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Ethnic and Racial Difference in Higher Education Access:

Effects of Family and School Resources

A Dissertation submitted in partial satisfaction of the

requirements for the degree Doctor of Philosophy

in Education

by

Sun Ah Lim

Committee in charge:

Professor Yukari Okamoto, Chair

Professor Russell W. Rumberger

Professor Karen Nylund-Gibson

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The dissertation of Sun Ah Lim is approved.

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Russell W. Rumberger

_____

Karen Nylund-Gibson

_____

Yukari Okamoto, Committee Chair

June 2010

Ethnic and Racial Difference in Higher Education Attainment:

Effects of Family and School Resources

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VITA OF SUN AH LIM
June 2010

EDUCATION

Bachelor of Arts in Educational Psychology, Sookmyung Women's University,
February 2000
Master of Arts in Educational Psychology, Sookmyung Women's University,
February 2002
Master of Arts in Education, University of California, Santa Barbara, December 2008
Doctor of Philosophy in Education, University of California, Santa Barbara, June
2010

AWARDS

1. Association for Institutional Research (AIR), Dissertation Fellowship (May, 2009-
      April, 2010), Funded by the National Science Foundation (NSF), the National
      Center for Education Statistics (NCES) of the Institute of Education Sciences.
2. Selected for 2010 AERA-IES Training Fellowship. Training for Early Childhood
      Longitudinal Study, Kindergarten Cohort (ECLS-K) Database Training
      Seminar, Washington D.C., June 2010

RESEARCH INTERESTS

Quantitative Methodology (Hierarchical Linear Modeling, Structure Equation
Modeling, Growth Modeling with Latent Variables Multilevel Modeling)
Large-Scale Data Analysis
Racial and Ethnic Differences
Cultural influence on Learning; Personality Measurement
Development of Human Cognitive Skills, Abilities and Intelligence throughout the
life-span

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 years[1] (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 data[2],

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

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[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

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[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

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[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, Kasprow, & 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

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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, Prislin, 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

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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 under-represented 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.

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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

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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 habitus[5] 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

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[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

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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

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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 imporazance of teachers finding seem to point out the importance of the teacher (and cost associated with enhancing teaching).

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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 a 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 capital[6].

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[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

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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,

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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

sources[7] 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

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[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.

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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

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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

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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
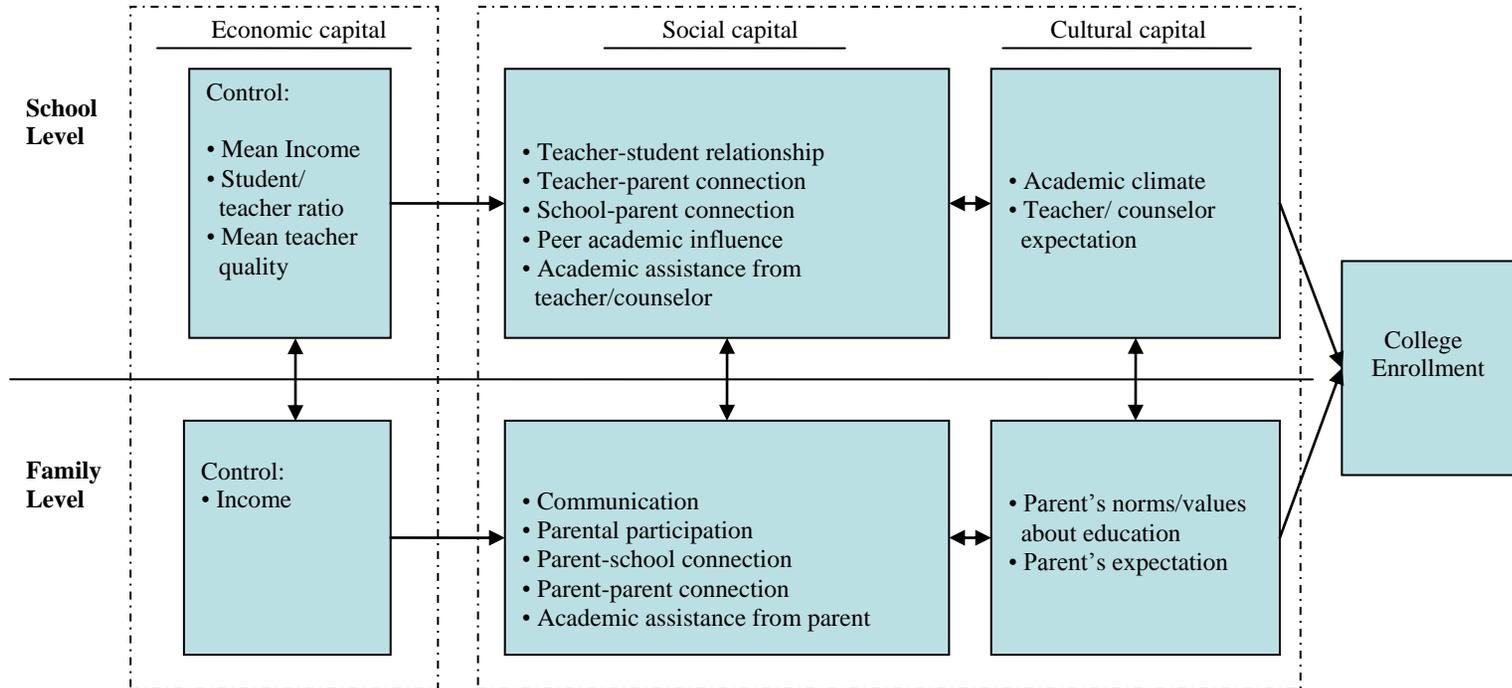
CHAPTER III

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 Statistics[8] 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

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[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,

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[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,

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private high schools.

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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. And 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 andTitus (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

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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' 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)		
Demographic			
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)
Economic capital			
Income	9.21	2.37	Total family income from all sources 2001-composite
Social capital			
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
Cultural capital			
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)		
Economic capital			
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)
Social capital			
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
Cultural capital			
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

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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 $\chi_0 = 1$. The two logit function were denoted as

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

and

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

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

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

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

and

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

Following the convention for the binary model, we let $\pi_j(\mathbf{x}) = P(Y = j \mid \mathbf{x})$ 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

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

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				
Economic capital				
Income ($1,000)	9.11	2.33	1.00	13.00
Social capital				
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
Cultural capital				
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				
Economic capital				
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
Social capital				
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
Cultural capital				
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								
Economic capital								
Income ($ 1,000)	9.65	2.00	7.73	2.55	7.75	2.37	8.60	2.73
Social capital								
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
Cultural capital								
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								
Economic capital								
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
Social capital								
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
Cultural capital								
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						
Social capital						
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***
Cultural capital						
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						
Social capital						
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
Cultural capital						
Academic climate					0.870	1.094*
Teacher/counselor expectation					1.231	1.083
Controls						
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-ration = 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 =

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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 form 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				
Social capital				
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***
Cultural capital				
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				
Social capital				
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
Cultural capital				
Academic climate			0.940	1.031
Teacher/counselor expectation			1.741	1.062
Controls				
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				
Social capital				
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
Cultural capital				
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				
Social capital				
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
Cultural capital				
Academic climate			2.085	1.222
Teacher/counselor expectation			0.953	1.306
Controls				
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				
Social capital				
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
Cultural capital				
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				
Social capital				
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
Cultural capital				
Academic climate			0.443**	1.074
Teacher/counselor expectation			0.580	1.123
Controls				
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.

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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				
Social capital				
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
Cultural capital				
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				
Social capital				
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
Cultural capital				
Academic climate			0.418*	1.200*
Teacher/counselor expectation			1.157	1.001
Controls				
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								
Social capital								
Communication		+		+		+	-	+
Participation		+	-	+		+		+
Parent-school connection		+						
Parent-parent connection		+	-					
Academic assistance from parents		+					-	
Cultural capital								
Parent's norms/values about education		+				-		+
Parent's expectation		+		+		+		+
School-level								
Social capital								
Teacher-student relationship		+				+		
Teacher-parent connection								
School-parent connection			+		-	-		
Peer academic influence		+		-				+
Academic assistance from teacher/counselor	-						-	
Cultural capital						-	-	+
Academic climate								
Teacher/counselor expectation								
Controls								
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

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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 form 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.

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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

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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

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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.

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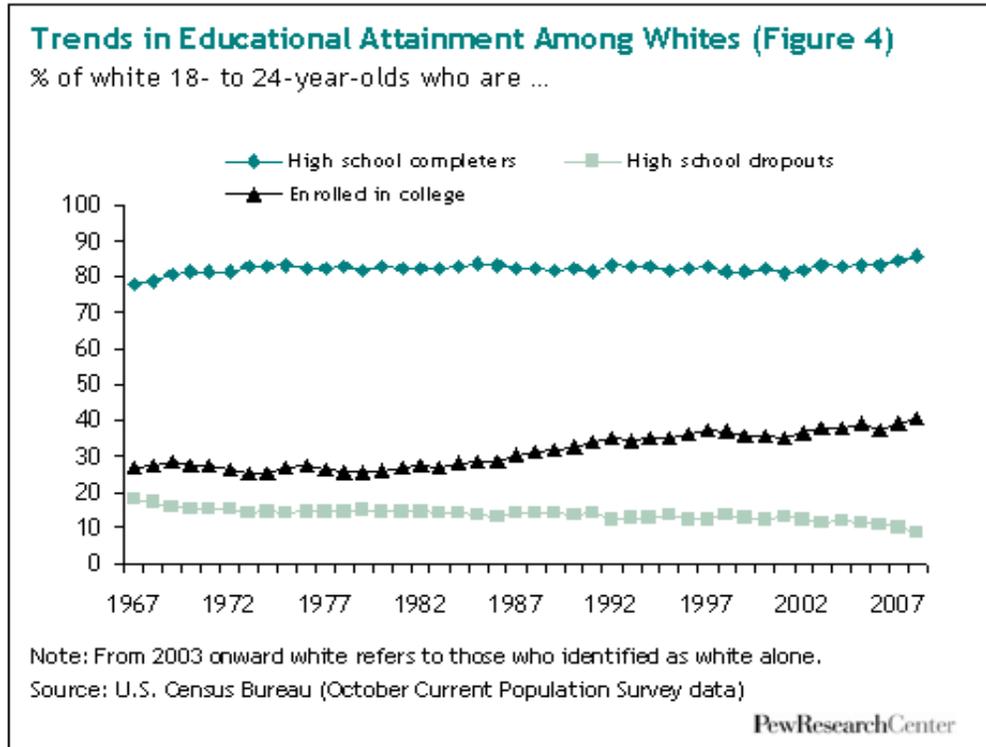
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Appendix

Appendix A
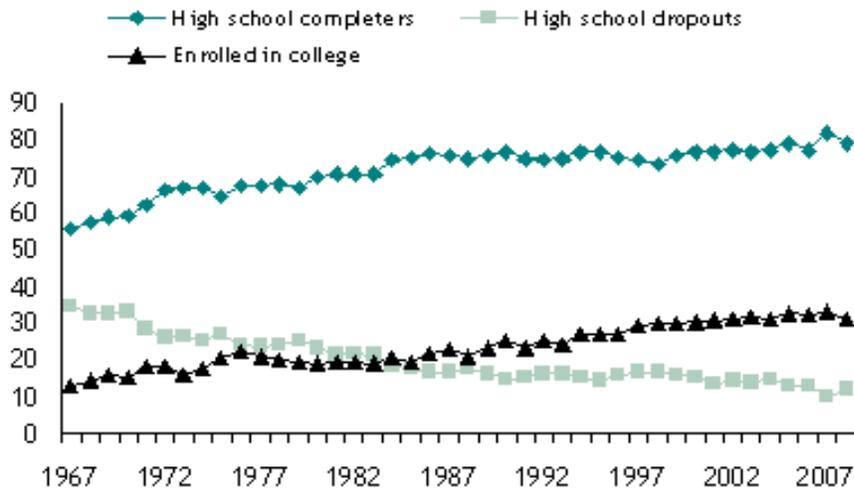

Trends in Educational Attainment Among Whites (Figure 4)
% of white 18- to 24-year-olds who are ...

Note: From 2003 onward white refers to those who identified as white alone.
Source: U.S. Census Bureau (October Current Population Survey data)

Trends in Educational Attainment Among Blacks (Figure 6)
% of black 18- to 24-year-olds who are …

Legend: High school completers — High school dropouts — Enrolled in college

Note: From 2003 onward black refers to those who identified as black alone.
Source: U.S. Census Bureau (October Current Population Survey data)

PewResearchCenter

Trends in Educational Attainment Among Hispanics (Figure 5)
% of Hispanic 18- to 24-year-olds who are …
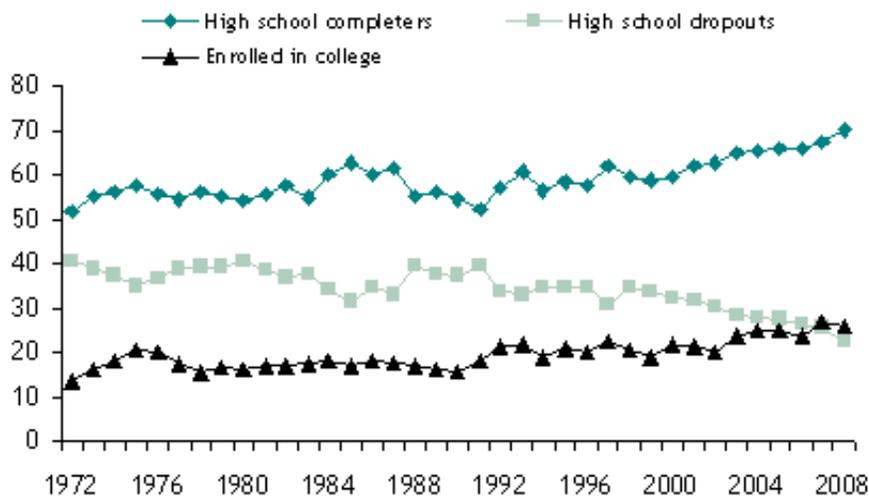
Legend: High school completers — High school dropouts — Enrolled in college

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

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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 1st friend	0.863
BYP59EA	Knows father of 10th grader's 1st 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 10th 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 10th grader about maintaining grade average	0.948
BYP69B	Family rules for 10th grader about doing homework	0.948
Percentage of variance explained		90.003

Parental expectation (Cronbach's alpha = .922)

BYS66A	Mother's desire for 10th grader after high school	0.963
BYS66B	Father's desire for 10th 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 10th grader after high school	0.955
BYS66F	Favorite teacher's desire for 10th grader after high school	0.955
Percentage of variance explained		91.231

Note. [a] Reverse coded.