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Ethnic and Racial Difference in Higher Education Access:

Effects of Family and School Resources

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requirements for the degree Doctor of Philosophy

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by

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Ethnic and Racial Difference in Higher Education Attainment:
Effects of Family and School Resources

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by

Sun Ah Lim

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I feel as though I have been on a long journey by rail. My heart was a flutter when I began this adventure. And throughout this journey I have felt excitement and joyfulness. However, along the way, there were times when I had to go through some dark tunnels, but during these times I felt a light guiding my path. The light was my God. He has always been with me and has led me through this difficult process. When I could not see the light, HE sent me people who encouraged and supported me and helped me to achieve my goals and dreams. Without their help, I would not have been able to accomplish what I have done today. First and foremost, I am indebted to Dr. Yukari Okamoto, my advisor and committee chair. In a broad sense she has been my role model of what it means to be a great teacher. She loves her students (including me, of course) and gives them a generous amount of her time and attention. I have often had the thought that I hope to be person and teacher like her someday. For the rest of my life in academia, I will remember her and try to be just like her with my own students and others. I would also like to thank Dr. Rumberger who contributed to my learning about the research process and about professionalism. I fondly remember the time I worked for him as a research assistant and admire the passion he displayed for the research. I also want to express appreciation to Karen Nylund-Gibson for her contributions. The feedback she gave me guided me through my dissertation. Furthermore, I want to thank Dr. Rebecca Zwick for her support and care.

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ABSTRACT

Ethnic and Racial Difference in Higher Education Access: Effects of Family and School Resources

by

Sun Ah Lim

Despite many years and multiple plans by educational policy makers and government to achieve educational equity, there is still a wide disparity in college enrollment rates across racial/ethnic groups. The present study was designed to examine this problem by focusing on the educational resources that might contribute to the persisting enrollment gap. This study adapted Bourdieu's notion of capitals and developed a comprehensive conceptual model of relations among various factors consisting of cultural and social capitals at family-and school-levels. By identifying the cultural and social factors simultaneously that differentiate the overrepresented and underrepresented groups, this study examined the extent to which these resources differentially affected college enrollment by racial/ethnic groups. To examine differences in the effects of social and cultural capitals relating to two resource-levels, ELS: 2002 data and a two-level multinomial logistic regression model were used.

The findings from this research provided evidence in support of the conceptual model of learning resources in a form of capitals that promote college enrollment.

Family-level measures of social and cultural capitals were related to the likelihood of a student enrolling in a 4-year college relative to not enrolling. Interestingly, the results revealed that the school capital measures were not powerful predictor of college enrollment compared to the family capital measures.

White students appeared to be the most effective group at converting social and cultural capitals into college enrollment when compared to the other racial/ethnic groups. On the other hands, Blacks and Hispanics not only possessed fewer types of capital that promote college enrollment, but also tended to attend schools with fewer resources that promote college enrollment.

The results of this study have several implications for school policy. First, college preparation programs should focus on ways to promote the types of social and cultural capitals and consider what can be added to family resources. Another implication is that the college preparation programs designed to promote the increase of college enrollment across racial/ethnic groups should recognize the ways in which the relation between capitals and college enrollment varies across racial/ethnic groups.

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CHAPTER I

INTRODUCTION

1.1 Introduction

In the United States, earning a bachelor's degree is recognized as the most important factor for reducing economic inequality and increasing social mobility (Bowen, Chingos, & McPherson, 2009). College attainment has been one of the most important paths to social and economic opportunities in America. It is also the main factor used for upward social mobility, a long-term goal of the U.S. population. Because college enrollment has such important implications for social equality, economic affluence, and status mobility, much recent research has focused on how the access to postsecondary schooling results in these benefits. For example, estimated lifetime earnings in 2003 were 73 percent higher for those with a bachelor's degree (excluding those who also earned advanced degrees of any kind) than for those with only a high school diploma (Baum & Payea, 2004). Card (1999) estimated the average rate of economic return for an additional year of schooling resulted in a 6 to 10 percent increase in additional earning power.

The American education policy generally intends to promote all students to attain their highest level of achievement. In particular, educational policymakers and program administrators have been examining ways to increase underrepresented minority students' access to college (e.g., early intervention programs and pre-collegiate outreach programs). However, research has shown that minority groups, such as Latinos and African-Americans, are consistently under-represented in

colleges as compared to Caucasians (Gandara & Contreras, 2009; Perna, 2007).

A persisting college enrollment gap reveals that efforts to reduce the observed racial/ethnic group gap in college enrollment have not been effective. That is, socially advantaged students continue to have greater access to learning resources than socially disadvantaged students, which, in turn, leads to attainment of higher education and advanced degree for advantaged students. As a result, socially advantaged students ensure higher social and economic status. Is it only the socioeconomic status that determines degrees of access to learning resources? It may be that differences in access to learning resources are related to not only socioeconomic status but also access to educational resources (e.g., family and school). Thus, it seems important to examine not only socioeconomic status but also family and school resources in order to understand the persistent college enrollment gap.

Although there were some studies that linked inequality of access to postsecondary education to family and school resources (Alexander & Eckland, 1977; Coleman & Hoffer, 1987; Falsey & Heyns, 1984; Perna & Titus, 2005), researchers have often focused too narrowly on the issue of college enrollment, correlated with socio-economics or minority status, without sufficient attention to interrelations among different types of resource factors. Thus, studies have provided very few clues about inequalities in learning resources at home and at school that may contribute to disparities in opportunities to enhance college access (Oaks, Mendoza, & Silver, 2006; Swail & Perna, 2002).

To examine these issues, the present study conceptualized educational

resources at family and school levels and examined the extent to which these resources differentially affect college enrollment by race/ethnicity.

1.2 Policy Issues

1.2.1 Persistent gaps in college enrollment among racial/ethnic groups

Census Bureau data show that almost 11.5 million 18- to 24-year-olds (39.6% of all young adults ages 18 to 24) were enrolled in either a two- or four-year college in October 2008 (11.8% of 18- to 24-year-olds were enrolled in two-year colleges; 27.8% of 18- to 24-year-olds were enrolled in four-year colleges).

Although the percentage of minority college students in the United States has been increasing over the past thirty years¹ (U. S. Department of Education, 2009), stratification in college enrollment continues to reflect disadvantages for Latinos and African-Americans. For instance, in 2007, 64.4 percent of White students had enrolled in degree-granting institutions compared with only 13.1 percent of Blacks and 11.4 percent of Hispanics (NCES, 2009). According to Census Bureau data², nearly 41% of White 18- to 24-year-olds were enrolled in college in 2008. In contrast, about 26% of Hispanic 18- to 24-year-olds were enrolled in college in 2008; the percentage of Black college enrollment among Black 18- to 24-year-olds in 2008 was

¹ In 1976, 15 percent were minorities, compared with 32 percent in 2007. From 1976 to 2007 the percentage of Asian or Pacific Islander students rose from 2 percent to 7 percent and the Hispanic percentage rose from 4 percent to 11 percent. The percentage of Black students was 9 percent at the beginning of the time period, and while it fluctuated during the early part of the period, rose to 13 percent in 2007.

² This is based on the report of the Pew Research Center's analysis of the October 2008 Current Population Survey and Census Bureau's historical time series on college enrollment available on the <http://www.census.gov/population/www/socdemo/education.html>
Source: U.S. Census Bureau, unpublished data.

32%.³

African Americans and Hispanics were less likely than students of other races to enroll in college. When they did enroll they were likely to enroll in public two-year colleges or less prestigious four-year colleges and universities (Baum & Payea, 2004; National Center for Education Statistics [NCES], 2003, 2004; Thomas & Perna, 2004). Furthermore, first-time undergraduates of African and Hispanic origin were greatly concentrated in two-year rather than four-year institutions. For example, African Americans represented a higher share of first-time freshmen at two-year institutions than at four-year institutions in fall 2001 (14.0% versus 11.1%). Similarly, Hispanics represented 12.2% of first-time freshmen at two-year institutions in fall 2001 and only 6.6% at four-year institutions (NCES, 2003).

1.2.2 Policies and Practices to reduce the persistent gap in college enrollment

Many government and school related programs have attempted to improve college access opportunities for all students. However, research has shown that minority groups, such as Latinos and African-Americans, are consistently underrepresented in college as compared to Caucasians and Asian-Americans. Some have speculated that the economic stratification could explain the enrollment differences between Latinos and African Americans when compared to Caucasians and Asian American (Felgin, 1995; Flint, 1992; Olson & Rosenfeld, 1984; Stage & Hossler, 1989; Tierney, 1980; White, 1982). To understand the racial/ethnic group differences in college enrollment it is critical to examine policies and practices related

³ For details of “Figures”, see Appendix A

to financial aid and other educational programs.

One of the important public policy vehicles for addressing gaps in college access and choice is student financial aid (Perna, 2007). The federal government, state governments, colleges and universities, private organizations and employers awarded nearly \$135 billion to postsecondary education students in the form of financial aid in 2005-06. The federal government is the largest source of student financial aid, with federally sponsored programs representing 70 percent of the total \$135 billion in financial aid that was awarded in 2005-06 (College Board, 2006a).

Despite the substantial investment in student financial aid, the data reflect persisting college enrollment gaps. Perna(2007) cited Gladieux and Swail (1999)'s conclusion—financial aid is not enough to account for the college enrollment gap—and suggested that eliminating gaps in college enrollment requires attention not only to the financial barriers to college enrollment but also the other factors. Therefore researchers should focus on the contribution of other resources.

Some educational programs were designated to provide under-represented students in higher education with the opportunities to develop, early in the educational pipeline, the college-related skills, knowledge, aspirations, and preparation that are required for postsecondary enrollment and attainment. The federal programs include student-based early intervention programs such as the Federal TRIO Programs (TRIO)⁴, as well as school-based approaches to early intervention, such as the Gaining Early Awareness and Readiness for Undergraduate

⁴ The Federal TRIO Programs (TRIO) are federal outreach and student services programs designed to identify and provide services for individuals from disadvantaged backgrounds.

Program (GEAR-UP)..

Despite the prevalence of these programs, little is known about their overall effectiveness or particular programmatic components (Tierney, 2002). Domina (2009)'s study, assessing the effectiveness of college outreach, suggested that targeted outreach programs do little to change the educational experiences of participating students. He argued, however, there is limited evidence to suggest that school-wide outreach programs may have modest "spill-over" effects, improving the educational outcomes of relatively unengaged students at participating schools.

The best available evidence, from the federally sponsored evaluation of Upward Bound, suggests that this program has a small but statistically significant impact, especially on four-year college enrollment rates (Myers, Olsen, Seftor, Young, and Tuttle, 2004). The evaluation also shows that Upward Bound is especially beneficial to Hispanics, as well as to individuals who had low educational expectations when they applied to the program. This seems to suggest that this program promotes particular college-related outcomes and is especially effective for Hispanics and students from other minority groups. As a result of this program, many minority students have attended higher education. However, the evaluation does not shed light on the contribution of particular or specific programmatic activities that contribute to these outcomes.

1.3 Substantive Issues

As said before, policy makers and administrators are interested in reducing the college enrollment gap as well as in explaining the inequality in access to postsecondary education. However some observers (e.g., Advisory Committee on Student Financial Assistance, 2002; St. John, 2003) argued that continued gaps in educational opportunity are primarily due to the inadequacy of existing financial aid programs. Beyond the financial problem, there were efforts to consider the educational resources devoted to reducing the gap in college enrollment rate across racial/ethnic groups. Perna (2004) has acknowledged the importance of student financial aid but also recognized the barriers imposed by inadequate academic preparations. Karen (1991) argued that the adequacy of information, particularly with regard to academic admission requirements, the costs of attendance, and the availability of student financial aid are equally responsible for the disparity in enrollment results.

Researchers have linked these inequities to social, economic, and educational resources (Karen, 2002; Lareau, 1989). Karen (2002) documented that race/ethnicity, SES, and students' characteristics, are associated with postsecondary outcomes in ways that continue to prevent more favorable outcomes: This suggests that a single source, such as SES, cannot explain the observed disparity.

Considerable attention has been given to understanding the relation between students, families, or high school and college enrollment (Alexander & Eckland, 1977; Coleman & Hoffer, 1987; Falsey & Heyns, 1984). In general, the findings of these studies have confirmed that characteristics of students and families affect

college enrollment, and that high schools' characteristics also matter for college transitions.

Though many studies have indicated the importance of family resources, some studies concluded that students' college enrollment depends less on the families' material and cultural wealth and more on school structure (Dupriez & Dumay, 2006). Other studies examined the extent to which school context was a major influence. School contextual factors included a school's formal structure (e.g., guidance resources and curriculum) and its organizational norms that communicate values and establish practices related to college enrollment (Alexander & Eckland, 1977; Meyer, 1970).

Although existing research on the relations between family or school factors and college enrollment is extensive, few studies have analyzed the transition from high school to college enrollment while simultaneously accounting for the effects of family resources and school resources across racial/ethnic groups. Furthermore, most studies focused on either Latinos or Blacks or both groups. With the mixed information about factors responsible for unequal access to college, there are few, if any, clues about inequalities in learning resources and opportunities within families and schools. An important question is what would be most effective in removing barriers responsible for disparities in learning resources and college-going, and hence providing particular resources that would enhance college access and opportunities (Oakes et al., 2006).

Perna and Thomas (2006) offered some suggestions for policymakers and practitioners who seek to improve success for all students and to thus reduce observed

enrollment gaps. They acknowledge the limitations on success that may be imposed by a student's situated context. They reviewed research that consistently showed that the path to student success may vary across racial/ethnic groups. They reported that despite the large number of studies that examined various aspects of student success few studies used multiple theoretical perspectives or paid enough attention to understanding the contribution of multiple layers of context to the effectiveness of policies and programs. They argued that policymakers and practitioners should recognize that no single approach to policy or practice would improve student success for all students or reduce gaps in success across students. Only policies and programs that recognize variations in the different layers of context are likely to be effective.

1.4 Methodological Issues

Thus, it is imperative to pay attention to multiple contextual layers because the degree of resources may be correlated with relationships or social networks at home and at the school. As mentioned earlier, Perna and Titus (2005) found that only few studies have used multiple units of analysis as well as multiple theoretical perspectives or paid enough attention to understanding the contribution of multiple layers of context students are in. Prior research has not simultaneously assessed school and family effects using multilevel analytic techniques. Most often, research looked at either the family level or the school level.

The only study, which considered both level resources, was Perna and Titus's (2005). They included structural characteristics of schools based on the argument of Stanton-Salazar (1997): structural characteristics of schools may restrict college

enrollment through their influence on social networks and relationships. However, their study focused on the parents' involvement, not other social networks and relationships that students have at school though they included multiple layers of context for understanding racial and ethnic group differences in college enrollment. With the exception of this study, the common approach was taking school-level variables as if they were student-level variables and entering them all into a multivariate regression equation. In such analyses, school-level variance could not be formally distinguished from family-level variance; hence, resources at the school-level could not be explicitly estimated. Conceptually, it was problematic to treat school effects as if they were the effects of family attributes since the two types of effects represented distinctive processes. Family effects were influenced by school effects or school effects were influenced by students coming from different degrees of family resource.

Statistically, mixing school-level variance with student-level variance might generate misleading results. In many prior studies, data were collected with sampling designs that involved more than one level (e.g., sampling students from sampled schools) rather than a simple random design. Students from the same school, in such designs, were not independent of one another. The estimates, which were based on assumptions for simple random design, usually reduced the statistical variance and thus produced more liberal results in significance tests (Bryk & Raudenbush, 1992; Salvucci & Weng, 1995). This methodological issue directly relates to the focal concern of this study.

1.5 Purpose of the study

Many studies showed mixed and varied results about factors responsible for unequal access to college within families and schools resources. However, they failed to conceptualize a full model for educational resources according to its constituent parts. Furthermore they did not fully assess the extent to which resources differently affect academic achievement by racial/ethnic groups.

Given this degree of complexity, what is needed is a focus on empirically examining the factors considered separately and within context that previous research has suggested as contributing to inequities across racial/ ethnic groups. This study thus sought to gain a better understanding of how the family and school resources affect college enrollment, by carefully examining specific characteristics of family and school resources. It also examined Latino, African American, Asians and Caucasians to see how these effects differ among ethnic groups. Built upon the extant literature, this study sought to examine factors that may explain the long observed inequality.

The purpose of this study was, thus, to expand the existing research literature on post-secondary education access, and to test a more informed, comprehensive conceptual model for understanding the impact of educational resources (social and cultural capitals), as a form of family resource and school resource, on college enrollment.

CHAPTER II

LITERATURE REVIEW

This chapter begins by reviewing the studies that examined one or more factors that might influence ethnically diverse high school students' college enrollment. Specifically, family- and school-level predictors are examined. The chapter then describes a conceptual framework that would allow one to integrate the influential factors identified, reviewing key ideas about learning resources in the form of social and cultural capitals. Finally, the chapter concludes by presenting a conceptual model based on this framework that incorporates seemingly independent studies, followed by the study's research questions.

2.1 Studies on Factors Affecting Students' College Enrollment

2.1.1 Family characteristics and resources

Many scholars attempt to explain the relation between family resources and college enrollment (e.g., Alexander & Eckland, 1997; Coleman & Hoffer, 1987; Espenshade, Hale, & Chung, 2005; Falsey & Heyns, 1984; Karen 2002). In general, the findings of these studies have confirmed that characteristics of students and families affect college enrollment more than high schools' characteristics.

For example, Karen (2002) looked at the relevance of individual students' social background to college enrollment. She found that although schools had some

effect on enrollment in higher education, family resources such as parents' education and income retained their influence after controlling for school variables.

Parental involvement with their children

Parental involvement was found to be related to higher grade point average (Lee, 1993; Muller, 1993; Zick, Bryant, & Osterbacka, 2001), increased achievement in reading (e.g., Senechal & LeFevre, 2002), and mathematics (Izzo, Weissberg, Kaspro, & Fendrich, 1999).

Studies using quantitative methods suggested that parental behavior can be a crucial determinant of educational performance (Epstein, 1984; Marjoribanks, 1979; Mendoza, 1996; Mundschenk & Foley, 1994; Ryan, 1992). Although the appeal of parental involvement is strong, the results about effects of parental involvement were not consistent. Some researchers have found evidence of positive effects of parental involvement on students' learning, whereas others have found little. Fan and Chen (2001) argued that there appear to be considerable inconsistencies among empirical studies that have investigated the issue quantitatively, so they performed a meta-analysis examining the influence of parental involvement on the general student population and concluded that parental involvement positively influences academic achievement. For example, parental aspiration/expectation for children's educational achievement has the strongest relation, whereas parental home supervision has the weakest relation, with students' academic achievement.

There have been some studies to examine the differential effects of parental involvement on academic achievement of students from the major American ethnic

groups (Dika & Singh, 2002; Mattingly, Prislin, McKenzie, Rodriguez, & Kayzar, 2002; McNeal, 1999). The advantages of parental involvement are generally found to be consistent across different racial/ethnic groups (Fan, 2001; Sui-Chi & Willms, 1996). For example, in Fan's (2001) meta-analysis study, the positive effects of education aspirations on students' academic achievement were found to be consistent across ethnic groups. In another study, Ho and Willms (1996) also found no differences in involvement between the ethnic groups examined.

Other studies, however, showed that the effectiveness of involvement varies by race/ethnicity. In one study, Griffith (1998) reported that African American parents were less frequently involved at school when compared to Caucasian parents. On the other hand, Lee (1984) indicated that African American parents were more likely to discuss about school topics, attend school meetings and contact teachers than White, Asian American, or Latino parents. Moreover, Keith and his colleagues (1998) reported different parent involvement models for Asian American and Native American students when compared with those for White, African American, and Hispanic students. They found differential effects of parental involvement on academic achievement with respect to ethnicity. According to the extant research, these differences appear to have varying effects on student achievement across ethnic groups (Schneider & Coleman, 1993). In their longitudinal study on mediating effects, Hong and Ho (2005) found that the indirect effects of parental involvement through the mediator of student educational aspiration were found to be consistent across all four ethnic groups and for both eighth grade academic achievement as well as subsequent academic growth. However, the direct effects of parental involvement

on student academic achievement as well as subsequent academic growth (i.e., longitudinal effects across four years) varied across the four ethnic groups of eighth-grade students. The National Center for Educational Statistics ([NCES] 1994) indicated that Asian American parents were less likely to communicate with their children's teachers whereas African American parents were more likely to visit their children's classrooms. Asian American parents, however, were more involved in their children's academic activities and had higher aspirations for their children's academic success.

Studies have also shown that parental involvement is associated with a greater likelihood of aspiring to attend college and actually enrolling (Hossler, Braxton & Cooper-smith, 1989; Cabrera & La Nasa, 2000; Horn, 1998; Hossler, Schmit & Vesper, 1999; Perna, 2000; Perna & Titus, 2005). In these research studies, parental involvement was generally operationalized using just one indicator such as a composite of the frequency of discussions between the parent and child about school-related activities (e.g., Horn, 1998; Perna, 2000). These results are also limited because the differential effects of parental involvement across ethnic groups were not tested empirically. Moreover, although some researchers (Perna, 2000; St. John, 1991) have shown that the college enrollment process varies across racial/ethnic groups, other researchers (Dika & Singh, 2002; Mattingly, Prislun, McKenzie, Rodriguez, & Kayzar, 2002; McNeal, 1999) have concluded that little is known about the extent to which the relationship between parental involvement and college enrollment varied by race/ethnicity.

Parents' educational expectations and norms

Education research highlighted the role that parents can play in transmitting educational values and practices to children, and hence facilitating their acquaintance with college enrollment. Some researchers have explained group achievement differences in terms of different ethnic groups possessing identifiable family resources that encompass cultural values, and practices (Sowell, 1981; Steinberg, 1996; Steinberg, Dornbusch, & Brown, 1992). From a sociocultural perspective, school performance can be explained more fully in terms of factors related to the cultures of various ethnic groups (Felgin, 1995; Ogbu, 1992; Rumberger & Larson, 1998, Zhou & Bankston, 1998). For example, cultural values, such as a tradition of respect for teachers, may contribute to the positive value some ethnic groups place on education (Zhou, 1997).

A majority of research indicates that students performed better and had higher levels of motivation when they were raised in homes characterized by supportive and demanding parents who were involved in schools and encouraged and expected academic success (Epstein, 1990; 1995; Steinberg et al., 1988). The way the expectation is manifested in the learning situation is via the student's dispositions. The key dispositions are the way students become open to experiences, their emerging beliefs about the value and worth to them from investing in learning, and the manner in which they learn that they can build a sense of self from their engagement in the learning enterprise (Hattie, 2009). Goyette and Xie (1999) argued that the most significant finding to explain the educational achievement of Asian American children was an important role of parental expectations.

Family norms. Family norms has been used as the topic for sociologists to study the role of family in individual achievement. Family norms in sociology means that an established standard of behavior shared by members of a social group to which each member is expected to conform. Fehmann, Keith, and Reimers (1987) suggested that more focused home supervision and family rules such as increased homework time, and restricted TV time might improve grades. Contrary to this suggestion, Keith and Lichtman (1992) found that family rules do not affect students' academic achievement.

When examining racial and ethnic differences, Sui-Chu and Willms (1996) found that Asians and Hispanics tended to have more family rules and restrictions than did Caucasians. Desimone (1999) separated family rules into student-reported and parent-reported rules. For Caucasians and Asians, she found that the relation was negative for parent-reported rules, whereas the relation was positive for student-reported rules. For African Americans and Hispanics, however, the composite family rule (whether student-or parent-reported) was negative. These results suggest that the relation between family norms and student achievement is complicated and varies among different ethnic groups.

Educational expectation. Typically, educational expectation is measured by asking parents and students how much education parents expect their children to complete. Numerous studies have documented the powerful relation between parents' educational expectations and student achievement (Goyette & Xie, 1999; Hao &

Bonstead-Bruns, 1998; Singh et al., 1995; Trusty, 2000; Trusty, Plate, & Salazar, 2003). For example, based on Bandura's (1977) self-efficacy theory, Trusty (2000) used 6-year longitudinal data from NELS:88 to find in the study of stability-of-education goals that parents' aspirations and efficacy influence their teenagers' academic self-efficacy, which, in turn, affect the teenagers' long-term educational attainment. However, in regard to racial and ethnic differences, findings were less conclusive. A popular belief remains that immigrant parents have higher educational expectations for their children than do native parents and that these expectations translate into their children's greater educational achievement. For example, several researchers (Chen & Stevenson, 1995; Hao & Bonstead-Bruns, 1998; Goyette & Xie, 1999) stated that cultural beliefs about the connection between effort and educational success may account for high educational achievement among Asian American children.

In a sociocultural perspective, differences in college enrollment among racial/ethnic groups can be explained more fully in terms of factors related to social networks of influence and support (Dika & Singh, 2002) and the cultures of various ethnic groups (Felgin, 1995; Ogbu, 1992; Rumberger & Larson, 1998, Zhou & Bankston, 1998). However, some researchers have argued that the socioeconomic factor is the strongest factor in explaining all or much of the variation in college enrollment among racial/ethnic groups so they have looked at SES as the main factor, which can explain minority groups' low achievement. Thus an important question is whether SES is the most important factor and what would be most effective factor

after controlling for SES that contributes to disparities in college enrollment. Next I reviewed the studies that have examined the relation between SES and finances and college-enrollment in the next section.

Socioeconomic status (SES) and finances

Socioeconomic status (SES) has continued to draw the interest of educational researchers and policy makers because SES may be the primary factor for the inequity in the learning environment. Previous literature has documented that race, ethnicity, and SES are associated with postsecondary education outcomes in ways that continue to reflect less favorable outcomes for disadvantaged groups (Alexander, Holupka, & Pallas, 1987; Baker & Velez, 1996; Beattie, 2002; Hearn, 1991; Karen, 2002).

Several researchers contend that college affordability is a major reason why a disproportionate number of low-income and minority students do not enroll in college or complete degree requirements (Heller, 2001, 2002; Perna, 2002; St. John & Starkey, 1994). Long and Riley (2007) documented how low-income students and students of color are likely to face substantial unmet financial needs for college. They suggest a greater emphasis on need-based financial aid in the future, especially grants to reduce the cost of college as a barrier to college access. Long (2007) reports on studies that focus on indirect subsidies to students in higher education (Heller, 2002; Rizzo & Ehrenberg, 2004), direct financial aid to students (Johnstone, 2003; McPherson & Schapiro, 1998), and studies of changes in price for higher education (Kane, 1999; Wetzel, O'Toole, & Peterson, 1998). Concerns about studies on

financial aid include the levels of aggregation that result in masking the vast heterogeneity in college price, quality, and subsidies.

Socioeconomic factors also have mediated students' access to information about college. Using data from the National Longitudinal Study of the High School Class of 1972 (NLS:72). Tierney (1980) reported that lower-level SES students had fewer information sources than upper-level SES students. Leslie, Johnson, and Carlson (1977) reported similar findings. These researchers found that lowest-SES students relied on high school counselors as the single most likely source of information about college. In contrast, upper-income students report a variety of sources including parents, students, catalogs, college representatives, and private guidance counselors. Low-income students may be limited in their access to a variety of sources of information and availability of high school-based academic information resources (King, 1996).

However, there is a body of literature that questions whether differences in SES are sufficient enough to explain the large gap in educational achievement among racial/ethnic groups. Simply stated, rather than SES, parents who are familiar with and understand the importance of higher education are more likely to convey and support the social and academic characteristics leading to academic achievement. Stage and Hossler (1989) argued that higher socioeconomic status parents are more likely to talk to their children about college. They are also more predisposed to make financial plans to pay for college (Flint, 1992) and are more knowledgeable of financial aid programs (Olson & Rosenfeld, 1984; Tierney, 1980). However, this relation between SES and academic achievement success is correlated at best.

Several theories have been proposed to explain why some groups, notably Asians, have succeeded to a greater degree than most Latino groups, even when parents' SES and the quality and location of the schools the students attended were controlled for. Felgin (1995) reported that even when SES was held constant, Jewish and Asian students performed academically better than did Hispanic, Black, and White students. Ogbu (1989) found that Chinese American students maintained high grade point average despite cultural and language differences and relatively low SES.

In a meta-analysis of more than 200 studies from the late 1970s and early 1980s, White (1982) found that social class accounted for only about 5 percent of the variance in performance. Thus, the socioeconomic approach does not account for all or even most of the variation, although some scholars (Heller, 2001, 2002; Perna, 2002) continue to argue that SES and finance are the most important factors for college enrollment. As American education policy generally aims to promote all students to their highest level of achievement, many governments and school districts put lots of money in programs to improve college attainment opportunities for underrepresented minority students and supported them financially. However, research has shown that minority groups, such as Latinos and African-Americans, are consistently underrepresented in college as compared to Whites and Asians. Thus there are some factors responsible for unequal access to college. What are the most important factors that account for the long observed inequality of college attainment, especially among the Latino and African-American groups? The answer, which I propose, is based on cultural and social factors within family and school.

2.1.2 School characteristics and resources

A vast body of research focused on school resources as possible factors in explaining differences in education achievement (the transition from high school to college) (Borman & Overman, 2004; Bryk, Lee, & Holland, 1993; Coleman & Hoffer, 1987; Ma & Wilkins, 2002). Although some researchers (e.g., Alexander, 1997) concluded that school resources likely mattered for learning and class/racial disparities, most studies that attempted to assess the independent role of schools in shaping postsecondary attainment concluded that the effect of school contexts is secondary to individual student effects (Espenshade, Hale, & Chung, 2005; Karen, 2002; Perna & Titus, 2005). Students' personal characteristics retained their effect after controlling for school's resources although schools' resources exerted some effect on postsecondary attendance.

However, incorporating secondary school into the process of enrolling in postsecondary education might be straightforward. Breen and Jonsson (2000) expressed: "A model of educational transitions that can take into account the institutional structure of the school system is better able in explaining why educational choices differ according to social origin, sex, ethnicity and other exogenous variables" (p. 759).

Some studies have argued that although characteristics of students and families substantially affect college enrollment, a high school's organizational characteristics also matter for college transitions. For example, Hill (2008) found that high schools do play a part in the college process and suggests that schools can make the transition easier for students whose families lack the information and resources to

assist their children in the college process. School effects on college enrollment are reflected in factors such as schools' resource structures and organizational norms (such as communicating values and establishing practices) which are the mechanisms through which schools influence college enrollment (Hill, 2008). School systems play a role by encouraging and helping their students to access university entrance by providing information and resources, as well as by maintaining a high academic and disciplinary climate.

School organization and social networks

1) School structure

Falsey and Heyns (1984) argued for the importance of providing college counseling and an organizational commitment to help students enter their way to college. McDonough's (1997) school-based study considered organizational differences among high schools and their relation to college enrollment. In his study, he analyzed variation between high schools in terms of structures (i.e., college guidance resources) and norms that characterize a school's approach to preparing students and families to navigate the college process. McDonough demonstrated that students' college decisions are circumscribed not only by individual characteristics, such as their academic performance or socioeconomic background, but also by structural characteristics of their high schools. The structure and organization of guidance counseling, for instance, revealed distinct differences across high schools, including the resources available to counselors, time allotted for college counseling, types of colleges recommended, and the nature of the counseling relationship.

Other analysts trace unequal levels of parental involvement in schooling back to the educational institutions themselves. Some accuse schools of institutional discrimination, claiming that they make middle-class families feel more welcome than working-class and lower-class families (Lightfoot, 1978; Ogbu, 1974). Recent work has also provided evidence that high school feeder networks influence matriculation decision (Engberg & Wolniak, 2009; Wolniak & Engberg, 2007a), and that high school structures and environments (e.g., quality and availability of resources and the frequency of school violence) influence students' academic performance well beyond high school graduation (Wolniak & Engberg, 2007b). While the results offer important evidence about the lasting effects of high school contexts, these studies were limited by the lack of generalizability and non-nested characteristics of the data.

Hill (2008) recently introduced a typology of "college-linking" strategies used by high schools to promote college enrollment. Analyzing a subset of NELS:88 data, Hill empirically identified a classification scheme for grouping high schools according to two dimensions associated with students' college transitions: one dimension was defined according to organizational resources and behaviors, while the other dimensions reflected organizational norms. Grouping high schools according to two dimensions proved effective in explaining how different combinations of organizational structures, resources, and practices differently affect college enrollment. Interestingly, the effectiveness of college-linking efforts differed for enrollment in 2-year versus 4-year colleges, suggesting that combinations of resources and practices within any given high school may not only influence college

enrollment generally, but may also influence the type of institution students are most likely to enroll in.

2) School social networks

Sources of school-related social support include teachers and classmates, who daily interact with students in school. Social support in school has positive effects on student outcomes (Danielsen, 2009). Analyzing ongoing enrollment patterns among other students in their social network, Person and Rosenbaum (2006) found that for Latino students, established network of social contacts are particularly important in acquiring information about college, but information gaps often remain as obstacles for these students in obtaining widespread access and success in college. Applying a similar chain migration perspective, Perez and McDonough (2008) argue that access to strong networks and social capital provides greater exposure to range of college choice options, whereas social networks that are limited in scope can significantly reduce a student's postsecondary options. Ultimately, they call for increased education and resources throughout the Latino community to affect students' support networks.

Teacher-student relationships. When students, parents, principals, and teachers were asked about what influences students' achievement, all but teachers emphasized the relationships between the teachers and the students. Building relationships with students implies agency, efficacy, respect by the teacher for each child in terms of what the child brings to the class (from home, culture, peers), and

allowing the experiences of the child to be recognized in the classroom. Further, developing relationships requires skills by the teacher-such as the skills of listening, empathy, caring, and having positive regard for others (Hattie, 2009).

Cornelius-White (2007), in his meta-analysis, located 119 studies and 1,450 effects, based on 355,325 students, 14,851 teachers, and 2,439 schools. He found a correlation of 0.34 across all person-centered teacher variables and all student outcomes (achievement and attitudes). The highest relations between person-centered teacher variables and achievement outcomes were for critical/creative thinking, math, verbal, grades.

In classes with person-centered teachers, there is engagement; more respect of self and others; there are fewer resistant behaviors; there is greater non-directivity (student-initiated and student-regulated activities); and there are higher achievement outcomes. Cornelius-White notes that most students who do not wish to come to school or who dislike school do so primarily because they dislike their teacher. His claim is that to “improve teacher-student relationships and reap their benefits, teachers should learn to facilitate students’ development” (p.23). This may be achieved by demonstrating that they care for the learning of each student as person (which sends a powerful message about purpose and priority), and empathizing with students. Teachers need to “see their perspective, communicate it back to them so that they have valuable feedback to self-assess, feel safe, and learn to understand others and the content with the same interest and concern.”

Counselor-student relationships. A school counselor is a counselor and educator who works in elementary, middle, and high schools to provide academic, career, college readiness, and personal/social competencies to all students through advocacy, leadership, systemic change, and teaming and collaborating with other stakeholders as part of a comprehensive developmental school counseling program. An important part of counseling is assisting students to make decisions that result in a change to more effective behaviors. If the school counselor can coach students in school success skills in the classroom with regard to organization, listening and responding in appropriate ways, cooperating with peers, and completing class work and homework in a timely manner, they are more likely to experience success in these areas that can reinforce the application and reoccurrence of these new behaviors. Counselors and teachers can collaborate and support each others' efforts to promote academic achievement (Clark & Breman, 2009).

The achievement gap problem may be exacerbated by the challenges facing today's high school counselors. There is an increasingly limited number of counselors per student at the high school level, and few counselors are able to spend much time on postsecondary issues (Dahir & Stone, 2009). The counselors that are there focus on a host of other issues such as disciplinary problems, emotional needs of students, and course scheduling and do not have the time to work with students who are traditionally underrepresented (McDonough, Korn, & Yamaski, 1997). Although counselors are usually the only source of information about college-preparation-related coursework and policies for all students, several studies have found that some counselors may not be giving students the information they need to make educated

decisions about their college choices (see, e.g., Orfield & Paul, 1994; Rosenbaum, 1999). Rosenbaum (1999) found that counselors do not believe that they have enough authority to give students bad news about the students' college prospects. The researchers hypothesized that this unwillingness might prevent students from receiving the information that they need to make the best decisions regarding their future college careers. In addition, they found that counselors' avoidance techniques hurt students who are economically disadvantaged the most.

Peer academic relationships. Peers can have a positive influence on one another. They can support academic goals and serve as important sources of information for upward mobility (Stanton-Salazar, 1997). Wilkinson and Fung (2002) noted that peers can influence learning, such as helping, tutoring, providing friendship, giving feedback, and making school a place where students want to come. Friendships can play an important part in the classroom environment, as they often involve higher levels of caring, support and help, can ease conflict resolution, and thus lead to more learning opportunities, hence enhancing academic achievement (Anderman & Anderman, 1999). This is particularly the case from early adolescence, where social relationships become particularly important.

Steinberg (1996) presented survey data that showed that Asian peers are more supportive of academic achievement than other groups. Students who hang out with low-performing friends tend to perform at lower levels as well, and those whose friends are dropouts are at higher risk for dropping out themselves (Epstein & Karweit, 1983).

Academic climates and school expectation

Teachers and peers may be regarded as potentially powerful norm senders and models of behavior or attitude. Teacher can create a culture in which every individual student recognizes the importance of studying. By sharing ways of problem solving, giving and receiving positive responses on tasks, providing positive attitudes toward school work, and encouraging student dialogue and cooperation, social support from classmates can represent effective support of learning and contribute to constructing a prolearning culture in the academic domain.

The results of studies have supported the finding that school academic climate has a positive relationship with student achievement (Lee, Smith, & Croninger, 1997; Shouse, 1996). McDonough (1998) found that the climate of schools and the college-choice organizational culture affected both college entrance and destination. McDonough argued that the school's organizational habitus⁵ may shape students' decision making and affect their postsecondary choices beyond their individual experience. That is, the school's academic orientation produces an atmosphere that affects the postsecondary choices of all students (Huang & Weng, 1998; Perna & Titus, 2004).

Teachers can be very effective in sending nonverbal messages to students about the amount of confidence they have in their abilities. For example, not only do teachers call on favorite students more often, research has shown that they wait longer for an answer from a student they believe knows the answer than from a student in

⁵ In Bourdieu's work, habitus can be defined as a system of durable and transposable "dispositions" (lasting, acquired schemes of perception, thought and action). The individual

whom the teacher has little confidence. With the latter student, the teacher is more likely to provide the correct answer, or move quickly on to another student (Brophy & Good, 1974). Students have also been shown to be very sensitive to these subtle teacher behaviors and to “read” their teachers’ attitudes quite accurately (Weinstein, 1989). In a series of studies conducted by the psychologist Rosenthal, teachers’ attitudes toward their students were shown to have a substantial impact on their academic performance. Thus, Sprinthall, Sprinthall & Oja (1998) conclude, (1) Pupils who are expected to do well tend to show gains; (2) pupils who are not expected to do well tend to do less well than the first group; and (3) pupils who make gains despite expectations to the contrary are regarded negatively by the teacher. In this way, students’ assessments of their own abilities can be moderated by teachers’ attitudes and beliefs. Unfortunately, teachers are more likely to assess middle class and nonminority students as having higher ability than their low-income and minority peers (Baron, Tom, & Cooper, 1985).

In the education system, it is now widely accepted that teachers do form expectations about student ability and skills and that expectations affect student achievement (Dusek & Joseph, 1985). Rosenthal and Jacobsen (1968) argued that teachers’ expectations were powerful influences on the success of student learning. Raudenbush (1984), in his meta-analysis, argued that the less teachers knew their students prior to receiving the false information, then the stronger the effect on learning. The research on expectations is not now as prevalent as it was in the 1970s and 1980s, but there has been a recent resurgence due to the work of Weinstein

agent develops these dispositions in response to the determining structures (such as class,

(2002) and colleagues. Smith (1980) found that when teachers identify and categorize pupils' ability, pupils reliably rate their ability, achievement, and behavior according to the perception provided by teachers. Teacher expectations affected their behavior to a modest degree; in particular, more teaching opportunities were given to students for whom there was a favorable expectation.

Students' learning is strongly tied to the expectations of those around them and the quality of their opportunities to learn. In a school with a strong college-going culture, educators believe that all of their students can learn at very high levels. The school culture that expects all students to spend time and effort on academic subjects and that emphasizes effort will pay off fosters high levels of academic achievement (Lee & Smith, 2001; Phillips, 1997). Of course, high expectations alone are not enough. However, when high expectations are present, teachers seem more able and willing to provide rigorous academic instruction and press for high standards. In turn, students respond to high expectations with greater effort, persistence, and achievement (Lee & Smith, 2001; Newmann et al., 1996). If teachers and schools are going to have expectations, they should make them challenging, appropriate, and checkable such that all students are achieving what is deemed valuable. To this we can add the potentially negative effects of students setting their own low expectations and not being provided with high level confidence that they can exceed these expectations and not only attain but enjoy challenging learning intentions.

Minority students, in particular, perform poorly when their teachers do not believe in their abilities (Ferguson, 1988). However, it was noted that Dusek and

family, and education) and external conditions (fields) they encounter.

Joseph (1985) found small effects of race on teacher expectations. Wherever the race advantage was found, however, it favored White and Asian students. Tenenbaum and Ruck (2007) reported that teachers had more positive expectations for European Americans than for minority students, the effects were greatest in elementary and high school and less so for college students. Further, teachers were more likely to make negative assignment (e.g., special education, disciplinary action) for ethnic minorities and direct more positive or neutral speech to whites, but there was no evidence of more negative speech to white compared to African Americans or Hispanics. Cooper and Allen (1993) investigated the interactive effects of race on the classroom experiences of white and minority students. It indicated that minority students have different types of interactions with teachers. In particular, there were more negative statements by teachers to non-white students, white students received more positive praise, and overall minority students had fewer interactions with teachers than white students.

School finances and quality

Research that examined the extent to which different school contexts correlated with college enrollment found the usual SES and academic ability factors aligned with particular schools. Thus schools with high SES and high mean test score showed greater percentages of postsecondary achievement (Alexander & Eckland, 1977; Alwin & Otto, 1977; Meyer 1970; Nelson, 1971).

However, the argument that SES is more important at the school raises the question of the notion of adequacy of funding at the school level-that is, the

sufficiency of resources for optimal academic achievement rather than equity, which usually means smoothing the differential resources at the student or family level but not acknowledging the increased level of problems and issues faced by schools teaching students from poorer backgrounds.

In a refutation to the claims about the limited effect of increased finances, Hedges, Laine and Greenwald (1994; Greenwald, Hedges, & Laine, 1996) analyzed the effects of differential school inputs on student outcomes. Their analysis showed systematic, positive patterns in the relations between educational resource inputs and student outcomes. An increase in per pupil expenditure of \$500 increased the effect on achievement.

Childs and Shakeshaft (1986) found different results. They undertook a meta-analysis of studies on the relation between educational expenditure and student achievement and showed that there was a minimal relation between the two, and the most positive relation related directly to the costs of instruction; for example for teacher salaries and instructional supplies. Teacher salaries, in turn, were more related to years of teaching experience and not teacher quality. Rolle (2004) also argued that more money was not necessarily needed but that there should be more productive use of existing resources. Thus, as Greenwald et al. (1996) put it, it would be possible to expect “comparable and substantial increases in achievement if resources were targeted to selecting (or retaining) more educated or more experienced teachers” (p. 380). Although there is little evidence to justify the importance of teachers finding seem to point out the importance of the teacher (and cost associated with enhancing teaching).

Teacher ratio. A recent study using a large nationally representative sample of high school students found that the student to teacher ratio was significantly correlated with a broad measure of student learning or achievement growth (Bhorat and Oosthuizen, 2008; Card & Krueger, 1996; Rumberger & Palardy, 2001). For example, reducing class size leads to more individualized instruction, higher quality instruction, greater scope for innovation and student-centered teaching, increased teacher moral, fewer disruptions, less student misbehavior, and greater ease in engaging students in academic activities.

The concept of excellent teaching changes when you have classes of sizes 30-80. Excellence in teaching in this instance may be considered following scripts closely, conducting chalk or whiteboard lessons, not tolerating deviant behavior in the class, over-learning the rules of classroom behavior, having more rigid forms of discipline that allow for little deviance, copying, and high amounts of rote learning, having straight rows, all walking through the lessons at the same pace (see Cortazzi & Jin, 2001). In classes of 20-30, grouping becomes possible. There are more opportunities to group students according to ability (or behavior), to encourage peer interactions, to allow for different proficiencies of self-regulation, and to tailor some of the curriculum to students (either in topic or pace). There is already a wealth of literature as to the profile of excellent teachers and how they differ from experienced teachers in classes of 20-30 students (e.g., Berliner, 1987, 1988; Borko & Livingston, 1989; Chi, Glaser, & Farr, 1988; Hattie & Clinton, 2008; Housner & Griffey, 1985; Krabbe, 1989; Leinhardt, 1983; Ropo, 1987; Smith, Baker, Hattie, & Bond, 2008;

Sternberg & Horvath, 1995). However, there is little evidence to believe that these attributes necessarily apply to classes other than class sizes.

The argument is that moving from one level of class size to another requires a shift in the concept of excellence of teaching—a move from direct (most often transmission) teaching of students (at 80 or more) through attending to teaching and learning (at 20-80), to co-working with a cohort of individual students teaching and learning together (at 20 or less) (Chan, 2005). The shift required by teachers is not merely to adapt their methods as they move across the levels, but a major re-conceptualization of what it means to be excellent as a teacher at the various levels of class size.

Teacher quality. One of the most powerful factors in students' academic success is their access to well-prepared teachers. Teacher quality, including teacher certification status, degree in field, and participation in high-quality professional development all have a significant impact on student outcomes (Betts, Rueben, & Danenberg, 2000; Darling-Hammond & Youngs, 2002; Ferguson, 1988). Improving the quality of teaching in the classroom has the greatest impact on students who are most educationally at risk. In some instances, the effects of well-prepared teachers on student achievement are stronger than the influences of student background factors, such as poverty, language background, and minority status (Fetler, 1997; Sanders & Rivers, 1996). Well-qualified teachers provide a wide range of teaching strategies: they ask questions that make students think and answer fully; they address students' learning needs and curriculum goals; they make subject matter accessible to diverse groups of students (Wenglinsky, 2002); and they make rigorous learning satisfying

and fun. Poorly qualified teachers spend more time on drill and practice (Carter & Doyle, 1987; Doyle, 1986). Moreover, well-prepared teachers of students of color and language minority students use strategies that bridge students' home culture and language with the knowledge and skills that matter at school. They demonstrate a valuing of all cultures in the academic curriculum (Ladson-Billings, 1994; Valenzuela, 1999).

Ferguson (1998) reviewed data from Texas in the 1980s and found that teachers with higher scores on the Texas teachers' test were more likely to produce significant gains in student achievement than their lower scoring counterparts. Goldhaber and Brewer (1997), in an analysis of NELS 88 data, showed a positive relation between teachers' degree in technical areas (math and science) and students' achievement. Haycock (1998) reviewed data that showed children of color, regardless of their socioeconomic level, are more likely to be taught by teachers with lower test scores and less academic preparation than White children. In addition, the quality of the teacher, measured by certification, quality of institution from which the teacher received his or her degree, and test scores, has been shown in a number of studies to have a significant impact on student performance. However, Wayne and Youngs (2003) argued, in their meta-analysis study, that in general, students learn more from teachers with higher test scores. However, it is important to remember that the synthesis of existing studies does not permit one to conclude which types of knowledge ought to be tested because a wide range of different types of licensure tests have been used in the past. Thus they suggested that future research on the

relationship between student achievement and teachers' performance on tests should examine those tests that are currently in use.

2.2 Learning Resources in the Form of Capitals

To understand the sources of the continuing gap, an approach focused on educational resources is useful. Although there were studies to link inequality of access to postsecondary education to family and school resources, as seen above, researchers have often focused too narrowly on the issue of college enrollment without sufficient attention to complex operation of resources. Thus, studies have provided very few clues about inequalities in learning resources at home and at school that may contribute to disparities in opportunities to enhance college access (Oaks, Mendoza, & Silver, 2006; Swail & Perna, 2002). This means that they failed to fully conceptualize educational resources according to their constituent parts and fully examine the extent to which resources differentially affect college enrollment by race/ethnicity.

To examine these issues, the current study drew on the notion of capitals (Bourdieu, 1986). Bourdieu's (1986) work provides the notion of resource perspectives as three factors: economic capital, social capital, and cultural capital⁶.

⁶ In 'The Forms of Capital' (1986), Bourdieu distinguishes between three types of capital:

- Economic capital: command over economic resources (cash, assets).
- Social capital: resources based on group membership, relationships, networks of influence and support. Bourdieu defines social capital as "the aggregate of the actual or

His conceptualization is grounded in theories of social reproduction and symbolic power. Although Bourdieu developed his theoretical positions decades ago, they remain instrumental tools in understanding inequity, as is evidenced by contemporary studies of education.

Bourdieu (1986) proposed that the amount of social capital to which an individual may gain access through social networks and relationships depends on the size of the networks as well as on the amounts of economic, cultural, and social capital that individuals in the network possess by each person whom he or she is connected. Bourdieu focused on the ways in which some individuals are advantaged because of their membership in particular groups (Portes, 1998).

Economic capital is an important factor. Thus, as noted earlier, SES has continued to draw researchers' interest due to its apparent correlation with inequity in learning environment. Some researcher (Paulsen & St. John, 2002; Perna, 2000, 2004, 2006; St. John & Asker, 2001) have argued that an economic approach to racial/ethnic group differences in college enrollment be expanded to include measures of social and cultural capital. Bourdieu's work argues that the most material types of capital – those which are economic in the restricted sense – can present themselves in the immaterial form of cultural capital or social capital and vice versa. Also, some researchers have recognized that family social and cultural capital may be more

potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance and recognition."

- Cultural capital: forms of knowledge, skills, education, and advantages that a person has, which give them a higher status in society. Parents provide their children with cultural capital by transmitting the attitudes and knowledge needed to succeed in the current educational system.

directly responsible constructs than SES for student achievement (Funkhouser & Gonzales, 1998; Lam, 1997; Lareau, 1987).

Thus, this study aimed to examine the effect of two other capitals, social capital and cultural capital, beyond economic capital that has been shown to influence college enrollment, and, importantly, how much these two capitals in both family and school contexts influence college enrollment. In this way, the analysis offers an extended empirical examination of the literature that seeks to shed new light on the ways of narrowing the gap among ethnic/racial groups.

Social capital

Bourdieu viewed social capital as a mechanism that the dominant class uses to maintain its dominant position (Lin, 2001b). Bourdieu defined social capital as the aggregate of actual or potential resources linked to possession of a durable network of essentially institutionalized relationships of mutual acquaintance and recognition.

This group identification provides members with the backing of the collectively owned capital. Relations may exist as material or symbolic exchanges. Social capital is made up of social obligations or connections and it is convertible, in certain conditions, into economic capital.

Social capital focuses on social networks and the ways in which social networks and connections are sustained (Morrow, 1999). Portes (1998) noted that social capital is acquired through an individual's relationships with other individuals, particularly through membership in social networks and other social structures.

Because social capital is based on resources accessed through social networks, it is dependent on the size and strength of the network and availability of different capital resources (Bourdieu, 1986). Educational achievement and social ties partially determine the levels of social capital accessible to students, which in turn provides assistance in obtaining additional education and making effective educational choices (Coleman, 1988). Bourdieu's social capital is decomposable into two elements: first, the social relationship that allows the individual to claim resources possessed by the collectivity, and second, the quantity and quality of those resources. Ultimately, Bourdieu sees social capital as the investment of the dominant class to maintain and reproduce group solidarity and preserve the group's dominant position (Portes, 1998).

Parents' involvement in their children's schooling is most often conceptualized as a form of social capital (Lee, 1993; McNeal, 1999; Yan & Lin, 2005). With respect to parental involvement in their children's education, there are at least three mechanisms through which children can benefit, as articulated by Domina (2005). First parental involvement socializes children; parents who are involved send a message to their children that education is important, and these children are more likely to value education themselves. Second, parental involvement provides parents with a means of social control; involved parents get to know other parents, teachers, and administrators who may then discuss their children's performance with them. Last, involved parents are privy to information about their children; if teachers tell parents their children are struggling, parents are in a better position to intervene (Turney & Kao, 2009).

Bourdieuian approach considers the parental involvement as a form of social capital (Dika & Singh, 2002). Dika and Singh (2002) argued that parental involvement promotes college enrollment by generating access to resources through dynamics of the triple relationship between (1) a student and her/his parents, (2) the relationship between the students' parents and school officials, and (3) the relationship between the student's parents and the student's friends' parents. Coleman more simply identified the ways in which parental involvement can build social capital and contends that parents' involvement in their child's schooling creates extra sources of social constraints to influence the child's behavior. Perna and Titus (2005) also suggested that parental involvement is positively related to college enrollment regardless of the level of school resources. Also, many studies argued that parents who maintain high educational expectations for their children become involved in school matters, discuss college plans with their children, and save for college costs (Flint, 1992, 1993; Henderson & Berla, 1994; Hossler & Vesper, 1993; Miller, 1997; Perna, 2000; Stage & Hossler, 1989).

Lin's (2001b) theory of social capital suggests that racial/ethnic group variations in college enrollment are attributable, at least in part, to racial/ethnic group differences in the types of resource that are available through a school's social networks. Lin assumed that social structures have a pyramidal shape in which the degree of access to and control over resources is positively related to an individual's position or level within the social hierarchy. Thus, groups that are most disadvantaged relative to other groups with higher social positions (e.g., African Americans and Hispanics relative to Whites) may also be similarly more disadvantaged in their

access to valued resources. This perspective predicts that, because of their disadvantaged position, African Americans and Hispanics have a greater need for resources that could help them ascend the pyramid structure. Yet, given that school resources are limited, groups higher up in the pyramid gain greater benefit (Lin, 2001b). This means that groups of African-American and Latinos are more concentrated in the lower part of the pyramid. This hypothesis is also consistent with work by Fries-Britt (1998) on high-ability Black students. Her qualitative research suggests that high-achieving Black students generally have few opportunities to establish relationships with other high achieving Black students during high school regardless of the racial/ethnic composition of the high school. Thus, positive academic peer influence is less on lower levels than on higher levels. Thus, Lin's perspective strongly suggests that variations across schools in the resources possessed by social networks and the limited extent of peer group level interactions limited are an important source of racial/ethnic differences in college enrollment across schools.

Cultural capital

Culturally prescribed values are the focus of another approach to this issue. The cultural approach to explaining class differences in educational attainment emphasizes more general values and predispositions toward intellectual pursuits. Bourdieu and Passeron (1979) argued that it is not only the parents' money, but the "cultural heritage" of French students from "privileged classes" that helps these students succeed at universities. They showed that these students spent less time on specific teacher-assigned projects and more time on general intellectual activities,

such as reading and going to the theater, concerts, operas, and so forth. Bourdieu and Passeron maintained that these students' dilettante attitudes, general knowledge of their classical heritage, and social skills helped them to acquire more easily the kind of knowledge required at universities and to know how to approach teachers properly, use teachers' advice, select classes, and so on.

The cultural capital theoretical framework of Pierre Bourdieu has been important in many of the new sociological studies that focus on how and why class status plays a role in educational achievement.

Cultural capital (Bourdieu, 1977a) is the property that middle and upper class families transmit to their offspring which substitutes for or supplements the transmission of economic capital as a means of maintaining class status and privilege across generations. Status groups are social collectives that generate or appropriate distinctive cultural traits and styles as a means to monopolize scarce social and economic resources (Weber, 1978). Elite status groups have appropriated educational credentials for the intergenerational transmission of social status and power (Bernstein, 1977). In other words, middle and upper class families highly value a college education and advanced degree as a means of ensuring continuing economic security, in addition to whatever money or financial assets can be passed along to their offspring.

Bourdieu maintained the cultural experiences in the home facilitate children's adjustment to school and academic achievement, thereby transforming cultural

sources⁷ into what he calls cultural capital (Bourdieu 1977a, 1977b). Bourdieu observed that those with high cultural capital have clear strategies of how much and what kind of schooling each generation should have. A student's disposition toward school is important because to maximize or conserve cultural capital one must be willing to consent to the investments in time, effort, and money that higher education requires. Cultural capital is precisely the knowledge that elites value yet schools do not teach. In the sense of this, with the complexity of the types of college choices in mind, college education might be one of a kind status resource or symbolic good in our society. The utility of cultural capital comes in using, manipulating, and investing it for socially valued and difficult-to-secure purposes and resources. Parents transmit cultural capital by informing offspring about the value and process for securing a college education, and its potential for conversion in the occupational attainment contest.

Cultural capital possessed by parents is consciously and unconsciously passed on to their children. These attitudes and behaviors are used to engage those institutions that hold capital to become more responsive to the needs of their students and parents, transmitting their children the values such as the importance of, and those processes of securing a college education. Individuals with socially restricted cultural capital may have lower educational aspirations, and self-select themselves out of particular situations (e.g., do not enroll in higher education), or they must

⁷ Cultural resources is in more general use specifically referring to cultural *heritage* resources.

“overperform” in order to compensate for their socially less -valued cultural resources (Lamont & Lareau, 1988).

Bourdieu also used the concept of habitus to refer to a deeply internalized, permanent system of outlooks, experiences, and beliefs about the social world that an individual gets from his or her immediate environment. According to Bourdieu (1977b), habitus is a common set of subjective perceptions held by all members of the same group or class that shapes an individual’s expectations, attitudes, and aspirations. Those aspirations are both subjective assessments of the chance for mobility and objective probabilities. They are not rational analyses, but rather are the ways that children from different classes make sensible or reasonable choices for their own aspirations (Macleod, 1987). They do so by looking at the people who surround them and observing what is considered good or appropriate across a variety of dimensions. To elaborate on Bourdieu’s work, through proposing the concept of entitlement, students believe that they are entitled to a particular kind of collegiate education based on their family’s habitus or class status.

The related concept of habitus has been used in college choice research to explain how cultural capitals influence differences in college enrollment across racial/ethnic groups. A student’s interpretation of acceptable actions, or habitus will vary, at least in part, based on his/her race/ethnicity (Hovat, 2001). Consistent with this perspective, Freeman’s (1997) qualitative study of the perceived barriers to the college enrollment of African Americans suggests that many African American students are not encouraged to pursue college by their parents or other adults.

Bourdieu and Passeron (1979) claimed that educated parents view school achievement as a reward for investing their resources (i.e., cultural capital) leading to economic success through well paid occupation for their children. Thus, educated parents strongly emphasize that their children get the most education possible. Also, educated parents are likely to possess knowledge of ways and dispositions to offer direct help with school activities and to stimulate their children's interest in school, and to implant their expectations for further education in their children (Jacob & Bleeker, 2004; Jacobs & Harvey, 2005; Reay, 2004; Zady & Portes, 2001). Educated parents thus became instrumental in supporting school environments that "push" students toward high achievement, in that such environments reflect their own backgrounds and the high post-secondary aspirations and expectations they hold for their children. According to Jacobs and Harvey (2005), parental education and aspirations for their children's education become strong determinants of school achievement.

Many studies have looked into cultural values and predispositions-such as a competitive attitude, an analytic approach, locus of control, fatalism, and orientation toward the present, self-esteem, and educational aspirations-that may support or depress the academic achievement of different ethnic groups (Fligstein & Fernandez, 1985; Gottfredson, 1981). In short, this approach assumes that parents from certain classes and ethnic groups provide their children with the social and intellectual skills and motivation that boost academic achievement.

Bourdieu's framework of cultural capital has been highly instructive for studies of social class and educational achievement rather than as a matrix of

racial/ethnic difference. He claimed that the cultural capital of middle and upper class students offers privileges in terms of economic security, organizational contexts, and personal support systems. According to Bourdieu, the families of each social class transmit distinctive cultural knowledge thus creating a divide between the children of upper and lower class families (Bourdieu, 1977). In this study, I adapted his perspective to extend the cultural capital concept to include racial/ethnic differences because of the need to better understand the dynamics that exist between race and culture that might explain the disparity in college enrollment across racial/ethnic groups. Because cultural capital can be produced through social relationships to expectations, norms, and obligation, cultural capital in the context of this study refers to the high academic standards set by parents or other adults, as well as the supportive relationships between adults and children in order to promote positive behavior and attitudes of children for their successful performance in school.

Social and Cultural capitals within an institutional perspective

Bourdieu's work (1977, 1986, 1991; Bourdieu & Passeron, 1977) is useful in helping to conceptualize how one views cultural and social capital within an institutional perspective. Bourdieu (1977a, 1977b; Bourdieu and Passeron, 1977) argued that schools draw unevenly on the social and cultural resources of members of the society. Social contexts are flexible and dynamic sites where interaction helps facilitate the accumulation, development, and exchange of many kinds of cultural and social capital. Bourdieu (1986) stated that "social capital" leads to a unique

relationship through participation in networks of affiliation that facilitates access to cultural capital. Tutoring programs, enrichment activities, and college counseling are kinds of social capital which schools make available to students. According to Lareau (1987), Bourdieu's perspective points to the structure of schooling and to family life and the dispositions of individuals to understand different levels of parental participation in schooling. The standards of schools are not neutral; their requests for parental involvement may be laden with the social and cultural experiences of intellectual and economic elites.

Furthermore, Bourdieu maintained that the cultural experiences in the home facilitate children's adjustment to school and academic achievement, thereby transforming cultural resources into cultural capital (Bourdieu, 1977a, 1977b). Cultural capital becomes institutionalized as shared status cultural signals (e.g. attitudes, preferences, and behaviors) (Lareau & Lamont, 1988). Providing students in disadvantaged schools access to institutional signals and cultural tools can lead to the awareness of the value of cultural capital. Thus, tutoring and college counseling, for instance, can be specific means to help underserved schools and students acquire the capital necessary for school success and college admission (Yonezawa et al., 2002).

Stanton-Salazar argued that such institutional agents as teachers, counselors, and middle-class peers provide ready access to resources and opportunities including information about college and help with college-admissions requirements. However, institutional structures often ignored the inability of working-class minority students to develop "trusting" relationships with institutional agents, due to unshared social norms. Structures that may restrict the growth of social capital for working-class

minority students include the focus of schools on bureaucratic processes, the dual role of teachers and counselors as mentors and gatekeepers, and the short-term duration of personal interactions (Stanton-Salazar, 1997).

Coleman, Hoffer, and Kilgore (1982) reported that students in Catholic and other private schools achieved at a higher level in math and verbal skills than students in public schools largely because of the transmission of common messages, expectations, and norms shared by school.

2. 3. Conceptual Model for the Present Study and Research Questions

I designed a comprehensive conceptual model in the forms of capital. The conceptual model assumed that students may draw on multiple forms of capital in the college enrollment process within the multiple home-school contexts. In addition, it assumed that paths to student college enrollment may vary across racial/ethnic groups, based on differences in family and school resources. By identifying the cultural and social factors simultaneously that differentiate the overrepresented and underrepresented groups, particular attention will be given to just how these effects may differ for disadvantaged students.

I approached the situation outlined above by looking for two factors-social capital and cultural capital- beyond SES-related research, as operating on two resource levels: family level and school level, as shown in Figure 1. Figure 1 illustrates how these capitals work to influence student college enrollment. The

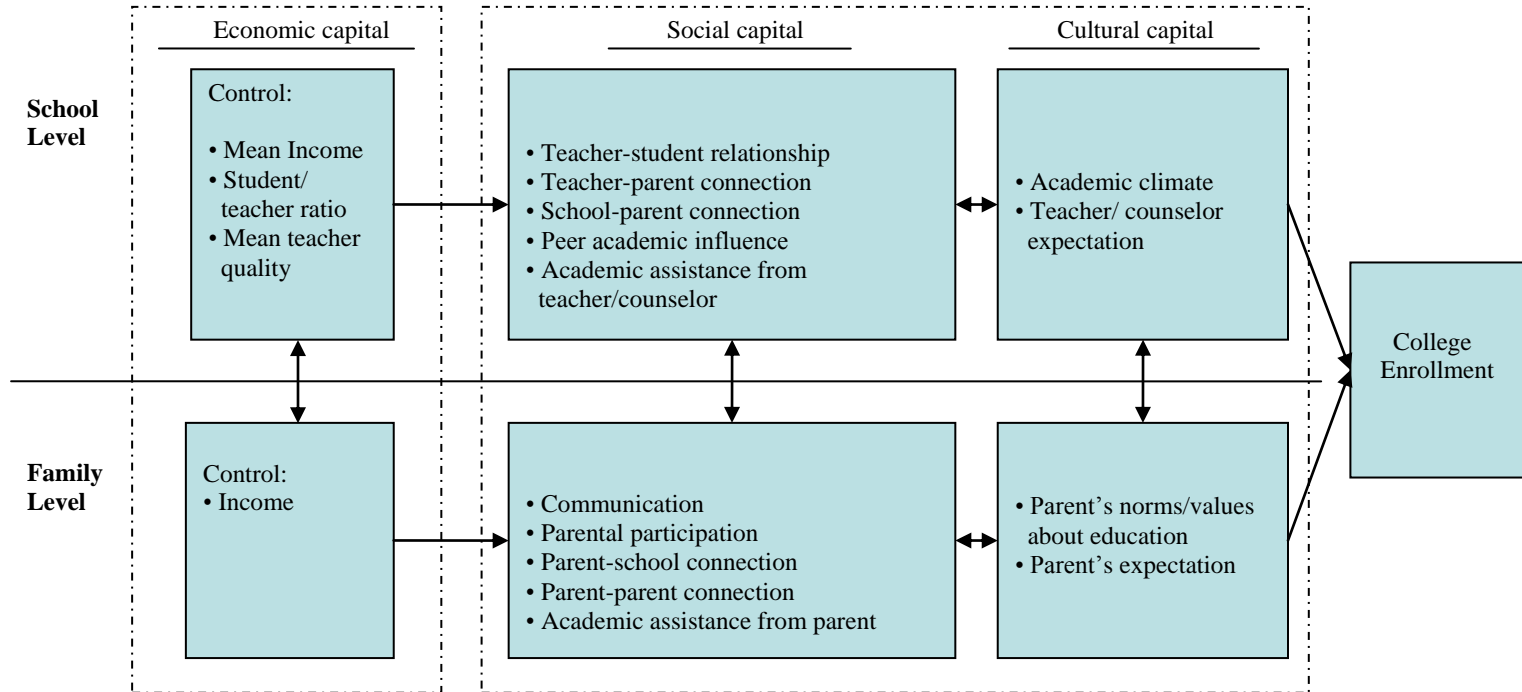
conceptual model shows that college enrollment is the result of both family factors and school factors.

Research Questions:

Based on the literature review, this study will address the following questions:

1. How large are differences in college access among racial/ethnic groups?
2. Are there racial/ethnic differences in social and cultural capitals at the school and family levels?
3. To what extent do family and school variables mediate the effects of race on college access?
4. Are there differences in effects of school and family variables on college access among racial/ethnic groups?

Figure 1: Conceptual Model



CHAPTER III

METHODS

This section begins by describing the Educational Longitudinal Study (ELS) data, sample selection procedures, and the variables selected. The appropriateness of the selected variables for the present inquiry is also presented. Next is a proposed conceptual framework for understanding the processes by which capitals affect college enrollment. Specifically, access to capitals at the family and school levels may help explain the differential rates of college enrollment for various racial/ethnic groups. The proposed framework was used to provide a rationale for both variable selection and analytic methodology in the study. The final sections describe the multinomial multilevel model.

3.1 Data and Sample

This study used recently released data from the Education Longitudinal Study (ELS). The ELS is a national survey of a representative sample of U. S. high school sophomores collected by the National Center for Educational Statistics⁸ in 2002. ELS: 2002 is a longitudinal study, in which the same units (schools and students) were surveyed repeatedly over time. The students surveyed were followed and interviewed on two-year intervals (in 2004 and 2006) and academic transcript data were collected from their high school in 2005, about one year after they were scheduled to graduate. ELS: 2002 is an integrated, multilevel study that involves multiple respondent

⁸ See <http://nces.ed.gov/surveys/els2002/>

populations. The respondents include students and their parents, teachers, and schools.

The base-year interview was carried out in a nationally representative probability sample of about 750 public, Catholic, and other private schools in the spring term of the 2001-02 school year. Of the 17,600 eligible selected sophomores, about 15,400 completed a base-year questionnaire, for a weighted response rate of 87 percent. The first follow-up interview took place in the spring of 2004, when most sample members were seniors in high school. It included 16,500 students, of whom 15,000 participated, for a weighted response rate of 89 percent. Almost 1 year after most sample members had graduated from high school, transcripts were requested for all sample members who participated in at least one of the first two student interviews. At least one transcript was collected for 14,900 of the 16,400 eligible students, for a weighted response rate of 91 percent. The second follow-up interview took place in 2006, approximately 2 years after most sample members had graduated from high school. Of the 15,900 eligible sample members, 14,200 participated in the second follow-up, for a weighted response rate of 88 percent (Ingles et al, 2007).

I used data from the base year (conducted in 2002) through the second follow-up surveys (conducted in 2006).⁹ Since the study focused on the transition from high school to college, the sample was limited to students who either graduated from high school or earned a GED and received a certificate of attendance or other equivalency. The sample was also restricted to have only four racial/ethnic groups: White, Black,

⁹ The F2-BY panel was used. This is a longitudinal sample of students who completed the survey at the base year and second follow up. The appropriate student and school sample

Hispanic, and Asian. The other racial/ethnicity groups were not included. To have adequate within-school sample size, I removed schools with less than five students sampled. This restriction was used to assure reasonable reliability estimates of within school parameters. The resulting data, drawn from the ELS sample consisted of 11,842 students from 731 regular public and private schools (within-school sample size averaged 16.20 students, ranging from 5 to 43 students), were used in the analysis. Table 3.1 summarizes the case deletion procedure.

Table 3.1 Summary of Case Deletion to Final Sample

Restriction	Cumulative Number of Cases And (Percentage of total)
Original number	16,197 (100.0)
F2 Panel	14,011 (86.5)
High school completion	13,178 (81.4)
White, Black, Hispanic, and Asian	11,906 (73.5)
Attended H.S. more than 5 students per each school	11,842 (73.1)
Final sample	11,842

ELS data is appropriate for this study of how different types of capital affect college enrollment at family and school levels because the data is gathered from a nationally representative sample of high school students. The data also includes an array of information gathered from students' teachers, parents, and school administrators. The ELS data allows one to map the transition of the majority of the cohort members out of school when most graduate from high school in 2006, and has information on the types of college they attended. In addition, ELS: 2002 allows for modeling students' college enrollment at the critical transition experienced by

weights were be applied so that the results generalize to 2002 10th graders and 2002 public/

students as they proceed through high school and into postsecondary education, which is the focus on the proposed study. ELS:2002 students have completed high school, the transition from high school to postsecondary education can be examined with the help of the data collected in 2006. The recentness of the ELS dataset makes the results more relevant to present-day policy issues.

Study sample selection

This study focused on all sample students who 1) responded in the second follow-up (2006); or who responded in the second follow-up and also had key base-year data collected in the first follow-up, weighted from spring 2002 10th grade students to 2006 (F2BYWT). The data were weighted using the variable F2BYWT to yield population estimates. Weighting accounted for differences in sample selection and response rates.

3.2 Variables and Data Editing

Dependent variables. At the student level, one measure of post-secondary school access was selected as the outcome. The dependent variable was the level of offering of first postsecondary institution (F2PS1LVL), indicating the level of the respondent's first-attended postsecondary institution during the period between 2004 and 2006. This variable is a three-category measure: (1) less-than-2-year school; (2) 2-year college/university; (3) 4-year college/university. Several studies (Alexander,

private high schools.

Holupka, & Pallas, 1987; Thomas, Alexander, & Eckland, 1979) focused on the distinction between two-year and four-year colleges.

Independent variables. Variable selection for independent variables was based on the conceptual framework presented in Figure 1. At the student level, four racial/ethnic groups were studied: (1) White; (2) Black; (3) Hispanic; (4) Asian. An indicator variable for each ethnicity was created and each of the variables was binary-coded with one indicating that the respondent was White, Black, Hispanic, or Asian respectively, and zero otherwise.

The sample size for the four groups is as follows: White (N= 7,171), Black (N= 1,013), Hispanic (N= 1,048), and Asian (N= 694). One of the family-level predictor variables, income, was used for measuring the economic capital. Income was a composite scale that encompassed total family income from all sources in the year 2001. Family-level independent variables for social capital consisted of five variables. The first variable, following the work of Perna and Titus (2005), was communication, measured by parent-student discussions about education-related issues. In the ELS data set, six questions asked respondents about parent-student communication. The measure of the parent-student communication about education-related issues was a composite factor comprised of six student-reported variables that reflect the frequency of discussions regarding the student's selection of courses, school activities, topics studied in schoolwork, grades, plans to take the SAT or ACT, and applications to college.

The second variable, according to Coleman (1988), was parental participation, a form of social capital that may promote college enrollment. Parental participation

was measured by parental participation of the student's school. Parental participation was a composite factor comprised of six parent-reported variables that reflect the parent's participation of school organization and school activities.

The third variable was parent-school connection, measured by the parent's connection with school. Parent-school connection about school related issues was a composite factor that comprised of six parent-reported variables. These included the connections regarding student's plans, course selection, homework, school program, fundraising/volunteer work, information for records.

The fourth variable was parent-parent connection, a composite factor that was comprised of six parent-reported variables; these reflect the connection between student's parent and his/her friend's parent, and the experience of receiving advice about education-related issues or favor which may be beneficial. Parent-parent connection was measured by how parent connected with other parents.

The last and fifth variable was academic assistance from parent, a composite factor composed of four parent-reported variables that were measured by parent's advice and help for student's school work, selecting course or programs, plan for college entrance exams, and applying to college/school after high school.

According to Bourdieu and Passeron (1979), family-level independent variables for cultural capital consisted of two variables: parent's norms/values about education and parent's expectation. Parent's norms/values about education were measured by the parents' monitoring homework or report card and family rules for GPA or homework. Parental expectation was measured by a parent's desire and

expectation for their student's education. Parental expectation was a composite factor that was comprised of four student-reported variables.

Three school level predictors were used. First, the mean school income (Income 2) was aggregated from sample students' income. The second variable was the student/teacher ratio, a composite of student/teacher ratio which was taken from the school file. The third variable was mean teacher quality which is a percent of excellent teachers.

School level independent variables were based on Falsey and Heyns (1984) and McDonough (1997). School level social capital consisted of five variables. The first variable was teacher-student relationship, a composite factor measured by the relationship between teacher and student. The second variable was teacher-parent connection, a factor composite that was comprised of four teacher-reported variables that reflect whether the teacher spoke to student's parent about poor performance, disruptive behavior, not doing homework, and absenteeism. The third variable was school-parent connection, a factor composite that is comprised of six parent-reported variables that reflect whether the school contacted student's parent about school program, student's plan after high school, course selection, fundraising/volunteer work, and helping with homework. The fourth variable was peer academic influence, a factor composite that is comprised of three student-reported variables about importance of friends. The fifth variable was the academic assistance from teacher/counselor, a factor composite that comprised of two student-reported variables that reflect whether student went to teacher or counselor for college entrance information.

School level cultural capital was composed of two variables. One variable was academic climate, measured by the academic press by school or teachers. Academic climate is a factor composite that is comprised of five school administrator-reported variables that reflect the student's morale/ spirit, and teacher's press for the student's achievement. The other one is teacher/counselor expectation, a factor composite that is comprised of two variables that reflect desires and expectation for student's education by teachers and counselors.

Control variables: Before looking for significant influences on inequalities in resources at the family- and school-levels, it is important to distinguish between the influence of the economic context underlying each level and the influence of resources. The economic variable at family level is the total family income from all sources 2001-composite and the economic variable at school level is the mean of income, composite student/teacher ratio, and percent of excellent teachers. Thus economic variables at each level will be controlled.

Table 3.2 presents variables at the two levels and their descriptive statistics.

Table 3.2
Variable Definitions and Descriptive Statistics for Samples

Variable name	M	SD	Description (ELS variable label)
Family-level variables (N= 11,842)			
<i>Demographic</i>			
White	0.69	0.48	(BYRACE=7)
Black	0.13	0.34	(BYRACE=3)
Hispanic	0.14	0.35	(BYRACE=4,5)
Asian	0.10	0.30	(BYRACE=2)
<i>Economic capital</i>			
Income	9.21	2.37	Total family income from all sources 2001-composite
<i>Social capital</i>			
Communication	0.00	1.00	Standardized principal component score
Parental participation	0.00	1.00	Standardized principal component score
Parent-school connection	0.00	1.00	Standardized principal component score
Parent-parent connection	0.00	1.00	Standardized principal component score
Academic assistance from parent	0.00	1.00	Standardized principal component score
<i>Cultural capital</i>			
Parental norms/values	0.00	1.00	Standardized principal component score
Parental expectation	0.00	1.00	Standardized principal component score
School-level variables (N= 731)			
<i>Economic capital</i>			
Mean income	9.21	1.24	Mean total family income from all sources 2001-composite (BYINCOME)
Student-teacher ratio	16.46	4.17	Composite student/teacher ratio (CP02STRO)
Mean teacher quality	38.48	25.53	% of excellent teachers (F1A37D)
<i>Social capital</i>			
Teacher-student relationship	0.00	1.00	Standardized principal component score
Teacher-parent connection	0.00	1.00	Standardized principal component score
School-parent connection	0.00	1.00	Standardized principal component score
Peer academic influence	0.00	1.00	Standardized principal component score
Academic assistance from teacher/counselor	0.00	1.00	Standardized principal component score
<i>Cultural capital</i>			
Academic climate	0.00	1.00	Standardized principal component score
Teacher/counselor expectation	0.00	1.00	Standardized principal component score

Note. Detailed descriptions of the composite variables are provided in Appendix B

Missing data

There were missing data randomly for several of the student-level variables and the school-level variables for the model. For each independent variable, missing values were recoded as system-missing. The mean of each continuous independent variable was used to impute missing values for composite variables.

3.3 Conceptual Model

To conduct the present study, a conceptual model was developed based on the existing theoretical and empirical research reviewed above. The framework is presented in Figure 1. The conceptual model is based on the idea that different forms of capitals -- economic, cultural, and social -- reflect aspects of an individual's learning resources and thus influence college enrollment. The conceptual model shows that social and cultural capital at family-level that an individual student possesses and at school-level that a student attends influence college enrollment.

In addition to this, the framework also suggested reciprocal relations among these capitals. At the family level (student level), the social and cultural capitals are a function of resources that individual students possess, from each family environment. At the school level, the model shows the aggregated social and cultural resources of each student's family in a school that is a function of resources of the school and its impact on the individual environment of the students in it. The economic resources affect social and cultural resources in both family and school levels and the social and cultural resources influence each other.

3.4 Analytic Strategy: Multinomial Extension of HLM

Because students in the ELS: 2002-06 data were collected with sampling designs that involved more than one level (i.e., sampling students from sampled schools), rather than a simple random sample (SRS) design, multilevel modeling was used for this study. Students from the same school in such designs were not independent of one another. If SRS is assumed when not true, the estimates might generate misleading results. Most commonly, this leads to a reduction in the variance of the test statistics and thus producing liberal results in significance tests (Bryk & Raudenbush, 1992). Based on the multilevel design of the ELS, multilevel modeling seemed especially applicable.

In addition, this method provides a way of dealing with the hierarchically-nested data structures. Statistically, the multilevel models are designed specifically to overcome the weakness that is a result of complex sampling design. In cases where variables exist at more than one level of analysis (e.g., a lower-level outcome and both lower-level and higher-level predictors), researchers have utilized dual option approach for data analysis.

The data used in this study, ELS:2002 includes information at multiple levels. It obtains information not only from students and their school records, but also from students' parents, teachers, and the administrators of their schools. This study used variables from multi-contexts and used the multinomial extension of HLM (Raudenbush & Bryk, 2002).

For this study, a two-level multinomial logistic regression model was employed that estimates the effects of family resources and school resources on a student's college enrollment, specifically, the level of offering of first postsecondary institution. To do this, several models were estimated: (a) Fully unconditional model, which contained only the outcome measure without any independent variables at either the family or school level. The purpose of this model was to address the question of whether significant variance exists between schools and justify the modeling of between-school variance, providing a baseline for comparisons with later models; (b) The second model introduced the racial/ethnic demographic predictor to the within-school model based on the conceptual model and then (c) a series of family level capital predictors were included into the model. This model would help examine which family resource had the strongest effect in high school students' college enrollment. And finally, (d) a series of school-level variables on between-school variations in the college enrollment were be examined by entering school level capital variables.

For both levels, economic capital variables, which can account for a substantial amount of the observed difference in college enrollment, were controlled by centering those predictors and leaving the remaining variables uncentered. In this study, five different models were analyzed for all ethnic groups and four different ethnic groups: White, Hispanic, African-American, and Asian. All five models involved the same set of family-level and school-level independent variables.

The ELS 2002 data file included a number of weights in order to compensate for unequal probabilities of selection of schools and students into the base-year

sample and adjust for the fact that not all schools and students selected for the sample actually participated. Because the software package HLM is unable to use student-level sample weights in the multilevel multinomial analysis; it will not be used. Instead, Mplus 5.21 (Muthen & Muthen, 2009) was used for this study.

Centering

In HLM contexts, researchers often center the independent variables.

Centering variables changes the value of the intercept as well and the value of the coefficient (Raudenbush & Bryk, 2002). In practice, centering variables is conducted by subtracting the mean value from the observed value for each subject. In multilevel models, the value that is subtracted may be the mean of the group that subjects belong to (schools in this case), or it could be the mean of the entire sample, which is referred to as the grand mean. The result of centering is that the adjusted variables have mean values of zero at either the group level or for the entire sample. The purpose of centering variables is to adjust the intercept. For example, when all the variables are centered about the grand mean, the intercept is the expected value for a person who is equal to the grand mean on all covariates (Raudenbush & Bryk, 2002, p.33).

All variables were centered around the school means to make the interpretation of HLM estimates more meaningful (see Bryk & Raudenbush, 1992). Moreover, the centering of student-level variables can influence the distribution of randomly varying outcomes at the school-level. Each of the school level continuous variables was centered around the grand mean. In this configuration the intercept can

be interpreted as the expected college enrollment rate for a student who was average on all of the continuous covariates (Raudenbush & Bryk, 2002).

Introduction of the model

For the case in which the outcome is a discrete outcome variable with more than two responses, one can consider a regression model with multinomial analysis. If we assume that the categories of the outcome variable, Y , are coded 0, 1, or 2. In the three outcome category model, we need two logit functions. The obvious extension was to use $Y=0$ as the referent or baseline outcome and to form logits comparing $Y=1$ and $Y=2$ to it.

To develop the model, assumed we have p covariates and a constant term, denoted by the vector, x , of length $p+1$ where $x_0=1$. The two logit function were denoted as

$$\begin{aligned} g_1(x) &= \ln \left[\frac{P(Y = 1 | x)}{P(Y = 0 | x)} \right] \\ &= \beta_{10} + \beta_{11}x_1 + \beta_{12}x_2 + \cdots + \beta_{1p}x_p \\ &= x' \beta_1 \end{aligned}$$

and

$$\begin{aligned} g_2(x) &= \ln \left[\frac{P(Y = 2 | x)}{P(Y = 0 | x)} \right] \\ &= \beta_{20} + \beta_{21}x_1 + \beta_{22}x_2 + \cdots + \beta_{2p}x_p \\ &= x' \beta_2 \end{aligned}$$

It follows that the conditional probabilities of each outcome category given the covariate vector are

$$P(Y = 0 | \mathbf{x}) = \frac{1}{1 + e^{g_1(\mathbf{x})} + e^{g_2(\mathbf{x})}},$$

$$P(Y = 1 | \mathbf{x}) = \frac{e^{g_1(\mathbf{x})}}{1 + e^{g_1(\mathbf{x})} + e^{g_2(\mathbf{x})}},$$

and

$$P(Y = 2 | \mathbf{x}) = \frac{e^{g_2(\mathbf{x})}}{1 + e^{g_1(\mathbf{x})} + e^{g_2(\mathbf{x})}}.$$

Following the convention for the binary model, we let $\pi_j(\mathbf{x}) = P(Y = j | \mathbf{x})$ for $j = 0, 1, 2$. Each probability is a function of the vector of $2(p+1)$ parameters

$$\beta' = (\beta'_1, \beta'_2).$$

A general expression for the conditional probability in the three category model is

$$P(Y = j | \mathbf{x}) = \frac{e^{g_j(\mathbf{x})}}{\sum_{k=0}^2 e^{g_k(\mathbf{x})}},$$

where the vector $\beta_0 = 0$ and $g_0(\mathbf{x}) = 0$.

CHAPTER IV

RESULTS

A series of statistical tests were carried out to find answers to the four research questions. The first question was to explore overall differences in college access among racial/ethnic groups (i.e., Whites, Blacks, Hispanics, and Asians). The second question examined racial/ethnic differences in more detail, focusing on social and cultural capitals at the school and family level. The third question attempted to identify specific family and school variables that mediate the effects of race on college access. The fourth question examined how effects of schools and family variables might differ on college access among four ethnic groups.

This chapter reports the findings pertaining to these four research questions. The results are reported in the following five sections. In the first section, the distributions of college enrollment are presented for the whole sample as well as for the racial/ethnic and income subgroups. The second section shows mean differences in economic, social, and cultural capitals across the four subgroups to measure the amounts of economic, social, and cultural capital factors at the family-level and the school-level on college enrollment. The third section illustrates the results of estimating a series of multinomial model to measure the effects of a broad range of family capitals and school capitals on college enrollment. The fourth section presents the results from a series of multinomial model with student-level and school-level predictor variables for each racial/ethnic group. The fifth and final section presents

the multinomial model across four different racial groups. This model includes the odds-ratios that were significantly different for particular groups.

4.1 Distributions of College Enrollment

The distributions of college enrollment are provided in Table 4.1 for all students as well as for subgroups based on racial/ethnicity and family income variables. As shown in Table 4.1, by 2006, which is two years after most 2002 tenth graders graduated from high school, more students were enrolled in a 4-year college (44.31%) than 2-year college (29.58%). The proportion of students not enrolled in either 2-year or 4-year college was the smallest (26.11%).

This general trend held up for Whites and Asians: Nearly half of Whites (48.95%) and more than half of Asians (57.53%) were enrolled in a 4-year college, with fewer students enrolled in a 2-year college (28.15% Whites and 28.75% Asians) or not enrolled in either 2-year or 4-year college (22.9% for Whites and 13.72% for Asians). Different patterns of results were found for Blacks and Hispanics. Among Blacks, although more students were enrolled in a 4-year college (37.76%) than a 2-year-college (28.86%), those who were enrolled in either 2-year or 4-year college were nearly as high (33.39%) as the 4-year-college enrollment. As for Hispanics, fewer students were enrolled in a 4-year college (26.46%) than in a 2-year college (36.80%), with a high proportion of students (36.74%) not enrolled in either 2-year or 4-year college

Table 4.1 also presents college enrollment patterns by family income. More students were enrolled in a 4-year college than a 2-year college for families whose

income was more than \$50,000, with the smallest proportions of students not enrolled in either 4-year or 2-year college. As for families with income more than \$20,000 but less than \$50,000, proportions of students enrolled in a 4-year (34.63%) and 2-year (32.51%) college were nearly identical. For students whose family income is less than \$20,000, the largest proportion of students were not enrolled in either 2-year or 4-year college (43.82%).

Table 4.1 Percentage of College Enrollment Rate by Race/ethnicity and Income

Characteristics	No college	2-year college	4-year college or university enrollment
Total	26.11	29.58	44.31
Racial/ethnicity			
White	22.90	28.15	48.95
Black	33.39	28.86	37.76
Hispanic	36.74	36.80	26.46
Asian	13.72	28.75	57.53
Family income			
\$0-20,000	43.82	32.13	24.06
\$20,001-50,000	32.86	32.51	34.63
\$50,001-100,000	19.09	29.65	51.25
\$100,001 or more	8.58	19.04	72.38

Note: Results are weighted (weighted variable= F2BYWT) to yield population estimates

4.2 Descriptive Statistics

The descriptive statistics of all measurement variables are provided in Table 4.2 for the total sample. Table 4.2 shows that students in the 10th grade had an average family income of 9.11 ranging from 1 to 12. The mean for communication is 13.00 and the SD is 2.736. Participation had a mean of 9.491 and a SD of 2.018. Parent-school connection had a mean of 11.043 and a SD of 2.841. Parent-parent connection had a mean of 21.689 and a SD of 2.277. Academic assistance from parents had a mean of 9.559 and a SD of 1.973. Parent's norms/values about expectation had a mean of 3.290 and a SD of 0.893.

The average school income is 9.06, ranging from 1.17 to 5.58. The mean for student-teacher ratio is 17.051 and the SD is 4.009. The mean for mean teacher quality is 17.051 and the SD is 4.009. Teacher-student relationship had a mean of 11.584 and a SD of 0.639. Teacher-parent connection had a mean of 4.718 and a SD of 0.321. Peer academic influence had a mean of 7.218 and a SD of 0.370. Academic assistance from teacher/counselor had a mean of 2.765 and a SD of 0.227. Academic climate had a mean of 19.405 and a SD of 2.994. Academic assistance from teacher/counselor had a mean of 2.765 and a SD of 0.227.

Table 4.2 Means and Standard Deviations of the Variables: Overall Group (N=11,842)

Variable Name	M	SD	Min.	Max.
Family-level				
<i>Economic capital</i>				
Income (\$1,000)	9.11	2.33	1.00	13.00
<i>Social capital</i>				
Communication	13.00	2.74	6.00	18.00
Participation	9.49	2.02	6.00	14.00
Parent-school connection	21.69	2.28	6.00	24.00
Parent-parent connection	11.04	2.84	6.00	20.00
Academic assistance from parents	9.56	1.97	4.00	13.00
<i>Cultural capital</i>				
Parent's norms/values about education	5.48	1.26	4.00	12.00
Parent's expectation	3.29	0.89	2.00	4.00
School-level				
<i>Economic capital</i>				
Mean income	9.06	1.17	5.58	12.24
Student/ teacher ratio	17.05	4.01	4.39	40.00
Mean teacher quality	37.54	19.69	1.00	97.73
<i>Social capital</i>				
Teacher-student relationship	11.58	0.64	8.78	15.44
Teacher-parent connection	4.72	0.32	4.00	6.17
School-parent connection	8.32	0.84	6.49	17.31
Peer academic influence	7.22	0.37	5.75	8.50
Academic assistance from teacher/counselor	2.77	0.23	2.20	3.57
<i>Cultural capital</i>				
Academic climate	19.41	2.99	6.00	25.00
Teacher/counselor expectation	3.10	0.29	2.00	4.00

Note: Results are weighted (weighted variable= F2BYWT) to yield population estimates

To answer the second research question about racial/ethnic differences in social and cultural capitals at the school and family levels, the means and standard deviations of the measures of social and cultural capital variables at both levels were broken down into four different racial and ethnic groups (see Table 4.3). Analysis of variance (ANOVA) was used to test for significant differences between groups for all

of the variables listed on Table 3. The results from the ANOVA test indicated that there was a statistically significant difference between groups for all the variables at $p < 0.001$.

Table 4.3 shows that White students had the highest means for most of social and cultural capital measures: family income, participation, parent-parent connection, mean school income, school-parent connection, academic climate, and teacher/counselor expectation. Asians had the highest means for parent-school connection, parents' norms/values, parent's education, mean teacher quality, peer academic influence, and academic assistance from teacher/counselor. The means for Black and Hispanic students tended to be lower compared to those of White and Asian students. Black students had the highest means for communication, academic assistance from parents, and teacher-parent connection. Hispanic students had a highest mean for one factor: teacher-student relationship.

For family income, on average, Whites tended to have a higher income family background compared to Blacks and Hispanics with mean difference (MD) 1.92 and 1.90 respectively. On the other hand, Asians had a lower family income background compared to Whites (MD: 1.05) but higher family income background compared to Blacks (MD: 0.87) and Hispanics (MD: 0.85). In other words, White and Asian students had higher means for family income; whereas, Blacks had lower means. Hispanic students had slightly higher mean income than Black students (MD: 0.02).

Among the social capital measures at the family-level, for communication, Black students were slightly higher than White students with the mean differences of 0.15 MD. For participation, on average, White students were higher than Black

students (MD: 0.23), Hispanic students (MD: 1.04), and Asian students (MD: 0.85). For parent-school connection, Asian students and Hispanic students were slightly higher than White students with the mean differences of 0.77 and 0.40, respectively; whereas, Black students were slightly lower than White students with the mean differences of 0.08. For parent-parent connection, White students were higher than the other racial groups (0.47 MD for Black students; 1.22 MD for Hispanic students; 0.94 MD for Asian students). For academic assistance from parents Black students were higher than White students with the mean difference of 0.49.

Among the cultural capital measures, for parent's norms/values about education, Asian students were the highest. Similar patterns are seen for parent's expectation. In other words, Asian students also had the highest mean score.

Table 4.3 Means and Standard Deviations of the Variables: For Each Racial and Ethnic Group

Variable Name	White		Black		Hispanic		Asian	
	M	SD	M	SD	M	SD	M	SD
	(N=7,171)		(N=1,013)		(N=1,048)		(N=694)	
Family-level								
<i>Economic capital</i>								
Income (\$ 1,000)	9.65	2.00	7.73	2.55	7.75	2.37	8.60	2.73
<i>Social capital</i>								
Communication	13.06	2.78	13.21	2.59	12.59	2.55	12.85	2.76
Participation	9.72	2.02	9.49	1.98	8.68	1.89	8.87	1.86
Parent-school connection	21.64	2.26	21.56	2.44	22.04	2.18	22.41	1.70
Parent-parent connection	11.34	2.84	10.87	2.81	10.12	2.73	10.40	2.57
Academic assistance from parents	9.51	1.92	10.00	1.95	9.43	2.13	9.29	2.03
<i>Cultural capital</i>								
Parent's norms/values about education	5.54	1.26	5.23	1.13	5.26	1.21	5.85	1.50
Parent's expectation	3.33	0.89	3.15	0.88	3.16	0.92	3.43	0.85
School-level								
<i>Economic capital</i>								
Mean income	9.43	0.99	8.05	0.96	8.01	1.11	8.78	1.33
Student/ teacher ratio	16.32	3.60	17.16	4.02	19.74	4.44	20.32	4.32
Mean teacher quality	38.46	20.89	34.41	16.51	32.93	15.43	39.17	19.24
<i>Social capital</i>								
Teacher-student relationship	11.61	0.64	11.37	0.71	11.64	0.59	11.53	0.50
Teacher-parent connection	4.70	0.32	4.85	0.36	4.65	0.28	4.68	0.25
School-parent connection	8.37	0.89	8.25	0.73	8.16	0.63	8.16	0.61
Peer academic influence	7.20	0.38	7.29	0.32	7.21	0.34	7.34	0.35
Academic assistance from teacher/counselor	2.75	0.23	2.80	0.21	2.80	0.20	2.85	0.25
<i>Cultural capital</i>								
Academic climate	19.69	2.91	18.85	2.95	18.22	3.42	19.50	2.94
Teacher/counselor expectation	3.12	0.29	3.09	0.28	3.05	0.27	3.07	0.27

Note: Results are weighted (weighted variable= F2BYWT) to yield population estimates

At the school-level, the mean income was the highest for Whites and the lowest for Hispanics, with the mean difference of 1.42. Asians had the highest mean score on student/teacher ratio and White students had the lowest mean score, with the difference of 4.00. For mean teacher quality, Asian students were higher than White students with the mean difference of 0.71.

The mean score of the teacher-parent relationship of Hispanic students was higher than Whites', with the mean difference of 0.03. For teacher-parent connection, Black students had higher mean score than White students (0.15). For peer-academic influence Asian students were higher than White students with the mean difference of 0.14. Academic assistance from teacher/counselor had the same pattern with peer-academic influence measure. In other words, Asian students had the highest mean score in academic assistance from teacher/counselor. The difference in mean score between Asians and Whites was 0.10.

For academic climate and teacher/counselor expectation, White students had the highest mean academic climate; whereas, Hispanics had the lowest means, with the differences representing 1.47 MD for academic climate measure and 0.07 MD for teacher/counselor expectation.

4. 3 Multinomial Logistic Regression Model for Total Sample

The first step in the analysis involved estimating a series of multinomial model with family- and school-level predictor variables to answer the third research question: To what extent do family and school variables mediate the effects of race on

college enrollment? The estimated odds-ratios from the models are shown in Table 4.4.

The interpretation of the multinomial logit coefficients is facilitated by the use of odds-ratios. The odds-ratio represents the change in the odds of a particular type of enrollment relative to the reference category (not enrolled) that is associated with a one-unit change in an independent variable holding constant all other variables (Peng, So, Stage, & St. John, 2002). A value of one signifies no significant change in the odds or likelihood of college enrollment. An odds-ratio greater than one indicates an increase in the likelihood of enrolling in a particular type of college or university relative to not enrolling, whereas an odds-ratio less than one indicates a decreased in the likelihood of that type of college enrollment.

A series of models were developed and tested to measure the effects of a broad range of racial/ethnic demographic predictor, social and cultural capital factors at the family level, and social and cultural capital factors at the school level on college enrollment. The analyses controlled for economic capital (income, mean income, student-teacher ratio, and mean teacher quality).

First, I estimated a model that only included racial/ethnic demographic predictor (Model 1). Table 4.4 shows that, after controlling for the income variable, the odds of enrolling in a 4-year college are lower for Blacks (odds-ratio= 0.925) and Hispanics (odds-ratio=0.528) than for Whites. Blacks are 0.9 times less likely to enroll in a 4-year college than Whites. Hispanics are 0.5 times less likely to enroll in a 4-year college than Whites (significant at $p < 0.001$). In contrast, the odds of enrolling in a 4-year college are higher for Asians (odds-ratio= 1.781) than for Whites. Asians

are 1.8 times more likely to enroll in a 4-year college than Whites (significant at $p < 0.001$).

Blacks and Hispanics are less likely than Whites to enroll in a 2-year college (odds-ratio for Blacks = 0.904 and odds-ratio for Hispanics = 0.851). On the contrary, Asians are more likely than students of other racial/ethnic groups to enroll in a 2-year college (odds-ratio = 2.481). None of these differences, however, was significant for enrollment in a 2-year college.

Table 4.4 Relative Odds of Two-Year College Enrollment and Four-Year College Enrollment with Family-and School-level Predictors: 2006 (N=11,842)

	Model 1		Model 2		Model 3	
	Two-year Enrollment	Four-year Enrollment	Two-year Enrollment	Four-year Enrollment	Two-year Enrollment	Four-year Enrollment
Demographic						
African American	0.904	0.925	1.001	0.942	1.197	1.216*
Hispanic	0.851	0.528***	0.884	0.603***	1.035	0.736**
Asian	2.481	1.781***	2.330	1.892***	2.632	2.254***
Family-level						
<i>Social capital</i>						
Communication			0.930	1.147***	0.923	1.135***
Participation			1.044	1.192***	1.041	1.158***
Parent-school connection			1.108	1.074***	1.108	1.083***
Parent-parent connection			1.007	1.054***	1.004	1.047***
Academic assistance from parents			0.955	1.052***	0.957	1.063***
<i>Cultural capital</i>						
Parent's norms/values about education			1.020	1.216***	1.019	1.197***
Parent's expectation			1.081	1.440***	1.027	1.394***
School-level						
<i>Social capital</i>						
Teacher-student relationship					0.857	1.137**
Teacher-parent connection					0.810	0.926*
School-parent connection					1.065	1.033
Peer academic influence					1.409	1.079*
Academic assistance from teacher/counselor					0.706	1.016
<i>Cultural capital</i>						
Academic climate					0.870	1.094*
Teacher/counselor expectation					1.231	1.083
<i>Controls</i>						
Income	0.993	1.316***	1.002	1.229***	0.956	1.143***
Mean income					1.395	1.395***
Student/ teacher ratio					1.104	0.906**
Mean teacher quality					0.922	1.063

* $p < .05$; ** $p < .01$; *** $p < .001$

The next model (Model 2) added a series of social capital predictors and cultural capital predictors at the family level. When controlling for the economic capital variable and racial/ethnic demographic predictor, all of the family-level social capital and cultural capital variables were significant predictors of 4-year college enrollment. In other words, all of the family-level measures of social capital and cultural capital variables were related to the odds of enrolling in a 4-year college even after taking into account economic capital variable (income) and racial/ethnic predictor.

A review of the statistically significant odds-ratios from Table 4.4 shows that the odds of enrolling in a 4-year college relative to not enrolling increased with frequency of communication (odds-ratio = 1.147), participation (odds-ratio = 1.192), parent-school connection (odds-ratio = 1.074), parent-parent connection (odds-ratio = 1.054), academic assistance from parents (odds-ratio = 1.052), parent's norms/values about education (odds-ratio = 1.216) and parent's expectation (odds-ratio = 1.440). In contrast, measures of social capitals and cultural capitals at family-level were not related to the odds of enrolling in a 2-year college.

The final model (Model 3 in Table 4.4) introduced school-level capital measures and examined the effects of social capital and cultural capital measures at school level after controlling for racial/ethnic variable, family-level capital variables, and school economic capital variables. In terms of school-level effects, Table 4.4 shows that some school level capitals were significant predictors of a 4-year college enrollment after controlling for racial/ethnic variable, economic capital predictors (both at family and school levels) variables, and family-level capital variables. Three

measures of social capital (teacher-student relationship, teacher-parent connection, and peer academic influence) and one measure of cultural capital (academic climate) were significant predictors of a 4-year college enrollment. Teacher-student relationship (1.137) and peer academic influence (1.079) were positively related to enrollment in a 4-year (odds-ratio = 1.137) institution, while teacher-parent connection was negatively related to the likelihood of enrolling in a 4-year college (odds-ratio = 0.926). Academic climate was positively related to enrollment in a 4-year (odds-ratio = 1.094).

4. 4 Multinomial Logistic Regression Model for Each Racial Group

To answer the fourth research question, there are differences in effects of school and family variables on college enrollment among racial/ethnic groups, the multinomial models for each racial/ethnic group were estimated.

4.4.1 Whites

First, I estimated a model that included a series of family capital predictors (Model 1). When controlling for economic variable (income), five of the social capital variables and two of the cultural capitals were significant predictors of a 4-year college. This suggests that family-level capital variables influence 4-year college enrollment among White students.

A review of the statistically significant odds-ratios showed that the odds of enrolling in a 4-year college, relative to not enrolling, increased with the frequency of parents' communication with the student about education-related topics (odds-ratio =

1.146), participation (odds-ratio = 1.204), parent-school connection (odds-ratio = 1.076), parent-parent connection (odds-ratio = 1.075), academic assistance from parents (odds-ratio = 1.057), and parent's norms/values about education (odds-ratio = 1.265), and parent's expectation (odds-ratio = 1.420).

The second model examined the effects of school capital factors. When controlling for family capital variables and school economic variables (mean income, student/teacher ratio, and mean teacher quality), teacher-student relationship and peer academic influence were significant predictors of a 4-year college enrollment (odds-ratio = 1.108; odds-ratio = 1.085, respectively). In other words, teacher-student relationship and peer academic influence are related to the likelihood of enrolling in a 4-year college.

In terms of 2-year college enrollment, none of family capital measures had significant effects on 2-year college enrollment. At the school-level, Academic assistance from teacher/counselor was a statistically significant negative predictor for 2-year college enrollment (odds-ratio = 0.524). In other words, academic assistance from teacher/counselor decreased the likelihood of enrolling in a 2-year college. None of cultural capital measures at school level was significant predictor of a 2-year college enrollment.

Table 4.5 shows that the economic capital measures at the family and school level were related to the likelihood of enrolling in a 4-year college. In contrast, the economic capital measures were not related to the likelihood of enrolling in a 2-year college. In other words, students from high income families (odds-ratios = 1.156) were more likely to enroll in a 4-year college than students from low income families.

Also students who attended high schools with high average levels of family income (odds-ratio = 1.656) and with the qualified teachers (odds-ratio = 1.084) were more likely to enroll in a 4-eyar college than they were to not enroll.

Table 4.5 Relative Odds of Two-Year College Enrollment and Four-Year College Enrollment with Family-and School-level Predictors for White Students (N=7,171)

	Model 1		Model 2	
	Two-year Enrollment	Four-year Enrollment	Two-year Enrollment	Four-year Enrollment
Family-level				
<i>Social capital</i>				
Communication	0.978	1.146***	0.957	1.136***
Participation	1.047	1.204***	1.076	1.172***
Parent-school connection	0.993	1.076***	0.954	1.093***
Parent-parent connection	1.052	1.075***	1.049	1.069***
Academic assistance from parents	0.773	1.057**	0.770	1.070***
<i>Cultural capital</i>				
Parent's norms/values about education	0.923	1.265***	0.911	1.249***
Parent's expectation	0.958	1.420***	0.857	1.403***
School-level				
<i>Social capital</i>				
Teacher-student relationship			0.851	1.108*
Teacher-parent connection			0.830	0.936
School-parent connection			0.671	1.059
Peer academic influence			1.726	1.085*
Academic assistance from teacher/counselor			0.524*	1.009
<i>Cultural capital</i>				
Academic climate			0.940	1.031
Teacher/counselor expectation			1.741	1.062
<i>Controls</i>				
Income	0.991	1.292***	0.923	1.156***
Mean income			1.530	1.656***
Student/ teacher ratio			1.453	0.948
Mean teacher quality			0.883	1.084*

* $p < .05$; ** $p < .01$; *** $p < .001$

4.4.2 Blacks

In the first model, two measures of social capital (communication and parental participation to school) and one measures of cultural capital (parent's expectation) at family level were statistically significant positive predictors of a 4-year college enrollment (odds-ratios = 1.108; odds-ratios = 1.230; odds-ratio = 1.474, respectively). In the second model, which examined the effects of social capital measures and cultural capital measures at school level, only one measure of school social capital, peer academic influence was negatively related to the odds of enrolling in 4-year college in the fall after graduating from high school, even after statistically accounting for family capital measures and economic capital variable (odds-ratios = 0.790). This suggests that peer academic influence decreased the likelihood to enroll in a 4-year college with negative effect.

In terms of 2-year college enrollment, parent-parent connection at the family-level was related negatively to the likelihood of enrolling in a 2-year college. On the other hand, school-parent connection was positively related to the likelihood of enrolling in a 2-year college. Students who attended high schools that contacted their parents about school related issues more frequently were more likely to enroll in a 2-year college (odds-ratio = 7.292) than they were to not enroll.

The economic capital measure at the family-level was related to the likelihood of enrolling in a 4-year college. However, the economic capital measures at school-level were not related to the likelihood of enrolling in a 4-year college.

Table 4.6 Relative Odds of Two-Year College Enrollment and Four-Year College Enrollment with Family-and School-level Predictors for Black Students (N=1,013)

	Model 1		Model 2	
	Two-year Enrollment	Four-year Enrollment	Two-year Enrollment	Four-year Enrollment
Family-level				
<i>Social capital</i>				
Communication	0.856	1.108***	0.895	1.103***
Participation	0.853	1.230***	0.672**	1.226***
Parent-school connection	1.070	1.043	1.472	1.052
Parent-parent connection	0.619*	0.969	0.647**	0.966
Academic assistance from parents	1.693	1.019	1.818	1.035
<i>Cultural capital</i>				
Parent's norms/values about education	1.486	1.096	1.534	1.104
Parent's expectation	0.955	1.474***	1.632	1.386***
School-level				
<i>Social capital</i>				
Teacher-student relationship			0.483	1.126
Teacher-parent connection			0.369	1.023
School-parent connection			7.292**	1.020
Peer academic influence			1.304	0.790*
Academic assistance from teacher/counselor			0.925	1.095
<i>Cultural capital</i>				
Academic climate			2.085	1.222
Teacher/counselor expectation			0.953	1.306
<i>Controls</i>				
Income	0.850	1.185***	0.877	1.165***
Mean income			0.888	1.068
Student/ teacher ratio			2.658	0.917
Mean teacher quality			2.389	1.020

* $p < .05$; ** $p < .01$; *** $p < .001$

4.4.3 Hispanics

For Hispanics, most family social capital measures were positively related to the odds of enrolling in a 2- year college except the communication measure. Students whose parents participate in school activities, contact school and other parents, and assist their children academically were more likely to enroll in a 2-year college (odds-ratio = 1.607; odds-ratio = 1.710; odds-ratio = 1.280; odds-ratio = 1.303, respectively) than they were to not enroll. On the other hand, students who communicate with their parents often were less likely to enroll in a 2-year college (odds-ratio = 0.823).

However, communication was positively related to the likelihood of enrolling in a 4-year college (odds-ratio = 1.123). In other words, students who communicate with their parents often were more likely to enroll in a 4-year college rather than to enroll in a 2-year college. In addition to this variable, parental participation and expectation were positively related to the likelihood of enrolling in a 4-year college (odds-ratio = 1.128; odds-ratio = 1.283).

The next model (Model 2) examined the effects of social capital predictors. When controlling for family capital variables and economic variables, school-parent connection was a statistically significant negative predictor of either 2- or 4-year college enrollment. Academic climate was a statistically significant negative predictor of a 2-year college enrollment. Students who attended high schools with good academic climate were less likely to enroll in a 2-year college (odds-ratio = 0.443) than they were to not enroll. However, students who have good relationship with their teachers were more likely to enroll in a 4-year college than to not enroll in college.

Table 4.7 Relative Odds of Two-Year College Enrollment and Four-Year College Enrollment with Family-and School-level Predictors for Hispanic Students (N=1,048)

	Model 1		Model 2	
	Two-year Enrollment	Four-year Enrollment	Two-year Enrollment	Four-year Enrollment
Family-level				
<i>Social capital</i>				
Communication	0.823**	1.123***	0.920	1.130***
Participation	1.607***	1.128*	0.937	1.119**
Parent-school connection	1.710***	1.055	1.414	1.029
Parent-parent connection	1.280***	1.009	1.150	1.032
Academic assistance from parents	1.303**	1.040	1.007	1.050
<i>Cultural capital</i>				
Parent's norms/values about education	1.110	1.113	0.451**	1.072
Parent's expectation	1.101	1.283**	1.274	1.332***
School-level				
<i>Social capital</i>				
Teacher-student relationship			0.635	1.224*
Teacher-parent connection			0.713	0.858
School-parent connection			0.590*	0.808*
Peer academic influence			1.344	1.133
Academic assistance from teacher/counselor			2.469	1.025
<i>Cultural capital</i>				
Academic climate			0.443**	1.074
Teacher/counselor expectation			0.580	1.123
<i>Controls</i>				
Income	0.799***	1.122**	0.790	1.074
Mean income			5.234**	1.297**
Student/ teacher ratio			0.395**	0.884
Mean teacher quality			0.179	1.041

* $p < .05$; ** $p < .01$; *** $p < .001$

4.4.4 Asians

Model 1 shows the estimation of family-level capital variables.

Communication was a significant predictor of either 2- or 4-year college enrollment but its effects were in the opposite directions (odds-ratio for 2-year = 0.693; odds-ratio for 4-year = 1.123). That is, the communication measure increased the likelihood of enrolling in a 4-year college and decreased the likelihood of enrolling in a 2-year college enrollment among Asian students. Parent-school connection measure was related to the likelihood of enrolling in a 4-year college (odds-ratio = 1.130).

Two of the cultural capital variables, parental norms/values about education and parental expectation, were significant predictors of a 4-year college (odds-ratio = 1.220; odds-ratio = 1.410, respectively). This suggests that family cultural capital measures influenced 4-year college enrollment among Asian students.

The second model examined the effects of school-level capital variables. Peer academic influence and academic climate were significant predictors of 4-year college enrollment (odds-ratio = 1.183; odds-ratio = 1.200, respectively).

Academic assistance and academic climate were statistically significant negative predictors of a 2-year college enrollment. Those measures were negatively related to enrollment in a 2-year college in the fall after graduating from high school relative to not enrolling.

Table 4.8 also shows that school mean income was negatively related to the likelihood of enrolling in a 2-year college. In other words, students who attended high schools with high average levels of family income (odds-ratio = 1.656) were less likely to enroll in a 2-year college than they were to not enroll.

Table 4.8 Relative Odds of Two-Year College Enrollment and Four-Year College Enrollment with Family-and School-level Predictors for Asian Students (N=694)

	Model 1		Model 2	
	Two-year Enrollment	Four-year Enrollment	Two-year Enrollment	Four-year Enrollment
Family-level				
<i>Social capital</i>				
Communication	0.693**	1.123**	0.751*	1.129***
Participation	0.888	1.105	0.845	1.140**
Parent-school connection	1.167	1.130*	1.174	1.077
Parent-parent connection	1.139	1.032	1.166	1.015
Academic assistance from parents	0.382	1.014	0.443*	1.072
<i>Cultural capital</i>				
Parent's norms/values about education	0.616	1.220**	0.789	1.248***
Parent's expectation	0.052	1.410**	0.064	1.517***
School-level				
<i>Social capital</i>				
Teacher-student relationship			1.528	1.054
Teacher-parent connection			0.659	0.880
School-parent connection			2.006	0.973
Peer academic influence			1.036	1.183*
Academic assistance from teacher/counselor			0.156**	1.021
<i>Cultural capital</i>				
Academic climate			0.418*	1.200*
Teacher/counselor expectation			1.157	1.001
<i>Controls</i>				
Income	1.063	1.190***	1.643**	1.108**
Mean income			0.084**	1.200
Student/ teacher ratio			0.370	0.910
Mean teacher quality			0.556	1.041

* $p < .05$; ** $p < .01$; *** $p < .001$

4.5 Summary findings

The results of the multinomial models showed how the effects of the social and cultural capital factors differed across four racial/ethnic groups. Table 4.9 summarizes significant multinomial logistic regression estimates. The results revealed that the most consistent findings across the groups were the effects of communication, parental participation, and parental expectation. That is, communication about school related issues, parental participation, and higher expectation about education increased the odds of 4-year college enrollment for all four racial/ethnic groups.

The results also revealed some differences in social and cultural capital factors among the ethnic/racial groups. All of the family social and cultural measures were powerful predictors of a 4-year college enrollment for White student groups. All of the family social capital and cultural factors significantly increased the predicted 4-year college enrollment among White students, but not among Blacks, Hispanics or Asians. For Blacks and Hispanics, communication, participation, and parental expectation were powerful predictors of 4-year college enrollment; those predictors significantly increased the odds of college enrollment. For Asians, communication, participation, and academic assistance from parents, parental norms/values about education, and parental expectation significantly increased the predicted odds of college enrollment among Asians.

Parental participation and parent-parent connection decreased the odds of 2-year college enrollment among Black students. Parental norms/values about education decreased the odds of 2-year college enrollment. Communication and academic

assistance from parents decreased the odds of 2-year college enrollment among Asians.

The effects of school-level variables were inconsistent across the groups. Teacher-student relationship significantly increased the predicted 4-year college enrollment among White and Hispanic students. For Hispanic students, school initiated contact to parents decreased the predicted odds of 4-year college enrollment. Peer academic influence was a positive predictor of 4-year college enrollment for White students and Asian students; for Black students, it was a negative predictor. Academic climate increased the odds of 4-year college enrollment among Asian students.

Academic assistance from a teacher/counselor reduced the odds of 2-year college enrollment among White and Asian students. Parental participation and parent-parent connection decreased the odds of 2-year college enrollment among Blacks. School-parent connection increased the odds of 2-year college enrollment among Blacks but decreased the odds of 2-year college enrollment among Hispanic students. Parental norms/values about education, school-parent connection, and academic climate decreased the odds of 2-year college enrollment among Hispanic students and Asian students.

Table 4.9 Multinomial Logistic Regression Model: Significant Difference in Social and Cultural Capital Measures among Racial/ethnic Groups

	White		Black		Hispanic		Asian	
	2-year	4-year	2-year	4-year	2-year	4-year	2-year	4-year
Family-level								
<i>Social capital</i>								
Communication		+		+		+	-	+
Participation		+	-	+		+		+
Parent-school connection		+						
Parent-parent connection		+	-					
Academic assistance from parents		+					-	
<i>Cultural capital</i>								
Parent's norms/values about education		+				-		+
Parent's expectation		+		+		+		+
School-level								
<i>Social capital</i>								
Teacher-student relationship		+				+		
Teacher-parent connection								
School-parent connection			+		-	-		
Peer academic influence		+		-				+
Academic assistance from teacher/counselor	-						-	
<i>Cultural capital</i>								
Academic climate						-		+
Teacher/counselor expectation								
<i>Controls</i>								
Income		+		+			+	+
Mean income		+			+	+	-	
Student/ teacher ratio					-			
Mean teacher quality		+						

+/- represents positively or negatively significant at p <0.05

CHAPTER V

DISCUSSION

5.1 Overview

Despite many years and multiple plans by educational policy makers and government agencies to achieve educational equity, there is still a wide disparity in college enrollment rates across racial/ethnic groups. The present study was designed to examine this serious problem by focusing on the educational resources that might potentially contribute to the persisting enrollment gap. To do so, this study adapted Bourdieu's notion of capitals and developed a comprehensive conceptual model of relations among various factors consisting of cultural and social capitals at the family and school levels.

The conceptual model assumed that students may draw on multiple forms of capital in the college enrollment process within the multiple home-school contexts, and that paths to student college enrollment may vary across racial/ethnic groups, depending on differences in family and school resources. By identifying the cultural and social factors simultaneously that differentiate the overrepresented and underrepresented groups, this study examined the extent to which these resources differentially affected college enrollment by racial/ethnic groups.

This study approached the situation outlined above by looking at two factors – social capital and cultural capital. The factors related to SES were treated as control variables. Thus, the study examined the effect of social and cultural capitals, controlling for economic capital. More importantly, the present study addressed to

what degree social and cultural capitals in the family and school contexts might influence college enrollment above and beyond the influence of economic capital. In this way, the analysis would offer an extended empirical examination of the extant literature and seek to shed new light on the ways of narrowing the gap among ethnic/racial groups.

The findings from this study provided answers to the four research questions. First, this study examined the question of overall differences in college enrollment among racial/ethnic groups. The findings for Whites and Asians indicated that more students were enrolled in a 4-year than 2-year college or not enrolled in either 2-year or 4-year college, with the last category being the smallest in proportion. As for Blacks, more students were enrolled in a 4-year than 2-year college but more students were not enrolled than they were enrolled in either 4-year or 2-year college. For Hispanics, the results indicated that fewer students were enrolled in a 4-year than 2-year college, and that an equally high proportion of students as that for 2-year college enrollment did not enroll in either 2-year or 4-year college.

Second, this study examined mean differences in economic, social, and cultural capitals across the four subgroups to measure the amounts of economic, social, and cultural capital factors at the family-level and the school-level on college enrollment. The descriptive statistics results showed that Whites, on average, had higher amounts in the social and cultural capital measures such as participation, parent-parent connection, school-parent connection, academic climate, and teacher/counselor expectation compared to the other racial/ethnic groups. Asians had higher amounts with parent-school connection, parental norms/values about

education, parental expectation, peer academic influence, and academic assistance from teacher/counselor compared to the other racial/ethnic groups. In addition, Whites and Asians were more likely than Blacks and Hispanics to come from higher income family background and high schools with high average levels of family income. Blacks had higher amounts of communication and academic assistance from parents compared to the other racial/ethnic groups. Hispanics had higher amounts only in teacher-student relationship measure.

Third, the study found evidence in support of the conceptual model based on Bourdieu's (1986) conceptualization of learning resources in a form of capital that promote college enrollment. Family-level and school-level measures of economic, social and cultural capitals were related to the likelihood of a student enrolling in a 4-year college relative to not enrolling. I hypothesized that social and cultural capitals were related to the likelihood of enrolling in college, even after controlling for the influence of economic capital. As the results showed, it was found that social and cultural capital measures were related to the likelihood of college enrollment, even after controlling for measures of economic capital.

Hill (2008) found that school systems played a role by encouraging students to have access to university entrance by providing information and resources as well as by maintaining a high academic and disciplinary climate. In order to find out the degree to which high schools play a part in the college transition process, this study examined the effects of school resources controlling family-level resource measures.

After taking into account measures of family capitals, most measures of school capitals were not related to the odds of enrolling in a 4-year college. That is, in

terms of school-level effects, the results revealed that most school capital measures at the school-level was a statistically significant predictor of college enrollment after controlling for family-level variables. This finding was in line with previous work by Karen (2002), Espenshade et al. (2005), and Perna and Titus (2005), who found that school effects in school contexts are secondary to individual student effects. Thus whereas schools had little effect on enrollment in higher education, family resources showed stronger influences.

Interestingly, measures of social capitals and cultural capitals at family-level were not related to the odds of enrolling in 2-year relative to not enrolling. This suggests that family-level and school-level measures of economic, social and cultural capitals do not influence 2-year college enrollment. That is, economic, social, and cultural capitals had little to do with entering a 2-year college compared to a 4-year college.

The current study also identified the types of family and school resources that were more influential in students' enrollment of higher college enrollment. For example, previous studies reported that parental involvement was associated with a greater likelihood of aspiring to attend and actually enrolling in college (e.g., Cabrera & La Nasa, 2000; and Perna, 2000). The current results also showed that parental involvement was strongly related to the likelihood of enrolling in a 4-year college. The measures such as the frequency with which parents communicate with the student school-related topics, parental participation to school, parent-school connection, parent-parent connection, and academic assistance from parents were associated with a greater likelihood of enrolling in a 4-year college.

Previous research indicated that parental aspiration/expectation for children's educational achievement had the strongest relation, whereas parental home supervision showed the weakest relation to students' academic achievement. In the present study, it was found that parental norms/values about education and parental expectation were strongly associated with the likelihood of enrolling in a 4-year college. This also supports the argument by Epstein (1990) and Steinberg et al. (1988) that students performed better when they were raised in homes characterized by supportive and demanding parents who were involved in school and encouraged and expected academic success.

Studies have also shown that some social capital measures at the school level, such as teacher-student relationship, were strongly associated with the likelihood of enrolling in a 4-year college. Stanton-Salazar (1997) argued that institutional agents such as teachers, counselors, and middle-class peers provide ready access to resources and opportunities. He specially argued that school-aged peers can support academic goals and serve as important sources of information for upward mobility (Stanton-Salazar, 1997). The current study supports this by showing that teacher-student relationship and peer academic influence are related to the likelihood of enrolling in a 4-year college.

One of the cultural capital measures, school academic climate, was associated with a likelihood of enrolling in a 4-year college. The results of this study supported the finding that school academic climate has a positive relationship with student achievement (Shouse, 1996; Lee, Smith, & Croninger, 1997). McDonough (1998) found that the climate of schools and the college-choice organizational culture

affected both college entrance and destination. Rosenthal and Jacobsen (1968) argued that teachers' expectations were powerful influences on the success of student learning.

This study also aimed to find out which resources might make the transition to college easier for students whose families lack the information and resources to assist their children in the college process. To answer this, particular attention was given to how these resource effects might differ for different groups of students. As suggested by the work of Lin (2001b) and Bourdieu (1986), the analyses revealed that the relation between capitals and the likelihood of enrolling in college varied across racial/ethnic groups.

The results revealed that there were consistent finding across the four groups in the effects of the several capital measures. Controlling for economic variable in the model, the frequency of parents' discussion with their children about school matters, parents' participation in school organization and activities, and parents' expectation increased the odds of college enrollment for all four racial/ethnic groups.

Compared with students of other racial/ethnic groups, White students utilized all of the social capitals from family learning resources to get a larger college enrollment premium. All of the family social measures were powerful predictors of a 4-year college enrollment for White students. On the other hand, Black and Hispanic students utilized social capital to get a college enrollment premium through school-related discussions and their parents' participation in school organization and activities. However, Black and Hispanic students did not utilize social capital to get a college enrollment premium when parents have less contact with school, do not

interact with other parents, or do not provide academic assistance to their children. Asian students utilized a larger college enrollment premium from parents' participation in school organization and activities as well as school-related discussions, but parents' contact to schools, parents' contact to parents, parents' academic assistance did not contribute to any increase in college enrollment.

These results suggest that White students are the most effective group at converting social capitals into college enrollment when compared to the other racial/ethnic groups. Black, Hispanic, and Asian students are less effective than White students at converting parents' contact with school, parent-parent connection, and academic assistance from their parents into college enrollment. These results are in contrast to Ho and Willms (1996)' findings of no differences in involvement between the ethnic groups that they examined. Instead, the current findings support other studies (e.g., Keith et al., 1998) that found the effectiveness of involvement varies by race/ethnicity.

All of the family cultural measures were powerful predictors of a 4-year college enrollment for White and Asian students. Whites and Asian students utilized cultural capital to get a college enrollment premium through parental norms/values about education and parental education. In contrast, Hispanic and Black students appeared to be less effective than White and Asian students at converting parental norms/values about education. Black and Hispanic students utilized only the higher expectation measure to get to a 4-year college.

The effects of school-level variables were inconsistent among the groups. Teacher-student relationship significantly increased the predicted 4-year college

enrollment for White and Hispanic students. This suggests that teacher-student relationship might be a solution to increasing college enrollment among Hispanic students. On the other hand, for Hispanic students, school initiated contact to students' parents decreased the predicted odds of 4-year college enrollment. Hispanic students whose school contacted their parents regarding school matters were less likely to enroll in a 4-year college than the other groups. The peer academic influence measure was a positive predictor of 4-year college enrollment for White and Asian students; but was a negative predictor for Black students. This suggests that White and Asian students receive positive influences from their peers, whereas Black students receive negative influences from their peers. Asian students had a larger college enrollment premium for students who attended at schools with good academic climate.

Blacks and Hispanics not only possess fewer types of capital that promote college enrollment, but also tended to attend schools with fewer resources that promote college enrollment. These findings suggest that the lower observed college enrollment rates for Blacks and Hispanics are due in part to lower levels of resources that are available through both family resources and school resources. As noted by others (Hurtado, Inkelas, Briggs, & Rhee, 1997; Perna, 2000), however, this conclusion should be interpreted with caution since only small shares of Blacks, Hispanics, and Asians are comparable to Whites in terms of all other variables that are included in the model.

In this study, an important question was whether or not economic capital is the most important factor and, if so, after controlling for economic capital, which factors

would be most effective in contributing to disparities in college enrollment. I argued that economic capital is not sufficient enough to explain the large gap in educational achievement among racial/ethnic groups. I thus proposed that social and cultural capitals within family and school are also important to examine. This study revealed that students from high-income families were much more likely to enroll in a 4-year college than students from low-income families. It also showed that students who attended high school with high average levels of family income and mean teacher quality are more likely to enroll in a 4-year college than they are not to enroll. This means that economic capital is an important factor in the college enrollment, which supports the work of Alexander, Holupka, and Pallas (1987), Beattie (2002), Hearn (1991), Karen (1991, 2002), and Baker and Velez (1996). However, the current study showed that social capital and cultural capital measures influenced disparities in college enrollment even after controlling for economic capital.

In general, Whites are advantaged in the college enrollment process via the resources that are available to promote college enrollment in the form of social and cultural capitals. On the other hands, Blacks and Hispanics are disadvantaged in the college enrollment process not only because of low levels of resources that are available through the social and cultural capitals at the family but also at the school. Asian students appeared to be disadvantaged via the resources through family and school capitals compared to White students. However, the fact that Asian students were more likely than Black and Hispanic students to enroll in college makes cultural capital to be an efficacious factor for enrolling in college. Hispanic students might find the way to increase 4-year college enrollment rate in the relationship with their

teachers. This suggests that college program might offer a promising approach in personally or academically strong relationship among Hispanics in college enrollment.

In conclusion, this research demonstrated that social and cultural capitals are positively related to college enrollment regardless of the level of economic capital. Family resources had powerful influences while schools had some effect on enrollment in higher education. This suggests that any intervention program must consider what can be added to family resources so that college enrollment can be increased among disadvantaged students.

5.2 Limitations

Although there were studies to link inequality of access to postsecondary education to family and school resources in order to understand the sources of the continuing gap, previous studies have often focused too narrowly on the issue of college enrollment without sufficient attention to complex operations of resources. Thus, studies have provided very few clues about inequalities in learning resources at home and at school that may contribute to disparities in opportunities to enhance college access. This study provided an educational resources model that is more fully conceptualized. It also examined the extent to which resources differentially affected college enrollment by race/ethnicity.

Perna (2007) argued, to eliminate the observed racial-ethnic group gap in college enrollment, policymakers and practitioners must better understand the sources of the persisting gaps and the programmatic activities that effectively address these

gaps. More comprehensive analyses of the college enrollment process and ethnic groups help with understanding the ways students of different racial and ethnic groups make decisions about attending college. In this sense, the next step to further this study would be the inclusion of student academic and psychological variables at the student level and school composition variables at the school level. This would provide additional information for policy makers and education researchers to further understand how those variables influence the difference in college enrollment across racial/ethnic groups. The results of these analyses can be used to guide policymakers and program administrators in their efforts to reduce persisting gaps in college access and choice.

Because of the small numbers of Blacks, Hispanics, and Asians at each high school in the ELS data set, this research was not able to examine the ways in which variations in the characteristics of individual high schools' resources contribute to racial/ethnic group differences in the likelihood of enrolling at a 2- or 4-year college. Specifically, the analyses do not converge with no or very small number of racial/ethnic groups at each high school when being analyzed for race/ethnicity to vary across schools in the multilevel analyses. Further research utilizing a sample with larger numbers of Blacks and Hispanics in each high school will be required to test the resources possessed by racial/ethnic group.

5.3 Implications

Although this research focused on the way in which capitals promotes college enrollment, the results provide support for the role of programs that are designed to

increase college enrollment. Although the analyses suggest that economic factors such as family income, student-teacher ratio, and school mean income influence college enrollment, this study suggests that college preparation programs should focus on ways to promote the types of social and cultural capitals. Specifically the family level social and cultural capitals are related to the likelihood that students enroll in college.

The results of this study have several implications for school policy. For one, it was found that high schools' capitals have relatively less influence on college enrollment in comparison to family capitals. I found that school capitals had smaller effects on college enrollment after controlling for the effects of family capitals. Given such findings, it is essential to reiterate that counselors and teachers should understand the importance of working with parents. For example, teachers can ask parents to attend school events, help in the classroom, or participate in other programs that promote parental participation in the classroom.

Another implication is that the college preparation programs designed to promote increased college enrollment across racial/ethnic groups should recognize the ways in which the relation between capitals and college enrollment varies across racial/ethnic groups. Mehan and his colleagues (1996) asserted that while parents of low-income families had high aspirations for their children, they frequently had insufficient knowledge and resources to assist them with higher education goals. As Lopez and her colleagues (2001) suggested, college preparation programs should view the differences across groups as an asset or form of cultural wealth that may be invested to promote college enrollment rather than imposing a one-size-fits-all

approach as well. One needs to recognize and look at the different social and cultural contexts for each ethnic group of students from a wide variety of backgrounds to create programs to help them and their families. Different strategies to apply college preparation programs for different ethnic groups should be created to have significant impact on disadvantaged minority families and their children. In order to better serve and incorporate family involvement into the curriculum, counselors, policy-makers, and administrators should recognize and address differences in the expectations of families from a wide variety of backgrounds.

In conclusion, though many college program administrators work diligently with families to ensure academic success for their students, and despite excellent teachers, tutors, and volunteers, success cannot be achieved without a clear and cogent theoretical understanding of resources that students possess. Foundations, government agencies, and other funding groups who support successful programs should also have a systematic understanding of a theoretical framework that derives policy. Because learning resources may differ by race and ethnicity, administrators who develop programs should consider local identities and cultures.

References

- Advisory Committee on Student Financial Assistance. "Empty promises: The myth of college access in America," available from the Advisory Committee on Student Financial Assistance, 80 F Street, N.W., Room 413, Washington, D.C. 20202-7582. June 2002
- Agresti, A. (2002). *Categorical Data Analysis*, 2nd edition. New York, NY: Wiley & Sons.
- Alexander, K. L. (1997). From first grade forward: Early foundations of high school dropout. *Sociology of Education*. 70(2), 87-107.
- Alexander, K. L. (1997). Public schools and the public good. *Social Forces*, 76(1), 1-30.
- Alexander, K. L., & Eckland, B. K. (1977). High school context and college selectivity: Institutional constraints in educational stratification. *Social Forces*, 56, 166-188.
- Alexander, K. L., Houпка, S., & Pallas, A. M. (1987). Social background and academic determinants of two-year versus four-year college attendance: Evidence from two cohorts a decade apart. *American Journal of Education*, 96, 56-80.
- Alwin, D. F. & Otto, L. B. (1977). High school context effects on aspirations. *Sociology of Education*, 50, 259-273.
- Anderman, L. H., & Anderman, E. M. (1999). Social predictors of changes in students' achievement goal orientations. *Contemporary Educational Psychology*, 24(1), 21-37.
- Baker, T. L., & Velez, W. (1996). Access to and opportunity in postsecondary education in the United States: A review, *Sociology of Education*, 69, 82-101.
- Bandura, A. (1977). Self-efficacy – Toward a unifying theory of behavioral change. *Psychological Review*, 84(2), 191-215.
- Baron, R., Tom, D., & Cooper, H. (1985). Social class, race and teacher expectations. In J. B. Dusek (Ed.). *Teacher expectancies* (pp. 251-269). Hillsdale, NJ: Erlbaum.
- Baum, S., & Payea, K. (2004). *Education pays 2004: The benefits of higher education for individuals and society*. Washington, D.C.: College Board, 2004.

- Beattie, I. R. (2002). Are all adolescent econometricians' created equal? Racial, class, and gender differences in college enrollment. *Sociology of Education*, 75, 19-43.
- Betts, J., Rueben, K., & Danenberg, A. (2000). *Equal resources, equal outcomes? The distribution of school resources and student achievement in California*. San Francisco: Public Policy Institute of California.
- Berliner, D. C. (1987). *Ways of thinking about students and classrooms by more and less experienced teachers*. In J. Calderhead (Ed.), *Exploring teachers' thinking* (pp. 60-83). London: Cassell Educational Limited.
- Berliner, D. C. (1988). *The development of expertise in pedagogy*. Washington, DC: AACTE Publications.
- Bernstein, H. (1977). Sociology of developing societies – HOOGVELT, AMM. *Sociological Review*, 25(3), 624-626.
- Bhorat, H. & Oosthuizen, M. (2008). Determinants of grade 13 pass rates in the post-apartheid south African schooling system. *Journal of African Economics*, 18(4), 634-666.
- Borko, H., & Livingston, C. (1989). Cognition and improvisation: Differences in mathematics instruction by expert and novice teachers. *American Educational Research Journal*, 26(4), 473-498.
- Borman, G. D. & Overman, L. T. (2004). Academic resilience in mathematics among poor and minority students. *The Elementary School Journal*, 104(3), 177-195.
- Bourdieu, P. (1977a). Cultural reproduction and social reproduction. In J. Karabel and A. Halsey (eds.), *Power and Ideology in Education*. New York: Oxford University Press.
- Bourdieu, P. (1977b). *Outline of a theory of practice*. Cambridge: Cambridge University Press.
- Bourdieu, P. (1986). The forms of capital. In J. G. Richardson (Ed.), *Handbook of theory and research for the sociology of education* (pp. 241-258), New York: Greenwood Press.
- Bourdieu, P., & Passeron, J. C. (1977). *Reproduction in education, society, and culture*. Beverly Hills, CA: Sage Publications.
- Bourdieu, P., & Passeron, J. C. (1979). *The inheritors* (R. Nice, Trans.). Chicago: University of Chicago Press.

- Bowen, W. G., Chingos, M. M., & McPherson, M. S. (2009). *Crossing the finish line: Completing college at American's public universities*. New Jersey: Princeton University Press.
- Breen, R., & Jonsson, J. O. (2000). Analyzing educational careers: A multinomial transition model. *American Sociological Review*, 65, 754-772.
- Brophy, G., & Good, T. (1974). *Teacher-student relationships: Causes and consequences*. New York: Holt, Rinehart and Winston.
- Bryk, A. S., & Raudenbush, S. W. (1992). *Hierarchical linear models*. Thousand Oaks, CA: Sage Publications.
- Bryk, A. S., Lee, V. E., & Holland, P. B. (1993). *Catholic schools and the common good*. Cambridge, MA: Harvard University Press.
- Cabrera, A. F., & La Nasa, S. M. (2000). Overcoming the tasks on the path to college for college America's disadvantaged. In A. F. Cabrera & S. M. La Nasa (Eds.), *Understanding the college choice of disadvantaged students* (pp. 31-44). San Francisco: Jossey-Bass.
- Card, D. (1999). The causal effect of education on earnings. *Handbook of Labor Economics*, in: O. Ashenfelter & D. Card (ed.), *Handbook of Labor Economics*, edition 1, Volume 3, Ch. 30, 1801-1863.
- Card, D. & Krueger, A. B. (1996). School quality and the return to education. In Gary Burtless. *Does money matter?: the effects of school resources on student achievement and adult success*. Washington, D.C.: Brookings Institute, pp. 118-119. ISBN 0-8157-1274-X.
- Carter, K., & Doyle, W. (1987). Teachers' knowledge structures and comprehension processes. In J. Calderhead (Ed.), *Exploring Teacher Thinking* (pp. 147-160). London: Cassell.
- Chan, C. (2005). *Are small classes better? Or what makes a small class better?* Paper presented at the conference on learning effectiveness and class size, University of Hong Kong, Hong Kong.
- Chen, C. & Stevenson, H. W. (1995) Motivation and mathematics achievement: A comparative study of Asian-American, Caucasian-American, and East Asian high school students. *Child Development*, 66, 1215-1234.
- Chi, M. T. H., Glaser, R., & Farr, M. J. (1988). *The nature of experience*. Hillsdale, NJ: Lawrence Erlbaum Associate.

- Childs, T. S., & Shakeshaft, C. (1986). A meta-analysis of research on the relationship between educational expenditures and student achievement. *Journal of Education Finance*, 12, 249-263.
- Clark, M. A. & Breman, J. C. (2009). School counselor inclusion: A collaborative model to provide academic and social-emotional support in the classroom setting. *Journal of Counseling & Development*, 87, 6-11.
- Coleman, J. S. (1988). Social capital in the creation of human capital. *American Journal of Sociology*, 94, 95-120.
- College Board (2006a), *Trends in student aid 2006*. Washington, D.C.: College Board.
- Coleman, J. S., & Hoffer, T. (1987). *Public and Private Schools: The Impact of Communities*. New York: Basic Books.
- Cornelius-White, J. (2007). Learner-centered teacher-student relationships are effective: A meta-analysis. *Review of Educational Research*, 77(1), 113-143.
- Cortazzi, M., & Jin, L. (2001). Large classes in China: ‘Good’ teachers and interaction. In D. A. Watkins & J. B. Biggs (Eds.), *Teaching the Chinese learner: Psychological and pedagogical perspectives* (pp.115-184). Hong Kong: CERC and ACER.
- Dahir, C. A., & Stone, C. B. (2009). School counselor accountability: The path to social justice and systemic change. *Journal of Counseling and Development*, 87, 12-20.
- Darling-Hammond, L., & Youngs, P. (2002). Defining “highly qualified teachers”: What does “scientifically-based research” actually tell us? *Educational Researcher*, 31(9), 13-25.
- Desimone, L. (1999). Linking parent involvement with student achievement: Do race and income matter? *The Journal of Educational Research*, 93(1), 11-30.
- Dika, S. L., & Singh, K. (2002). Applications of social capital in educational literature: A critical synthesis. *Review of Educational Research*, 72, 31-60.
- Domina, T. (2005). Leveling the home advantage: Assessing the effectiveness of parental involvement in elementary school. *Sociology of Education*, 78, 233-249.
- Domina, T. (2009). What works in college outreach: Assessing targeted and schoolwide interventions for disadvantaged students. *Educational evaluation and policy analysis*, 31(2), 127-152.

- Dupriez, V., & Dumay, X. (2006). Inequalities in school systems: effect of school structure or of society structure? *Comparative education review*, 42(2), 243-260.
- Dusek, J. B., & Joseph, G. (1985). The bases of teacher expectancies. In J. B. Dusek (Ed.), *Teacher expectancies* (pp. 229-249). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Epstein, J. (1984). Effect on parents of teacher practices of parent involvement. Report No. 346. Baltimore: Jones Hopkins University, Center for the Social Organization of Schools.
- Epstein, J. L. (1990). School and family connections: Theory, research school, and implication for integrating sociologies of education and family. In D. G. Unger and M. B. Sussman (Eds.), *Families in Community Settings: Interdisciplinary Perspectives*. New York: Haworth Press.
- Epstein, J. L. (1995). School/family/community partnerships: Caring for the children we share. *Phi Delta Kappan*, 76, 701-712.
- Epstein, J. L. & Karweit, N. L. (1983). *Friends in school: Patterns of selection and influence in secondary schools*. New York: Academic.
- Espenshade, T. J., Hale, L. E., & Chung, Y. C. (2005). The frog pond revisited: High school academic context, class rank and elite college admission. *Sociology of Education*, 78(4), 269-293.
- Falsey, B. & Heyns, B. (1984). The college channel: Private and public schools reconsidered. *Sociology of Education*, 57, 111-122.
- Fan, X. (2001). Parental involvement and students' academic achievement: A growth curve modeling analysis. *The Journal of Experimental Education*, 70, 27-61.
- Fan, X., & Chen, M. (2001). Parental involvement and students' academic achievement: A meta-analysis. *Educational Psychology Review*, 13(1), 1-22.
- Fehmann, O. G., Keith, T. A., & Reimers, T. (1987). Home influence on learning: Direct and indirect effects of parental involvement on high school grades. *The Journal of Educational Research*, 80, 330-337.
- Felgin, N. (1995). Factors contributing to academic excellence of American Jewish and Asian students. *Sociology of Education*, 68, 18-30.
- Ferguson, R. F. (1988). The black-white test score gap. In C. Jencks & M. Phillips (Eds.), *Teachers' perceptions and expectations and the black-white test score gap* (pp. 273-317). Washington, DC: Brookings Institution.

- Fetler, M. (1997). Where have all the teachers gone? *Education Policy Analysis Archives*, 5(2). Retrieved on January 18, 2004, from <http://olam/ed.asu.edu/epaa/v5n2>
- Fligstein, N. and Fernandez, R.M., 1985. Hispanics and education. In: Cafferty, P. and McCready, W., Editors, 1985. *Hispanics in the United States: A New Social Agenda*, Transaction Books, New Brunswick, NJ.
- Flint, T. A. (1992). Early awareness of college financial aid: does it expand choice? *Review of Higher Education*, 16(3), 309-327.
- Flint, T. A. (1993). Early awareness of college financial aid: does it expand choice? *Review of Higher Education*, 16(3), 309-327.
- Freeman, K. (1997). Increasing African Americans' participation in higher education: African American high-school students' perspectives. *Journal of Higher Education*, 68, 523-550.
- Fries-Britt, S. (1998). Moving beyond Black achiever isolation: Experiences of gifted Black collegians. *Journal of Higher Education*, 69, 556-576.
- Funkhouser, J. E. & Gonzales, M. R. (1998). *Family involvement in children's education: successful local approaches*. Washington DC: U.S. Department of Education, Office of Research and Education.
- Gándara, P. & Bial, D. (2001). *Paving the way to postsecondary education: K-12 intervention programs for underrepresented youth*. Washington, D.C.: U.S. Department of Education, National Center for Education Statistics. Retrieved [date], from: <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2001205>.
- Gándara; and Domina, T. (2009). What works in college outreach: Assessing targeted and schoolwide interventions for disadvantaged students. *Educational Evaluation and Policy Analysis*, 31, 127-152;
- Gándara, P. & Contreras, F. (2009). *The Latino education crisis: The consequences of failed social policies*. Cambridge, MA: Harvard University Press.
- Gladieux, L. E., & Swail, W. S. (1999). Financial aid is not enough: Improving the odds of college success. In J. E. King (ed.). *Financing a college education: How it works, how it's changing*. Washington D.C.: Ace/Oryx Press, 1999.
- Goldhaber, D. D., & Brewer, D. J. (1997). Why don't schools and teachers seem to matter? Assessing the impact of unobservables on educational productivity, *Journal of Human Resources*, 33, 505-523.

- Gottfredson, L. S. (1981). Circumscription and compromise: A developmental theory of occupational aspirations. *Journal of Counseling Psychology*, 28(6), 545-579.
- Goyette, K., & Xie, Y., (1999). Educational expectations of Asian American youths: Determinants and Ethnic difference. *Sociology of Education*. 72, 22-36.
- Greenwald, R., Hedges, L. V., & Laine, R. D. (1996). The effect of school resources on student achievement. *Review of Educational Research*, 66(3), 361-396.
- Griffith, J. (1998). The relation of school structure and social environment to parent involvement in elementary schools. *Elementary School Journal*. 99(1), 53-80.
- Hao, L. & Bonstead-Bruns, M. (1998). Parent-child differences in educational expectations and the academic achievement of immigrant and native students. *Sociology of Education*, 71(3), 175-198.
- Hattie, J. A. C., & Clinton, J. (2008). Identifying accomplished teachers: A validation study. In L. Ingvarson & J. A. C. Hattie (Eds.), *Assessing teachers for professional certification: The first decade of the National Board for Professional Teaching Standards* (pp. 313-344). Oxford, UK: Elsevier.
- Haycock, K. (1998). Good teaching matters...a lot. *OAH Magazine of History*, 13(1), 61-63.
- Hearn, J. (1984). The relative roles of academic, ascribed, and socioeconomic characteristics in college destinations. *Sociology of Education*, 57, 22-30.
- Hearn, J. (1991). Academic and nonacademic influences on the college destinations of 1980 high school graduates. *Sociology of education*, 64, 158-171.
- Hedges, L. V., Laine, R. D., & Greenwald, R. (1994). An exchange: Part I: Does money matter? A Meta-analysis of studies of the effects of differential school input on student outcomes. *Educational Researcher*, 23(4), 5-8.
- Heller, D. E. (Ed.). (2001). *The states and public higher education policy: Affordability, access, and accountability*. Baltimore, MD: Johns Hopkins University Press.
- Heller, D. E. (Ed.). (2002). *Condition of access: higher education for lower income students*. Westport, CT: American Council on Education/Praeger.
- Henderson, A. T., & Berla, N. (1994). *A New Generation of Evidence: The Family is Critical to Student Achievement*. Washington, DC: National Committee for Citizens in Action.

- Hill, L. D. (2008). School strategies and the “College-linking” process: Reconsidering the effects of high schools on college enrollment. *Sociology of Education*, 81, 53-76.
- Ho, E. S., & Willms, J. D. (1996). Effects of parental involvement on eighth-grade achievement. *Sociology of Education*, 69, 126-141.
- Hong, S., & Ho, H.-Z. (2005). Direct and indirect longitudinal effects of parental involvement on student achievement: Second-order latent growth modeling across ethnic groups. *Journal of Educational Psychology*, 97(1), 32-42.
- Horn, L. (1997). *Confronting the odds: Students at risk and the pipeline to higher education*. Statistical Analysis Report No. NCES 98-084. Washington, DC: U. S. Department of Education, Office of Educational Research and Improvement, National Center for Education Statistics.
- Horn, L. J. (1998). *Confronting the odds: Students at risk and the pipeline to higher education*. (NCES Report No. 98-094). Washington, DC: U.S. Department of Education.
- Hosmer, D. W. & Lemeshow, S. (2000). *Applied Logistic Regression*. 2nd edition. New York, NY: Wiley & Sons.
- Hossler, D., Braxton, J., & Cooper-smith, G. (1989). Understanding student college choice. In J. C. Smart (Ed.). *Higher education: Handbook of theory and research* (Vol. 5, pp. 231-288). New York: Agathon Press.
- Hossler, D., Schmit, J., & Vesper, N. (1999). *Going to college: How social, economic, and educational factors influence the decisions students make*. Baltimore: Johns Hopkins University Press.
- Hossler, D., & Vesper, N. (1993). An exploratory study of the factors associated with parental saving for postsecondary education. *Journal of Higher Education*, 64(2), 140-165.
- Housner, L. D., & Griffey, D. C. (1985). Teacher cognition: Differences in panning and interactive decision making between experienced and inexperienced teachers. *Research Quarterly for Exercise and Sport*, 56(1), 45-53.
- Hovat, E. M. (2001). Understanding equity and access in higher education: The potential contribution of Pierre Bourdieu. In J. C. Smart (Ed.), *Higher education: Handbook of theory and research* (Vol. 16, pp. 195-238). New York: Agathon Press.

- Huang, G. G., & Weng, S. S. (1998). Minority post-secondary education attendance, high school desegregation, and student characteristics. *Race, Ethnicity and Education, 1*(2), 241-267.
- Hurtado, S., Inkelas, K. K., Briggs, C., & Rhee, B. S. (1997). Differences in college access and choice among racial/ethnic groups: Identifying continuing barriers. *Research in Higher Education, 38*, 43-75.
- Izzo, C. V., Weissberg, R. P., Kaspro, W. J., & Fendrich, M. (1999). A longitudinal assessment of teacher perceptions of parent involvement in children's education and school performance. *American Journal of Community Psychology, 27*, 817-839.
- Johnstone, D. B. (2003). *Fundamental assumptions and aims underlying the principles of federal financial aid to students, National Dialogue on Student Financial Aid*. New York: College Board.
- Jacob, J. E., & Bleeker, M. M. (2004). *Girls and boys' developing interest in math and science: Do parents matter?* Now Directions for Child and Adolescent Development, 106, 5-21.
- Jacob, N., & Harvey, D. (2005). Do parents make a difference to children's achievement? Differences between parents of higher and lower achieving students. *Educational Studies, 31*(4), 431-448.
- Kane, T. J. (1999). *The price of admission: Rethinking how Americans pay for college*. Washington, DC: Brookings.
- Karen, D. (1991). The politics of class, race, and gender: Access to higher education in the United States, 1960-1986. *American Journal of Education, 99*, 208-237.
- Karen, D. (2002). Changes in access to higher education in the United States: 1980-1992. *Sociology of Education, 99*, 208-237.
- Keith, T. Z., Keith, P., Quirk, K., Spertudo, J., Santillo, J., & Killings, S. (1998). Longitudinal effects of parent involvement on high school grades: Similarities and differences across gender and ethnic groups. *Journal of School Psychology, 25*, 335-363.
- King, 1996)? 1999 King, J. E. (Ed.) (1999). *Financing a college education: How it works, how it's changing*. Phoenix, AZ: American Council on Education, Oryx Press.
- Krabbe, M. A. (1989). *A comparison of experienced and novice teachers routines and procedures during set and discussion instructional activity segments*. Paper

presented at the Annual meeting of the American Educational Research Association, San Francisco, CA.

- Ladson-Billings, G. (1994). *The dreamkeepers: Successful teachers of African American children*. San Francisco, CA: Jossey-Bass.
- Lam, S. F. (1997). *How the family influences children's academic achievement*. New York: Garland Publishing.
- Lamont, M., & Lareau, A. (1988). Cultural capital: Allusions, gaps and glissandos in recent theoretical developments. *Sociological Theory*, 6, 153-168.
- Lareau, A. (1987). Social class differences in family-school relationships: The importance of cultural capital. *Sociology of Education*, 60, 73-78.
- Lareau, A. (1989). *Home advantage: Social class and parental intervention in elementary education*. New York: Falmer.
- Lareau, A. & Lamont, M. (1988). Cultural capital: Allusions, gaps, and glissandos in recent theoretical developments. *Theoretical Sociology*, 6(2), 153-168.
- Lee, S. A. (1993). Family structure effects on student outcomes. In B. Schneider & J. S. Coleman (Eds.), *Parents, their children, and school* (pp. 43-75). Boulder, CO: Westview Press.
- Lee, C. C. (1984). An Investigation of psychosocial variables related to academic success for rural Black adolescents. *Journal of Negro Education*, 53(4), 424-434.
- Lee, V. E., & Smith, J. B. (2001). *Schools that work*. New York: Teachers College Press.
- Lee, V. E., Smith, J. B., & Croninger, R. G. (1997). How high school organization influences the equitable distribution of learning in mathematics and science. *Sociology of Education*, 70, 128-150.
- Leinhardt, G. (1983). *Routines in expert math teachers' thoughts and actions*. Paper presented at the Annual meeting of the American Educational Research Association, Montreal, Canada.
- Leslie, L. L., Johnson, G. P., & Carlson, J. (1977). The impact of need-based student aid upon the college attendance decision. *Journal of Education Finance* 2, 269-285.
- Lin, N. (2001b). *Social capital: A theory of social structure and action*. New York: Cambridge University Press.

- Lightfoot, S. L. (1978). *Worlds apart: Relationship between families and schools*. New York: Basic Books.
- Long, B. T. (2007). The contributions of economics to the study of college access and success. *Teachers College Record*, 109(10), 2367-2443.
- Long, B. T. & Riley, E. (2007). Financial aid: A broken bridge to college access? *Harvard Educational Review*, 77(1), 39-63.
- Lopez, F. G., Mauricio, A. M., Gormley, B., Simko, T., & Berger, E. (2001). Adult attachment orientations and college student distress: The mediating role of problem coping styles. *Journal of Counseling and Development*, 79(4), 459-464.
- Ma, X. & Wilkins, J. L. M. (2002). The development of science achievement in middle and high school: Individual differences and school effects. *Evaluation Review*, 26(4), 395-417.
- Marjoribanks, K. (1979). *Families and their learning environments: An Empirical Analysis*. London: Routledge and Kegan Paul.
- Mattingly, D. J., Prislun, R., McKenzie, T. L., Rodriguez, J. L., & Kayzar, B. (2002). Evaluating evaluations: The case of parent involvement program. *Review of Educational Research*, 72, 549-576.
- McNeal, R. B. (1999). Parental involvement as social capital: Differential effectiveness on science, achievement, truancy, and dropping out. *Social Forces*, 78, 117-144.
- McDonough, P. (1997). *Choosing colleges: How social class and schools structure opportunity*. Albany: State University of New York Press.
- McDonough, P. M. (1998). Structuring college orientations: A cross-case analysis of organizational culture, climates and habit. In C. A. Torres & T. R. Mitchell (Eds.), *Sociology of education: Emerging perspectives* (pp. 181-210). Albany: State University of New York Press.
- McPherson, M. S., & Schapiro, M. O. (1998). *The student aid game: Meeting need and rewarding talent in American higher education*. Princeton, NJ: Princeton University Press.
- Mehan, H., Hubbard, L., Lintz, A., & Villanueva, I. (1996). *Constructing school success: The consequences of untracking low-achieving students*. New York: Cambridge University Press.
- Meyer, J. W. (1970). High school effects on college intentions. *American Journal of Sociology*, 76(1), 59-70.

- Morrow, V. (1999). Conceptualising social capital in relation to the well-being of children and young people: A critical review. *Sociological Review*, 47, 744-765.
- Muller, C. (1993). Parent involvement and academic achievement: An analysis of family resources available to the child. In B. Schneider & J. S. Coleman (Eds.), *Parents, their children, and school* (pp. 77-113). Boulder, CO: Westview Press.
- Myers, D., Olsen, R., Seftor, N., Young, J., & Tuttle, C. (2004). *The impacts of regular upward bound: The results from the third follow-up data collection*. Washington, D.C.: U.S. Department of Education, Office of the Undersecretary, Policy and Program Studies Service.
- National Center for Education Statistics. (1994). *National Education Longitudinal Study of 1988 second follow-up: Student component data file user's manual* (NCES Report No. 94-374). Washington, DC: U. S. Department of Education.
- National Center for Education Statistics. (2003). *The condition of education*. Washington, DC: U. S. Department of Education.
- National Center for Educational Statistics (2007). *Education Longitudinal Study of 2002 (ELS:2002): Base-Year to Second Follow-up Data File*. Washington, DC: Author.
- Nelson, J. I. (1971). High school context and college plans: the Impact of social structure on Aspirations. *American Sociological Review*, 37: 143-148.
- Newmann, F. M., Wehlage, G. G., Secada, W., Marks, H., Gamoran, A., King, B., & Associates (Eds.). (1996). *Authentic achievement: Restructuring schools for intellectual quality*. San Francisco: Jossey-Bass.
- Oakes, J., Mendoza, J. A., & Silver, D. (2006). California opportunity indications: Informing and monitoring California's progress toward equitable college access. In P. Gandara, G. Orfield, & C. L. Horn (eds.), *Expanding opportunity in higher education*. New York: State University of New York Press.
- Paulsen, M. B., & St. John, E. P. (2002). Social class and college costs: Examining the financial nexus between college choice and persistence. *Journal of Higher Education*, 73, 189-236.
- Perna, L. W. (2000). Differences in the decision to attend college among African Americans, Hispanics, and Whites. *Journal of Higher Education*, 71(2), 117-141.

- Perna, L. W. (2002). Pre-college outreach programs: Characteristics of programs serving historically underrepresented groups of students. *Journal of College Student Development, 43*, 64-83.
- Perna, L. W. (2006). Studying college choice: A proposed conceptual model. In J. C. Smart (ed.), *Higher Education: Handbook of Theory and Research, vol. 21* (pp. 99-157). New York: Springer.
- Perna, L. W. (2007). *The sources of racial-ethnic group differences in college enrollment: A critical Examination*. New directions for institutional research, no. 133, New York, NY: Wiley & Sons.
- Perna, L. W., & Titus, M. A. (2005). The relationship between parental involvement as social capital and college enrollment: An examination of racial/ethnic group differences. *The Journal of Higher Education, 76*(5). 485-518.
- Phillips, M. (1997). What makes schools effective? A comparison of the relationships of communitarian climate and academic climate to mathematics achievement during middle school. *American Educational Research Journal, 34*(4), 633-662.
- Portes, A. (1998). Social capital: Its origins and applications in modern sociology. *Annual Review of Sociology, 24*, 1-24.
- Raudenbush, S. W. (1984). Magnitude of teacher expectancy effects on pupil IQ as a function of the credibility of expectancy induction: A synthesis of findings from 18 experiments. *Journal of Educational Psychology, 76*(1), 85-97.
- Raudenbush, S., & Bryk, A. (2002). *Hierarchical linear models: Applications and data analysis methods*. 2nd edition. Thousand Oaks, CA: Sage Publications.
- Reay, D. (2004). Education and cultural capital: The implications of changing trends in education policies. *Cultural Trends, 13*(50), 73.86.
- Rizzo, M., & Ehrenberg, R. (2004). Resident and nonresident tuition and enrollment at flagship state universities. In C. Hoxby (Ed.), *College choices: The economic of which college, when college, and how to pay for it* (pp. 303-353). Chicago: University of Chicago Press.
- Ropo, E. (1987). *Teachers' conceptions of teaching and teaching behavior: Some differences between expert and novice teachers*. Paper presented at the Annual meeting of the American Educational Research Association, Washington, DC.
- Rumberger, R.W. & Larson, K. A. (1998). Student mobility and the increased risk of high school dropout. *American Journal of Education, 107*, 1-35.

- Rumberger, R. W., & Palardy, G. J. (2001). *Does Segregation Matter? The Impact of Student Composition on Academic Achievement in High School*. Paper presented at the American Educational Research Association, Seattle, WA.
- Salvucci, S. & Weng, S. (1995). *Design effects and generalized variance functions for the 1990-91 schools and staffing survey (SASS)*, Technical Report, NCES-95-342-2 (Washington, DC, National Center For Education Statistics).
- Sanders, W. L., & Rivers, J. C. (1996). Cumulative and residual effects of teachers on future student academic achievement: University of Tennessee Value-Added Research and Assessment Center.
- Shanteau, J. (1992). Competence in experts: The role of task characteristics. *Organizational Behavior and Human Decision Processes*, 53, 252-266.
- Shouse, R. (1996). Academic press and sense of community: Conflict and congruence in American high schools. *Research in Sociology of Education and Socialization*, 11, 1730202.
- Singh, K., Bickley, P. G., Trivette, P., Keith, T. Z., Keith, P. B., & Anderson, E. (1995). The effects of four-components of parental involvement on eighth grade student achievement: Structural analysis of NELS:88 Data. *School Psychology Review*, 24, 299-317.
- Smith, T. W., Baker, W. K., Hattie, J. A. C., & Bond, L. (2008). A validity study of the certification system of the National Board For Professional Teaching Standards. In L. Ingvarson & J. A. C. Hattie (Eds.), *Assessing teachers for professional certification: The first decade of the National Board for Professional Teaching Standards* (pp. 345-378). Oxford, UK: Elsevier.
- Smith, M. L. (1980). Teacher expectations. *Evaluation in Education*, 4, 53-55.
- Sprinthall, R., Sprinthall, N., & Oja, S. (1998). *Educational psychology: A developmental approach*. 7th ed. Boston MA: McGraw Hill.
- St. John, E. P. (1991). What really influences minority attendance? Sequential analysis of the High School and Beyond sophomore cohort. *Research in Higher Education*, 32, 141-158.
- St. John, E. P. (2003). *Refinancing the college dream: Access, equal opportunity, advanced multilevel modeling*: Thousand Oaks, CA: Sage Publications.
- St. John, E. P. & Asker, E. H. (2001). The role of finances in student choice: A review of theory and research. In M. B. Paulsen and J. C. Smart (eds.), *The finance of higher education: Theory, research, policy, and practice* (pp. 419-438). New York: Agathon Press, 2001.

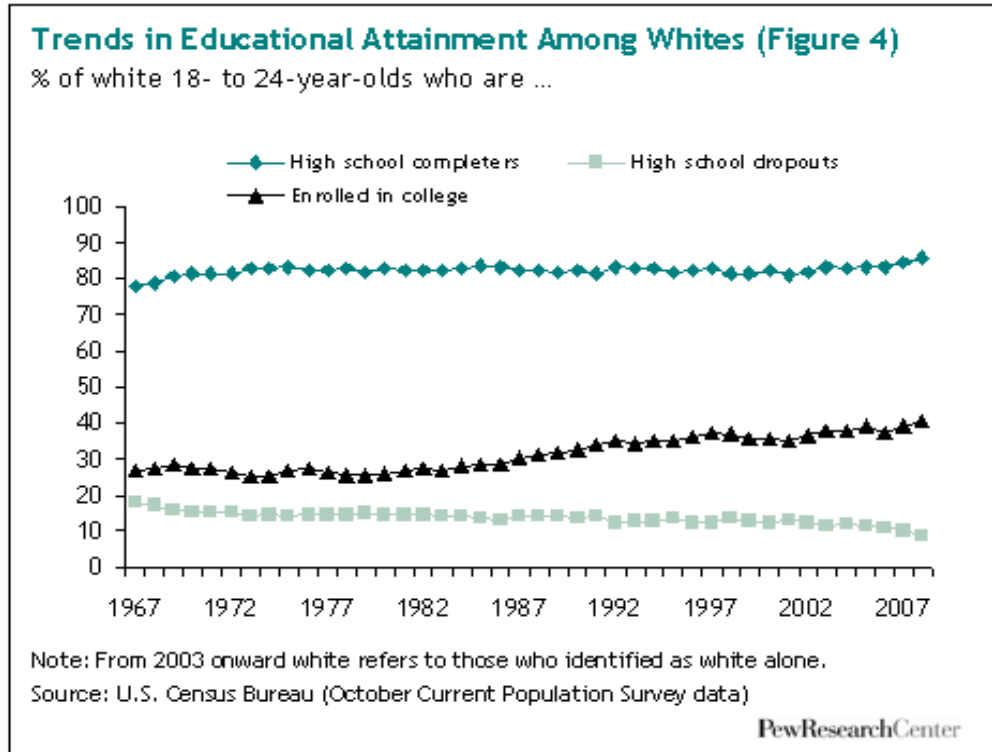
- St. John, E. P. & Starkey, J. B. (1994). The influence of costs on persistence by traditional college-age students in community colleges. *Community College Journal of Research and Practices*, 18, 201-213.
- Stage, F. K., & Hossler, D. (1989). Differences in family influences on college attendance plans for male and female ninth graders. *Research in Higher Education*, 30(3), 301-315.
- Stanton-Salazar, R. D. (1997). A social capital framework for understanding the socialization of racial minority children and youth. *Harvard Educational Review*, 67, 1-40.
- Steinberg, L. (1996). *Beyond the classroom: Why school reform has failed and what parents need to go*. New York: Simon & Shuster.
- Steinberg, L., Brown, B., Cider, M., Kaczmarek, N., & Lazzaro, C. (1988). *Noninstructional influences on high school student achievement: The contributions of parents, peers, extracurricular activities, and part-time work*. Madison, WI: National Center on Effective Secondary Schools.
- Steinberg, L., Dornbusch, S. M., & Brown, B. B. (1992). Ethnic differences in adolescent achievement: An ecological perspective, *American Psychologist*, 47(6), 723-729.
- Strahan, D. B. (1989). How experienced and novice teachers frame their views of instruction: An analysis of semantic ordered trees. *Teaching and Teacher Education*, 5(1), 53-67.
- Sui-Chu, E. H., & Willms, J. D. (1996). Effects of parental involvement on eighth-grade achievement. *Sociology of Education*. 69, 126-141.
- Swail, W. S., & Perna, L. W. (2002). A view of the landscape: Results of the national survey of outreach programs. In College Board. *Outreach program handbook 2001* (pp. xi-xxix). New York: The College Board.
- Swanson, H. L., O'Connor, J. E., & Cooney, J. B. (1990). An information processing analysis of expert and novice teachers' problem solving. *American Educational Research Journal*, 27(3), 533-556.
- Tenenbaum, H. R., & Ruck, M. D. (2007). Are teachers' empathy and cognitions: Statistical analysis of text data by graphical models. *Contemporary Educational Psychology*, 32(1), 48-82.

- Thomas, G. E., Alexander, K. L., & Eckland, B. K. (1979). Access to Higher Education: The importance of race, sex, social class, and academic credential. *School Review*, 87, 133-156.
- Tierney, M. S. (1980). The impact of financial aid on student demand for public/private higher education. *Journal of Higher Education*, 51(5), 527-545.
- Tierney, W. G. (2002). Parents and families in precollege preparation: The lack of connection between research and practice. *Educational Policy*, 16, 588-606.
- Tudor, M. T. (1992). Expert and novice differences in strategies to problem solve an environmental issue. *Contemporary Educational Psychology*, 17(4), 329-339.
- U. S. Department of Education, Condition of Education, 2009. Washington, DC: National Center for Education Statistics.
- Valenzuela, A. (1999). *Subtractive schooling: U.S. Mexican youth and the politics of caring*. Albany: State University of New York Press.
- van der Mars, H., Vogler, E. W., Darst, P. W., & Cusimano, B. (1995). *Novice and expert physical education teachers: They may think and decide differently ... but do they behave differently?* Washington, DC: Department of Education.
- Wayne, A.J. & Youngs, P. (2003). Teacher characteristics and student achievement gains: A review. *Review of Educational Research*, 73, 89-122.
- Weinstein, R. S. (2002). *Reaching higher: The power of expectations in schooling*. Cambridge, MA: Harvard University Press.
- Wenglinsky, H. (2002, February 13). How schools matter: The link between teacher classroom practices and student academic performance. *Education Policy Analysis Archives*, 10(12). Retrieved on January 7, 2004, from <http://epaa.asu.edu/epaa/v10n12/>
- Westerman, D. A. (1991). Expert and novice teacher decision making. *Journal of Teacher Education*, 42(4), 292-305.
- Wetzel, J., O'Toole, D., & Peterson, S. (1998). An analysis of student enrollment demand. *Economics of Education Review*, 17, 47-54.
- White, K. R. (1982). The relation between socioeconomic status and academic achievement. *Psychological Bulletin*, 91(3), 461-481.
- Wilkinson, I. A. G., & Fung, I. Y. Y. (2002). Small-group composition and peer effects. *International Journal of Educational Research*, 37(5), 425-447.

- Yan, W., & Lin, Q. (2005). Parent involvement and mathematics achievement: Contrast across racial and ethnic groups. *The Journal of Educational Research*, 99, 116-127.
- Yekovich, F. R., Thompson, M. A., & Walker, C. H. (1991). Generation an verification of inferences by experts and trained nonexperts. *American Educational Research Journal*, 28(1), 189-209.
- Yonezawa, S., Jones, M., & Mehan, H. (2002). Partners for preparation: Redistributing social and cultural capital. In W.G. Tierney & L.S. Hagedorn (eds.), *Increasing access to college*. New York: State University of New York Press.
- Zhou, M. (1997). Growing up American: The challenge confronting immigrant children and children of immigrants. *Annual Review of Sociology*, 23, 63-95.
- Zhou, M., & Bankston, C. (1998). Social capital and the adaption of second generation: The case of Vietnamese youth in New Orleans. *International Migration Review*, 28, 821-845.
- Zick, C. D., Bryant, W. K., & Osterbacka, E. (2001). Mothers' employment, parental involvement, and the implications for intermediate child outcomes. *Social Science Research*. 30, 25-49.

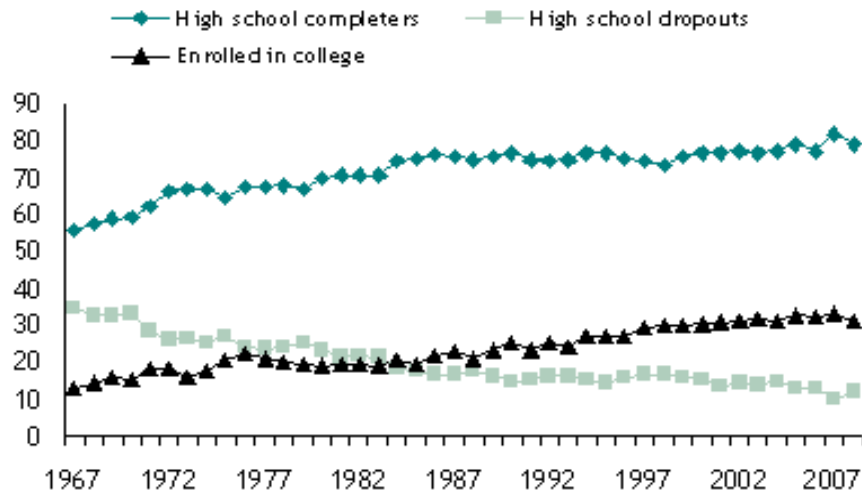
Appendix

Appendix A



Trends in Educational Attainment Among Blacks (Figure 6)

% of black 18- to 24-year-olds who are ...



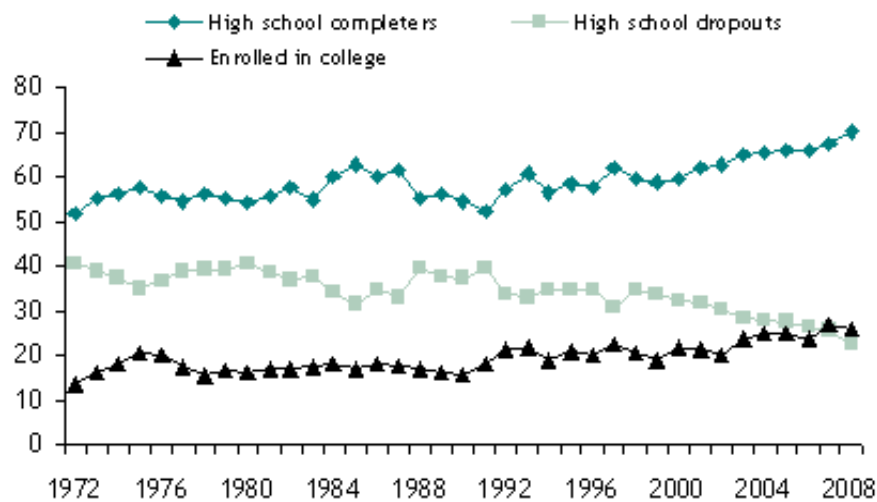
Note: From 2003 onward black refers to those who identified as black alone.

Source: U.S. Census Bureau (October Current Population Survey data)

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Trends in Educational Attainment Among Hispanics (Figure 5)

% of Hispanic 18- to 24-year-olds who are ...



Source: U.S. Census Bureau (October Current Population Survey data).

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Appendix B

Descriptions, Factor Loadings, and Reliability of Factor Composite measures

Variables	Item description	Factor loading
Family-level: Social capital		
Communication (Cronbach's alpha = .991)		
BYS86A	How often discussed school courses with parents	0.980
BYS86B	How often discuss school activities with parents	0.978
BYS86C	How often discuss things studied in class with parents	0.984
BYS86D	How often discussed grades with parents	0.976
BYS86F	How often discussed prep for ACT/SAT with parents	0.970
BYS86G	How often discussed going to college with parents	0.976
Percentage of variance explained		95.533
Parental Participation (Cronbach's alpha = .957)		
BYP54A	Belong to parent-teacher organization	0.931
BYP54B	Attend parent-teacher organization meetings	0.932
BYP54C	Take part in parent-teacher organization activities	0.922
BYP54D	Act as a volunteer at the school	0.909
BYP54E	Belong to other organization with parents from school	0.924
BYP57A	Attended school activities with 10th graders	0.883
Percentage of variance explained		84.078
Parent-school connection (Cronbach's alpha = .973)		
BYP53B	Parent contacted school about school program for year	0.934
BYP53C	Parent contacted school about plan after high school	0.935
BYP53D	Parent contacted school about course selection	0.948
BYP53H	Parent contacted school about fundraising/volunteer work	0.938
BYP53I	Parent contacted school about helping with homework	0.940
BYP53J	Parent contacted school to provide information for records	0.940
Percentage of variance explained		88.230
Parent-parent connection (Cronbach's alpha = .955)		
BYP59DA	Knows mother of 10th grader's 1 st friend	0.863
BYP59EA	Knows father of 10 th grader's 1 st friend	0.855
BYP60A	Friend's parent gave advice about teacher/courses	0.926
BYP60B	Friend's parent did favor	0.935
BYP60C	Friend's parent received favor	0.930
BYP60D	Friend's parent supervised 10 th grader on field trip	0.919
Percentage of variance explained		81.982

Academic assistance from parent (Cronbach's alpha = .969)		
BYP56A	Provide advice about selecting courses or programs	0.967
BYP56B	Provide advice about plans for college entrance exams	0.967
BYP56C	Provide advice about applying to college/school after hs	0.951
BYP57B	Worked on homework/school projects with 10th grader	0.943
Percentage of variance explained		91.592

Family-level: Cultural capital

Parent's norms/values about education (Cronbach's alpha = .955)		
BYP55A	How often check that homework completed	0.943
BYP55B	How often discuss report card	0.956
BYP69A	Family rules for 10 th grader about maintaining grade average	0.948
BYP69B	Family rules for 10 th grader about doing homework	0.948
Percentage of variance explained		90.003

Parental expectation (Cronbach's alpha = .922)

BYS66A	Mother's desire for 10 th grader after high school	0.963
BYS66B	Father's desire for 10 th grader after high school	0.963
Percentage of variance explained		92.802

School-level: Social capital

Teacher-student relationship (Cronbach's alpha = .920)

BYS20A	Students get along well with teachers ^a	0.927
BYS20F	Teachers are interested in students ^a	0.861
BYS20G	Teachers praise effort ^a	0.902
BYS20H	In class often feels put down by teachers	0.914
Percentage of variance explained		81.266

Teacher-parent connection (Cronbach's alpha = .939)

BYTE08A	Spoke to parents about poor performance (English)	0.915
BYTE08B	Spoke to parents about disruptive behavior (English)	0.926
BYTE08C	Spoke to parents about not doing homework (English)	0.928
BYTE08D	Spoke to parents about absenteeism (English)	0.908
Percentage of variance explained		84.510

School-parent connection (Cronbach's alpha = .975)

BYP52B	School contacted parent about school program for year	0.933
BYP52C	School contacted parent about plans after high school	0.944
BYP52D	School contacted parent about course selection	0.940
BYP52H	School contacted parent about fundraising/volunteer work	0.940
BYP52I	School contacted parent about helping with homework	0.948
BYP52J	School contacted parent to obtain information for records	0.951

Percentage of variance explained		88.871
Peer academic influence (Cronbach's alpha = .985)		
BYS90A	Important to friends to attend classes regularly	0.988
BYS90B	Important to friends to study	0.988
BYS90D	Important to friends to get good grades	0.982
Percentage of variance explained		97.188
Academic assistance from teacher/counselor (Cronbach's alpha = .988)		
BYS59A	Has gone to counselor for college entrance information	0.994
BYS59B	Has gone to teacher for college entrance information	0.994
Percentage of variance explained		98.812
School-level: Cultural capital		
Academic climate (Cronbach's alpha = .993)		
BYA51A	Student morale is high	0.986
BYA51B	Teachers press students to achieve	0.982
BYA51C	Teacher morale is high	0.987
BYA51D	Learning is high priority for students	0.985
BYA51E	Students expected to do homework	0.988
Percentage of variance explained		97.185
Teacher/counselor expectation (Cronbach's alpha = .904)		
BYS66E	School counselor's desire for 10 th grader after high school	0.955
BYS66F	Favorite teacher's desire for 10 th grader after high school	0.955
Percentage of variance explained		91.231

Note. ^a Reverse coded.