a mean of 50 and standard deviation of 10 using cross-sectional sample weights for each wave of data. The IRT (Item Response Theory) scale uses patterns of correct and incorrect answers to obtain estimates that are comparable across different assessment forms. Proficiency levels provide a means of distinguishing status or gain in specific skills within a content area from the overall achievement measured by the IRT scale scores and T-scores.

item response T-scores in 2003-04 spring of fifth grade is relatively high with .93 and .94 for reading and mathematics respectively¹² (Tourangeau et al. 2009).

Independent Variables

Educational expectations. Parental expectations regarding their children's educational attainment are viewed as an important indicator of parental involvement in and out of school (Robinson and Harris 2013). The ECLS-K parent survey asked parents how far they expected their children to go in school. Parental expectations scores include: 1=less than high school diploma; 2=graduate from high school; 3=two or more years of college; 4=college degree; 5=master's degree or equivalent; and 6=PhD, MD, or other higher degree. This item is treated as a continuous variable for regression models¹³ (Grossman, Kuhn-McKearin and Strein 2011).

School-based involvement. The survey items drawn from the ECLS-K K-8 full sample dataset assessing parents' school-based involvement are similar yet not identical to those seen in other empirical studies (e.g. Crosnoe 2006). Seven items in the parent interview are associated with parental participation in school. They are all dichotomous measures based on yes/no responses investigating whether parents were involved (1=yes) in the series of activities related to parenting or school functions. The items include contact with the child's teacher or school (for any reason having to do with the child), presence at an open house (or back-to-school night), attendance at a meeting of parent-teacher institutes (for example, Parent-Teacher Association, or Parent-Teacher Organization), attendance at a regularly scheduled parent-teacher conference (or

¹² Reliabilities of item response T-scores in prior years for reading and math are: .93 and .91 in spring-kindergarten; .96 and .92 in spring-first grade; .93 and .94 in spring-third grade.

¹³ The interpretation for the results of parental expectations was consistent with that when the variable was treated as a categorical variable.

meeting with the child's teacher), participation in a school or class event (such as a play, sports event, or science fair), volunteering at the school (or serving on a committee), and participation in fundraising for the child's school. The items are summed to create a scale from 0 (no participation) to 7 (participation in 7 school-related activities) representing the parent's level of school-based involvement.

Home-based involvement. Most conceptions of parent involvement with young children regard learning at home as a crucial manifestation of parenting (e.g. Epstein 1995), and parents' interactions with their children at home is expected to be consequential for the child's educational success (Lareau 2000). Therefore, I include a measure of home activities, which is a continuous measure based on parent reports of engaging in various activities with their child. Parents were asked how often they do the following activities with the child: 14 reading books, telling stories, singing songs, helping with arts and crafts, playing games or puzzles, talking about nature or doing science projects, playing with construction toys, and practicing with numbers and letters. The parent-child activities are assessed on a 4-point scale (1=not at all, 2=once or twice a week, 3=3 to 6 times a week, 4=every day). I create an averaged scale of these items with a Cronbach's alpha of .71. Researchers analyzing ELCS-K data have used these same items to construct similar scales (Klugman, Lee, and Nelson 2012; Bodovski and Farkas 2008).

¹⁴ Homework help is also considered as an important measure in terms of home-based involvement. However, ELCS-K did not inquire parents about questions in this respect until child's third grade. Therefore, I included homework help of third grade and fifth grade in separate models in replace with home activities of that wave to show the influence of homework help. Parents were asked how often they help with reading homework and math homework separately. Responses range from 1 "Never," 2 "Less than once a week," 3 "1 to 2 times a week," 4 "3 to 4 times a week," and 5 "5 or more times a week." Results are presented in footnote 18-20.

Parental control. Parental control is assessed with three items related to family rules for television-related activities. The items are measured dichotomously. The questions include whether or not parents had family rules for the following: which programs the child can watch, how early or late the child may watch television, and how many hours the child may watch television. Items are summed to create a measure of parental control ranging from 0 (no rules) to 3 (3 rules).

Parental social networks. Parents' social networks between the respondent parents and parents of the surveyed child's friends are assessed by identifying the number of parents of children in their child's class that the parent respondent talks with regularly. The communication could be either in person or on the phone. Responses over 40 are coded as 40 in the third wave in reference to the other three waves.

Family type moderator. To test my last hypothesis attributing the influence of interracial and same-race couples on the relationship between parental involvement and children's achievement, I include a categorical variable measuring the family types. ECLS-K collected data on the race of the child as well as the race of the child's mother and father respectively. This study distinguishes the type of the family with both mother's race and father's race instead of utilizing only the children's race to make family type more accurate. After recoding the variables of the race of the mother and father and excluding races other than White and Asian, I created a categorical variable by combining the race of mother and that of father. Specifically, the White-White family is comprised of parents who are identified as White, and the Asian-Asian family includes parents who identify themselves as Asian. By contrast, White-Asian family is formed either by the presence of Asian mother and White father or the presence of White mother and Asian father. The family type serves as a moderator.

Control Variables

Several characteristics of parents, children, and schools act as controls to predict children's educational outcomes. Each of these characteristics has been shown to be related to parents' involvement at school or at home as well as academic achievement of children in elementary school or higher (Kristin and Kao 2009; Lareau 2003; Turney and Kao 2009; Chatterji 2006; Jeynes 2003).

For parents, I control for immigration status (both native-born, one native-one foreign, both foreign-born), the highest education level of the parents (high school/GED or less, some college/equivalent, a bachelor's degree, higher than BA/BS), maternal occupation prestige level, paternal occupation prestige level, and total annual household income (ranging from \$5,000 or less to \$75,001 or more). Except for parental immigration status, the other four are continuous variables in the analysis. It is reasonable to assume that parents would intervene in children's education differently when raising different numbers of children (Turney and Kao 2009). Therefore, I control for the number of children in the household.

At the individual child level, I also measure child's sex (0=male, 1=female) and age in months as two of the control variables for children's characteristics. Additionally, the child's reading and math achievement in previous years are also taken into account when predicting his/her current achievement (Domina 2005). Similar to measures of the dependent variables, standardized test scores of reading and math of fall-kindergarten wave are used to indicate the child's achievement before their school education.

At the school level, I include the types of school the child attended, coded as 1=Catholic, 2=other religious, 3=other private, 4=public. Since children of inter-racial couples are minority students and studies have shown ethnic and racial disparities in education (e.g. Hirschman and

Lee 2005), I also include a categorical measure of the percentage of minority students in the child's class (1=less than 10%, 2=10% to less than 25%, 3=25% to less than 50%, 4=50% to less than 75%, 5=75% or more).

Analytic Strategy

I analyze the data with a three-step process. First, I compute descriptive statistics for all variables employed in the analysis to show the characteristics of my sample (shown in Table 1). In order to test my first hypothesis, I examine the mean differences in the levels of each dimension of parental involvement across the four family types using a two sample t-tests technique. Finally, to illustrate and to demonstrate the variability of academic achievement associated with the interaction of particular involvement dimensions and family types, I examine the interaction effects on students' achievement of the parental involvement variables and interracial marriage as well as same-race marriage, without (Model 1 and 3) and with (Model 2 and 4) control variables.

Since these data are longitudinal and the sampled students are clustered in schools, this study uses generalized estimating equations (GEE) to correct for the problem of correlated residuals in all the four models. Introduced by Liang and Zeger (1986) as an extension of generalized linear models (GLM), GEE are generally appropriate for analysis of longitudinal/clustered data (Gibbons, Hedeker, and DuToit 2010). As a population-level approach based on a quasi-likelihood function, GEE provides the population-averaged estimates of the parameters. To estimate the change in children's academic outcomes over time by parental involvement, I specify an unconstructed correlation structure for the residuals. The unstructured covariance matrix allows the variances to be calculated from the data and thereby accounts for

correlation due to clustered sample design and correlated observations among children.¹⁵ For the two continuous outcomes, I treat the outcome as having a Gaussian distribution and an identity link function. In order to address multicollinearity problems detected in the models because of the interaction effects, the explanatory variables (parental expectations, school-based involvement, home-based involvement, parental control, and parental social networks) were transformed into standardized values in z-score.¹⁶ The transformed variables are comparable to each other with mean of zero and standard deviation of one.

[Insert Table 1 about here]

RESULTS

Descriptive Statistics

I begin by looking at demographic characteristics of the overall sample and children from each family type. Table 1 presents descriptive statistics for all variables used in the analyses. We learn about several important features of the sample in this table. Looking at family characteristics, the majority of the parents (86%) included in the sample are native-born. When taking family types into account, however, the numbers tell us a different story. While more than 90% of children of White-White parent families have parents who were born in the United States, immigrant parents composed a substantial proportion of the Asian-Asian and White-Asian parent sample. Nearly 85% of parents in Asian-Asian families were both born outside of

¹⁵ Correlated residuals pose two problems for analyses using regular regression methods: artificially depressed standard errors and inefficient parameter estimates. GEE solves both problems (Ballinger 2004). GEE has been used in other studies to analyze students in school contexts (Crosnoe 2001b; Doyle and Kao 2007).

¹⁶ I computed the models using OLS regression and the VIFs for all variables in the four models ranged from 1.01 to 3.52. This is well below the commonly proposed VIF cut-off of 10, suggesting that multicollinearity is not a problem with the results when using z-transformed scales. All the other assumptions of GEE model were also met: Skewness of the residuals ranged between -.30 and -.16; homoscedastic errors followed random patterns.

the US while more than half of children White-Asian families have a parent from another country.

Although the majority of the parents are well-educated, enjoy relatively high occupational prestige, and possess median household income, there are remarkable disparities between White-Asian families and the other two groups in terms of socioeconomic status (SES). White-Asian parent families generally have significantly higher SES than the other family types, considering parental education level, paternal occupation prestige, and annual household income. The only variable on which White-Asian families score lower than others is mother's occupation prestige level in Asian mother-White father families. This is due to the fact that more than one-third of these Asian mothers are housewives and, thus, have a zero score on this variable. The differences between White mother-Asian father families and Asian mother-White father families are not significant. On average, parents in the sample have two to three children ($M=2.52$, $SD=1.05$). Only Asian parents have a significantly larger number of children than white parents.

Another notable difference concerns the types of classes the children attend. Not surprisingly, more than half of children of White-White parents attend classes in which the percentage of minority students is less than 10%, compared to children of Asian-Asian parents for whom almost half are more likely to attend classes in which the percentage of minority students is more than 50%. Last, but not least, children from White-Asian families already achieve considerably higher in both reading and math than those from the other two groups before they begin school. Children who have an Asian mother and a White father, in particular, show substantially greater reading and math skills in their preschool education. Interestingly, White students and Asian students do not show much difference in their math skills before they are affected by school education.

Parental Involvement by Family Types

The first hypothesis of the study is to examine variations for the racial/inter-racial family types in parental involvement. Mean differences in parental involvement by family types are reported in Table 1. Although the majority of parents report high level of involvement generally, the mean/proportion of parents reporting varies by the specific involvement type and the variations are significant within the four groups. As predicted in my first hypothesis, White-Asian families overall tend to participate more in their child's education activities than the same-race families. Specifically, it is the families composed of Asian mother and White father parents that have the highest parental involvement level for most forms of involvement. The only exceptions to this finding are for parental aspirations regarding the child's educational attainment and parental control regarding television rules, which is highest among Asian families ($M=4.66$, $SD=.97$; $M=2.51$, $SD=.83$). No significant differences of parental involvement are found between White mother-Asian father families and Asian mother-White father families regardless of the type of involvement.

On the other hand, the comparisons between Asian parents and White parents are not entirely consistent with prior research. Similar to the findings of previous research (e.g., Fan et al. 2012), Asian parents participate significantly less in school-related activities compared to their white counterparts. And not surprisingly, Asian parents have the smallest social networks with the parents of their children's friends ($M=2.39$, $SD=3.08$). Those parents, however, are involved less often in home-related activities ($M=2.57$, $SD=.51$), which is contrary to some research (Crosnoe 2001a).

Table 1 also shows substantial family type differences in student's academic performance. Similar to the patterns found in parental involvement, children from White-Asian families are

more competitive in both reading and math, with the highest standardized test scores. For children in Asian mother-White father families, achievement levels in reading and math are not only higher compared to their white peers, but also to their Asian peers. Children of White mother-Asian father families, on the other hand, lose their advantage in mathematics to Asian children. White students have the lowest standardized test scores of all, whether it is reading or math. These findings show that exploring dissimilarities in parental involvement for both biracial and single race family types is more useful than examining single race family types alone. Knowing this, I expect variations by family types in the relationship between parental involvement and academic achievement.

Family Type Interaction Effects

As striking as the differences are among the four family types, it is useful to examine the interaction effects of family type on the relationship between parental involvement and children's educational outcomes. Table 2 reports the results of regressions predicting academic achievement when including family type as a moderator. In order to better illustrate the numerical results of the interaction effects, the relationships included in Model 1 and 3 are shown in Figure 2 to Figure 13 in the Appendix. Considering the fact that the number of cases of interracial families in the analysis is extremely limited, the coefficients that are significant at .10 level are also discussed here.

[Insert Table 2 about here]

Results of analyses of interaction effects indicate that the slopes between particular forms of parental involvement and certain subjects of achievement vary across family types. Asian-Asian parent families tend to follow patterns similar to Asian mother-White father families in a few forms, but not all. White-White parent families are similar to White mother-Asian father

families under certain circumstances. To illustrate the substantive meaning of the results in greater detail, I first focus on the results for reading achievement. For this outcome, the coefficients of all five parental involvement forms are statistically significant ($p < .001$ for the three; $p < .05$ for the last two) when the effects of family type are zero and only home involvement has a negative association with reading scores. However, the effect of parental involvement is different, although not always significant, for different family types. The differences between White-White family (reference group) and the other three family types vary in relation to the form of involvement.

Parental expectations among White-White parent families has a stronger effect in predicting the child's reading performance compared to Asian-Asian parent families and Asian mother-White father families ($p < .05$). When predicting the reading achievement for the four family types with the three values of educational expectations (low=the standardized score minus one, moderate=zero, high=the standardized score plus one¹⁷), I find distinct effects of expectations among the four family types on students' reading test scores. These relationships are shown in Figure 2. Interestingly, while the relationships are positive for the other three families, the association for Asian mother-White father is negative. Also, although the difference between White-White parent families and White mother-Asian father families is not statistically significant, parent expectations have the greatest influence (steepest slope) on reading achievement among children from the latter family type.

¹⁷ I used the margins command with values of -1, 0, 1 of educational expectations and plot the relationships with a two-way line command. The relationships plotted visually of other forms of parental involvement use the same technique.

For parental involvement at school, however, the effect of White-White parent family is only marginally stronger when compared to Asian mother-White father family ($p < .10$), and the effects show no differences in other families. Again, the association is only negative in Asian mother-White father families (see Figure 3). A similar pattern is found in the form of parental social networks. The estimate for Whites is not significantly different from those of other racial groups. The association between talks among parents and reading achievement is slightly weaker for Asian mother-White father than for White-White, and the former is the only family group that has a negative slope.

When it comes to home activities, however, the results for reading achievement are reversed. The effect of home-based involvement is significantly weaker for White-White parent families compared to Asian-Asian parent families ($p < .001$) and Asian mother-White father families ($p < .10$). The associations are positive for Asian-Asian parent families and Asian mother-White father families yet negative for the other two (see Figure 4). On the other hand, there are no statistical differences in the effect of parental control when comparing the four family types. The patterns for forms of parental involvement remain similar after adjusting for the effects of the same set of control variables. The only noticeable change lies in the effects of school involvement when comparing Asian mother-White father and White-White parent families. After controlling for a set of family, child, and school characteristics, White parents benefit substantially more from participating in school activities ($p < .001$) than the Asian mother-White father group.

In contrast to reading outcomes, the predicted effects of parental involvement on mathematics among those family types are rather dissimilar. The most astonishing change is related to parental involvement at school. In contrast to the reading scores, the effects of school-

related involvement among Asian-Asian parent families and White mother-Asian father families are stronger than that among White-White family in predicting math scores, and the difference is significant for Asian family after controlling for family, child, and school characteristics ($p < .05$). Also, it is compelling to find that parental involvement at school is positively related to math performance among all family types except for Asian mother-White father families (see Figure 8). Interestingly, similar to the effect on reading scores, the effect of parental social networks on math scores is significantly weaker in Asian mother-White father families ($p < .05$) compared to that in White-White parent families, while the effect in Asian parent families is slightly stronger ($p < .10$). Unlike reading achievement, the effects of the forms of expectations and home activities on math achievement have no significant differences among the four family types. Consistent with reading achievement, the impact of parental control on math achievement shows no differences in the four groups. The overall patterns are similar when holding all the other covariates constant (Model 4).

DISCUSSION

Findings of the Study

The results of this study provide a rich and complex picture of the ways that parents from four family types value the importance of education and enact their roles in facilitating their children's school performance. My results reveal similarities in some levels of involvement in children's schooling in White-White parent families and White mother-Asian father families compared to the other two groups. I find meaningful differences with regard to parental involvement at school and at home in each family type as well, suggesting cultural variations in the meanings of educational achievement and parental involvement. These variations are captured in each dimension of involvement, indicating the important role that culture plays in

influencing how parents interact with their children and put into practice their education beliefs. Since the issue of parental involvement is complicated, and the results of this study sustain the idea that parental involvement is a multidimensional construct, the problems of children's educational success are further discussed by each dimension of parental involvement. The results for my hypotheses are incorporated into each discussion.

Parental education expectations

Consistent with past research in the U.S. (e.g., Fan and Chen 2001), the results of this study suggest that the educational expectations that parents have for their children has the largest beneficial effect on child's academic performance in the elementary school years. However, contrary to my expectations, White-Asian families do not have higher educational aspirations for their children than White families and Asian families. Although the majority of the parents in each family type have relatively high expectations for their children, expecting them to at least graduate from a four or five year college program with a bachelor's degree, Asian-Asian parent families rank the highest. Almost half of Asian parents in this study anticipate their children will earn a master's degree or an even higher degree. Parents' expectations for their children may be influenced by their own past experiences. In this study, most Asian parents are foreign-born immigrants. After 1965, the U.S. immigration policy utilized two new criteria for immigrants: family reunification and occupational qualifications. For Asians, the only path was that of formal credentials (Portes and Rumbaut 2006). Thus, due to the high average levels of education of those Asian immigrant parents and political factors, they are more likely to have even higher levels of education expectations for the next generation.

While parent expectations are one of the strongest predictors of student performance generally, the findings of my analyses that take into account family types offer new information

to consider. The results indicate a negative relationship between educational expectations and academic achievement in Asian mother-White father families, although the expected effect still applies for the other three family types that the more parents expect their children to achieve in school, the better the students perform academically. Based on the interaction effects, inconsistent with my second hypothesis, children of White-White parent families benefit significantly more from their parents' expectations than those in Asian-Asian parent families and Asian mother-White father families, despite of the fact that White parents have the lowest expectations for their children of the four groups. And this benefit is still seen for children of White parents after controlling for parents' SES, child's prior achievement, and other covariates. However, this beneficial difference relates only to reading achievement.

School-based involvement

School involvement is found to have the second largest beneficial effect on reading and math achievement. This finding concurs with previous research that has found positive relationships between parental school involvement and academic outcomes in the U.S. (e.g. Xu et al. 2010; Fan and Chen 2001). Parents' engagement in school activities is important because the frequency of parental participation may reflect how much they value education, and it may also mirror the overall investment parents make in their children's education. The substantial effect of school involvement on academic achievement suggests a need for school administrators to communicate with parents the importance of their involvement in their children's school events so that schools and parents can cooperate in facilitating better performance.

More specifically, my results indicate substantial heterogeneity across family types regarding the benefits of school involvement. As predicted in my first hypothesis, White-Asian parents tend to be engaged more often in school events. In particular, it is Asian mother-White

father parent families who participate most frequently in school related activities. However, the effect of this behavior on their children's reading achievement is significantly weaker compared to children of White-White parent families. Additionally, the effect is negative for children of Asian mother-White father families while only children of White-White parent families seem to benefit from their parents' school involvement in terms of reading achievement. The finding that White children are the group that has significantly higher benefits from their parents' school involvement is consistent with previous studies (e.g. Pienik 2008). Contrary to prior literature, however, the effect of this dimension of involvement is stronger for children of Asian-Asian parent families in math scores compared to their White peers. This suggests that even though Asian parents have the lowest level of involvement in school, their children are able to take advantage of that engagement when they do. Before we conclude that this finding indicates a causal relationship, however, we need to consider another possible explanation of this phenomenon. Asian children tend to have higher achievement in mathematics for a variety of reasons. A more rigorous research design, such as an experimental design, may be needed to further study the causal effects of these two variables among Asian students.

Home-based involvement

Although it is generally agreed that children benefit when their parents are more involved with them at home (e.g. Hoover-Dempsey et al. 2001; Jeynes 2003; Xu and Corno 2003), the results of this study concur with a few studies that suggest that there may be no significant effect, or possibly even a negative effect, of involvement in home related activities (Altschul 2012; Jeynes 2007; Robinson and Harris 2013). More specifically, while it has no significant effect on children's math achievement, parental home involvement is associated with declines in reading

achievement.¹⁸ Before explaining why home-related activities may hinder or have no influence on children's academic achievement, I consider the effects of family types, which convey a different perspective.

Compared to children from families composed of two White parents, those from the other three types of families all enjoy more beneficial effects of their parents' involvement at home on reading outcomes. The only exception is for White mother-Asian father families, the group that shows a similar declining pattern to White families in this aspect. Considering the large number of cases of White-White families in the sample, it is understandable that results would show a general negative association before separating out each family type. In other words, the negative association possibly results from the strong effects for White-White parent families. Asian-Asian parent families and Asian mother-White father families, in contrast, support the positive effects of parental involvement at home on educational outcomes.¹⁹ The two patterns found in these four types of families may be explained by the fact that it is mothers who usually tend to be involved with the child at home. Mothers from the same ethnic background are more likely to favor similar parenting styles when cultivating their children and, therefore, are more likely to result in comparable outcomes.

Admittedly, the counterproductive effect of home-based involvement among White-White parent families and White mother-Asian father families may reflect parents responding to poor achievement, rather than a causal consequence. On the other hand, however, because of the

¹⁸ The results show no significant association between home involvement and academic outcomes of both subjects when including homework help in the analysis. The only exception is on reading scores after controlling for a couple of family, child, and school variables, when the relationship becomes significantly negative.

¹⁹ For Asian-Asian families, the effect of homework help is significantly positive on reading achievement as well as math achievement.

longitudinal research design, the conventional belief that any form of parental involvement is always a good thing for any child can be questioned. It should be considered that some forms of involvement may work for some groups, but not for others. As discerned by only a few researchers, different forms of involvement display uneven importance across racial/ethnic groups (Robinson and Harris 2013) and the cultural meaning behind this needs to be recognized. It is interesting to note that in this study, Asian-Asian parent families have the lowest level of involvement at home and Asian mother-White father families rank the highest,²⁰ but they have the same pattern on this matter. In other words, no matter how much effort Asian mothers put into their children at home, the children benefit from that effort. This finding seems to provide support for the Asian cultural superiority narrative suggested by the model minority label that is commonly applied to them (Chua 2011; Kao 1995).

Parental control

Similar to the patterns found in the educational expectations and somewhat supportive of my first hypothesis, Asian parents generally implement higher controls when parenting, followed by Asian mother-White father families. Supporting the image of a “tiger mom” (Chua 2011), families with an Asian mother in the family appear to have higher parental control over their children while those with a White mother tend to be less strict and firm in terms of rule-setting. Previous research has found that Asian cultures often carry belief systems that promote high academic achievement and upward mobility (Sue and Okazaki 1990). Asian parents holding such beliefs usually appreciate the value of effort and the importance of pushing their children to succeed. This is less typical of parents with other cultural backgrounds, which may suggest why

²⁰ This result remains the same when including homework help in the analysis.

parental control is relatively lower among families with a White mother. Interestingly, however, this parenting style of high monitoring and control fails to evidence a clear, positive effect on student achievement in Asian-Asian parent and Asian mother-White father families. Concurring with my second hypothesis, I find no notable differences among the four groups with regard to the effects of parental control, whether it is reading or math achievement. And the results are robust both without and with a set of control variables.

Parental social networks

My first hypothesis is partially supported by the results of parental social networks. While White-Asian parent families in general have stronger social networks with the parents of their child's friends than Asian-Asian parent families, they do not have significantly different social networks than White-White parent families. The fact that Asian-Asian parent families rank the lowest on the level of social networks actually supports prior findings on immigrants and minorities, considering that most Asian-Asian parent families in this study are first-generation immigrants, i.e., foreign-born. Kao and Rutherford (2007) found that first-generation Asian parents appeared to know fewer of their children's friends' parents than native-born White parents due to language difficulty and unfamiliarity with school customs. White-Asian parent families, on the other hand, do not have such problems since the foreign-born parent is usually married to a native-born spouse, and language proficiency should not be a barrier to them.

Similar to patterns found with school-based involvement, social networks are negatively associated with student achievement among Asian mother-White father families, although there are no clear associations for the other three family types. This finding should be expected because students whose parents have higher levels of school involvement are more likely to know more of their friends' parents (Kao and Rutherford 2007). However, it is still unclear why

more contacts with parents of their child's friends do not benefit children of Asian mother and White father families. Besides the explanation of responses to achievement failure, an experimental research may be needed to capture the causal effect of social networks, as suggested before.

Limitations of the Study

While these findings are valuable, this study has limitations when interpreting the results, which suggest several considerations that should be addressed in future research. First of all, children from White-White parent families are overrepresented in my sample, whereas those from White-Asian families are very underrepresented. Since the number of participants from White-Asian families is rather small, especially the combination of a White mother and an Asian father, the generalizability of the findings to the population of biracial children is limited. The small number of inter-racial couples may have reduced the likelihood of obtaining significant results for the analyses of interaction effects involving these racial/ethnic groups. Another problem concerns the fact that data are gathered from a single main respondent who is usually the mother of the child, although perspectives from the father may be included in some variables like expectations. Fathers are likely to practice different educational philosophies from mothers due to their fatherhood roles. The current study fails to take into consideration the separate, unique contribution of the non-questioned parent.

Additionally, there are several limitations related to the secondary data used. First, I have to rely on self-reports of the respondents and cannot corroborate it by other sources. In this case, the results represent only parents' perceptions of their involvement, and it is possible that some respondents inflate their levels of involvement. Even if their reports are reliable, the questions asked in the parent survey capture some aspects of parents' involvement, but not all. Parents of

different cultural background may interpret their involvement differently than how researchers have defined this in the past. Unfortunately, ECLS-K did not administer open-ended questions so that we could learn more about parents' experiences. Additionally, we lack cultural questions that would allow linking cultural influences to parental involvement. Despite the fact that I make include parental involvement forms that are most commonly discussed in the education literature, these problems are still not satisfactorily solved.

In addition to the limitations in measuring the explanatory variables, I only examine two measures of academic performance, reading and math. As prevalent as these two measures are in children's education, they are only partial measures of children's school performance. Other relevant measures of academic outcomes, such as science, social studies, and classroom behavior, may also indicate academic success. The findings may be biased in terms of the factors included in the study.

Lastly, the use of a quasi-experimental research design does not isolate causal relationships. Even though this is a longitudinal study that tracks parental involvement and child academic performance over time, the causal relationships are established because they cannot be directly tested by my data. Future research should include motivations for the parents' involvement so we may distinguish parents who become involved because of their children's worsening academic performance from those who help their children with school work to increase their performance. In this study, I assume that parents choose to be involved in the child's education whether he/she is in trouble or not. However, the relationship between involvement and achievement in certain family type, i.e. Asian father-White mother, indicates that they may only intervene in their children's study after they perform poorly, considering their children's high performance in general.

Implications of the Study

Despite the limitations discussed above, the examination of the link between parental involvement and achievement among single racial families and biracial families of the four combination of White and Asian suggests important implications for education scholars as well as parents, policymakers, and educators. One of the most valuable implications that this study has is that cultural background based on race/ethnicity plays a significant role in how parents are involved in their children's education and is influential in children's educational attainment.

Numerous studies have explored how parents can contribute to the academic success of their children from various angles. As representatives of social class driven theory, Lareau (2003) and other scholars (e.g., Stevenson and Baker 1987; Muller 1998; Crosnoe 2001a) suggest that social class creates distinctive parenting styles. This conclusion is also supported by many studies using quantitative analyses, revealing that parents with higher social class background are more proactively involved in their children's schooling at school and at home than those with lower social class backgrounds. However, fewer researchers have investigated whether racial/ethnic differences in parenting exist independent of social class, and little is known about whether parents with comparable socioeconomic status favor divergent parenting patterns due to their ethnic backgrounds. Because the majority of the parents in my sample are from middle class or upper²¹ and the sample includes sufficient numbers of White, Asian and inter-racial parent families, my analyses can make meaningful ethnic group comparisons.

²¹ Overall, 70.30% of White-White families are middle class or upper, and the percentages for Asian-Asian, White mother-Asian father, Asian mother-White father are 55.80%, 79.73%, 80.45% respectively, using 50,000 dollars as the threshold in terms of their annual household income based on U.S. Census Economic Survey in 2005 (U.S. Census Bureau 2005).

Therefore, the parenting differences revealed in the results may not be due solely to social class, but may relate to other factors, such as race/ethnicity. Thus, this study contributes to the literature by addressing the gaps in previous research pertaining to the interactions between parental involvement and specific family types that represent distinctive same-race and inter-racial marriage groups. These family types also reflect a range of experiences with majority vs. minority group assimilation into American society. Also, this is possibly the first study to investigate parents' involvement in their children's educational attainment based on racial identities of both mothers and fathers.

Lareau's (2003) ethnographic observations led her to conclude that social class strongly predicted the expectations that parents held concerning how they should participate in their children's schooling, regardless of race. Specifically, no matter what racial background they have, working-class and poor parents are less likely to intervene in their children's schooling while middle-and-upper class parents are inclined to take a more proactive approach to monitor their children's progress. The results of the current study, however, bring this conclusion into question because parents from the same social class adopt distinct parenting styles dependent on their racial/ethnic group. In this study, the majority of the parents are middle or upper class, but they show diverse levels of parental involvement on each form. However, this does not suggest that racial/ethnic differences in parental involvement exist independently of social class. Future research is needed to determine if race and social class both have independent effects of parents' involvement by recruiting more parents with lower SES background for the analysis.

Also, the findings of this study could be greatly enhanced by qualitative analyses aimed at providing greater depth to each parental response measure. Such studies could reveal the underlying sentiment that parents of each family type have when providing a given response or

could reduce the uncertainty in interpretation of response categories. Parenting perspectives and practices available from both parents would help us understand better the cultural diversity of childrearing in different racial/ethnic group families and the influence of parents with different racial/ethnic backgrounds on children's development.

Finally, further research can improve understanding of the subject of interracial marriages and families by incorporating families of other racial groups such as Black, Hispanic, or other minorities. Research on parents' and children's preschool experience is also needed to examine its importance for each family, considering that many parents invest in their children's education a lot earlier. Educational outcomes of later school years of the child are also meaningful for analysis of the influences parents' participation in the child's early learning periods.

CONCLUSION

In conclusion, the results of this study suggest that parental involvement is positively associated with children's school achievement, although in terms of an overall construct the relationship becomes more complicated when accounting for specific dimensions, such as academic subjects, and family types. This study identifies five dimensions of parental involvement that are likely to contribute to the education outcomes of students in elementary school: educational expectations, school-based involvement, home-based involvement, parental control, and parental social networks. All the five forms of parental involvement are found to be statistically significant predictors of children's reading achievement and the associations are positive except for home involvement. Only educational expectations and school involvement are significantly predictive of math achievement and the relationships are both positive.

In further investigations, I found that these generalized conclusions may be influenced by the effects of the large number of White families represented in my sample. After identifying the

level of parental involvement in each of the four family types (White-White, Asian-Asian, White mother-Asian father, and Asian mother-White father) analyzed in this study, I found significant differences among the four family types in terms of specific dimensions of parental involvement. Children with Asian parents are generally expected to go much further in school and tend to experience higher levels of parental control, yet their parents' involvement at school, at home, and interaction with other parents are the lowest. In contrast, White parents overall have the lowest educational expectations for their children, although the majority expect their children to obtain a bachelor's degree at least. On the other hand, children born in families with a White parent and an Asian parent do not experience the same level of parental involvement, depending on the mother's racial identity as well as the father's. Asian mother-White father families are involved in school and at home the most in all four family types, and they also show the highest level in terms of contacts with parents of their child's friends. In contrast, White mother-Asian father families rank modestly, if not the bottom, in all the five dimensions, similar to two White parent families.

Accordingly, I examined the moderating effect of family type on the connection between parental involvement and student achievement, and the results suggest that not all children benefit from all forms of parental involvement. Some forms of involvement may serve as positive indicators in certain families, but not in others. To sum up, (1) in White-White parent families, expectations and school-based involvement tend to have stronger effects on children's reading achievement, but the difference is not significant when compared to White mother-Asian father families. (2) For Asian-Asian parent families, home involvement has a stronger effect on reading achievement while school involvement is a stronger predictor of math achievement compared to White-White parent families. (3) What improves educational attainment for children

from White mother-Asian father families is not significantly different from other families. (4) As for Asian mother-White father families home-based involvement is a stronger predictor of reading scores in comparison with White-White parent families.

Even though I cannot determine causation based on the current research design, and the negative associations may just reflect an increased involvement in response to a child's worse performance in school, the diverse patterns found in each family type suggest that not everything that parents do is helpful. Perhaps students (and families) should be viewed as different from one another. Not only does their SES identity matter, but parent and family racial/ethnic identities matter as well, and their cultural references and practices are embedded in their child's daily life. Whether the associations found in this study are causal or not, they have implications for parents, but teachers, school administrators, and policy makers. Parents should recognize that even though they can borrow from other parents about how to nurture their children's learning, some techniques may be unique to some cultures, and they should adjust them to their own cultural frame of reference so their children would get the best education possible. This also suggests that schools need to re-examine their policies regarding how they should involve parents and develop an educational strategy that leads to diversification of interpersonal interactions between families and school members. More research needs to be done to investigate the reasons why certain forms of involvement function well in some families and why some do not. With knowledge of that, school administrators and policy makers would be better able to promote positive parental attitudes and involvement among all groups that could help increase the academic performance of children of all racial and social backgrounds.

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TABLES

Table 1. Parental Involvement and Academic Achievement Means Comparisons across Four Family Types ECLS-K 1998-1999 to 2003-2004

<i>Variables (Range)</i>	<i>Overall (n=4,400)</i>	<i>White-White (n=4,002)</i>	<i>Asian-Asian (n=306)</i>	<i>White Mom- Asian Dad (n=37)</i>	<i>Asian Mom- White Dad (n=55)</i>
<i>Academic Achievement</i>					
Reading Scores (6.49-86.91)	54.24 (8.60)	54.10 (8.55)	55.05 ^a (9.04)	57.33 ^{ab} (8.37)	57.25 ^{ab} (8.08)
Mathematics Scores (4.65-91.95)	54.52 (8.74)	54.44 (8.69)	55.01 ^a (8.46)	55.72 ^a (8.50)	57.34 ^{ab} (7.91)
<i>Parental Involvement</i>					
Educational Expectations (0.65-7.20)	4.09 (0.93)	4.04 (0.91)	4.66 ^a (0.97)	4.42 ^{ab} (1.09)	4.41 ^{ab} (0.80)
School-based Involvement (-0.02-8.96)	5.19 (1.43)	5.26 (1.37)	4.15 ^a (1.73)	5.24 ^b (1.44)	5.48 ^{ab} (1.40)
Home-based Involvement (1-4)	2.63 (0.49)	2.63 (0.49)	2.57 ^a (0.51)	2.61 (0.54)	2.66 ^b (0.49)
Parental Control (-1.10-5.10)	2.35 (0.81)	2.34 (0.80)	2.51 ^a (0.83)	2.27 ^b (0.87)	2.45 ^a (0.80)
Parental Social Networks (-13.08-40)	3.73 (4.06)	3.82 (4.09)	2.39 ^a (3.08)	3.56 ^b (4.09)	4.35 ^b (5.07)
<i>Family Characteristics</i>					
<i>Parent Immigration Status</i>					
Both native-born (%)	0.86	0.93	0.08 ^a	0.35 ^{ab}	0.33 ^{ab}
One native-one foreign (%)	0.06	0.05	0.07	0.60 ^{ab}	0.64 ^{ab}
Both foreign-born (%)	0.08	0.02	0.85 ^a	0.05 ^b	0.03 ^b
Parent highest education level	2.67 (1.02)	2.65 (1.02)	2.78 ^a (1.07)	3.14 ^{ab} (0.97)	3.10 ^{ab} (0.78)
Maternal Occupation Prestige	34.39 (22.97)	34.42 (22.97)	34.16 (22.21)	37.60 (25.59)	30.78 ^{abc} (24.57)
Paternal Occupation Prestige	44.82 (13.80)	44.71 (13.59)	44.91 (15.53)	50.02 ^{ab} (18.30)	48.85 ^{ab} (14.21)
Annual Household Income	9.56 (1.92)	9.61 (1.86)	8.78 ^a (2.56)	9.99 ^{ab} (1.71)	10.11 ^{ab} (1.67)
Number of Children	2.52 (1.05)	2.52 (1.00)	2.66 ^a (1.57)	2.42 (0.63)	2.45 (0.91)

Table 1 (continued)

<i>Variables (Range)</i>	<i>Overall (n=4,400)</i>	<i>White-White (n=4,002)</i>	<i>Asian-Asian (n=306)</i>	<i>White Mom- Asian Dad (n=37)</i>	<i>Asian Mom- White Dad (n=55)</i>
<i>Child Characteristics</i>					
Child is female (%)	0.49	0.49	0.51	0.54	0.55
Child Age (months)	101.93 (23.45)	102.08 (23.46)	100.39 ^a (23.36)	102.11 (23.35)	99.98 (23.37)
Prior Reading Achievement (14.95-93.05)	53.81 (9.82)	53.60 (9.54)	55.45 ^a (12.55)	56.01 ^{ab} (10.52)	57.92 ^{abc} (10.40)
Prior Math Achievement (11.68-88.77)	55.06 (9.29)	55.04 (9.21)	55.02 (10.42)	55.67 ^{ab} (8.89)	56.94 ^{abc} (8.21)
<i>School characteristics</i>					
<i>School Types</i>					
Catholic (%)	0.16	0.16	0.13 ^a	0.12	0.14
Other religious (%)	0.07	0.08	0.02 ^a	0.09 ^b	0.06 ^b
Other private (%)	0.03	0.03	0.04 ^a	0.01	0.14 ^{abc}
Public (%)	0.74	0.73	0.81 ^a	0.78	0.66 ^{abc}
<i>% of Minority Students in Class</i>					
Less than 10%	0.51	0.55	0.07 ^a	0.33 ^{ab}	0.21 ^{abc}
10% to less than 25%	0.24	0.24	0.18 ^a	0.21	0.33 ^{abc}
25% to less than 50%	0.16	0.15	0.26 ^a	0.28 ^a	0.31 ^a
50% to less than 75%	0.05	0.04	0.15 ^a	0.12 ^a	0.09 ^{ab}
75% or more	0.04	0.02	0.34 ^a	0.06 ^{ab}	0.06 ^{ab}

^a Mean/ % is significantly different from that of White-White families at minimum of $p < .05$ level.

^b Mean/ % is significantly different from that of Asian-Asian families at minimum of $p < .05$ level.

^c Mean/ % is significantly different from that of White Mom-Asian Dad families at minimum of $p < .05$ level.

Note: Estimates were derived from multiple-imputation data. Two sample t-test results were estimated using the first of twenty imputed data sets only. Standard deviations are presented in parentheses. ECLS-K=Early Childhood Longitudinal Study–Kindergarten Cohort.

Table 2. GEE Regression Analyses Testing Family Types as Moderator to Predict Child's Academic Performance (N=4400)

Explanatory Variables	Reading Scores				Mathematics Scores			
	Model 1		Model 2		Model 3		Model 4	
	β	SE β	β	SE β	β	SE β	β	SE β
<i>Family Types</i>								
White-White (reference)	–	–	–	–	–	–	–	–
Asian-Asian	0.826 [†]	0.472	-0.230	0.511	0.819 [†]	0.491	0.424	0.491
White Mother-Asian Father	2.858 [*]	1.213	1.259	0.841	1.237	1.295	0.689	0.806
Asian Mother-White Father	3.335 ^{**}	1.004	0.812	0.710	2.999 ^{**}	1.066	1.625 [*]	0.678
<i>Parental Involvement</i>								
Educational expectations (EE)	0.780 ^{***}	0.058	0.382 ^{***}	0.047	0.459 ^{***}	0.053	0.199 ^{***}	0.047
School-based involvement (SI)	0.304 ^{***}	0.057	0.094 [*]	0.044	0.136 ^{**}	0.052	0.024	0.045
Home-based involvement (HI)	-0.443 ^{***}	0.065	-0.265 ^{***}	0.064	-0.042	0.061	-0.047	0.058
Parental control (PC)	0.122 [*]	0.053	0.085 [*]	0.041	0.027	0.047	-0.024	0.041
Parental social networks (PR)	0.127 [*]	0.052	-0.050	0.039	-0.057	0.046	-0.117 ^{**}	0.040
<i>Interactions</i>								
EE×Asian-Asian	-0.370 [*]	0.190	-0.312 [*]	0.144	-0.182	0.169	-0.083	0.147
EE×White Mother-Asian Father	0.446	0.538	0.376	0.414	0.114	0.503	0.204	0.424
EE×Asian Mother-White Father	-1.020 [*]	0.465	-0.708 [*]	0.360	-0.584	0.424	-0.273	0.369
SI×Asian-Asian	-0.296	0.181	-0.163	0.146	0.298 [†]	0.161	0.250 [*]	0.143
SI×White Mother-Asian Father	-0.238	0.531	-0.295	0.416	0.485	0.487	0.310	0.420
SI×Asian Mother-White Father	-0.919 [†]	0.486	-1.329 ^{***}	0.377	-0.542	0.443	-0.562	0.387
HI×Asian-Asian	1.110 ^{***}	0.223	0.741 ^{**}	0.215	0.045	0.208	-0.065	0.194
HI×White Mother-Asian Father	0.320	0.692	-0.183	0.633	0.694	0.651	-0.003	0.574
HI×Asian Mother-White Father	0.909 [†]	0.527	0.774	0.521	0.406	0.495	0.478	0.467
PC×Asian-Asian	0.010	0.170	0.153	0.135	0.014	0.152	-0.006	0.136
PC×White Mother-Asian Father	0.198	0.496	-0.158	0.445	-0.128	0.443	-0.126	0.406
PC×Asian Mother-White Father	-0.005	0.454	-0.010	0.366	0.423	0.404	0.416	0.356
PR×Asian-Asian	-0.010	0.263	-0.073	0.199	0.394 [†]	0.236	0.376	0.201
PR×White Mother-Asian Father	-0.089	0.545	-0.080	0.441	0.267	0.506	-0.025	0.436
PR×Asian Mother-White Father	-0.713 [†]	0.364	-0.440	0.298	-0.733 [*]	0.329	-0.498 [†]	0.298

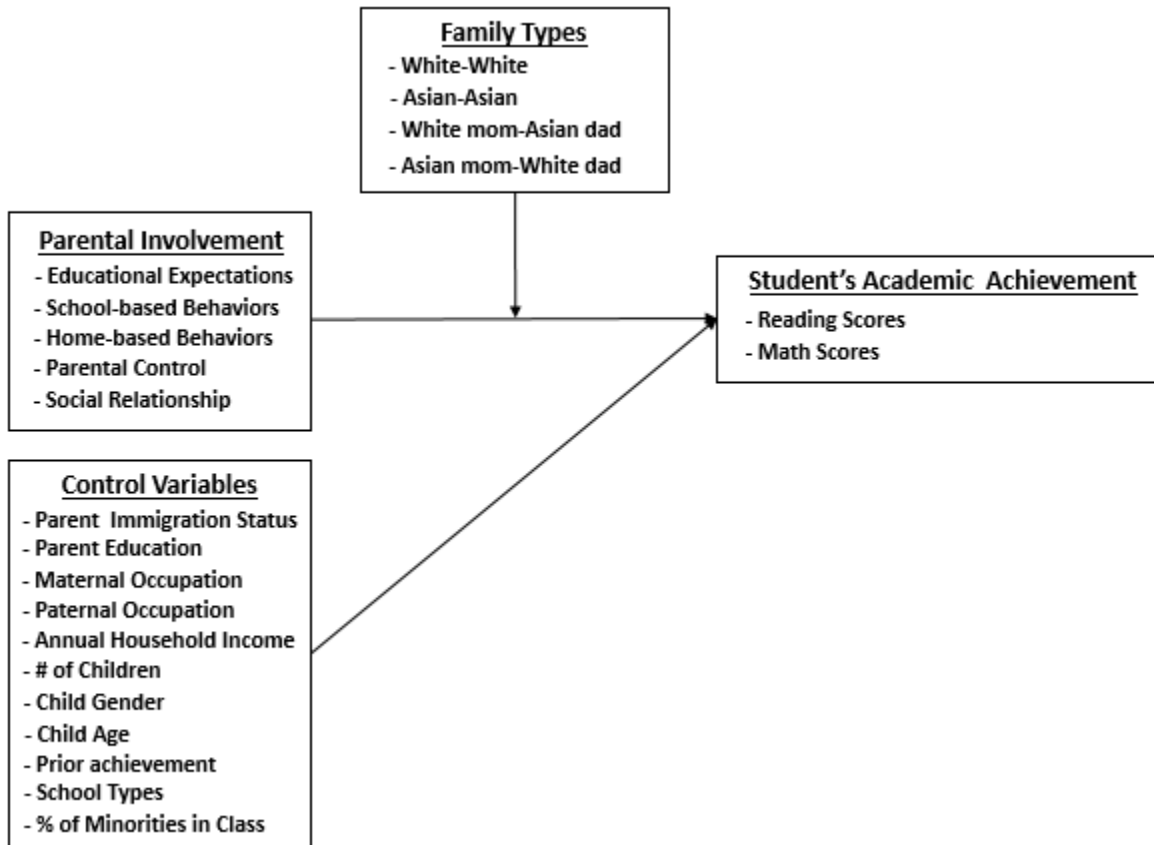
Table 2 (continued)

Explanatory Variables	Reading Scores				Mathematics Scores			
	Model 1		Model 2		Model 3		Model 4	
	β	SE β	β	SE β	β	SE β	β	SE β
<i>Family Characteristics</i>								
Both native-born (reference)			–	–			–	–
One native-one foreign			0.039	0.325			-0.294	0.313
Both foreign-born			0.639	0.466			0.393	0.446
Parental highest education level			0.527***	0.079			0.485***	0.075
Maternal occupation prestige			-0.0001	0.002			-0.004†	0.002
Paternal occupation prestige			0.004	0.004			0.011**	0.004
Annual household income			0.172†	0.030			0.043	0.029
Number of children			-0.033	0.064			0.097	0.063
<i>Child Characteristics</i>								
Gender (female)			0.355*	0.148			-1.059***	0.142
Child age (months)			0.011***	0.002			-0.002	0.002
Prior reading achievement			0.562***	0.008			–	–
Prior math achievement			–	–			0.663***	0.008
<i>School Characteristics</i>								
School Types								
Catholic (reference)			–	–			–	–
Other religious			0.392	0.299			0.746*	0.292
Other private			-0.100	0.381			0.819*	0.363
Public			-0.090	0.195			1.072***	0.188
% of Minority Students in Class								
Less than 10% (reference)			–	–			–	–
10% to less than 25%			0.067	0.118			0.242*	0.117
25% to less than 50%			0.226	0.148			0.174	0.149
50% to less than 75%			-0.061	0.230			-0.033	0.236
75% or more			-0.478†	0.252			-0.239	0.262
Constant	54.128***	0.114	20.561***	0.580	54.488***	0.123	15.099***	0.584

†p < .10. *p < .05. **p < .01. ***p < .001 (two-tailed test).

FIGURES

Figure 1. Conceptual Model of Parental Involvement and Children Achievement



APPENDIX A

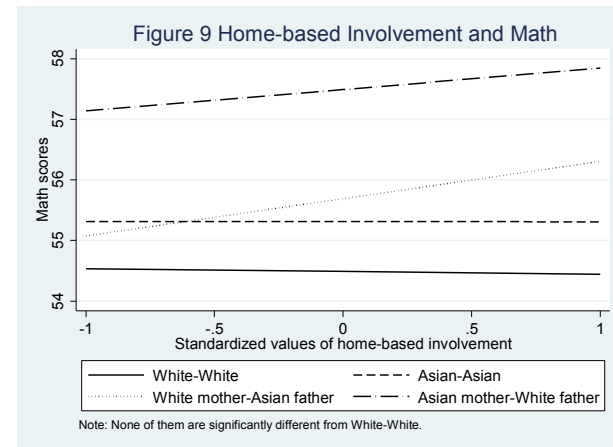
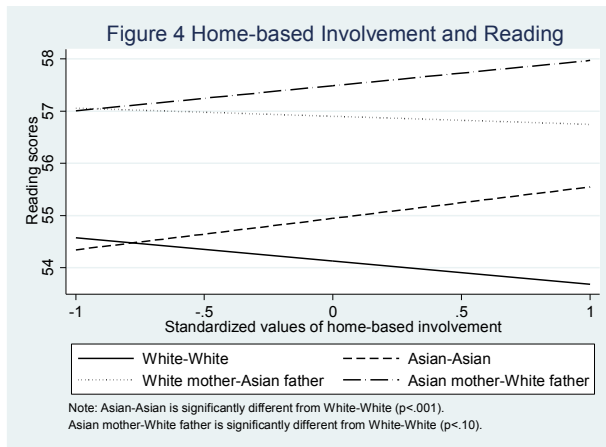
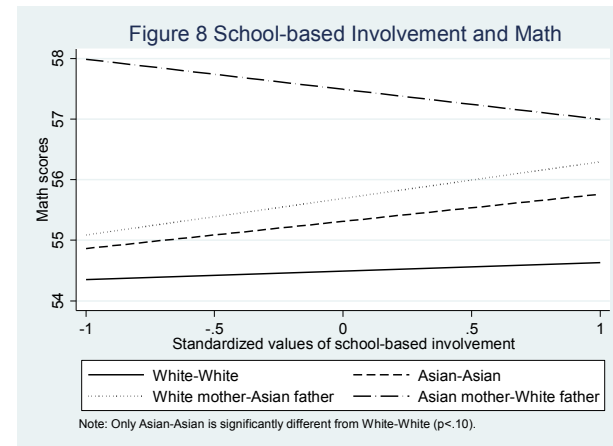
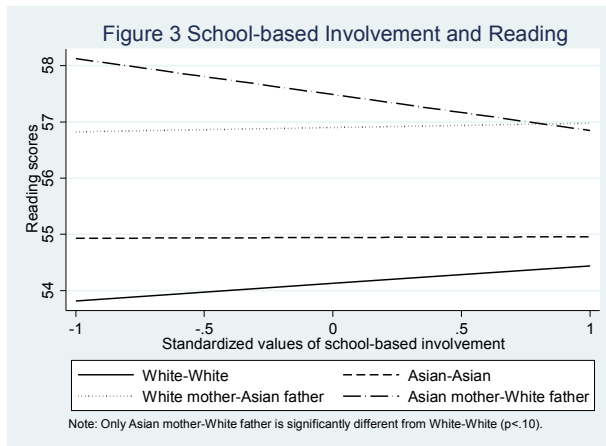
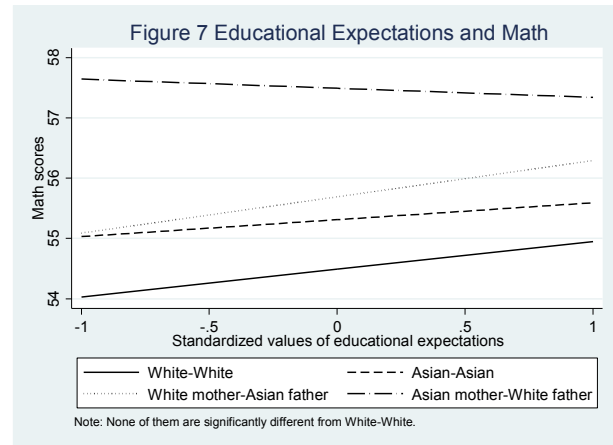
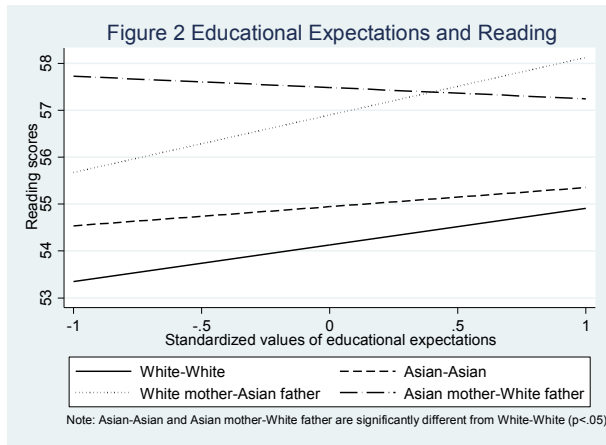
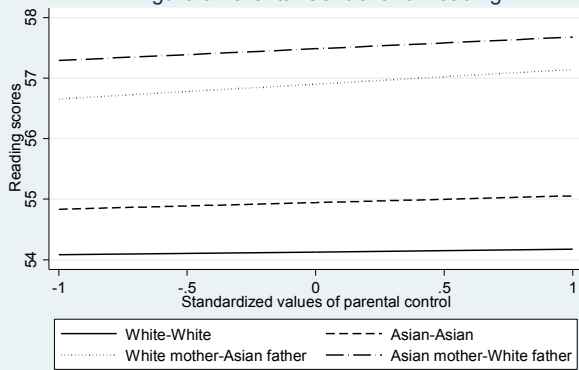
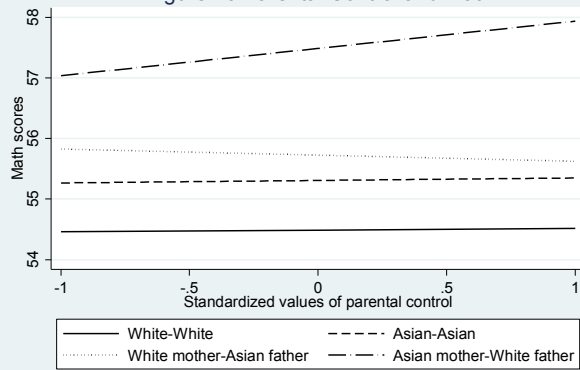


Figure 5 Parental Control and Reading



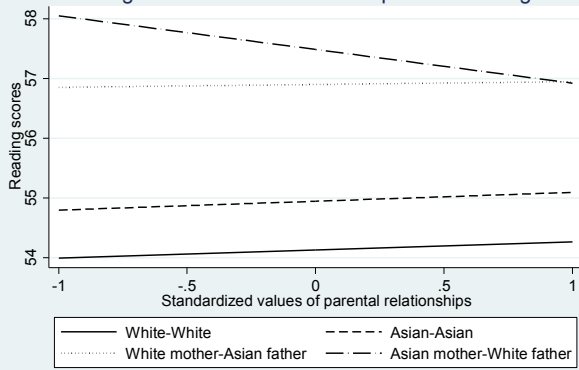
Note: None of them are significantly different from White-White.

Figure 10 Parental Control and Math



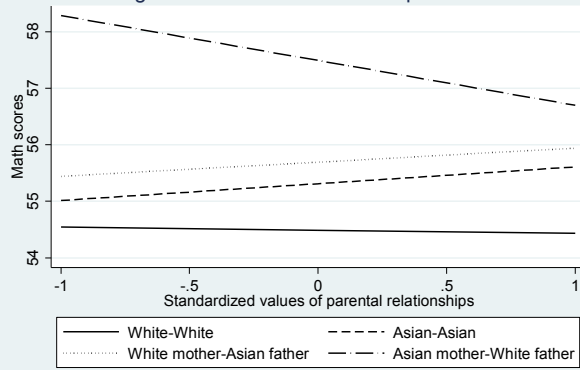
Note: None of them are significantly different from White-White.

Figure 6 Parental Relationships and Reading



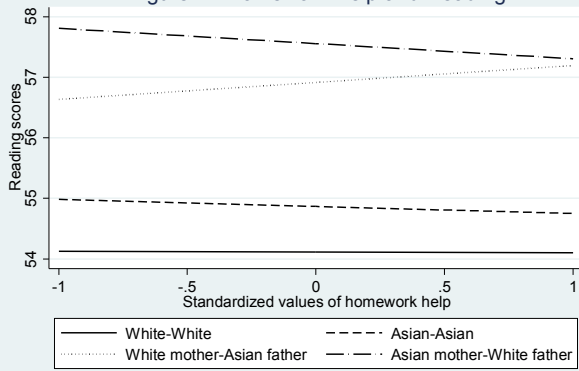
Note: Only Asian mother-White father is significantly different from White-White ($p < .10$).

Figure 11 Parental Relationships and Math



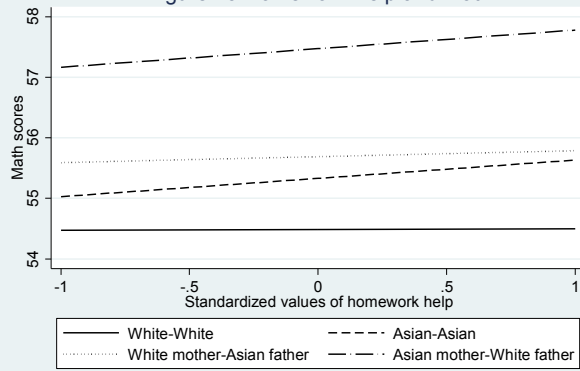
Note: Only Asian mother-White father is significantly different from White-White ($p < .05$).

Figure 12 Homework Help and Reading



Note: None of them are significantly different from White-White.

Figure 13 Homework Help and Math



Note: Only Asian-Asian is significantly different from White-White ($p < .05$).