

Parental Influence on Graduate School Aspirations among First Generation and Non-
First Generation College Students Attending Highly Selective Institutions

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(ABSTRACT)

First-generation students face significant challenges with respect to college enrollment (Choy, 2001) and remain disproportionately underrepresented in certain segments of American higher education particularly in graduate education (Callan, 2001). Among those individuals who shape the educational plans of first-generation students are their parents (Hossler & Stage, 1999; McDonough, 1997). Researchers operationalize parental influence as the transmission of various forms of capital (Bourdieu, 1977).

The purpose of this study was to determine if there was a relationship between various forms of capital parents transmit to their children and graduate school aspirations of first-generation and non-first generation students attending highly selective institutions. Three dimensions of capital were explored in this study: (a) human, (b) cultural, and (c) social. Additionally, this study was designed to determine whether there are differences in the degree of these forms of capital among groups classified by race, gender and institution type.

Data from the National Longitudinal Survey of Freshmen (NLSF) (Massey et. al, 2003) which included a sample of Asian, Black, Hispanic and Caucasian first year, first-generation and non-first-generation students from 28 highly selective colleges and universities were used for this study.

The findings suggest that human, cultural, and social capital transmitted to students by parents are marginally related to graduate school aspirations regardless of generation status. Also, graduate school aspirations differ by race/ethnicity and gender, but do not differ substantively between first generation and non-first generation students in this sample. Finally, the type of institution students attend does not relate to their graduate school aspirations.

Dedication

Proverbs 3: 5 & 6

I would like to dedicate my dissertation to my ancestors, my grandparents (Georgianna Walton, Nannie Evelyn Johnson Fizer, Walter Miller Fizer, Sr., and Calvin Hayden), and future generations of my family.

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CHAPTER ONE

INTRODUCTION

Undergraduate college student enrollment has increased dramatically over the last 20 years. In 1988, approximately 11 million undergraduate students were enrolled in colleges and universities across the United States. By 2005, this number had increased to nearly 15 million students. Enrollment is projected to expand by another 18% for undergraduate students by 2013 (Eaton, 1997; Gerald & Hussar, 2003; U.S. Department of Education, 2006).

The extraordinary growth in enrollment is, in part, a result of the government's attempt to expand access to higher education for all United States citizens. To demonstrate their commitment to addressing this prevailing public issue, government leaders have enacted various policies over the past 60 years intended to overcome barriers to educational access (Eaton, 1997). Beginning in 1944 with the G.I. Bill, men and women returning from World War II were given the opportunity to pursue undergraduate degrees due to their participation in the military. Title XI of the Civil Rights Act of 1964 was designed to improve hiring practices and college admissions opportunities for women and racial and ethnic minorities. This legislation is now referred to as affirmative action (Garrison-Wade & Lewis, 2004; Hayden, 2000). The Higher Education Act of 1965 was another initiative designed to provide financial assistance to students who possessed academic ability but who were not able to attend college because they did not have adequate financial resources (Bowen & Bok, 1998; Eaton, 1997).

In recent years, efforts to expand access have targeted specific student populations. For example, elite colleges and universities have developed initiatives to recruit students who have been historically underrepresented at these institutions. Also, within the last decade the college preparation and outreach program movement has been instrumental in encouraging students who are underrepresented, marginally prepared academically, or from low socioeconomic backgrounds to consider higher education as a postsecondary option (Callan, 2001; Corwin, Colyar, & Tierney, 2005; Eaton, 1997).

These and other notable policies have not only increased the size of the student population, but they have created substantial demographic shifts among students enrolled in college. Data reveal that students from diverse racial and ethnic backgrounds constitute more than one-third of the undergraduate student population (Callan, 2001; Laden, 2004). Undergraduate enrollment for Caucasian students ages 18 to 24 increased by 14% from 6,393,000 in 1995 to 7,393,000 in 2005. During the same time frame, the numbers of African American students enrolled in college increased by 24% from 988,000 to 1,297,000. Furthermore, the proportion of Hispanic students enrolled reflects an extraordinary increase of 38% from 745,000 in 1995 to 1,215,000 in 2005. The number of diverse students in colleges continues to grow (U.S. Department of Education, 2006).

Another shift has occurred in the family income of students who attend U.S. colleges and universities. Presently, more students from low-income families are enrolled in college. In 1972, 26% of students aged 16-24 from low-income families enrolled in college immediately following their senior year of high school. This number had grown to include nearly 50% of low-income students in 2004. However, the immediate college enrollment rates for students from higher-income families have been consistently higher over the last three decades than the rates for students from middle and low-income families. The average percentage of students from high-income families aged 16-24 who enrolled in college directly after high school was 79% while the rate was 64% for students from middle-income families (U.S. Department of Education, 2006).

Parents' level of educational attainment is another characteristic that varies among undergraduate students. There are more students than ever before who are the first in their families to attend college. These students are referred to as "first-generation college students" (Levine & Nidiffer, 1996). Currently, of all first-generation students completing secondary education only 29% enroll in college immediately after high school. Among students whose parents are college educated, however, 73% enter college immediately after high school (Educational Research Institute, 2005). This

dramatic difference in enrollment creates questions and concerns about this growing segment of the higher education student population.

First-Generation Students in Higher Education

For first-generation college students and their parents, the process of pursuing a college education may be a foreign concept. Research on these students reveals a variety of characteristics that place them at a disadvantage when compared to their counterparts. First, results from a special report by the National Center for Education Statistics revealed that many of these students come from families who are in the lowest income quartile (Chen & Carroll, 2005; Ishitani, 2003). Considering their socioeconomic background they are more likely to attend middle and high schools that offer a limited college preparatory curriculum. Typically, these schools do not offer access to timely and accurate information about postsecondary options. As a result, first-generation students and their parents make ill-informed decisions about career and educational opportunities.

Second, less than half of first-generation students take admissions exams like the American College Testing Program (ACT) or Scholastic Aptitude Test (SAT). The first-generation students who take these examinations often score in the lowest quartile (Educational Research Institute, 2005). Third, first-generation students are also more likely to be African American or Hispanic. Fourth, first-generation students whose parents are immigrants often experience difficulties with language barriers (Chen, 2005; Choy, 2001).

Regardless of academic ability, possessing one or more of these characteristics impacts first-generation students' eligibility to attend and enroll in certain types of institutions. For instance, Laden (2004) asserts that first-generation, ethnic minorities, and low-income students are less likely to enroll in a four-year institution following high school graduation. Instead, these students are disproportionately segmented in community colleges. Furthermore, most of the first-generation students in these educational settings are from racially and ethnically diverse backgrounds, particularly African American and Latino (Laden, 2004).

Among first-generation students who do attend 4-year institutions, a greater proportion is attracted to public, local, state university systems (Zusman, 1999). As a result, first-generation students are not enrolled on the campuses of highly selective 4-year institutions to any great extent (Chen, 2005). Examining this issue from a historical perspective offers some insight as to why there are limited numbers of first-generation students attending highly selective institutions.

Through the years, highly selective colleges and universities have been criticized for their exclusionary admissions policies and practices. Prior to the 1950s, admission to elite institutions was reserved for Caucasians (primarily men) who attended premier high schools and whose parents had obtained privileged financial and social status that would guarantee acceptance of their offspring (Steinberg, 2002). These practices impacted racial and ethnic minorities and those students from low-income backgrounds who, due to financial constraints, could not afford to attend these institutions (Callan, 1997; Eaton, 1997; National Center for Education Statistics, 2006).

In recent years, access efforts at the institutional level, particularly at highly selective flagship institutions, have slightly improved with regards to first-generation, low-income and underrepresented students (The Education Trust, 2005). College and university officials at highly selective institutions have adopted more aggressive efforts to recruit students from diverse backgrounds by modifying early admissions processes and developing special initiatives and financial assistance programs. Those first year students who choose to attend these institutions receive support to assist them with their academic and social integration into the campus culture (Powers, 2006; Tinto, 1993). Analyses of the 1995-1996 Beginning Postsecondary Study reveal that first-generation students represent 47% of all entering students at colleges and universities in the U.S. They represent 53% of the student population entering two-year institutions and 34% of entering students at four-year institutions. Of those students who attend four-year institutions, an even smaller segment of first-generation students are entering highly selective institutions, either public or private (Choy, 2001).

The limited enrollment of first-generation students in undergraduate education in general, and at highly selective institutions in particular has serious implications for the

future of higher education and society as a whole. First, their enrollment patterns impinge upon the overall numbers of first-generation students who earn bachelor's degrees. Second, the scarcity of first-generation students earning bachelor's degrees impacts the number of students who can compete for admission to graduate degree programs (Marshall & Glover, 1996; Simpson, 2004; Zusman, 1999).

Research on first-generation students and their aspirations to attend graduate school reveals similar concerns about this population. First-generation students are less likely than their non-first-generation counterparts to aspire to and pursue advanced degrees (Walpole, 2003). Due to their declining retention and low attainment of bachelor's degrees, some do not meet the academic standards to even apply. Those who are interested in applying to graduate school face barriers due to limited access to information about the application process and financial assistance information about scholarships and fellowships. Additionally, first generation students lack encouragement to support their educational aspirations due to the fact that their parents and in some instances close family members have no experience with the expectations of pursuing a graduate degree (York-Anderson & Bowman, 1991; Simpson, 2004; U.S. Department of Education, 2007). They are the first in their families to attain an undergraduate education and parents and families cannot support them at that level of education so there is little hope they can offer the kind of support their students might need to pursue graduate education.

Federal TRIO programs such as Student Support Services and the Ronald E. McNair Post-baccalaureate Achievement Program are designed to help first-generation and underrepresented students move through the educational pipeline with the ultimate goal of attaining a Ph.D. However, first-generation students who successfully matriculate to graduate school programs may experience challenges related to academic and social integration at their graduate school of choice. Unfortunately, those students who aspire to this level do not always have the support necessary to achieve their educational goals (Simpson, 2004; U.S. Department of Education, 2006).

Hence, the divide between those who are college educated and non-college educated continues to expand. The disparity becomes even more pronounced when

one considers those pursuing graduate education. This phenomenon affects the number of first-generation students who are able to make substantial contributions to the American workforce and improve their social and economic mobility (Jackson & Moore, 2006; Marshall & Glover, 1996).

Educational Aspirations

As first-generation students contemplate their future careers and examine opportunities to enroll in higher education, their opinions and aspirations are shaped by a multitude of factors. For high school students, Hossler and Gallagher (1987) refer to this time as the *predisposition* stage of a student's college decision-making process. This is the first stage of their college choice model. During this stage, students decide to pursue one of several postsecondary options (i.e., attend college, pursue a career, or enlist in the military). Using this model, Hossler and Gallagher contend that a student's characteristics and the combination of school/college characteristics, significant others and education activities influence predisposition to college.

On the other hand, researchers have given little theoretical attention to whether undergraduate students use a similar approach when making the decision to attend graduate school. In reviewing the research, several previous studies have applied the constructs of the Hossler and Gallagher model (1987) to help explain graduate student college choice. These studies investigate factors influencing students' decisions during the *search* and *choice* phases (Poock & Love, 2001; Strayhorn & Hayden, 2006; Treseder, 1995). Other studies related to the development of graduate school aspirations use a combination of factors including students' background characteristics, academic achievement in high school and college, and the amount of debt an undergraduate student has accrued prior to graduation (Ekstrom, Goertz, Pollack, & Rock, 1991; McWhirter, Larson, & Daniels, 1996). Still there are very few models related to the graduate school decision making process that explore the same factors that influence undergraduate students to attend graduate school.

Among other factors, those students who have aspirations to pursue higher education, undergraduate or graduate, are influenced by the opinions, behaviors of and information they receive from individuals they come in contact with on a regular basis

including peers (Cohen, 1983; Hallinan & Williams, 1990), school counselors (Fallon, 1997; McDonough, 2005), faculty members who serve as formal or informal mentors (Ekstrom, et. al, 1991; Frierson, 1996; Nettles, 1990), family members, and parents (Ceja, 2006; Gandara, 1995; Persell, Catsambis & Cookson, 1992; Smith, 2001).

Peers can negatively and positively impact students' educational achievement and college aspirations. Much of the literature has focused on negative peer group affiliation that results in students dropping out of school, engaging in antisocial behaviors during school, or failing to make academic progress (Bishop, 1989; Fordham & Ogbu, 1986). On the other hand, some studies illustrate the benefits of associating with positive peers. That is, students who belong to peer groups where most students intend to pursue higher education tend to be more motivated and are more likely to enroll in college (Rumberger, 1991). A similar trend exists among peers in the collegiate environment. Participating in learning communities and building associations with other students who are highly motivated and making academic progress help to ease the transition during the first year of college and increase overall student retention. In turn, this type of interaction promotes active learning, academic excellence and has been found by some researchers to increase the likelihood that students will pursue graduate education (Sallee & Tierney, 2007; Treisman, 1992).

School counselors are a primary source of guidance for high school students throughout their secondary school careers (Fallon, 1997). School counselors assist students with scheduling classes and testing, but also advise students about college admission and job placement options. However, first-generation students from low-income backgrounds often attend secondary schools where counselors are inundated with additional responsibilities. These counselors lack the time and resources to provide substantial assistance and encouragement to students as they consider their postsecondary plans (Fallon, 1997; McDonough, 2005). Research conducted by the Center for Higher Education Policy Analysis (CHEPA) in California revealed that not only do these students attend high schools where teachers and counselors do not encourage them to participate in higher education, but they do not have timely access to

financial aid and admissions information to make well informed college decisions (Tierney, 2002).

Another group of individuals that influence students' decisions to pursue graduate education particularly at the collegiate level are faculty members/mentors. Students who participate in undergraduate research opportunities are engaged in one of the most effective methods used to develop graduate school aspirations. Through student and faculty interaction, faculty mentors guide students through the research process and begin to socialize them so that they will be prepared for graduate school coursework and investigative research (Frierson, 1996). There are also faculty members who write recommendation letters for students and work with them to complete their graduate school application process (Neal-Barnett, Mitchell, & Boeltar, 2002).

Whether first generation students have undergraduate or graduate school aspirations, previous research supports the notion that another group of individuals highly influences their decisions, their families. Freeman (2005) contends that family members are major influences on the motivations and aspirations of students. "In addition to the immediate family, the influences of extended relatives, also known as *kin*", are funneled through students' cultural characteristics in order to understand the influences on students' college choice" (Freeman, 2005, p. 111).

Furthermore, within families, parents or guardians play a central role in influencing the college aspirations of their students (Cabrera & La Nasa, 2000b; Gandara, 1995; Hamrick & Stage, 2004; Hossler & Stage, 1999; McDonough, 1997; Perna, 2000). In fact, Hossler, Schmit, and Vesper (1999) argue that among those individuals who influence educational aspirations, parents are the "single most important predictor" (p. 24). Recognizing the importance of parents in the development of college aspirations, researchers have examined different types of parental influence.

Parental influence has been defined in the literature using several theories. One prevailing discussion within the social science literature operationalizes parental influence or involvement as the ability of parents to transmit various forms of capital to their children. These theories are based on research related to cultural (Bourdieu,

1977), human (Becker, 1993), and social (Coleman, 1988) capital. Within families where parents are able to transmit more diverse forms of capital to their sons and daughters, students often exhibit higher educational aspirations (McDonough, 1997).

According to other research, there are variations in parental influence on educational aspirations based on race and socioeconomic background (Hamrick & Stage, 2004; McDonough, 1997). Although Mexican American parents who are not college-educated cannot offer explicit advice to their daughters about applying to college, they place a high value on education and strongly encourage them to pursue higher education (Ceja, 2000). Similar findings emerge with respect to the African American parents. These parents want their sons and daughters to participate in higher education and stress the importance of going “beyond their own [i.e., parent’s] level of schooling” (Freeman, 2005, p. 17). Additionally, Hamrick and Stage (2004) examined the validity of a model that measured predisposition to college for students attending high-minority, low-income schools. They concluded that across all racial subgroups the predisposition to college is positively impacted by having at least one college educated parent. Most first-generation students, however, lack complete knowledge about postsecondary options because their parents are not college educated, hence are unable to provide this information to them (Smith, 2001).

Previous studies on the college aspirations of high school students have used socio-cultural factors such as race and ethnicity, socioeconomic status, and involvement in school activities to explain parental influence. However, researchers have not fully examined some of the parental behaviors or characteristics within the home or family environment that shape the aspirations of first-generation students (Freeman, 2005). This topic is of interest because despite significant obstacles, including parents with no post-secondary education, limited access to information about college and irregular encouragement from school counselors or faculty members, first-generation students still aspire to attend, are accepted to, and eventually enroll in graduate school (Brumage & Peltier, 2005; Cabrera & La Nasa, 2000b; McDonough & Antonio, 1996; Nettles, 1990).

Statement of the Problem

In summary, the numbers of undergraduate college students enrolled in U.S. colleges and universities are growing and the student population is becoming increasingly diverse (Bowen & Bok, 1998; Eaton, 1997). Federal higher education legislation has made it possible for students who possess academic ability to enroll in elite institutions where they were once ineligible because of their race, ethnicity, or disadvantaged socioeconomic background (Callan, 1997; Eaton, 1997). First-generation students are among those students who benefit from this legislation.

The factors that influence first generation students' undergraduate college aspirations have been examined fairly extensively in the literature. Parents constitute one of the most powerful influences on students' predisposition to attend college (Brumage & Peltier, 2005; Gandara, 1995; Hossler & Gallagher, 1987; Hossler & Stage, 1999; McDonough, 1997; Perna, 2000). Researchers operationalize parental influence as the transmission of various forms of capital (Becker, 1993; Bourdieu, 1977; Coleman, 1988; McDonough, 1997). Increased transmissions of capital increase the likelihood that students will aspire to and enroll in college.

Less is known, however, about the role that parents and forms of capital play in the graduate school aspirations of first generation students (Callan, 1997; Eaton, 1997; Laden, 2004). Since first generation students are underrepresented in the ranks of graduate and professional programs, research that addresses this phase of the educational pipeline is needed. It is this gap in the body of knowledge about educational aspirations of first generation students that my study addressed.

Purpose of the Study

The purpose of this study was to examine what type of relationship exists between graduate school aspirations of students attending highly selective institutions and parental capital, and to determine if the relationship differs by generational status (first vs. non first-generation). Three dimensions of capital were explored in this study: (a) human, (b) cultural, and (c) social. Additionally, this study was designed to determine if graduate school aspirations for students at highly selective institutions differ by racial group, gender, or institutional type.

The two samples used in this study included highly selective institutions and students at those institutions who participated in the National Longitudinal Survey of Freshmen (NLSF). The first sample included 28 highly selective colleges and universities that were identified in the *College and Beyond Survey* by Bowen and Bok (1998) and two additional institutions, the University of California at Berkeley and Howard University. The second sample consisted of Asian, Black, Hispanic and Caucasian first year, first-generation and non-first-generation students enrolled at these institutions. For the purposes of this study, first-generation status refers to students from homes where neither parent has earned a bachelor's degree.

The NLSF was designed to explore underachievement among students from racial and ethnic minorities who are participating in higher education (Massey et. al, 2003). Data for the NLSF was collected over six waves (1999, 2000, 2001, 2002, 2003 and 2004). The present study uses data from the base line survey conducted in 1999.

Research Questions

1. What is the relationship between graduate school aspirations of students attending highly selective institutions and forms of human, cultural and social capital transmitted to them by their parents? How are they associated?
 - a. Does this relationship differ by generational status (first- vs. non first-generation)?
2. Do graduate school aspirations differ by race/ethnicity and generational status after controlling for parental capital?
3. Do graduate school aspirations differ by gender and generational status after controlling for parental capital?
4. Do graduate school aspirations for students at highly selective institutions differ by institutional type?

Significance of the Study

This study had significance for future practice, research, and policy. First, there were several constituencies that might benefit from the results of this study. One group would be parents of first-generation high school students. Using the results of this study, parents would gain a better understanding of the behaviors that other first-generation

parents use to encourage their students to pursue higher education. This type of information would benefit parents as they attempt to offer assistance to their own students who aspire to attend highly selective institutions and eventually graduate school.

The second group would include school counselors who work with first-generation students. The results of the study provided school counselors with information about the different forms of capital used among parents of first-generation students from different racial and ethnic backgrounds. Counselors could offer suggestions to parents about the types of behaviors and forms of capital that have influenced first-generation students from similar racial and ethnic backgrounds.

The third group of individuals that might benefit from the results of this study included those who work in graduate school admissions. The results offered representatives information about the types of human capital transmitted to students from parents. During conversations with first-generation students, admissions representatives may want to highlight academic and social support resources that may be useful to prospective students as they transition into graduate school.

The fourth group includes college personnel who work with student retention efforts. The results of the study offered these individuals a better understanding of the social capital that parents are able to transmit to their students. This type of information may be useful in directing students to academic and social support programs that will enhance their college experience and increase retention and potential graduate school attendance among first-generation students.

The results presented in this study also have significance for future research. The purpose of this study was to determine if there was a relationship between parental transmission of capital and graduate school aspirations. Researchers interested in exploring other types of familial involvement on graduate school aspirations might consider studying the behaviors of siblings or other relatives. Additionally, other individuals outside the family unit could be included in the analysis, e.g. peers and school counselors. These studies would contribute to existing literature about the influences of various individuals on students' post-baccalaureate educational plans.

Another study could be conducted on parental involvement by institution type. This study explored parental involvement among students at highly selective institutions. Examining parental involvement using these same dimensions of human, cultural and social capital at other institutional types may yield significantly different results.

In addition, an alternative analysis might offer insight into the relationship between parental influences and retention of first-generation students. This future study would add another dimension to the influences that parents have not only on college aspirations, but on students as they move through the educational pipeline. A study on this topic would expand the knowledge on student enrollment and persistence in higher education for first-generation students.

Third, the present study was significant for future policy. The results of this study might be used by federal and state policymakers who focus on issues of educational access. These individuals may use the results to develop policies that may encourage parents to transmit forms of capital that positively influence aspirations to attend and enroll in graduate education among first-generation students.

Additionally, policymakers who engage in K-16 reform efforts might be interested in the findings. The results of this study provided details about the forms of human and cultural capital transmitted by parents that relate to post-baccalaureate aspirations. Policymakers could use the results to structure opportunities for parental involvement throughout students' educational careers.

Finally, policymakers at highly selective institutions concerned with parent relations could also benefit from the results of this study. From this research, they will gain a better understanding of capital that is transmitted that predicts high levels of college aspirations. This information may be used to establish policies within the universities that offer guidance and meet the needs of parents as their students make the transition through college.

Delimitations

It is important to recognize that there were several delimitations associated with this study. The first delimitation dealt with the data. These data were collected from

students attending institutions defined by Bowen and Bok (1998) as highly selective. There are any number of definitions of highly selective colleges and universities. Another definition might have led to different results.

The second delimitation related to the instrument, the NLSF. When using secondary data, the researcher is limited to the items included in the instrument. In this case, analysis was based on the forms of capital that were included in the NLSF. There may be other types of parental influence and capital that were not addressed in this instrument. If so, these results could be skewed.

A third delimitation of this study was related to self-reported responses. First-generation students were asked to report information such as annual household income, parental behaviors, and emotions. Their responses may not reflect candid answers to the survey questions. If this was the case, the results may have been influenced.

Despite these delimitations, this study made a valuable contribution to the literature on first-generation students. Previous studies have explored parental influence on graduate school aspirations for a variety of student populations. However, there is limited literature on the parental influences on first-generation students who enroll in highly selective institutions. This study was designed to explore this topic.

Organization of the Study

The present study was organized around five chapters. In Chapter One the topic of the study was discussed, along with the research questions, the significance of the study and delimitations. Chapter Two includes a summary of the literature relevant to the study. The third chapter describes the methodology of the study, as well as the sampling techniques and procedures used to collect and analyze the data. Chapter Four explains the results of the data analysis. Finally, the fifth chapter discusses these results in more detail and provides implications for future practice, research and policy.

CHAPTER TWO

REVIEW OF LITERATURE

The purpose of this study was to examine the parental influences on graduate school aspirations among first-generation and non-first-generation students who attend highly selective institutions. Parental influence was operationalized as the transmission of three dimensions of capital (a) human, (b) cultural, and (c) social. This study was also designed to determine if there were differences in graduate school aspirations by race, gender and institutional type after controlling for forms of parental capital.

The current chapter includes a summary of the literature relevant to this study. Also, it describes the theory of *habitus* by Pierre Bourdieu (1977). “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” (McDonough, 1997, p. 9). Based on this theory, students’ decisions to pursue higher education are influenced by those individuals who are around them most often. To that end, the literature is categorized into two areas: development of educational aspirations (undergraduate and graduate) and parental influences on educational aspirations (including human, cultural and social forms of capital). References to research on the experiences of first-generation students are included where appropriate.

Research on the Development of Educational Aspirations

Making the decision to pursue higher education whether at the undergraduate or graduate level is an important milestone in the lives of prospective students (Cabrera & La Nasa, 2000a; Pocke & Love, 2001). Much of the literature, however, focuses on models of undergraduate college aspirations among students. Examining the constructs of undergraduate and graduate educational aspirations are equally important to the purpose of this study.

Undergraduate College Aspirations

A multitude of theories have been created to explain the factors that influence the development of college aspirations among prospective undergraduate students (Chapman, 1981; Hossler & Gallagher, 1987; Jackson, 1982; Kolter, 1976; Litten, 1982). Hossler and Gallagher (1987) designed a comprehensive model that is cited

most frequently when referring to the college decision making process. In their model students undergo three phases: *predisposition*, *search* and *choice*. The predisposition phase relates to the development of college aspirations (Hossler & Gallagher, 1987; Hossler, D., Schmit, J., & Vesper, N., 1999; Litten, 1982; Perna, 2000).

In the *predisposition* phase students develop their plans for life after high school graduation. They decide whether they will pursue higher education or another option that could include full time employment or enlisting in the military (Hossler & Gallagher, 1987; Hossler, Schmidt & Vesper, 1999). This phase of the Hossler and Gallagher (1987) model is heavily influenced by preexisting background characteristics of the student including parents' level of education, family income, student's social and academic experiences and parental encouragement. These characteristics are funneled through school characteristics, significant others and educational activities. All of these factors impact whether the student will ultimately choose to attend college (Hossler & Gallagher, 1987).

Freeman (2005), on the other hand, offers an alternative model for examining the development of college aspirations. She contends that the predisposition phase of the Hossler and Gallagher "model does not take into account students' cultural characteristics" (p. 111). She offers an addendum to their model that includes the *predetermination* phase instead of *predisposition* phase. In this expanded version *family and kinship* and *school characteristics* are two constructs that impact students' cultural characteristics and ultimately influence their predetermination to attend college. In other words, when examining college aspirations using the Freeman framework "the decision [to attend college] is often predetermined by the circumstances outside of the students' control" (p. 111).

Several different models exist that attempt to explain the formation of college aspirations. The picture becomes fuzzier because differences in college aspirations among various student populations depend on the characteristics included in any given model. In other words, the literature reveals that the components or factors included in these predisposition models will vary based on grade level, race and family background characteristics (Cabrera & La Nasa, 2000a; Freeman, 1999; Stage & Hossler, 1989).

As students progress from one grade level to the next, they report that different factors influence their college aspirations. Research studies on middle school students reveal that various school activities and individuals in their families have influenced their hopes to attend college (Cabrera & La Nasa, 2000a; Stage & Hossler, 1989). When students enter high school, additional factors impact their aspirations. For example, Hossler and Stage (1992) studied 2,497 ninth grade students and factors that influence their plans to attend college. The results of their study suggest that parents' level of education and gender of the student significantly influence students' predisposition to college (Hossler & Stage, 1992).

The opinions and behaviors of peers are another set of factors that have a direct impact on college aspirations among high school students. When students attend schools and classes with other students who intend to pursue higher education it increases the likelihood that they too will aspire to attend college (Falsey & Heyns, 1984; Hallinan & Williams, 1990; Tierney & Colyar, 2005). Simply engaging in conversations with peers about educational and career aspirations has the ability to foster college-going behaviors among students.

Differences in the formation of college aspirations have also been studied based on racial and ethnic background. In general, minority students are more likely to plan to attend college, but are less likely than their Caucasian counterparts to attain their educational goals (Brown, 1982). For example, Perna (2000) studied college aspirations among students of diverse racial backgrounds. Of those students who intended to pursue a bachelor's degree, only 39% of African American students and 37% of Hispanic students were actually enrolled in a four-year undergraduate institution after their high school graduation as opposed to 56% of Caucasian students (Perna, 2000).

Furthermore, in some studies African American high school students have the highest reported college aspirations among racial groups. However, they have the lowest undergraduate degree attainment of all students (Brown, 1982; Freeman, 1999). Howard (2003) argues that this phenomenon may be related to "the disruption of the development of positive academic identities" (p. 1) among African American students. In other words, students have high academic ability, but they allow stereotypes and the

perceptions that others have of them to negatively impact their performance. This dissonance between their academic ability and academic performance has been attributed to lack of interest in the subject matter and the students' fear of "acting White" (Howard, 2003; Fordham & Ogbu, 1986).

When comparing the factors influencing educational aspirations among students of different racial backgrounds, other differences emerge in the literature. Bateman and Hossler (1996) examined the predictors of postsecondary education plans of Caucasian and African American students. For Caucasian students these predictors included parents' expectations, student ability, and father's level of education. For African American students, parents' expectations and student ability were also significant predictors, but mother's level of education was more influential than father's level of education (Bateman & Hossler, 1996).

Other factors that influence post-secondary aspirations are family background characteristics. For instance, students who live in single parent homes are likely to experience differences in educational aspirations when compared to students who live in two parent households. In single parent households where the father is not present, the educational aspirations of students are not as high as they are when two parents are in the household (Bateman & Kennedy, 1999).

Parental expectations about college are also considered to be family background characteristics that shape students' aspirations. Previous market research studies reveal that students whose parents expect them to attend college are more likely to enroll in higher education. In fact, some college and university marketing campaigns target parents and encourage them to help their children earn a college degree (Litten, Sullivan & Brodigan, 1983).

Socioeconomic status is another component of family background that impacts undergraduate college aspirations. In the literature, researchers argue that this is the most influential factor in determining predisposition to college (Choy, 2001). Equally important to note is the fact that students who attend low-income and high minority schools experience significant barriers that discourage their aspirations to attend college (Hamrick & Stage, 2004; Perna, 2000). Often, these schools lack active

parental involvement and other educational activities, and limited access if any at all to a strong college preparatory curriculum. These same factors also place students at risk of dropping out of high school and limit their eligibility to attend college (Choy, Horn, Nuñez, & Chen, 2000).

Parents' level of education is another factor that influences college aspirations (Choy, 2001; Hossler & Stage, 1992). Researchers have found that a positive relationship exists between parents' level of education and educational aspirations among high school students (Hossler & Stage, 1992; Sariagiani, Wilson, Petersen, & Vicary, 1990). Students whose parents have earned an undergraduate degree are more likely to aspire to attend college. On the other hand, students being raised in households where neither parent graduated from college often have lower college aspirations. These students are known as first-generation students in social science literature (Choy, 2001).

The pre-college experiences of first-generation students place them at a disadvantage early in their educational careers. They have little assistance from home in selecting classes that result in a strong college preparatory curriculum. Their parents are not able to engage in discussions about the benefits of higher education and how a college education improves social and economic mobility. First-generation students do not receive information from their parents about the steps necessary to pursue an undergraduate degree. In fact, they are not able to guide their children through the college search process including preparing for standardized tests and financial considerations for college entry because they did not participate in these experiences as a student. In general, first-generation students have less information about the college experience and as a result, fewer first-generation students pursue higher education than students who are non-first generation students (Choy, 2001; Strayhorn, 2006).

Variations of these family background characteristics impact students differently when they consider earning an undergraduate degree. For example, Jackson (1978) contends that there are three distinct groups of students: a) *whiches*, b) *whethers* and c) *nots*. For the *whiches*, the decision to attend college has always been a goal or

expectation for them. The main concern or question for these students is “which” college will they attend? The *whethers* are students who are still contemplating whether or not they will attend college and in most cases will apply to their local community college as a postsecondary option. On the other hand, the *nots* tend to be students who never consider college as one of their choices after high school (Jackson, 1978).

Similarly, Freeman (1999) has categorized this same population of students, but with different names and slightly different descriptions based on her research on African American students. The first group is called the *knowers*. For this group of students, attending college is a goal that they know and seem to have always known they will achieve in their lives. She refers to the second group as the *seekers*. The realization that they can attend college is an idea that has evolved for them over time. These students are finally at a point in their lives where they begin to take the appropriate steps necessary to enroll in a higher education institution. The third group is referred to as the *dreamers*. As their names suggest, the students in this category may dream about attending a higher education institution, however, they do not intend to pursue a college degree (Freeman, 1999).

A host of models have been developed to explain the factors that influence undergraduate educational aspirations. When using these models or components of these models, differences emerge in students' aspirations based on their grade level, race and family background characteristics. The strength of these factors in explaining undergraduate college aspirations warrants a further investigation to determine if similar factors impact students' graduate school aspirations.

Graduate School Aspirations

Much of the literature that explains undergraduate students' aspirations to attend and selection of a graduate or professional school has been predicated on the Hossler and Gallagher (1987) model of the undergraduate choice process. These studies focus primarily on two phases of their model, *search* and *choice*. For instance, research on the *search* phase examines those behaviors that students engage in when they are selecting a graduate school or program to apply to (Pocke & Love, 2001). Once they are admitted to one or more institutions, *choice* research relates to factors students

consider as they attempt to determine which graduate school they will ultimately attend among the ones they have been admitted to (Strayhorn & Hayden, 2006).

Researchers have given little theoretical attention to explaining graduate school aspirations among undergraduate students using the *predisposition* phase of the Hossler and Gallagher (1987) model. The research design would involve shifting the population of interest from prospective undergraduate students in high school to prospective graduate students, i.e., those currently pursuing their undergraduate degrees. This type of investigation would provide insight into the factors that influence aspirations of undergraduate students.

The ideas expressed by Ekstrom, Goertz, Pollack and Rock (1991) lead to a broader conceptual framework for the formation of graduate school aspirations. In the model they designed, three main constructs impact educational aspirations during a student's senior year of high school and senior year of college. The first is high school factors including grades and achievement tests. The second component consists of college factors like grades, undergraduate major, tuition and fees and financial debt. The third component of this model is background and family influences including sex, race/ethnicity, marital status, family income, and parental education (Ekstrom, Goertz, Pollack & Rock, 1991).

Similar to the factors that influence undergraduate college aspirations, family background characteristics play a role in the development of graduate school aspirations. Parents' level of education emerges as a factor that predicts graduate school aspirations. Students whose parents have earned a bachelor's degree or higher are more likely to pursue higher levels of education as well (Choy, 2001; Eyermann & Kim, 2000).

Another factor that impacts graduate school aspirations is participation in a structured undergraduate research program. These programs are designed in such a way that students are actively involved in a scholarly research process with the assistance of a faculty mentor. For example, the McNair Scholars Program is a federally funded program that includes an extensive summer research component. The purpose of this and similar programs is to encourage more students who are first-generation,

low-income and underrepresented in higher education to pursue graduate education with the ultimate goal of earning a Ph.D. (Frierson, 1996; Simpson, 2004).

Additionally, students who are interested in careers that require a graduate degree are likely to possess high graduate school aspirations. It is not surprising that students who want to become medical doctors are instructed to attend medical school. In a similar fashion, students who plan to increase their earning potential over a lifetime understand that obtaining advanced degree is one way to achieve their professional goals (Engle, Bermeo, & O'Brien, 2006).

Inconsistent views exist about the impact of undergraduate loan debt on graduate school aspirations. Schapiro, O'Malley, and Litten (1991) found that there was no relationship between graduate school aspirations and loan debt among students interested in arts and sciences disciplines. One of the limitations of his study was that all of the participants attended elite institutions and were from upper income households. Perhaps many of these students did not need to borrow money for their educational pursuits. However, Eyermann and Kim (2000) discovered that for students who borrowed money to finance their undergraduate education after the 1992 Higher Education Amendment there was a positive relationship between loan debt and graduate school aspirations. Eyermann and Kim (2000) contend that aspirations of these students remain high because borrowing is a much easier process than in years past and as a result has become commonplace among college students today.

The literature suggests that students' background and cultural characteristics play a significant role in the development of their undergraduate and graduate school aspirations (Cabrera & La Nasa, 2000a; Freeman, 2005; Hossler & Gallagher, 1987). Among these characteristics are parental influences, from their level of education to their involvement in educational lives of their children (Cabrera & La Nasa, 2000a; Hossler & Gallagher, 1987; Hossler, Schmidt & Vesper, 1999). A further investigation of the types of parental influence on educational aspirations is important for this study.

Parental Influence on Educational Aspirations

Research reveals that parents have a major influence on their children's decisions to pursue higher education (Hossler & Gallagher, 1987; McDonough, 1997;

Weissman, Bulakowski & Jumisko, 1998). In fact, parental influence has been cited as “one of the best predictors of postsecondary educational aspirations” (McCarron & Inkelas, 2006, p. 536). Some scholars operationalize parental influence as the transmission of certain forms of capital from parents to their children (Bourdieu, 1977; McDonough, 1997). In the present review, parental influence on educational aspirations was categorized into three types of capital: human, cultural and social.

Before exploring these three forms of capital, it is important to note that all of them are directly affected by financial capital, the most recognized form of capital that parents can transmit to their children. This type of capital is a collection of the economic resources within a household including “income, assets and various monetary instruments” (Massey et. al, 2003, p. 5). In other words, the transmission of financial capital is directly correlated to the socioeconomic status of the family. Therefore, it is not surprising that affluent families are able to transmit more financial capital to their children that in turn gives students increased opportunities to pursue and afford higher education (Massey et. al, 2003).

Not only is the amount of financial capital that parents are able to transmit important, but how parents use these economic resources is significant to their children’s aspirations. For example, the ability of parents to save money for their children’s college education influences college aspirations (Flint, 1992). Advising students on the college costs that a family can reasonably afford is another way in which parents influence pursuits of higher education (Cabrera & La Nasa, 2000a; Flint, 1992).

Conversely, low-income families are often at a disadvantage as it relates to transmission of financial capital. Parents from low-income families have fewer economic resources to disseminate to their children (Cabrera & La Nasa, 2000b). With fewer financial resources to contribute to higher education, these parents may adversely impact attendance. Furthermore, the idea of pursuing a college degree seems implausible for these students because they are under the impression that their family is not financially able to afford the costs associated with higher education (Paulsen & St. John, 2002).

These examples illustrate how socioeconomic status can impact the types of capital that parents are able to transmit to their children. Also, they lend credence to the fact that these forms of capital are highly interrelated. A further explanation of each form of capital follows.

Human Capital

The first form of parental capital that impacts educational aspirations is human capital. Transmission of human capital can be interpreted as those “skills, abilities, and knowledge possessed by parent(s)” that are shared with their children to help them develop skills and talents that will benefit their futures (Massey et al., 2003, p. 5; Ream, 2003). Additionally, when parents invest time and resources into educating their children, they are transmitting human capital (Massey et al., 2003).

One form of human capital is parental involvement in their child’s education. Activities such as reading to children, helping them with their homework and checking their homework demonstrate that parents are actively participating in the educational endeavors of their offspring. These activities also extend outside of the home to include participating in the Parent Teacher Association (PTA) and meeting during or after school hours for parent-teacher conferences (Massey et al., 2003; Trusty, 1998).

Human capital is also demonstrated through parental encouragement. This includes behaviors and language directed towards students that positively reinforce their educational pursuits. Many parents want their children to have bright futures. They realize that offering support, building confidence and encouraging their children to perform well in school so that they can attend college are among the ways to help them make this a reality. Also, when students earn poor grades in school, parents push them to try harder, do their best and strive for their educational goals. This type of encouragement has the ability to empower students about their education aspirations (Horn & Chen, 1998; Knight, Norton, Bentley & Dixon, 2004; Weissman, Bulakowski, & Jumisko, 1998).

Another component of human capital is reflected in parents’ ability to create a home environment that is conducive for learning and helps children develop critical thinking skills (Coleman, 1988; Senechal, 2006). This can include monitoring children’s

study or homework time and engaging in discussions about everyday activities. Simply taking children to the library gives them an opportunity to observe and be involved in an intellectually stimulating environment. Also, when parents have reading materials in their home and read daily newspapers or news magazines openly, they have the ability to indirectly convey a message about the premium they place on education (Paratore, 1990; Senechal, 2006).

Another point of view to consider is that parents who have more financial resources also have the ability to invest more in their children. This can translate into paying for learning assistance programs such as tutoring and educational camps. Additionally, some parents are able to afford tuition for private secondary education that offers individualized attention and encourages students to pursue post-secondary education (Massey et. al, 2003). This type of parental support and influence causes students to develop positive college aspirations.

For first-generation students the transmission of human capital from parents is limited for multiple reasons (Terenzini et al., 1996). First, depending on the level of educational attainment they themselves achieved, parents may not be able to offer and provide homework assistance as students progress through their secondary school careers. Second, 27% of those students who graduate from high school are defined as first-generation students. Nearly 50% of these students are concentrated in low-income households (Brumage & Peltier, 2006; Horn & Chen, 2000). The employment situation for these parents may not be such that parents can devote time to PTA meetings and supporting their children's extracurricular activities outside of school. Third, parents of first-generation students do not possess the background to engage in comprehensive discussions about postsecondary education and so students are more likely to talk with friends about their college aspirations (Brumage & Peltier, 2006). As a result, first-generation students are less likely to receive assistance from their parents as they consider and prepare to attend college (Vargas, 2004).

Although parents of first-generation students are not college educated, they are still capable of offering parental encouragement that positively affects educational aspirations. A study by MacGowan (2002) about African American high school students

supports this idea. The results revealed that parental expectations and support are much stronger influences on college attendance than parents' educational attainment. In theory, high expectations and supportive roles overshadow the lack of knowledge these parents have about pursuing a college education (MacGowan, 2002).

One study (Wilson & Allen, 1987) examined African American students and the effects of interpersonal dynamics on educational attainment. The findings show that higher educational attainment by the mother is correlated to high educational aspirations of the child. From these results, it is evident that parental influence is enhanced when at least one parent has a college education.

Cultural Capital

Pierre Bourdieu (1977) introduced the idea of parents or elders transmitting cultural capital to children or younger adults within a family unit. He argued that information and intangible benefits are passed along from one generation to another within a particular culture, family or group. These norms, collective tastes, and behaviors of parents, in most cases, influence the habits, preferences and aspirations of their children (Bourdieu, 1977; Massey, 2003).

As it relates to educational aspirations, parents "transmit cultural capital by informing offspring about the value and process of securing a college education, and its potential for conversion in the occupational attainment contest" (McDonough, 1997, p. 9). Thus, parents who value and possess an appreciation for education as well as have an understanding of the system of higher education engage their children in activities that help facilitate their entry into various segments of higher education (Bourdieu, 1977, 1986; DiMaggio, 1982; Lamont & Lareau, 1988; McDonough, 1997).

Parents transmit cultural capital in different ways (Bourdieu, 1977; Lamont & Lareau, 1988; McDonough, 1997). One of the more traditional methods of transmitting cultural capital includes taking children to educational and fine arts activities including museum exhibits, plays, and concerts. Equally important to note are those parents who take their children with them on trips to other countries to explore diverse cultures. Through these activities children observe lifestyles, hear new languages and develop an

awareness of other opportunities outside of their home environment (Lamont & Lareau, 1988; McDonough, 1997).

First-generation students are at a disadvantage when it comes to the transmission of cultural capital from their parents. As mentioned previously, socioeconomic status significantly impacts parents' ability to transmit cultural capital to their children. Since those students from lower SES backgrounds are less likely to have parents who have been college educated (Paulsen & St. John, 2002), these parents have fewer financial resources available to take their children to special activities and educationally diverse events that generate cultural capital. An important point to consider is that there are more minority students whose parents did not attend college than those of Caucasian students (Choy, 2001; Cibik & Chambers, 1991). These trends perpetuate racial and class stratification within communities and society (Bourdieu, 1977).

Social Capital

Another form of capital that parents transmit to their children is social capital. This type of capital is generated as groups or networks of individuals exchange information about various topics (McDonough, 1997). These networks include persons with strong ties to parents within a school or community setting. Additionally, information is received from external sources such as parents' coworkers or individuals who have shared information with these coworkers. Through these social ties parents gain information on how to use financial, human and physical resources to advance their lives and the lives of their children (Ream, 2003).

One of the subjects discussed within these social networks is higher education. Parents who are college educated have a clear understanding of higher education and are able to promote the benefits of college enrollment to their offspring. For example, these parents know that individuals who possess a college degree increase their earning potential. Not only does a college degree increase the likelihood of financial earnings, but it also greatly enhances job opportunities. Parents who are able to transmit this type of social capital along with information about the process by which to obtain a college degree increase their influence on educational aspirations (Lange &

Stone, 2001). Parents want their children to achieve a higher socioeconomic status (SES) for themselves and their children's children (Freeman, 1999; Knight, Norton, & Bentley, 2004; Romo & Salas, 2003).

Contrary to the positive images that parents create with regards to pursuing higher education, they also have the ability to produce negative images. When students are surrounded by parents who contribute to this perspective, it adversely affects their attitudes and aspirations related to higher education. As a result some students decide not to pursue higher education. Smith and Johnson (2003) use the term *educational deprivation* to describe the phenomenon that occurs when parents do not encourage their children to pursue higher education.

In terms of first-generation students, their parents often lack this type of information sharing about higher education to build social capital that can be shared with their children (Johnson & Smith, 2003; Loewith, 1998). Although they may want their children to pursue higher education, their influence could be considered weaker than a parent who has this knowledge. Consequently, parents of first-generation students must rely on other individuals in the students' school or community network to facilitate the process (Lange & Stone, 2001).

Litten's (1982) research is pertinent to this school of thought about students whose parents are less educated hence must rely on other individuals. He examined the differences and commonalities of students from different ethnic backgrounds engaging in the undergraduate college choice process. A segment of this study focused on the educational background of the parents. Those students whose parents had no college education utilized their mothers and fathers as resources only 20% and 21% of the time, respectively and relied on a high school counselor 53% of the time. On the other hand, those students whose parents had graduate level degrees utilized their mothers and fathers as resources 48% and 52% of the time, respectively. In addition to their parents, these students received information from admissions officers (57%) and unrelated alumni (48%) more often than from their peers.

Additionally, a qualitative study (Smith, 2001) provided some insights into the perceptions of low SES African American parents regarding the development of

educational aspirations and the college choice process. Considering most of these parents did not attend college, they lack in-depth knowledge about the college choice process. These parents expressed feelings of frustration about their inability to counsel their children. Some parents in the study attempted to learn more, but felt that information was too difficult to obtain or was being deliberately hidden from them. Others were more disengaged and were forced to rely on other individuals to assist their children in the process (Smith, 2001).

In summary, evidence suggests that parental influence is one of the most important factors impacting the undergraduate college aspirations for first-generation students. This type of parental influence is exhibited in three forms: human, cultural, and social capital (Bourdieu, 1977; Hossler, Schmit & Vesper, 1999; McDonough, 1997). There are models of graduate school choice (Ekstrom, Goertz, Pollack, & Rock, 1991), but further research is needed on whether these three forms of capital influence graduate school aspirations of first-generation students. This study examined whether there is a relationship between parental influence and graduate school aspirations in an effort to expand the scholarly literature about the differences between first-generation and non-first-generation college students. Also, this study will determine if there are differences among students based on race, gender and institutional type.

CHAPTER THREE

METHODOLOGY

The purpose of this study was to examine what type of relationship exists between graduate school aspirations of students attending highly selective institutions and parental capital, and to determine if the relationship differs by generational status (first vs. non first-generation). Three dimensions of capital were explored in this study: (a) human, (b) cultural, and (c) social. Additionally, this study was designed to determine if graduate school aspirations for students at highly selective institutions differ by racial group, gender, or institutional type.

Data from the National Longitudinal Survey of Freshmen (NLSF) were used to arrive at the results for this study. Specifically, there were four research questions that guided this research:

1. What is the relationship between graduate school aspirations of students attending highly selective institutions and forms of human, cultural and social capital transmitted to them by their parents? How are they associated?
 - a. Does this relationship differ by generational status (first- vs. non first-generation)?
2. Do graduate school aspirations differ by race/ethnicity and generational status after controlling for parental capital?
3. Do graduate school aspirations differ by gender and generational status after controlling for parental capital?
4. Do graduate school aspirations for students at highly selective institutions differ by institutional type?

This chapter contains an overview of the NLSF which is the source of data for this study. I also describe the sample selection process, instrumentation, validity and reliability for the survey instrument, and data collection and analysis procedures.

National Longitudinal Survey of Freshmen Overview

The NLSF is an instrument administered by the Office of Population Research at Princeton University. It was designed to collect data to test competing theories related to underachievement among racial and ethnic minority students participating in higher

education (Massey et. al, 2003). Among these was the theory of stereotype threat posed by Steele (1988, 1992, 1998). According to Steele, individuals from underrepresented populations may “underperform academically because of an unconscious fear of living up to negative stereotypes about their group’s intellectual capacity” (Massey, et. al, 2003, p. 10). Another was the theory of oppositional culture by Ogbu (1978, 1981) that relates to the negative feelings, values and beliefs held by racial and ethnic minorities about mainstream education and knowledge acquisition. These feelings result from historical and institutional oppression. Additionally, Tinto’s (1975) theory of academic and social integration of students into college life was incorporated into the design. These theories, along with others related to attachment, peer influence, and capital deficiency, established the framework for the purpose and design of the NLSF study (Massey et. al, 2003).

The NLSF consists of six waves (1999, 2000, 2001, 2002, 2003 and 2004) of data collected from first year students with no prior college attendance who enrolled in highly selective institutions. The colleges and universities identified for the study were the same as those used in the *College and Beyond Survey* (Bowen & Bok, 1998) with the addition of the University of California at Berkeley. In addition to Berkeley, four selective historically Black colleges and universities (HBCUs) were approached about being included in the study for a total of 35 institutions in the potential sample. Ultimately, 28 institutions (80% of those invited) participated in the study. These institutions were classified as liberal arts (7, 25%), private research (16, 57%), and public research (5, 18%). A list of these institutions is included in Appendix A.

Data were collected for the NLSF using two methods. First, researchers conducted face-to-face interviews with student participants to obtain base line information. The initial interviews took place during the first semester of the participants’ freshmen year (Fall 1999). Second, subsequent interviews occurred over the phone in the spring semester of each academic year beginning in 2000 and ending in 2004. The final interview conducted in 2004 was intended to be a post-graduation follow up. Although some students did not persist from one year to the next or decided to transfer to other institutions, they were tracked, interviewed and their responses were incorporated into the study (Massey et al., 2003).

The NLSF was used as the data source for this study for two reasons. First, the questions contained in the instrument directly related to parental influence in the form of human, cultural, and social capital. Second, this data source is the only one of its kind that specifically solicits background information from students who are attending highly selective institutions. For the purposes of this study, only the data from the first wave (1999) or base line survey were included in the data analysis.

Sample Selection

The sample of student participants for the NLSF was obtained using a stratified sampling technique. Stratified sampling allows researchers to select participants from a population in which there is a disproportionate number of individuals that would create an imbalance of participants in a sample (Creswell, 2005). Using this sampling technique involves a two step process. First, the population is divided into strata based on a specific characteristic most often related to the dependent variable. Second, a simple random sample is used to select participants from within these strata and then weighted to create an estimate of the population (Creswell, 2005; Pedhazur & Schmelkin, 1991).

For the NLSF, researchers developed a sampling method based on the total number of Black students enrolled at the 28 participating institutions. The method they developed resulted in four categories (strata) of institutions and within each category researchers determined a specific number of students to sample from the respective institutions. The first category included institutions with a Black student population of 1000+. Following a rubric, researchers targeted 70 students from four ethnic groups (Asian, Black, Hispanic, and Caucasian) which resulted in a total of 280 participants from these institutions. The second category of institutions enrolled between 500-1000 Black students and 50 students from each ethnic group were targeted for a total of 200 participants. The third category included institutions with 100-500 Black students. At these institutions 80 students were targeted so that 20 students from each ethnic group would be represented in the study. In the fourth category, institutions with fewer than 100 Black students, 40 were interviewed (10 students from the four ethnic groups). Seventy students participated at the one HBCU included in the study (Massey et. al, 2003).

The sample for the present study included all students participating in the NLSF. However, since one purpose of this study was to examine parental influence on the graduate school aspirations of first-generation and non-first generation students, it was necessary to use two criteria to identify those students who would be considered first-generation students. First, students neither of whose mothers and fathers had completed a bachelor's degree were identified. Two questions from the instrument were used to assess this criterion. The first question asked respondents to indicate the highest level of education achieved by the respondents' mother or the woman most responsible for raising the respondent. The second question asked respondents to indicate education level of their father or the man most responsible for raising them. For these questions, students could choose from response options including high school graduate, some college, college graduate, some graduate school, or graduate or professional school (Massey et. al, 2003). Those students who reported their mother and father had only a high school education at most were considered first generation college students (Horn & Nuñez, 2000). Otherwise, students were considered non first-generation college students.

Second, the presence of parents in the households of these first-generation students was another important criterion. The focus of this study was on the behaviors and characteristics of parents that influence college aspirations, therefore for students to answer these behavioral questions one or more of their parents should have been present. Items on the NLSF asked students which parents were in the home at certain points in their upbringing. Only those students who indicated that a mother, father or both parents were in their household when they were six years old, 13 years old and in their senior year of high school were included in the sample. The final sample of participants meeting these two selection criteria for first generation status consisted of 349 students.

Instrumentation

The present study used data collected in 1999 from the base line survey of the NLSF. This base line survey was composed of four main sections, 37 sub-sections and 155 items. These items were designed to elicit information about the respondents' family background, peers, school quality, academic preparation, neighborhood

environment, and their perspectives on a variety of societal issues including race relations.

In the first section there were five demographic items used to gather background information about the respondents. The first question asked respondents to identify the type of college they were currently attending (i.e., liberal arts, private research, or public research). The second and third questions elicited information about the sex and ethnicity of the respondent respectively. The fourth question described the respondent's skin color on a scale of "0" indicating a very light complexion to "10" representing a very dark complexion. The fifth question was related to the nationality of the student. Students could indicate whether they were born in the United States or not (Massey et. al, 2003). The remainder of this section contained questions that elicited information on the type and number of individuals living in the household with the respondents at three time periods: six years of age, thirteen years of age, and during their senior year of high school.

The second section contained six subsections. Each subsection included questions about the respondent at six years of age. These subsections contained questions about parental behaviors towards their children, the type of school the respondent attended in the first grade, and their educational experiences during the summer after they completed the first grade. Additionally, there were subsections about the ethnic and racial composition of the respondent's school and neighborhood as well as the violence within the respondent's school and neighborhood (Massey et. al, 2003).

The third section of this instrument included five subsections related to the household, school and neighborhood environments the respondents experienced when they were 13 years old. Specifically, these subsections pertained to the type of school students attended when they were 13-years old, violence that occurred in the respondents' schools and neighborhoods, and the racial composition of these environments (Massey et. al, 2003).

The fourth section of the instrument contained 25 subsections and focused on the parents, school, and neighborhood of the respondents during their senior year of high school. Furthermore, these subsections contained questions that asked about the disciplinary methods used by their parents, characteristics of their high school, part-time

jobs and non-work activities, and perceptions of various racial and ethnic populations (Massey et. al, 2003). The NLSF is a copyrighted instrument so it cannot be appended herein. Those interested in learning more about the instrument may do so at <http://nlsf.princeton.edu/index.htm>.

For purposes of this study, questions from eight of the subsections contained in the sections described above were used to examine three types of parental influences on graduate school aspirations. Human capital was the first type of parental influence. Three subsections were composed of questions that asked students to describe how often their parents engaged in behaviors that cultivated human capital. In the first subsection, students were asked to respond based on their experiences when they were six years old. The second and third subsections were related to those behaviors that their parents exhibited when students were 13 years old and then in their senior year of high school respectively. For all of these subsections, respondents could indicate that their parents engaged in these behaviors: never, rarely, sometimes, often, or very often.

There were six questions pertaining to the cultivation of human capital when students were six years old in the first subsection. These items were designed to gather information on how often their parents read to them, helped them with their homework, and took them to the library. The final three questions in this subsection asked students if their parents did or did not enroll them in summer school, a summer educational camp and an academic enrichment camp.

The behaviors related to parents' cultivation of human capital when respondents were 13 years old included four questions in the second subsection. These items asked how often their parents assisted them with their homework, took them to the library, enrolled them in a summer educational camp and participated in the Parent Teachers' Association (PTA) (Massey et. al, 2003).

A series of 12 questions asked students to describe how often their parents engaged in behaviors that cultivated human capital when they were enrolled in their senior year of high school. This third subsection included similar questions to those mentioned above for age 13. For example, these questions asked how often their parents helped them with and checked their homework as well as met with their

teachers. There were also questions about the frequency with which their parents read the daily newspaper, read the Sunday newspaper, and read weekly news magazines. Additional questions solicited information on how their father or the man most responsible for them and their mother or the woman most responsible for raising the student treated them during this time period. For both individuals, participants were required to indicate the degree to which respondents could count on this parent or guardian to help them with homework whenever they did not understand it. They also responded to statements about the degree to which this person pushed them to do their best and encouraged them to try harder when they received a poor grade. Participants reported their parents' engagement in these behaviors using a five-point scale where "0" equaled strongly disagree and "4" meant strongly agree with the statement (Massey et. al, 2003).

The second type of parental influence examined in this study was cultural capital. There were three subsections containing questions that asked students to describe how often their parents engaged in behaviors that cultivated cultural capital. The questions in the first subsection related to the time period when the student was six years old, the second subsection related to their parents' behaviors when the student was 13 years old and the third subsection included questions about the students' senior year of high school. All but one of the questions in each subsection were the same. They asked how often their parents took them to an art museum, a science museum, took them to plays and concerts and how frequently they traveled with their parents on trips outside of the U.S. The one deviation was the question about how often parents took students to a science museum. This item was omitted from the subsection about the students' senior year of high school (Massey et. al, 2003).

The third form of parental influence was social capital. Those items measuring social capital were included in two subsections, one related to respondents when they were 13 years of age and the other when they were in their senior year of high school. In the first subsection, students were asked the degree to which they agreed with the fact that their parents talked with the students' friends. This same question was asked in the second subsection in addition to two other questions. Students were asked to

indicate the degree to which they agreed with the fact that their mother knew the students' friends and their father knew the students' friends (Massey et. al, 2003).

This study also used two questions as control variables. These two questions were related to the socioeconomic status and academic ability of the student. The first question asked students to give an estimate of the annual income of the household in which they spent their senior year of high school using a 14-point scale. The lowest income level was under \$3,000 and the highest income level was \$75,000 or more per year. The second question asked students to give their composite score on the ACT administered by the American College Testing Program or the Scholastic Aptitude Test (SAT) (Massey et. al, 2003). Prior literature on students' educational aspirations has revealed that family income and academic ability influence educational aspirations, so it was important to control for those two factors in the data analysis (Hossler & Stage, 1992; Perna, 2000; York-Anderson & Bowman, 1991).

Additionally, two questions related to graduate school aspirations, the dependent variable in this study, were included in one of the subsections on the NLSF. Students were asked to estimate the probability that they would achieve various educational milestones using a 10 point scale, where "0" indicated that achieving a certain educational level was extremely unlikely and "10" indicated that it was extremely likely. The educational levels were a) go on for more education after college, and b) complete a graduate or professional degree (Massey et. al, 2003). Table 1 lists the variables used for this study and the items to construct the variables. Among them, the dependent variables, graduate school aspirations, and three types of capital, human, cultural, and social capital were constructed by the average of constituent item scores. More details about this procedure will be described in the Data Analysis section.

Validity and Reliability of Instruments

This section includes details about two measures of quality of instruments: validity and reliability. Validity refers to whether the inferences made from the scores or responses on an instrument are "appropriate and meaningful" (Gall, Borg & Gall, 1996, p. 249) in explaining something about the study population (Gall, Borg & Gall, 1996; Pedhazur & Schmelkin, 1991).

Table 1 (continued)

Factor and Variable		Response Range
Did your parents read Sunday newspaper?	(age 18)	Never (0) to Very Often (4)
Did your parents read weekly news magazines?	(age 18)	Never (0) to Very Often (4)
Mother pushed me to do my best.	(age 18)	Never (0) to Very Often (4)
Mother helped with schoolwork when I didn't understand.	(age 18)	Never (0) to Very Often (4)
Whenever I got a poor grade, mother encouraged me to try harder.	(age 18)	Never (0) to Very Often (4)
Father pushed me to do my best.	(age 18)	Never (0) to Very Often (4)
Father helped me with homework when I didn't understand.	(age 18)	Never (0) to Very Often (4)
Whenever I got a poor grade, father encouraged me to try harder.	(age 18)	Never (0) to Very Often (4)
▪ Cultural Capital (11 items)		
Parents took you to a museum?	(age 6)	Never (0) to Very Often (4)
Parents took you to a science center?	(age 6)	Never (0) to Very Often (4)
Parents took you to zoo or aquarium?	(age 6)	Never (0) to Very Often (4)
Parents took you on trips to foreign countries?	(age 6)	Never (0) to Very Often (4)
Parents took you to a museum?	(age 13)	Never (0) to Very Often (4)
Parents took you to a science center?	(age 13)	Never (0) to Very Often (4)
Parents took you to plays and concerts?	(age 13)	Never (0) to Very Often (4)
Parents took you on trips to foreign countries?	(age 13)	Never (0) to Very Often (4)
Parents took you to a museum?	(age 18)	Never (0) to Very Often (4)
Parents took you to plays and concerts?	(age 18)	Never (0) to Very Often (4)
Parents took you on trips to foreign countries?	(age 18)	Never (0) to Very Often (4)
▪ Social Capital (4 items)		
Parents talked with your friends	(age 13)	Never (0) to Very Often (4)
Parents talked with your friends	(age 18)	Never (0) to Very Often (4)
Mother knew who your friends were	(age 18)	Never (0) to Very Often (4)
Father knew who your friends were	(age 18)	Never (0) to Very Often (4)

Table 1 (continued)

Factor and Variable	Response Range
▪ Composite SAT/ACT score	200 – 800 for SAT and 1 – 36 for ACT
▪ Gender	0 = Male 1 = Female
▪ Respondent's Ethnicity	1 = Asian 2 = Black/African American 3 = Hispanic/Latino 4 = White Caucasian
▪ Parent's Education Highest level of schooling achieved by mother	1 = Grade School 2 = Some High School 3 = High School 4 = Some College 5 = College Graduate 6 = Some Post-Graduate 7 = Graduate or Professional Degree
Highest level of schooling achieved by father	1 = Grade School 2 = Some High School 3 = High School 4 = Some College 5 = College Graduate 6 = Some Post-Graduate 7 = Graduate or Professional Degree

Table 1 (continued)

Factor and Variable	Response Range
<ul style="list-style-type: none"> ▪ Household annual income during senior year of high school 	0 = Under \$3,000 1 = \$3,000-\$3,999 2 = \$4,000-\$4,999 3 = \$5,000-\$5,999 4 = \$6,000-\$6,999 5 = \$7,000-\$7,999 6 = \$8,000-\$8,999 7 = \$9,000-\$14,999 8 = \$15,000-\$19,999 9 = \$20,000-\$24,999 10 = \$25,000-\$34,999 11 = \$35,000-\$49,999 12 = \$50,000-\$74,999 13 = \$75,000-More

Two types of validity were important to this study. First, content validity measures whether researchers have included all relevant questions on the instrument that could possibly relate to the research topic. To substantiate this measure, NLSF developers held in-depth interviews with experts, including faculty, administrators and students, to review the instrument and offer suggestions on ways to improve the instrument. The researchers also administered a pilot survey to first year students at an institution not included in the sample. Suggestions about the instrument were also solicited from these students (Creswell, 2005; Massey et. al, 2003).

The second type of validity, construct validity, should be established to ensure that the items on the instrument are consistent with and actually measure the constructs that they were designed to measure (Creswell, 2005). To that end, NLSF developers used existing theories to create survey items that would help explain family, neighborhood and school factors that impact achievement and motivation in undergraduate college students (Massey et. al, 2003).

Reliability is another measure of instrument quality associated with the accuracy and precision of responses over multiple administrations of an instrument (Pedhazur & Schmelkin, 1991). As it relates to the NLSF, self reported information about grades and household income were correlated with actual data from students' grade reports and financial aid documents submitted to the university's financial aid office by their parents or guardians. The agreement of students' actual grades to self-reports was relatively marginal (.575) and slightly improved for actual parental income and self-reported parental income (.70) (Massey et al., 2003). Finally, all interviewers assisting with this study were thoroughly trained to follow a standardized interview protocol for each face to face interview and used computer-assisted telephone interviewing with student participants (Massey et. al, 2003).

Since the three types of capital were constructed based on a different set of item questions in the NLSF, it was necessary to conduct separate reliability measures on the human, cultural and social capital items. These procedures and the results are explained in the Data Analysis section.

Data Collection Procedures

Because the current study analyzed existing data, several steps were taken to acquire the data. First it was necessary to obtain permission to conduct the study from the Institutional Review Board for Research Involving Human Subjects (IRB). The IRB monitors all research conducted by students, faculty and staff at my institution. The appropriate forms were submitted to the IRB and approval was granted to proceed with the study by the chair of the IRB. A copy of this approval letter from the IRB has been included in Appendix B.

Second, to obtain access to the NLSF dataset I registered to become an authorized user of the data with the Office of Population Research at Princeton University where this dataset is stored. After registering, I completed a User Agreement form briefly describing my study and the purpose of using the NLSF data and agreed to use the data in an appropriate and ethical manner for dissertation research. This form was submitted electronically and access to the entire dataset was subsequently granted. Additionally, I sent an electronic mail message to the director of the Office of Population Research to confirm my intentions to use the data for dissertation research. A response message was received restating the approval to use the data for those purposes.

Finally, I logged on to the registered users site and entered the NLSF data archive. From this archive, I downloaded the first wave of the dataset to my computer. These data were made available in an SPSS file.

Data Analysis Procedures

To address the research questions developed for this study several types of data analysis procedures were performed. Some procedures were performed using the statistical software package SPSS, including obtaining descriptive statistics, constructing the variables from the selected items in the questionnaire, and calculating reliability coefficients for the scores for the constructed variables. Chapter Four includes a description of additional steps employed to clean up and prepare the data for the study.

Hierarchical linear modeling (HLM) (Raudenbush & Bryk, 2002) was employed to answer the research questions developed for this study. The main reason for using this

statistical method is due to the fact that the NLSF data are situated in a nested data structure such that first-generation and non-first-generation students, women and men, and students from different racial groups (micro-level units) are nested within highly selective institutions (macro-level units). Therefore, it was more appropriate to use a hierarchical approach instead of a single level model because it was anticipated that students' observations from the same institutions were likely to be correlated because of the shared experiences obtained by being in the same institutional environments (Raudenbush & Bryk, 2002). Using HLM made it possible to examine not only the average association between parental behaviors or practices that can be categorized into three forms of capital (human, cultural, and social) and graduate school aspirations (outcome variable) of first-generation and non-first-generation students in these highly selective institutions, but also whether that association varies from institution to institution and why (Raudenbush & Bryk, 2002). Further, using HLM enabled me to examine associations between gender and graduate school aspirations, and race and graduate school aspirations, controlling for forms of parental capital in both instances.

There are several consequences that may arise if a researcher ignores the hierarchical structure of data when conducting research. The first is aggregation bias which refers to making an assumption that processes occurring at one level of analysis are the same as those happening at another level. The second challenge is misestimated error or precision that has the potential to result in an increased likelihood of a Type I error, overstating the degrees of freedom in the analysis, generating confidence intervals that may be too narrow or underestimating the standard error. A third challenge known as the "unit of analysis" problem emerges when one tries to analyze the impact of macro unit independent variables on micro unit dependent variables in the data, where the micro units such as students are nested within the macro unit such as schools. Using HLM, however, researchers have the ability to explore questions using different units of analysis simultaneously. A fourth challenge occurs when the researcher attempts to examine a complex theory but does not have the ability to conduct the sophisticated statistical analysis that matches the theory and this leads to impoverished conceptualizations (Miyazaki, 2006; Raudenbush & Bryk, 2002). HLM allows researchers to address all these challenges. To implement the HLM,

a specialized software program, HLM for Windows (Raudenbush, Bryk, Cheong, Congdon, & du Toit, 2004) was used for all steps of the HLM analyses.

Prior to conducting the HLM analysis, reliability coefficients were calculated for the constructed variables such as the dependent variable, graduate school aspirations, and the independent variables that represent the three forms of capital. This type of analysis is used to examine how accurately the survey questions being used for the study measure the theoretical constructs they were intended to measure (Hinkle, Wiersma & Jurs, 2003). The Cronbach's coefficient alpha (α) is the most frequently used index for reliability coefficients and it ranges from 0 to 1. Values of .5 and above suggest that the variables are closely related to each other. Conversely, values of .499 and below represent a weak association between these variables (Hinkle, Wiersma & Jurs, 2003). Table 2 presents the descriptive statistics and the Cronbach's alpha for each type of parental capital and graduate school aspirations for first-generation and non-first-generation students.

As mentioned in the previous section, four variables (the dependent variable of graduate school aspirations and the independent variables of human, cultural, and social capital) were constructed using the average of the constituent item scores in the questionnaire for each variable. As seen in Table 1, two items were used for graduate school aspirations, 22 items for human capital, 11 items for cultural capital, and four items for social capital. To handle the missing cases, two rules were followed. First, for graduate school aspirations and social capital, only students who completed all of the items were included in the dataset. Second, for human and cultural capital, students who completed about 80% of the items (18 for human capital and 9 items for cultural capital) were included as valid cases in the dataset.

Table 2 illustrates that all of the Cronbach's alphas were high enough to suggest that the items associated with each variable hung together. It is also important to point out that the alphas for the first-generation and non-first-generation samples were reasonably close to those for the whole sample. For example, on Human Capital, the full sample Cronbach's alpha was .810, the first-generation sample was .831, and the non-first-generation sample was .793. This suggests that the scores produced from the

Table 2

Descriptive Statistics and Cronbach's Alpha for Constructed Variables

a) Descriptive Statistics for the Constructed Variables (N = 2,988)

Variable	Possible Score Range	Minimum	Maximum	Mean	SD
Graduate School Aspirations	0 – 10	0	10	7.98	2.02
Human Capital	0 – 4	.32	3.70	2.21	.510
Cultural Capital	0 – 4	0	4	1.22	.712
Social Capital	0 – 4	0	4	2.67	.821

b) Cronbach's Alpha for Types of Parental Capital and Graduate School Aspirations

	<u>Variable</u>			
	Graduate Aspirations	Human Capital	Cultural Capital	Social Capital
Cronbach's Alpha (N = 2,988)	.932	.810	.851	.756
Cronbach's Alpha (FG Sample, N = 267)	.941	.831	.826	.779
Cronbach's Alpha (NFG Sample, N = 2,721)	.931	.793	.846	.751

** = $p \leq .01$

average of the constituent item scores were equally reliable measures of human capital and graduate school aspirations for both groups.

HLM Analysis

For this HLM analysis there were three categories of variables. The first category included the dependent (outcome) variable for this study, graduate school aspirations (*EdAspire*).

The second category included the independent (predictor) variables used for the models. These were classified into student level (micro-level) and institutional level (macro-level) variables. There were several variables used at the student level: first generation status (first-generation and non first-generation), race/ethnicity (Asian, Black, Hispanic, and Caucasian), and gender (male and female). These variables were categorical, so dummy variables were created to represent them in the models. For generational status, the “non first-generation student” was made the reference group. For the race/ethnicity variable “Caucasian” was used as the reference group, and for gender “male” was used as the reference group. Institution type was the only institutional level independent variable included in this study. There were three institutional types: private research, liberal arts, and public research. For this categorical variable, “private research institutions” were used as the reference group.

The third category included control variables that had been used in other studies related to first-generation students and parental influence (Terenzini et al., 1996). These variables included SAT score (*SAT*) and household income during the student’s senior year of high school (*Hincome*). Since these factors are known to influence educational aspirations as discussed in the literature review, it was important to control for them in this study.

The HLM analysis involved three steps. For the first step it was necessary to run a One-Way ANOVA model also called an unconditional or baseline model. This model (termed as *Model 1*) is referred to as the baseline model because it does not include predictor, or independent variables (Luke, 2004). This model can also be used to obtain the intraclass correlation coefficient (ICC) that determines how much the observations are clustered. The second step was to formulate and finalize the level-1 (student-level) model (*Model 2*). When significant variability exists at level-2 (institutional-level), the

third step was to attempt to explain the variability by further including level-2 predictors (*Model 3*). The following paragraphs provide a more comprehensive description of these three steps.

In this study, *Model 1* has two distinct levels, level-1 for the student and level-2 for the institution. The equation for Level-1 is: $Y_{ij} = \beta_{0j} + r_{ij}$ [$r_{ij} \sim N(0, \sigma^2)$]. In this equation the Y_{ij} represents the score on the outcome variable (graduate school aspirations) for student i attending j^{th} institution. Additionally, β_{0j} is the institutional/school mean on graduate school aspirations, and r_{ij} represents a random effect for i^{th} student at j^{th} institution. The errors r_{ij} are assumed to be independent to each other and are normally distributed with mean of 0 and variance σ^2 (Raudenbush & Bryk, 2002).

The equation for Level 2 is: $\beta_{0j} = \gamma_{00} + u_{0j}$ [$u_{0j} \sim N(0, \tau_{00})$]. Similar to the student level equation above, each symbol represents a unique portion of the equation. However, these components of the equation relate to institutional predictors. For example, the β_{0j} is the institutional mean on the outcome variable. In this research study, γ_{00} is the overall mean for graduate school aspirations. The random effect, u_{0j} , in this equation is the unique effect of institution j on institutional mean graduate school aspirations (Raudenbush & Bryk, 2002). The level-2 random effects, u_{0j} , are also assumed to be independent from each other and to the level-1 errors, and normally distributed with mean of 0 and variance τ_{00} .

This baseline model produced two variance components, τ_{00} and σ^2 , that are used to calculate the *intraclass correlation coefficient* (ρ_1). This statistic is a product of the following formula:

$$\rho_1 = \frac{\tau_{00}}{\tau_{00} + \sigma^2}$$

The *intraclass correlation* coefficient is interpreted as a measure of “the proportion of variance in the outcome that is between groups” (Raudenbush & Bryk, 2002, p. 36). The significant high value in this statistic justifies the use of HLM analysis. In each of the subsequent models discussed below, the estimates of the two variance components in the formula were obtained and the values of these statistics were compared to determine whether the subsequent models helped to explain some of the variation in graduate school aspirations.

For the second step, the second HLM model (*Model 2*) was developed to answer the first research question. This question was designed to examine the relationship between graduate school aspirations and forms of parental capital for students attending highly selective institutions. There was also a sub-question that was intended to determine if the forms of parental capital differed by generational status (i.e., first-generation and non first-generation). The model contained a complete set of student-level predictor variables, but no institutional-level predictor variables.

To be specific, the student-level equation included 17 predictor variables, a) dummy code for Asian ethnicity (*dAsian*), b) dummy code for Black ethnicity (*dBlack*), c) dummy code for Hispanic (*dHispanic*), d) dummy code for Female student (*dFemale*), e) dummy code for First-Generation student (*dFG*), f) First-Generation Asian student (*FG_dAsian*), g) First-Generation Black student (*FG_dBlack*), h) First-Generation Hispanic student (*FG_dHispanic*), i) First-Generation female student (*FG_dFemale*), j) Student's Human Capital measure (*HumanCap*), k) Student's Cultural capital measure (*CulturalCap*), l) Student's Social Capital measure (*SocialCap*), m) First-Generation by Human Capital interaction (*FG_HumanCap*), n) First-Generation by Cultural Capital interaction (*FG_CulturalCap*), o) First-Generation Social Capital interaction (*FG_SocialCap*), p) Student's SAT score (*SAT*), and q) Household income during student's senior year of high school (*Hincome*). In this model, it is important to note that race/ethnicity (*dAsian*, *dBlack*, *dHispanic*) and gender (*dFemale*) were dummy coded variables which take on values of 0 or 1 and they are used in their original form, i.e., uncentered. Continuous variables such as Human Capital, Cultural Capital, Social Capital, SAT, and Household income were grand mean centered. Interaction terms were created using these coding schemes. As a result of this centering, the intercept, β_{0j} , represents the average graduate school aspirations of non first-generation, male Caucasian students in school *j* who had average scores for human capital, cultural capital, social capital, SAT, and household income. These variables are included in the equation below:

$$\begin{aligned} Aspirations_{ij} = & \beta_{0j} + \beta_{1j} (dAsian)_{ij} + \beta_{2j} (dBlack)_{ij} + \beta_{3j} (dHispanic)_{ij} + \beta_{4j} (dFemale)_{ij} + \beta_{5j} \\ & (dFG)_{ij} + \beta_{6j} (HumanCap)_{ij} + \beta_{7j} (CulturalCap)_{ij} + \beta_{8j} (SocialCap)_{ij} + \beta_{9j} \\ & (FG_dAsian)_{ij} + \beta_{10j} (FG_dBlack)_{ij} + \beta_{11j} (FG_dHispanic)_{ij} + \beta_{12j} \end{aligned}$$

$$(FG_dFemale)_{ij} + \beta_{13j} (FG_HumanCap)_{ij} + \beta_{14j} (FG_CulturalCap)_{ij} + \beta_{15j} (FG_SocialCap)_{ij} + \beta_{16j} (SAT)_{ij} + \beta_{17j} (Hincome)_{ij} + r_{ij} \quad [r_{ij} \sim N(0, \sigma^2)].$$

The level-2 equation did not include institutional-level predictors. This equation is below:

$$\beta_{0j} = \gamma_{00} + u_{0j}$$

$$\beta_{1j} = \gamma_{10}$$

$$\beta_{2j} = \gamma_{20}$$

$$\beta_{3j} = \gamma_{30}$$

$$\cdot \quad \cdot$$

$$\cdot \quad \cdot$$

$$\cdot \quad \cdot$$

$$\beta_{16j} = \gamma_{160} \quad [u_{0j} \sim N(0, \tau_{00})].$$

It is important to note that the intercept, β_{0j} , was made random and the other regression coefficients were fixed. This choice was made based on the fact that these slopes did not significantly vary when I examined this possibility empirically.

To answer the first research question and the sub-question it was necessary to examine several statistics related to the HLM output. First, the regression coefficients for each of the three forms of capital (*HumanCap*, *CulturalCap*, and *SocialCap*) and the interaction terms with capital and generational status (*FG_HumanCap*, *FG_CulturalCap*, and *FG_SocialCap*) were examined to see whether the forms of capital had a positive or negative influence on graduate school aspirations and whether those influences differed by generation status. Second, the values for τ_{00} and σ^2 , variance components, were examined to determine whether the model helped to explain some of the variation in graduate school aspirations compared to the baseline model.

Model 2 was also be used to answer the second and third research questions. The second question was intended to examine if graduate school aspirations differed by racial/ethnic groups and generational status after controlling for the three types of parental capital. These racial/ethnic groups included a) Asian, b) Black/African American, c) Hispanic/Latino, and d) Caucasian students. The third question was related to whether graduate school aspirations differed by gender and generational status after controlling for parental capital groups. In an effort to answer these two

questions, it was necessary to examine the regression coefficients for the interaction variables for each racial/ethnic group and generation status (*FG_dAsian*, *FG_dBlack*, and *FG_dHispanic*), and gender and generation status (*FG_dFemale*). Additionally, the p-values for these predictor variables were examined and interpreted.

After removing the non significant level-1 predictors, *Model 2* was finalized. This model revealed significant variability of the adjusted mean graduate school aspirations.

The third step involved explaining the variability by including the level-2 (school level) predictors. Thus, *Model 3* was formulated and it would also address the fourth research question that examined whether there was a difference in graduate school aspirations for students attending highly selective institutions by institutional type. Similar to the previous models, *Model 3* included two equations. The student-level (level-1) equation included 10 predictor variables, a) dummy code for Asian ethnicity (*dAsian*), b) dummy code for Black ethnicity (*dBlack*), c) dummy code for Hispanic (*dHispanic*), d) dummy code for Female student (*dFemale*), e) dummy code for First Generation student (*dFG*), f) Student's Human Capital measure (*HumanCap*), g) Student's Cultural capital measure (*CulturalCap*), h) Student's Social Capital measure (*SocialCap*), i) Student's SAT score (*SAT*), and j) Household income the senior year of high school (*Hincome*). The following is the student-level equation:

$$\text{Aspirations}_{ij} = \beta_{0j} + \beta_{1j} (d\text{Asian})_{ij} + \beta_{2j} (d\text{Black})_{ij} + \beta_{3j} (d\text{Hispanic})_{ij} + \beta_{4j} (d\text{Female})_{ij} + \beta_{5j} (d\text{FG})_{ij} + \beta_{6j} (\text{HumanCap})_{ij} + \beta_{7j} (\text{CulturalCap})_{ij} + \beta_{8j} (\text{SocialCap})_{ij} + \beta_{9j} (d\text{SAT})_{ij} + \beta_{10j} (d\text{Hincome})_{ij} + \Gamma_{ij} \quad [\Gamma_{ij} \sim N(0, \sigma^2)].$$

The equation for Level-2 was: $\beta_{0j} = \gamma_{00} + \gamma_{01}(d\text{Liberal})_j + \gamma_{02}(d\text{Public})_j + u_{0j}$, [$u_{0j} \sim N(0, \tau_{00})$]. There are two level-2 predictors: a) liberal arts institution type (*dLiberal*) and b) public research institution type (*dPublic*). Similar to the student-level equation above, each symbol represents a unique portion of the equation as it relates to institutional predictors. The β_{0j} is the expected graduate school aspiration for non first-generation, male, Caucasian students in school *j*, who had average scores on human capital, cultural capital, social capital, SAT, and household income. Thus, β_{0j} is the expected graduate school aspiration for typical non first-generation, male, Caucasian students. γ_{00} is the overall expected graduate school aspiration for typical non first-

generation, male, Caucasian students who attend private research institutions. γ_{01} is the mean difference on graduate school aspirations between liberal arts institutions and private research institutions. γ_{02} is the mean difference on graduate school aspirations between public institutions and private research institutions. The random effect, u_{0j} , in this equation is the unique effect of institution j on mean graduate school aspirations. Finally, the variance of the random effect(s), τ_{00} , is the residual variance among institutions after taking into account the institution types (i.e., liberal arts, public research and private research).

To answer the fourth question, it was necessary to inspect the γ (Gamma) coefficients for institutional types (dLiberal and dPublic). Equally important to the analysis was a comparison of the values for the variance components, τ_{00} and σ^2 , for this final model with those of *Models 1*, and *2*.

In summary, for this HLM analysis, the dependent (or outcome) variable was the measure of graduate school aspirations used for the initial regression model. The independent (or predictor) variables used for the model were classified into student level (micro-level) and institutional level (macro-level) variables. There were three variables used at the student level: race/ethnicity, gender, and generation status. These were categorical and therefore dummy variables were created to represent them in the model. For example, with the race/ethnicity variable “Caucasians” were used as the reference group, for gender “males” were used, and for generational status non first-generation status was used as the reference group. Institution type was the only institutional level variable included in this study. There were three institutional types: public research, private research and liberal arts. For this categorical variable, “public research institutions” were used as the reference group. The analyses were run using these variables to address the research questions posed in the study.

CHAPTER FOUR

RESULTS

In this chapter I report the results of this study. The main components of this chapter include a description of the sample and results of the data analysis. These results are organized according to the research questions posed in the study.

Before beginning the data analysis, it was necessary to clean the data set. This process involved visually examining the data grid, recoding the data so that all of the numeric responses corresponded with the appropriate descriptive response for each variable or item on the instrument, and “inspecting the data for scores (or values) that [were] outside the accepted range” using frequency distributions (Creswell, 2005, p. 180).

Establishing rules for how missing data would be handled was another important consideration in the data cleaning process. This step was critical to the data analysis process because some students unintentionally skipped or decided not to supply answers to one or more of the survey items. If students were missing a significant number of responses from those items used in the study, or did not respond to the items used to calculate the dependent variable, they were omitted from the sample (Creswell, 2005).

Once the data were prepared for analysis, descriptive statistics were obtained for all categorical and continuous variables used in the study. These statistics included the frequencies, mean, standard deviation, and correlations.

Description of the Sample

The sample used in this study was a subset of the participants from the National Longitudinal Survey of Freshmen (NLSF). There were 3,924 participants from 28 elite institutions in the U.S. included in the NLSF. Following the deletion of cases with a significant number of missing data for key variables in the study and those with missing responses to the questions associated with the dependent variable, 2,988 (76%) participants from the 28 elite institutions remained in the study sample. As mentioned in Chapter 3, 16 (57%) of the institutions are classified as private research, seven (25%) as liberal arts colleges, and five (18%) as public research colleges and universities. This sample included both first-generation students and non-first generation students.

Frequencies of demographic characteristics for the entire sample and each group separated by generation status are located in Table 3.

There were 267 first-generation students in this sample. These students were classified as first-generation because they indicated that their parents had earned no more than a high school diploma. Of these students, 55.8% (149) were female and 44.2% (118) were male. The first-generation sample consisted of 70 (26.2%) Asian students, 51 (19.1%) Black students, 35 (13.1%) Caucasian students, and 111 (41.6%) Hispanic students. Over half of these students (55.4%) attend private research institutions. Additionally, most (59.2%) of these first-generation students reported that the average annual household income for their families was either between \$25,000 - \$34,999 (15%), \$35,000 - \$49,999 (24.3%), or \$50,000-\$74,999 (19.9%).

The other portion of the sample was composed of non-first-generation students. These students were non-first-generation students because they indicated that one or both of their parents had attended college or earned an undergraduate college or advanced degree. There were 2,721 non-first generation students. In this portion of the sample, 57.4% (1561) were female and 42.6% (1160) were male. The racial/ethnic composition of students in this group consisted of 699 (25.7%) Asian students, 686 (25.2%) Black students, 762 (28%) Caucasian students, and 574 (21.1%) Hispanic students. Of the students in this group, 59.5% attended private research institutions. The majority of these students (56%) were from families where the average annual household income was between \$75,000 or more.

Table 4 displays the means and the standard deviations of the continuous variables used in the current student such as graduate school aspirations, parental capital, SAT scores and household income, for the entire sample, and separated by generation status, which was further broken down either by race/ethnicity or by gender, in order to facilitate understanding the differences of the subgroups with respect to the above characteristics. There were some differences among the respondents in this study based on their graduate school aspirations. Overall, non-first-generation students had a slightly higher mean score (7.99 on a scale of 0-10) for graduate school aspirations than first-generation students (7.90). When examining the mean score for graduate school aspirations in the first-generation group, Asian students had the highest

Table 3

Frequency Tables for Demographic Characteristics for NLSF Data

Demographic	First-Generation Sample (N = 267) n (Column %)	Non First-Generation Sample (N = 2,721) n (Column %)	Entire Sample (N = 2,988) n (Column %)
Generation Status			
First-Generation	267 (100.0)		267 (8.9)
Non First-Generation		2,721 (100.0)	2,721 (91.1)
Gender			
Female	149 (55.8)	1,561 (57.4)	1,710 (57.2)
Male	118 (44.2)	1,160 (42.6)	1,278 (42.8)
Race/Ethnicity			
Asian	70 (26.2)	699 (25.7)	769 (25.7)
Black	51 (19.1)	686 (25.2)	737 (24.7)
Caucasian	35 (13.1)	762 (28.0)	797 (26.7)
Hispanic	111 (41.6)	574 (21.1)	685 (22.9)
College Type			
Liberal Arts	30 (11.2)	272 (10.0)	302 (10.1)
Private Research	148 (55.4)	1,619 (59.5)	1,767 (59.1)
Public Research	89 (33.3)	830 (30.5)	919 (30.8)

Table 3 (Continued)

Frequency Tables for Demographic Characteristics for NLSF Data

Demographic	First-Generation Sample (N = 267) n (%)	Non First-Generation Sample (N = 2,721) n (%)	Entire Sample (N = 2,988) n (%)
Household Income			
Under \$3,000	3 (1.1)	12 (.4)	15 (.5)
\$3,000-\$3,999	2 (.7)	6 (.2)	8 (.3)
\$4,000-\$4,999	1 (.4)	2 (.1)	3 (.1)
\$5,000-\$5,999	0 (.0)	8 (.3)	8 (.3)
\$6,000-\$6,999	3 (1.1)	6 (.2)	9 (.3)
\$7,000-\$7,999	2 (.7)	3 (.1)	5 (.2)
\$8,000-\$8,999	2 (.7)	4 (.1)	6 (.2)
\$9,000-\$14,999	20 (7.5)	36 (1.3)	56 (1.9)
\$15,000-\$19,999	14 (5.2)	46 (1.7)	60 (2.0)
\$20,000-\$24,999	27 (10.1)	96 (3.5)	123 (4.1)
\$25,000-\$34,999	40 (15.0)	166 (6.1)	206 (6.9)
\$35,000-\$49,999	65 (24.3)	309 (11.4)	374 (12.5)
\$50,000-\$74,999	53 (19.9)	503 (18.5)	556 (18.6)
\$75,000-More	35 (13.1)	1524 (56.0)	1559 (52.2)

Table 4

Mean and Standard Deviation for Graduate School Aspirations, Parental Capital, SAT Score and Household Income for NLSF Data

Demographic	First-Generation Sample (N = 267) Mean (SD)	Non First-Generation Sample (N = 2,721) Mean (SD)	Entire Sample (N = 2,988) Mean (SD)
Graduate School Aspirations	7.90 (2.14)	7.99 (2.01)	7.98 (2.02)
by Race/Ethnicity			
Asian	8.10 (2.03)	8.13 (1.98)	8.13 (1.98)
Black	8.01 (2.10)	8.38 (1.97)	8.35 (1.98)
Caucasian	7.16 (2.55)	7.51 (1.95)	7.50 (1.98)
Hispanic	7.95 (2.06)	7.98 (2.06)	7.97 (2.06)
by Gender			
Female	8.05 (2.07)	8.20 (1.92)	8.18 (1.93)
Male	7.70 (2.22)	7.70 (2.10)	7.70 (2.11)

Table 4 (Continued)

Mean and Standard Deviation for Graduate School Aspirations, Parental Capital, SAT Score and Household Income for NLSF Data

Demographic	First-Generation Sample (N = 2,721) Mean (SD)	Non-First-Generation Sample (N = 267) Mean (SD)	Entire Sample (N = 2,988) Mean (SD)
Human Capital	1.79 (.568)	2.25 (.484)	2.21 (.510)
by Race/Ethnicity			
Asian	1.61 (.497)	2.16 (.494)	2.11 (.519)
Black	2.02 (.500)	2.28 (.516)	2.26 (.519)
Caucasian	1.98 (.470)	2.31 (.422)	2.30 (.429)
Hispanic	1.74 (.618)	2.26 (.498)	2.17 (.553)
by Gender			
Female	1.85 (.576)	2.30 (.499)	2.26 (.522)
Male	1.71 (.550)	2.19 (.456)	2.14 (.485)

Table 4 (Continued)

Mean and Standard Deviation for Graduate School Aspirations, Parental Capital, SAT Score and Household Income for NLSF Data

Demographic	First-Generation Sample (N = 267) Mean (SD)	Non First-Generation Sample (N = 2,721) Mean (SD)	Entire Sample (N = 2,988) Mean (SD)
Cultural Capital	.743 (.600)	1.27 (.705)	1.22 (.712)
by Race/Ethnicity			
Asian	.568 (.500)	1.27 (.695)	1.20 (.709)
Black	.672 (.571)	1.06 (.688)	1.04 (.688)
Caucasian	.847 (.547)	1.34 (.645)	1.31 (.649)
Hispanic	.853 (.660)	1.41 (.758)	1.32 (.771)
by Gender			
Female	.774 (.586)	1.37 (.731)	1.30 (.737)
Male	.703 (.618)	1.16 (.654)	1.12 (.663)

Table 4 (Continued)

Mean and Standard Deviation for Graduate School Aspirations, Parental Capital, SAT Score and Household Income for NLSF Data

Demographic	First-Generation Sample (N = 267) Mean (SD)	Non First-Generation Sample (N = 2,721) Mean (SD)	Entire Sample (N = 2,988) Mean (SD)
Social Capital	2.42 (.915)	2.70 (.807)	2.67 (.821)
by Race/Ethnicity			
Asian	2.13 (.850)	2.42 (.862)	2.40 (.832)
Black	2.59 (.848)	2.66 (.820)	2.65 (.821)
Caucasian	2.95 (.770)	2.87 (.727)	2.87 (.728)
Hispanic	2.35 (.949)	2.87 (.769)	2.78 (.822)
by Gender			
Female	2.53 (.884)	2.76 (.801)	2.74 (.811)
Male	2.28 (.939)	2.62 (.807)	2.58 (.825)

Table 4 (Continued)

Mean and Standard Deviation for Graduate School Aspirations, Parental Capital, SAT Score and Household Income for NLSF Data

Demographic	First-Generation Sample (N = 267) Mean (SD)	Non First-Generation Sample (N = 2,721) Mean (SD)	Entire Sample (N = 2,988) Mean (SD)
SAT Score	1229.81 (166.81)	1313.17 (153.38)	1305.72 (156.42)
by Race/Ethnicity			
Asian	1287.44 (170.42)	1383.76 (127.41)	1374.99 (134.65)
Black	1150.92 (161.25)	1202.54 (150.14)	1198.96 (151.39)
Caucasian	1301.14 (143.87)	1363.74 (130.23)	1360.99 (131.39)
Hispanic	1207.21 (154.03)	1292.31 (133.65)	1278.52 (140.59)
by Gender			
Female	1206.85 (168.63)	1289.66 (150.54)	1282.44 (153.93)
Male	1258.79 (160.56)	1344.82 (151.54)	1336.87 (154.35)

Table 4 (Continued)

Mean and Standard Deviation for Graduate School Aspirations, Parental Capital, SAT Score and Household Income for NLSF Data

Demographic	First-Generation Sample (N = 267) Mean (SD)	Non First-Generation Sample (N = 2,721) Mean (SD)	Entire Sample (N = 2,988) Mean (SD)
Household Income	10.26 (2.42)	11.94 (1.82)	11.79 (1.94)
by Race/Ethnicity			
Asian	10.00 (2.39)	12.15 (1.65)	11.96 (1.83)
Black	10.82 (1.96)	11.39 (2.18)	11.35 (2.17)
Caucasian	10.91 (2.61)	12.40 (1.38)	12.33 (1.48)
Hispanic	9.96 (2.51)	11.73 (1.85)	11.44 (2.07)
by Gender			
Female	10.42 (2.54)	11.83 (1.89)	11.70 (2.00)
Male	10.05 (2.24)	12.09 (1.70)	11.91 (1.85)

mean score (8.10) followed by Black, Hispanic and Caucasian students respectively. However, in the non-first-generation group, Black students had higher graduate school aspirations (8.38) than other racial/ethnic groups. In general, Asian, Black and Hispanic students have higher mean scores (i.e., higher graduate school aspirations) than Caucasian students regardless of their first-generation status. Additionally, female students have higher graduate school aspirations than male students in both groups.

Differences in mean values emerged when examining the three forms of parental capital among first-generation students. For instance, Black students in this sample had a higher mean score (2.02) on human capital than all other race/ethnic groups. First-generation Hispanic students reported the highest mean score (.853) on cultural capital transmitted by parents and Asian students reported the lowest (.568). For social capital measures, Caucasian students had the highest reported mean score (2.95). Overall, female students had higher mean scores than male students for all forms of capital.

The mean scores and standard deviations of parental capital for non first-generation students are also displayed in Table 4. Caucasian students reported the highest transmission of human capital from parents (2.31). However, Hispanic students had the highest mean score (1.41) for cultural capital behaviors exhibited by their parents and Black students reported the lowest (1.06). Caucasian and Hispanic students were tied for the highest mean value (2.87) for social capital transmissions. Similar to the findings for first-generation students, female first-generation students had higher mean scores on all forms of capital transmitted by their parents.

There were differences in SAT scores and household income based on generation status, race/ethnicity, and gender. Overall, non first-generation students had higher SAT scores and household income than first-generation students. When examining the entire sample, Asian (1374.99) and Caucasian (1360.99) students tended to have higher SAT scores than Hispanic (1278.52) and Black (1198.96) students. Also, male (1336.87) students reported higher SAT scores than female (1282.44) students. For household income, Caucasian students tended to be higher than other groups. It should be noted that household income was recoded using a 0 to 13 scale from 1 to 14 in order to explicitly define the meaning of "0" income.

Correlation coefficients among the continuous variables used in this study such as graduate school aspirations, each of the three forms of parental capital, SAT score, and household income were also obtained. Table 5 reports the correlation coefficients among these variables and the strength and direction of the relationship between variables can be seen (Gall, Borg & Gall, 1996). The results reveal that although the correlation is relatively weak between graduate school aspirations and the three forms of parental capital, each pair of variables is positively correlated with one another (i.e., .134, .121, and .085) with statistical significance at the .01 level. The correlation between each type of capital is positively correlated with much higher magnitude (.514, .472, and .304). SAT score and household income are unrelated to graduate school aspirations (.001 and .021), though SAT score and household income has small positive correlation (.242). Also, three types of capitals (Human, Cultural, and Social capitals) and the income are positively correlated, but the magnitude is small (.243, .215, and .112 respectively).

In sum, non first-generation students have higher overall mean scores for human, cultural and social capital than first-generation students. It should be noted, however, that mean scores on cultural capital were relatively low compared to human and social capitals considering that these three variables have the same possible score range (See Table 2-a).

Results of HLM Analysis

The present study was designed to examine what kind of relationship exists between graduate school aspirations of students attending highly selective institutions and parental capital (human, cultural, and social), and to determine if the relationship differs by generational status (first vs. non first-generation). Another purpose of this study was to determine if graduate school aspirations for students at highly selective institutions differ by racial group, gender, and institutional type.

One Way ANOVA – Model 1

To begin the discussion of the results, it was necessary to review the preliminary findings from the One Way ANOVA or unconditional model (*Model 1*). These results are reported in Table 6. The average school mean for graduate school aspirations was 8.03. Since the minimum and maximum responses for this variable were 0 and 10,

Table 5

Correlations among Types of Parental Capital and Graduate School Aspirations with Reliability Coefficients (N = 2,988)

Measure	Human Capital	Cultural Capital	Social Capital	Total SAT Score	Household Income	Graduate Aspirations
Human Capital	---					
Cultural Capital	.514**	---				
Social Capital	.472**	.309**	---			
Total SAT Score	.003	.164**	-.061**	---		
Household Income	.243**	.215**	.112	.242**	---	
Graduate Aspirations	.134**	.121**	.085**	.001	.021	---

**p-value \leq .01

Table 6

Results of Model 1 - Unconditional Model

Estimation of Fixed Effects

Fixed Effect	Coefficient	S.E.	t-Statistic	p-value
Intercept (γ_{00})	8.028*	.076	105.061	< .001

Estimation of Variance Components

Random Effect	SD	Variance Component	df	Chi-Square	p-value
Institution Mean, u_{0j}	.336	.113*	27	108.291	< .001
Level-1 error, r_{ij}	1.997	3.986			

*p-value < .05

respectively, students within this sample had relatively high aspirations regarding graduate school attendance.

Another important aspect of the results to take into consideration was the *intraclass correlation coefficient* (ρ_I). This coefficient is a form of empirical evidence that provides support for using a multilevel model (Luke, 2004). As mentioned in Chapter 3, it explains the proportion of total variance that lies at the institution-level, and it can be obtained by running the One-Way ANOVA or unconditional model.

The *intraclass correlation coefficient* is computed using a formula composed of τ_{00} and σ^2 . The estimate for the between- institution variability (τ_{00}) was .113 and the estimate for the within- institution variability (σ^2) was 3.986 (see Estimation of Variance Components in Table 6). Importing these values into the formula for ρ_I results in a value

of .028 ($\frac{\tau_{00}}{\tau_{00} + \sigma^2} = \frac{.113}{.113 + 3.986} = \frac{.113}{4.099}$) and accounts for only about 3 percent of the

variance in graduate school aspirations between groups or at level-2. This value is relatively small. According to Snijders and Bosker (1999) most educational research related to achievement has an *intraclass correlation coefficient* between .15 - .20 (15% or 20%). Even though this is small, the between- institution variance (τ_{00}) was still statistically significant ($p < .001$). Therefore, for this research it was appropriate to use HLM analysis to examine the aforementioned research questions.

Conditional HLM Models – Models 2 and 3

There were four research questions that guided this study. The first research question was designed to examine the relationship between graduate school aspirations and forms of parental capital for students attending highly selective institutions. This question also had a sub-question that was designed to determine if the relationship between parental capital and graduate school aspirations differed by generational status (i.e., first generation and non-first generation). To address these questions, *Model 2* was formulated using 17 predictor variables. The results of this analysis are displayed in Table 7. The results reveal that parents' human capital had a statistically significant positive effect on graduate school aspirations ($\gamma_{05} = .383$, $t = 3.943$, $p < .001$). In other words, a 1-point increase in the human capital measure results in a .383 point increase in graduate school aspirations. Also, cultural capital ($\gamma_{06} = .218$, $t = 3.440$, $p < .001$) and

Table 7

Results of Model 2 – HLM Parental Capital and Student Interaction Effects Model
Estimation of Fixed Effects

Fixed Effect	Coefficient	S.E.	t-Statistic	P-value
Intercept, γ_{00}	7.226*	.106	67.900	<.001
dAsian, γ_{10}	.728*	.104	6.983	<.001
dBlack, γ_{20}	1.028*	.114	8.992	<.001
dHispanic, γ_{30}	.518*	.110	4.703	<.001
dFemale, γ_{40}	.342*	.078	4.361	<.001
dFG, γ_{50}	-.201	.391	-.516	.606
HumanCap, γ_{60}	.383*	.097	3.943	<.001
CulturalCap, γ_{70}	.218*	.063	3.440	.001
SocialCap, γ_{80}	.144*	.053	2.693	.008
FG_dAsian, γ_{90}	.218	.431	.505	.613
FG_dBlack, γ_{100}	-.072	.447	-.161	.873
FG_dHispanic, γ_{110}	.435	.403	1.080	.280
FG_dFemale, γ_{120}	.082	.254	.322	.747
FG_HumanCap, γ_{130}	-.168	.301	-.559	.576
FG_CulturalCap, γ_{140}	-.310	.245	-1.264	.207
FG_SocialCap, γ_{150}	-.175	.167	-1.044	.297
SAT, γ_{160}	.0009*	.0003	2.958	.004
Hincome, γ_{170}	.008	.020	.397	.691

Estimation of Random Effects

Random Effect	SD	Variance Component	df	Chi-Square	p-value
Institution Mean, u_{0j}	.318	.101*	27	103.183	< .001
Level-1 error, r_{ij}	1.934	3.742			

*p-value < .05

social capital ($\gamma_{07} = .144$, $t = 2.693$, $p = .008$) have statistically significant effects on graduate school aspirations among these students. These results demonstrate that there is a relationship between graduate school aspirations and human, cultural and social forms of capital for students attending highly selective institutions.

To answer the first sub-question about how graduate school aspirations and parental capital are associated, the γ coefficients for each form of parental capital were standardized by multiplying the standard deviation of each predictor variable available from Table 4 and the resulting values were rank ordered. Based on these results, human capital had the strongest relationship with graduate school aspirations ($.383 \times .510 = .195$), followed by cultural capital ($.218 \times .712 = .155$) and finally social capital ($.144 \times .821 = .118$). Therefore, activities such as helping students with their homework and improving their reading skills are more closely related to graduate school aspirations than taking children to cultural activities or interacting with various social networks.

The sub-question associated with this main research question was intended to determine if there were differences in the relationship between graduate school aspirations and the three forms of capital based on generational status (first vs. non first-generation) of the student. The γ coefficient of each interaction term for generation status and each form of capital (γ_{130} for *FG_HumanCap*, γ_{140} for *FG_CulturalCap*, and γ_{150} for *FG_SocialCap*) and its respective p-value (all of which were $p > .05$) revealed that there was no significant relationship between these interaction predictors in relation to graduate school aspirations. This means that having a certain generational status (first- vs. non first-generational) does not significantly impact the relationship between graduate school aspirations and parental capital (see Table 7). In other words, there is no strong evidence that the relationship between graduate school aspiration and three kinds of parental capital differs by generation status.

Model 2 was also used to answer the second and third research questions. The second question was intended to determine if graduate school aspirations differed by race/ethnicity and generational status after controlling for parental capital. The γ coefficient of each main effect and interaction effect term for race/ethnicity and first

generation status and its respective p-value (all of which were $p > .05$) revealed the following results:

1. There were no statistically significant interaction effects between first-generation status and race/ethnicity on graduate school aspirations ($\hat{\gamma}_{90} = .218$, p-value = .613 for *FG_dAsian*; $\hat{\gamma}_{10} = -.072$, p-value = .873 for *FG_dBlack*; $\hat{\gamma}_{110} = .435$, p-value = .280 for *FG_dHispanic*).
2. There was no statistically significant main effect for first-generation status on graduate school aspirations ($\hat{\gamma}_{50} = -.201$, p-value = .606 for *dFG*).
3. There were statistically significant main effects of race/ethnicity on graduate school aspirations ($\hat{\gamma}_{10} = .728$, p-value < .001 for *dAsian*; $\hat{\gamma}_{20} = 1.028$, p-value < .001 for *dBlack*; $\hat{\gamma}_{30} = .518$, p-value < .001 for *dHispanic*).

This means that although the main effect of being from a certain racial/ethnic background is significant in this model, the combination of being a first-generation student from a certain race/ethnicity does not significantly impact graduate school aspirations nor the first-generation status itself (see Table 7). In other words, there are differences in levels of graduate school aspirations among different race/ethnicity groups, but there is no difference in graduate school aspirations between the non first- and first-generation groups. Further, differences in the levels of graduate school aspirations among race/ethnicity groups are the same between the non first- and first-generation students within each race/ethnicity group.

The third research question was designed to determine if graduate school aspirations differed by gender and generational status after controlling for parental capital. The results revealed that there was a statistically significant main effect of gender ($\hat{\gamma}_{40} = .342$, p-value < .001 for *dFemale*), but there was not a statistically significant interaction effect between the generation status and the gender ($\hat{\gamma}_{120} = .082$, p-value = .747 for *FG_dFemale*). As for the main effect of the first-generation status, there was not a statistically significant difference ($\hat{\gamma}_{50} = -.201$, p-value = .606 for *dFG*). This means that the combination of generation status and gender did not impact

graduate school aspirations after controlling for the three forms of capital, but the main effect of being male or female did relate to graduate school aspirations (see Table 7).

Another point worth mentioning about this model is the fact household income (*Hincome*) did not have a significant impact on graduate school aspirations ($\hat{\gamma}_{170} = .008$, $p\text{-value} = .691$). That is, the average annual household income for students' families, whether it was between \$25,000 - \$34,999, or \$50,000-\$74,999 did not significantly impact graduate school aspirations for students attending highly selective institutions. These results are also found in Table 7.

The final research question was intended to determine if graduate school aspirations for students at highly selective institutions differed significantly among private research, liberal arts and public research institutions included in this study. The results of *Model 3* are presented in Table 8 to answer this question. Several student-level characteristics were significant in this model. Holding all other variables in the model constant, being Asian ($\hat{\gamma}_{10} = .741$, $t = 7.346$, $p < .001$), Black ($\hat{\gamma}_{20} = 1.004$, $t = 9.009$, $p < .001$), or Hispanic ($\hat{\gamma}_{30} = .560$, $t = 5.290$, $p < .001$) suggested higher graduate school aspirations. Additionally, being female ($\hat{\gamma}_{40} = .346$, $t = 4.615$, $p < .001$) was associated with higher graduate school aspirations. When all other variables were held constant, being a first generation student was related to slightly higher graduate school aspirations, though this variable was only marginally significant in the model ($\hat{\gamma}_{50} = .288$, $t = 2.144$, $p = .032$). Also, the results demonstrate that students' graduate school aspirations are not related to the type of institution they attend ($\hat{\gamma}_{01} = .174$, $p = .385$ for *dLiberal*) or ($\hat{\gamma}_{02} = -.030$, $p = .879$ for *dPublic*). These findings demonstrate that institutional type does not impact graduate school aspirations for these students, holding all other variables constant.

Comparison of Variance Components

Although the comparison of the variance components for each model was not directly related to the research questions for the study, this secondary analysis provides

Table 8

*Results of Model 3 – Final Model with Student-Level and Institutional-Level Variables
Estimation of Fixed Effects*

Fixed Effect	Coefficient	S.E.	t-Statistic	P-value
Intercept, γ_{00}	7.194*	.124	58.026	<.001
dLiberal, γ_{01}	.174	.197	.884	.385
dPublic, γ_{02}	-.030	.194	-.155	.879
dAsian, γ_{10}	.741*	.101	7.346	<.001
dBlack, γ_{20}	1.004*	.111	9.009	<.001
dHispanic, γ_{30}	.560*	.106	5.290	<.001
dFemale, γ_{40}	.346*	.075	4.615	<.001
dFG, γ_{50}	.288	.134	2.144	.032
HumanCap, γ_{60}	.349*	.092	3.790	<.001
CulturalCap, γ_{70}	.206*	.061	3.370	.001
SocialCap, γ_{80}	.121*	.051	2.385	.017
SAT, γ_{90}	.001*	.001	2.781	.006
Hincome, γ_{10}	.006	.020	.306	.759

Estimation of Random Effects

Random Effect	SD	Variance Component	df	Chi-Square	p-value
Institution Mean, u_{0j}	.332	.110*	25	101.636	< .001
Level-1 error, r_{ij}	1.935	3.746			

*p-value <.05

useful information about the strength of the predictors in each model developed to explain graduate school aspirations.

As mentioned previously in this chapter, Tables 6, 7, and 8 include the variance components at Level-1 and Level-2 for the HLM models formulated for this study. According to Raudenbush and Bryk (2002), these variance components can be incorporated into two formulas that express the proportion reduction in variance at Level-1 and Level-2. The formulas are found below:

$$\text{Level-1: } \frac{\sigma^2 \text{Unconditional model} - \sigma^2 \text{Conditional Model}}{\sigma^2 \text{Unconditional model}}$$

$$\text{Level-2: } \frac{\tau_{00} \text{Unconditional model} - \tau_{00} \text{Conditional Model}}{\tau_{00} \text{Unconditional model}}$$

The results of these computations are reported in Table 9. For Level-1 when the 17 student predictor variables were added to the model, the within-institution variance was reduced by 6.17%. These predictors did help to explain a small portion of the variance in graduate school aspirations. However, less of the variance was explained in *Model 3* (6.02%) because I deleted non-statistically significant interaction terms at level-1 when I fitted *Model 3*. From these results one can conclude that some of the student-level predictors were useful to help explain within-schools between-students variability of students' graduate school aspirations.

At Level-2, the between-institution variance was reduced by 10.62% from *Model 1* to *Model 2*. After adding the institutional-level variables to the final model, there was a negligible difference in variance explained from *Model 3* (2.65%). These results suggest that overall these institutional variables were not useful and that other variables related to the institution may be more influential in explaining graduate school aspirations for these students. Also, the fact that student level independent variables such as gender, race/ethnicity, first-generation status, parental capital, SAT scores, and household income had explained 10.62% of the between-institutions variability of students' graduate school aspirations implies that some of these individual student characteristics

Table 9

Summary of Results for Proportion of Variance Explained

	Model 1 Unconditional	Model 2 Interaction Effects	Model 3 Final Model
Variance at Level-1 (σ^2)	3.986	3.742	3.746
Percentage of Variance Explained	---	6.17%	6.02%
Variance at Level-2 (τ_{00})	.113	.101	.110
Percentage of Variance Explained	---	10.62%	2.65%

are associated with institutional membership, which in turn implies that there is a slight segregation of student characteristics by institution.

In conclusion, the results of the HLM analysis revealed that there was a relationship between graduate school aspirations and parental influence in the form of human, cultural and social capital but the relationship was not different between the first-generation and non first-generation groups. In terms of the levels of graduate school aspirations, there was a gender difference and there were differences among different race/ethnicity groups. The difference between the non first- and first-generation students on graduate school aspirations was marginally statistically significant after adjusting for three types of parental capital, gender, race/ethnicity, SAT score, and household income. Additionally, there were no differences in graduate school aspirations among different types of institutions. Chapter 5 contains a further discussion about these results along with implications for future research, practice and policy.

CHAPTER FIVE

DISCUSSION

This chapter includes a discussion of the findings and their meanings. It is organized around the four research questions developed for this study. Additionally, these findings are discussed in terms of the factors that influence graduate school aspirations (i.e., generation status, race, gender, and institution type). The final sections describe implications for future practice, research, and policy and limitations related to the study.

Discussion

The first research question examined the relationship between forms of human, cultural, and social capital transmitted by parents and graduate school aspirations among undergraduate students attending highly selective institutions. The comprehensive HLM model (Model 2, see Table 7) was generated to examine this question and two related sub-questions.

The results revealed that a statistically significant relationship exists between human, cultural, and social capital and graduate school aspirations for these students. These findings are significant because they provide evidence to support the argument that increased levels of parental capital relate to higher levels of graduate school aspirations for students attending highly selective institutions. In other words, human, cultural, and social forms of capital transmitted to children at ages six, 13, and during the students' senior year of high school impact their intentions to pursue graduate school. This research was predicated on Bourdieu's theory of *habitus* (1977) that suggests a shared set of beliefs, values, and behaviors held by a group has the ability to influence members of the group. In the context of this study, parental beliefs, values and behaviors have an influence on students' graduate school aspirations.

To answer the question about how graduate school aspirations and forms of parental capital are associated, an examination of the findings illustrate that human capital is the strongest influence on graduate school aspirations, followed by cultural capital, and then social capital. Human capital may be the strongest form of influence because it relates to the behaviors that parents engage in regardless of their socioeconomic status (e.g., encouraging students to do their best academically, helping

them with their homework, and trying to be positive examples by making their home environment intellectually stimulating and supportive). Students who attend highly selective institutions evidently have parents who nurtured them while they were growing up.

Cultural capital is the second strongest form of parental influence on graduate school aspirations for students in this study. Although taking children to plays and art museums could be considered important culturally enriching experiences, one might argue that these behaviors are not substantive ways to encourage students to pursue graduate education. In addition to taking their children to these activities, perhaps there has to be more intentional effort on the part of the parents to provide further explanations that help students make associations between the activity and graduate education. For example, a parent might explain to their child that what they see in a science museum is a result of the experiments conducted by scientists and researchers who have attended graduate school. Another point should be mentioned about the cultural capital examined in this study. This form of capital is likely to be impacted by issues of affordability (i.e., parents being able to afford tickets to plays, admission into museums, or trips to foreign countries). Access, including where these cultural events take place in relation to students' homes and whether parents are able to take their children to these events due to their work schedules, also influences cultural capital. Therefore, some parents may have been limited in their abilities to transmit this type of capital to their children.

Social capital is the least influential form of parental capital. One could argue that the items used in the study to measure social capital (i.e., knowing children's friends, talking to children's friends) represent only a limited set of activities that help parents build social networks. When parents know who their children's friends are and talk with these friends, parents get an opportunity to learn more about those with whom their children are associating. However, if parents were interacting with the parents of their children's friends about college going experiences this might be more advantageous to them and might stimulate discussions about opportunities that are associated with graduate school attendance.

I further explored whether the relationship further to determine if the relationship between human, cultural, and social capital and graduate school aspirations differed by generation status. The findings reveal that generation status (first vs. non-first) does not make a significant difference. That is, forms of capital matter, but generation status does not change the nature of the relationship between forms of capital and graduate school aspirations. These results could possibly be related to the high value parents of students who attend highly selective institutions place on education. Literature on first generation students suggests that these students often come from homes where parents do not encourage them to excel academically or to pursue higher education (Choy, 2001). However, the first and non-first generation students in this sample may have come from homes where parents stress the importance of education and believe that their children can attain even higher levels of education than they did.

Another explanation for the findings could be the intrinsic motivation these students possess to apply to and enroll at these elite institutions in the first place no matter their generation status. For first generation students these findings are worth mentioning because it could mean that they have transcended many of the obstacles that would have otherwise hindered their academic success. In other words, certain individual factors like motivation or self-efficacy may drive first generation student aspirations and overshadow some of the challenges that place such students at a disadvantage in terms of college going rates when compared to non-first generation students.

Furthermore, these findings could be a reflection of the time and energy that individuals other than parents have invested in these students. Perhaps others in the lives of first generation students have stepped in and acted as surrogate parents who supplement the support and encouragement they do not receive at home. For instance, K-12 teachers and coaches may have taken an interest in these students and nurtured them. These individuals may have reinforced positive values and encouraged first generation students to strive for high academic achievements.

Additionally, generation status and parental capital may not be as strongly related to graduate school aspirations as they are to undergraduate college aspirations. The literature related to undergraduate college aspirations reveals that parents have a

major influence on high school students' aspirations to attend college (Hossler & Gallagher, 1987; McCarron & Inkelas, 2006). Perhaps parents do not have as strong an influence on students' decisions to attend graduate school because fewer parents may have graduate degrees. Since no first generation and only some non-first generation parents have earned advanced degrees, they may not be able to share this type of capital with their offspring. Instead, parents may encourage their offspring to find a "good job" following graduation, and not encourage the pursuit of an advanced degree as a method to gain stable and rewarding employment.

The second research question examined whether graduate school aspirations differ by racial/ethnic background and generation status after controlling for parental capital. The results revealed that there was no statistically significant interaction effect between race/ethnicity and generation status on graduate school aspirations for students attending highly selective institutions, there was no statistically significant (but marginally statistically significant by Model 3, see Table 8) main effect for generation status on graduate school aspirations but there was a statistically significant main effect for race/ethnicity on graduate school aspirations. This suggests that race/ethnicity and generation status do not affect graduate school aspirations simultaneously, however race/ethnicity does influence graduate school aspirations independently. For instance, Black students tend to have higher graduate school aspirations than Caucasian students in this sample when controlling for differences in parental capital.

Comparisons on the mean graduate school aspirations among racial/ethnic groups support this finding. For example, Asian students tended to report higher mean scores than Caucasian students on average. Surprisingly, despite Bowen and Rudenstine's (1992) observation that fewer Black students enroll in graduate school than Caucasians, Black students tend to have higher graduate school aspirations than Hispanic and Caucasian students in this sample. This could be related to the importance that is placed on education and achievement among individuals in these cultural groups (e.g., Asians and Blacks). These students and their families may acknowledge that barriers based on race still exist in the workplace, so they believe that obtaining more educational credentials will improve their chances to overcome those barriers and help to level the playing field when being considered for job opportunities.

On the other hand, Caucasian students had the lowest graduate school aspirations of all racial/ethnic groups whether first generation or non-first generation. Perhaps Caucasian students, especially those who attend highly selective institutions, do not associate their advancement in the workplace with the attainment of more academic credentials, but believe that other factors (e.g., social networks) will be equally or more influential to their future careers.

These findings suggest that overall, graduate school aspirations among first generation and non-first generation students tend to be more similar than different. In fact descriptive statistics indicate that all students have relatively high graduate school aspirations. This is not surprising since all of these students attend highly selective institutions. These students chose prestigious colleges and universities where the academic culture is purposefully designed to stimulate intellectual development and promote extraordinary academic achievement (Kuh, Schuh, Whitt, & Associates, 1991). If students have demonstrated the academic ability necessary to be admitted to these institutions, then one could argue that they certainly possess high educational aspirations not only at the undergraduate level but also at the graduate level.

Although no interaction effect was uncovered in the analysis between race/ethnicity and generation status, descriptive statistics reveal interesting patterns in the three forms of parental capital examined in the present study. For first generation students, Black students (2.02) tended to report the highest human capital transmissions from their parents, followed by Caucasian (1.98), Hispanic (1.74) and Asian (1.61) students. These mean values may suggest that Black and Caucasian parents were investing more of their skills, knowledge and time in their offspring by helping their children with homework, and encouraging them to try harder and to always do their best. One might speculate that Black and Caucasian parents who have not attended college may encourage their offspring to pursue a higher level of education than they did or than was even made available to them through higher education legislation (e.g., G.I. Bill, Civil Rights Act).

An important point should be made regarding the contradiction between aspirations and parental capital for Caucasian students. The results reveal that Caucasian students report the lowest graduate school aspirations, but higher levels of

parental capital than their diverse peers. This suggests that parental capital does not always translate into higher graduate school aspirations for all students. Instead it may be the case that high amounts of parental involvement have a leveling effect on graduate school aspirations for Caucasian youth. Recall that a majority of the sample were from high SES families (i.e., household incomes of \$75,000 or more).

Economically advantaged Caucasian youth may become conditioned to seeing their parents' involvement as more important to their future goals than graduate education.

As far as cultural capital was concerned, first generation Hispanic (.853) students tended to have the highest capital, followed by Caucasian (.847), Black (.672) and finally Asian (.568) students. The findings suggest that Hispanic parents who have not attended college transmit more cultural capital to their children than parents from other groups. Hispanic parents may expose their offspring to plays, concerts, as well as museums that teach them more about their Hispanic heritage, customs, values and beliefs. Likewise, international travel may be more endemic among Hispanics whose culture of origin is outside of the United States. As a result they may travel more frequently to visit relatives in other countries. All of these kinds of activities might lead to higher cultural capital scores for Hispanics in the study.

Social capital behaviors were generally rated highest among first generation Caucasian (2.95) students, followed by Black (2.59), Hispanic (2.35), and Asian (2.13) respondents. It would seem that Caucasian parents spend more time interacting and networking with their children's friends. Parents know that adolescents spend a significant amount of time with their friends in school and in social settings. When parents spend time getting to know their children's friends, they gain insight into what is going on among the group of friends. Caucasian parents in this first generation sample may be using this as a strategy to protect their children from associating with students who would be negative influences and limit their children's academic potential.

Racial/ethnic differences also emerged in the patterns of parental capital among non-first generation students. Caucasian non-first generation students tended to have the highest transmission of human capital (2.31) from their parents, followed by Black (2.28), Hispanic (2.26), and Asian (2.16) students. These mean values suggest that college-educated Caucasian parents were more actively involved in the lives of their

children by encouraging them to excel academically, attending school events, and assisting with homework. This might be explained by the fact that Caucasian parents were likely products of the American school system that favored Caucasians when the parents were students. This is the same system that educated the offspring of Caucasian parents. The parents of students from other racial backgrounds may not have benefited from the American school system in the same way when they were growing up. In some cases, these parents may be immigrants for whom the American system of schooling is difficult to comprehend and/or navigate.

In terms of cultural capital, non-first generation Hispanic (1.41) students more often reported the higher capital transmissions, then Caucasian (1.34), Asian (1.27), and then finally Black (1.06) students. These findings are similar to the first generation group; that is, college-educated Hispanic parents may also expose their children to activities outside the home in which students experience Hispanic customs and traditions. Like their first generation counterparts, this group may also have relatives in other countries, so parents may take their children to visit these relatives by traveling to foreign countries.

Finally, social capital behaviors were generally rated highest among non-first generation Caucasian (2.87) and Hispanic students (2.87), followed by Black (2.66) and Asian (2.42) students. One explanation for the high social capital averages among Caucasian and Hispanic students may be reflective of the fact that they are members of the Millennial Generation, individuals born in or after 1982. According to Howe and Strauss (2000), their mothers and fathers tend to be protective of them and extremely involved in their lives so much so that they are known as “helicopter parents” because they tend to “hover” over their children. Ways in which parents may “hover” include engaging in conversations about peers, asking questions, and monitoring activities (e.g., telephone conversations, sleepovers) to get to know their children’s friends. Likewise, these Millennial parents tend to be soccer moms and dads who carpooled their children and their friends to school, band camps, and sports practices. This gives parents more time to interact and build relationships with their children’s friends.

There was also a third research question that examined if graduate school aspirations differed based on the gender of the student and generation status after

controlling for parental capital. The findings revealed that there was no significant interaction effect between generation status and gender on graduate school aspirations. If all parental capital measures are held constant, the combination of being a certain gender and generation status does not yield a simultaneous influence on graduate school aspirations. Additionally, there was no significant main effect of generation status on graduate school aspirations. There was, however, a main effect of gender on graduate school aspirations. These findings suggest that despite any differences in the way parents treat their children, women tend to have higher graduate school aspirations than men in this sample.

The raw data from males and females by generation status is illuminating, however. Female, first generation students generally reported higher mean scores (8.05) for graduate school aspirations than male students (7.70). Likewise, non-first generation, female students reported higher graduate school aspirations (8.20) than male non-first generation students (7.70). The young women in this study possess higher aspirations for pursuing graduate education than their male counterparts. Additionally, both first generation and non-first generation female students tended to have higher mean scores for all three forms of capital than their male first generation and non-first generation counterparts (see Table 4).

These findings suggest that parents are investing more personal time, participating in cultural activities outside of the home, and interacting with their children's friends more often with their daughters than their sons. Perhaps Millennial parents do so out of concerns for their daughter's safety since they tend to be more protective of their children. As a result, women in this study tended to rate these human, cultural, and social behaviors higher than their male counterparts. A second explanation exists; parents may believe that their daughters need more assistance from them in pursuing their academic goals than their sons.

Furthermore, when considering students with similar capital backgrounds, women at elite institutions tend to have higher graduate school aspirations than their male counterparts. This finding may be related to perceptions of gender inequity. In other words, these women may feel compelled to pursue graduate education as a means to achieve economic and social success in today's society. This conclusion

would seem reasonable since a number of reports indicate an increase in wage disparities between men and women in similar positions (Porter, Toutkoushain, & Moore, 2008).

The fourth research question was designed to determine if graduate school aspirations for students attending highly selective institutions differed by institutional type. The final HLM model (Model 3) formulated for this study included student-level variables and different institutional types (public research, private research, and liberal arts). The results suggest that students' graduate school aspirations are not related to the institution type they attend. One explanation for this finding could be related to the highly developed graduate school aspirations students in the sample had before they arrive on these campuses. Students applying to and attending highly selective institutions often have taken rigorous academic coursework in high school including Advanced Placement (AP), International Baccalaureate (IB) classes, or have taken dual enrollment courses at colleges or universities near their high schools (Massey et al., 2003). They are highly motivated academically so they may be encouraged by their guidance counselors to apply to colleges that offer the type of challenging academic environment that is commonly found at highly selective institutions. The academic cultures of these highly selective institutions may help to promote the attainment of advance degrees. Additionally, if the institutions in this study offer these attributes then the type of institution may not matter because students are already getting what they expected to receive from these institutions. Therefore institution type would not be substantially different.

Another explanation may be that many students attend highly selective institutions not only because of the prestige and academic reputation of such schools, but because they recognize that graduating from an elite institution improves their chances of being accepted to graduate or professional school. In other words, once they earn their undergraduate degrees, participation in graduate education is understood as the next necessary step in the educational pipeline for these students regardless of whether the elite institution is public, private, or a research or liberal arts campus.

Beyond the research questions, there were two other noteworthy findings related to this study. The first dealt with the control variables I used: students' SAT score and their family's average household income. In each HLM model considered for this study, household income was not significantly related to graduate school aspirations, however, a relationship between SAT score and graduate school aspirations did exist. In other words, students' average household income during their senior year of high school did not impact their aspirations, but students who scored higher on the SAT were more likely to have higher graduate school aspirations.

There are several possible explanations for the relationship that exists between each of these variables and graduate school aspirations. For example, a student's SAT score is one of the factors that colleges and universities use in making an admission decision. To be admitted to highly selective institutions, a student must achieve high scores on this standardized test. Therefore, it is not surprising that SAT score is related to graduate school aspirations. Another explanation for the relationship may be that doing well on the SAT raises students' self-efficacy, in general, on standardized tests. Thus, high performance on the SAT may boost students' confidence in being able to perform well on the Graduate Record Exam (GRE), or other entrance exams required by graduate and professional schools. This in turn may raise graduate school aspirations. Carter (2001) purports that students "cannot attain what they cannot see or think possible" (p. 57). Doing well on the SAT may help students "see" that graduate school is attainable.

Household income during the senior year, on the other hand, was not related to graduate school aspirations. The income variable used in this study represents the students' report of their household income during the senior year of high school. One reason household income was not related could be due to the amount financial assistance offered by these institutions. Most highly selective institutions have sizeable endowments and programs that offer low income students special grants and/or scholarships. Thus, family income is not as much of a factor if parents are not required to make a significant family contribution to the student's tuition and fees. Students in this sample may have received extensive financial assistance for their undergraduate degree and believe they will be afforded the same level of support in graduate school.

The second finding was related to the variance components for the HLM models. One of the important factors to note was the fact that neither Model 2 nor Model 3 was able to explain the small portion of variance of graduate school aspirations found by Model 1 both at the student level and the institution level. That is, after adding student level predictors and their interactions, the portion of variances that were explained by the predictors was 6.17% at the student level and 10.62% at the institution level. After eliminating the non-significant student level interactions and adding institutional level predictors in Model 3, the amount of variance explained at the student-level stayed at the same level (6.02%), but it decreased at the institutional-level from 10.62% in Model 2 to 2.65% (see Table 14). Thus, about 94% of the variance is still unexplained at the student level, and at least about 90% of the variance at the institution level was unexplained. This is important because it suggests that there are other individuals or institutional level factors, in addition to forms of capital, that help to explain the development of graduate school aspirations for these students. At the student level, individuals such as siblings, advisors, faculty members, or coaches can impact students' aspirations to attend graduate school. At the institutional level, desirable institutional climates that promote graduate school aspirations such as positive academic experiences with peers or mentoring relationships with faculty or staff members may influence graduate school aspirations. The important point here is that forms of parental capital, overall, have very little influence on graduate school aspirations and although graduate school aspirations do differ by race and gender, institutional type has no influence. So future research is needed to identify what factors do, in fact, influence graduate school aspirations for students at elite institutions.

Relationship of the Findings to Prior Research

The results of this study are equivocal in terms of prior research. In some cases, they support prior research related to educational aspirations and parental influences. Prior studies reveal that interest in careers that require a graduate or professional degree (Engle, Bermeo, & O'Brien, 2006), amount of loan debt (Eyermann & Kim, 2000), and participation in a formal research program (Frierson, 1996, Simpson, 2004) helped to explain the development of graduate school aspirations among undergraduate students. My study reinforces these findings because parental capital only explained a

small portion of the variance in graduate school aspirations for these students. Evidently other factors that were not included in this study must be considered to develop a model that explains graduate school aspirations among undergraduate students at elite institutions.

Prior research related to undergraduate college aspirations reveals that Black students have the highest aspirations among racial/ethnic groups (Freeman, 1999; Perna, 2000). My results suggest the same is true for graduate school aspirations: Black, non-first generation students reported the highest graduate school aspirations among all groups. Not only do Black students have high aspirations in high school but those aspirations remain high as students transition into their undergraduate years. Black students may value academic achievement because their parents and relatives remind them of a time when it was illegal in America for Black people to learn how to read or write. In an effort to honor the sacrifices that have been made by their ancestors and to have access to opportunities for advancement in society, perhaps Black students set their academic goals relatively high.

In several studies, racial/ethnic background was significantly related to educational aspirations (Choy, 2001; Horn and Nuñez; Perna 2000). In Model 3 of my analysis, the main effect of being Asian, Black or Hispanic, with all other factors being held constant, was related to having higher graduate school aspirations than being Caucasian. One could speculate about how income disparities based on race have impacted access to education for people of color for many years. Parents of Asian, Black or Hispanic students may have wanted to pursue higher education, but their families could not afford to send them to college or graduate school. Research reveals that higher incomes often translate to higher educational levels. Therefore, parents who had higher levels of income, i.e., Caucasians, were perhaps more likely to encourage their children to pursue graduate degrees because the household income could support this educational endeavor. Another explanation could be related to the fact that some of the first generation students may have been involved while in high school in programs that promote high educational aspirations among student participants.

Studies reveal that parents who have a bachelor's degree or higher are able to transmit higher levels of human, cultural, and social capital to their non-first generation

children (Choy, 2001; McDonough, 1997). My results generally supported this finding: mean scores for parental capital reported by non-first generation tended to be higher than the mean scores on parental capital measures for first generation students. This is not surprising since parents who have earned college degrees have been exposed to different perspectives about the world through their academic experiences. In turn, they may attempt to create similar opportunities for their children by helping them to learn, spending quality time with them in the home, participating in cultural activities, and engaging in social networking. All of these activities have the potential to influence the educational aspirations of their children.

My findings, however, contradict the results of other prior studies. For instance, the literature on first generation students reveals that these students have lower educational aspirations than non-first generation students due in part to their disadvantaged backgrounds (Choy, 2001; Saenz, Hurtado, Barrera, Wolf & Yeung, 2007). This notion is not well supported in the present study. Overall, first generation students tended to have graduate school aspirations that were as high as their non-first generation counterparts at elite institutions.

Also, research suggests that household income, a construct of socioeconomic status, plays a significant role in development of undergraduate college aspirations (Coleman, 1988; Cabrera & La Nasa, 2000b). In the present study overall, first generation students reported lower levels of all forms of capital when compared to non-first generation students. They also reported lower average household incomes during their senior year of high school. However, the analysis revealed that average household income during the senior year of high school for students attending highly selective colleges is not related to graduate school aspirations.

Prior studies have reported that background characteristics including parents' level of education are related to graduate school aspirations. Furthermore, students whose parents have earned a bachelor's degree or higher are more likely to pursue further education (Ekstrom, Goertz, Pollack & Rock, 1991). The present study demonstrates that the main effect of being a first generation student in this sample was only marginally related to graduate school aspirations. Therefore, parent's level of education is not as closely related to graduate school aspirations for students who

attend highly selective institutions as it may be to undergraduate aspirations for high school students.

Implications for Future Practice, Research, and Policy

Regardless of the relationship of my results to prior research, there are specific ways parents, administrators, researchers and policymakers can use the findings from this study in their future practice, research, and development of policy. For example, parents of students who attend highly selective institutions may benefit from the results of this study. Forms of human, cultural, and social capital variables were measured at ages 6, 13, and during the students' senior year of high school. Since parental capital is related to graduate school aspirations, first generation parents who are seeking ways to encourage academic achievement and high aspirations in their children may benefit from engaging in behaviors such as helping students with their homework or taking their children to science museums during their developmental years. If financial considerations are of concern, these parents should focus on activities that are less expensive but helpful in transmitting human and social capital. For example, encouraging students to do their best in school, taking them to the library, or getting to know their children's friends have no financial cost associated with them but may promote educational aspirations among their children.

These results may also have implications for staff from faith-based organizations and civic groups who coordinate programs for children and families. Knowing that human, cultural, and social capital activities play a role in the development of graduate school aspirations, staff members could coordinate workshops at service agencies, local churches, mosques, or synagogues that promote interaction between parents and their children during their late teen and early adult years. For example, a program could be designed to help parents and students understand the importance of pursuing a graduate degree and then help them strategize about the steps they can take as a family to help the student achieve that goal. Also, staff might consider sponsoring a speaker series that highlights members of these community-based organizations who have been successful in earning graduate and professional degrees. Speakers can share their experiences and answer questions from students and parents about

graduate education. These kinds of programs might not only bring families together but also positively influence graduate school aspirations.

Personnel who work with TRIO outreach initiatives such as Talent Search and Upward Bound should take note of the results of my study. These initiatives were developed to help students matriculate through each stage of the education pipeline (high school, undergraduate, and graduate levels). Talent Search and Upward Bound personnel could include workshops that highlight strategies for first generation parents on how to encourage their students to pursue a graduate degree. In many instances, students admire individuals who are doctors, lawyers, or professors. TRIO personnel might encourage parents to discuss these professions with their children and encourage them to attend graduate school if they want to pursue these careers. Also, parents who know individuals in these positions may want to inquire about an opportunity for their children to shadow a professional for a day. Students who do so may have a better understanding of the tasks associated with that job and may engage in a discussion about the educational requirements necessary to gain this type of position.

Faculty members who teach undergraduate students are among the other professionals who may benefit from the findings of this study. Similar to the literature related to undergraduate college aspirations, the findings in the present study reveal that Black students, regardless of generational status, report the highest graduate school aspirations of all racial/ethnic groups. However, Black students have one of the lowest rates of undergraduate degree attainment (Brown, 1982; Freeman, 1999). Also, trends in national higher education data for undergraduate students reveal that Black students are underrepresented in graduate education in the United States (U.S. Department of Education, 2006). To help increase the number of Black undergraduate students who attain graduate degrees, faculty members might invite students who demonstrate significant potential for graduate education to assist with research studies by helping in labs, conducting literature reviews, or proofreading manuscripts for publication. Additionally, faculty members can serve as mentors on undergraduate research projects with Black students. Such experiences may encourage Black students to follow through with their plans to pursue graduate education and earn their post-baccalaureate degrees.

Admissions and other recruitment professionals who work with science, technology, engineering, and math (STEM) programs may benefit from the results of this study. I found that female students have higher graduate school aspirations than male students and parents, on average, are transmitting more capital to their daughters than their sons. However, women are still underrepresented in STEM undergraduate and graduate degree programs (U.S. Department of Education, 2008). Administrators might target young women in such program and help them channel their interests and consider graduate school programs. Additionally, scholarships affiliated with special pipeline programs could be offered to encourage more women to pursue careers in male-dominated fields.

Additionally, admissions professionals who are interested in recruiting students of color to diversify their student population could benefit from the results of this study. When speaking with students and their families recruiters might underscore the fact that many students at elite institutions pursue graduate education once they earn their undergraduate degrees. Highlighting the success rate of past graduates may help to encourage participation in graduate education.

The implications of these findings may be useful to administrators who work with retention of students at highly selective institutions. Much of the research encourages students to interact with other practitioners and faculty members (Ekstrom, Goertz, Pollack & Rock, 1991; Pocke & Love, 2001). Recruitment and retention efforts must work in concert. That is, retention professionals would be well served to include graduate school preparation as a component of retention programs in addition to the traditional academic support services they might already offer students.

These findings also have implications for future research. The present study was designed to determine whether forms of parental capital were related to graduate school aspirations. Although there was a relationship, it was relatively small. A future study could examine what types of student behaviors or experiences occur during the high school and college years that might relate to graduate school aspirations for first generation and non-first generation students (e.g., high school curriculum, neighborhood, peers, etc.). Such a study might reveal other factors that influence aspirations more profoundly if it was conducted at the end of the junior year in college or

at the beginning or middle of the senior year. The timing of this approach would be more beneficial because it would capture students' perspectives during a time when they are more likely to be in the midst of making a decision about attending graduate school and the actual factors that influenced their aspirations might surface in the study.

A qualitative methodology could also be used to explore the factors that influence graduate aspirations. The present study was quantitative in nature and used existing data from an instrument that was not specifically developed to measure influences on graduate school aspirations. A qualitative study could yield information about factors that influence graduate school aspirations from the aspirants themselves. This method of inquiry gives the researcher the ability to obtain rich testimonials and stories from students and can be designed in such a way that questions probe into the other non-cognitive factors that influence graduate school aspirations. Additionally, respondents from various racial/ethnic and gender backgrounds could be included in such a study to explore differences among students from these groups. It would be interesting to hear the stories of Asian students that might explain why their human, cultural, and social capitals mean scores were among the lowest when compared to other racial/ethnic groups but their achievements (i.e., SAT scores) were the highest. This type of qualitative approach could help describe other forms of capital Asian students acquire that influence their educational aspirations.

I examined whether there was a relationship between parental capital and graduate school aspirations for students attending highly selective institutions that were mostly private (16 out of 28 institutions, 59%). A future study might lead researchers to investigate whether any relationship exists among these variables for first generation and non-first generation students at institutions that are considered land-grant institutions. Land-grant institutions have a different type of mission related to student access and tend not to be as selective in their undergraduate admissions criteria as elite institutions. A different type of first generation and non-first generation student may attend these institutions and thus, results might reveal differences in the relationship between forms of parental capital and graduate school aspirations based on generation status, race/ethnicity, and gender.

The sample in my study included entering first-year students. I looked at data about their graduate school aspirations. Another future study could examine whether these same students actually achieve their graduate or professional school aspirations. This type of longitudinal study might provide evidence of student persistence and degree attainment. Also, the proposed study could be used to determine if Black students remain the group that has the highest graduate school aspirations, but lowest graduate school attainment. Perhaps the phenomenon differs for students attending highly selective institutions.

Finally, the findings from this study have implications for future policy. Administrators who create policy at the elementary, middle, and high school levels should encourage parental involvement in schools. Schools are centralized locations for information sharing and offer partnerships between school administrators, teachers, and parents that are critical to student success. My findings reveal that human capital in the form of participation in Parent Teacher Association (PTA) and individual meetings with teachers is related to graduate school aspirations. School systems, therefore, would be well served by policies that enable all parents to take advantage of these opportunities. For example, there may be first generation parents who work evenings and efforts should be made to accommodate these parents so that they can have access to the information and activities and information schools can offer them (and their children).

Colleges and universities may want to consider developing policies that encourage graduate school aspirations while students are working on undergraduate degrees. The curricular and co-curricular activities that students participate in during their undergraduate years are possibly more influential than the experiences students have in high school. Administrators would be well served to capitalize on opportunities that promote graduate education at their institutions and help students prepare for the graduate school application process. Perhaps graduate and professional school preparation workshops co-sponsored by representatives from Career Services and the graduate school could be conducted at the beginning and middle of each academic year. Additionally, practice sessions for standardized tests like the GRE, LSAT and MCAT could be offered for interested students.

Finally, those who develop policy at higher education institutions can use the findings from this study to justify the development of strategies that could potentially increase the number of first generation students in graduate school programs. In general, there are fewer first generation students enrolled in highly selective institutions, but my findings demonstrate that those who are enrolled have relatively high graduate school aspirations. Institutional governing boards, academic deans and department heads who establish degree requirements, graduate admissions policies, and funding opportunities could be instrumental in facilitating the seamless transition of students at highly selective institutions from their senior year of college into graduate school programs.

Limitations

There were several limitations associated with the present study. The first was related to the sample size. A majority (76%, 2,988) of the students from the initial NLSF sample of 3,924 respondents were used in this study. However, the number of first generation students in the sample was rather small ($n=267$) compared to the number of non-first generation students ($n=2,721$). This small number could be due to the fact that I had to delete considerable numbers (20%) of first generation students from the original sample because they were missing significant amounts of data including responses to human and social capital items in the survey. The deleted cases may have contained patterns of information that were, therefore, not included in the analysis and this might have skewed the results. If so, the findings may not be generalizable to the population of students attending highly selective institutions.

The second limitation is related to the relatively high graduate school aspirations of the students in this sample. The sample mean was 7.98 and the standard deviation was 2.02 on a 10-point scale (see Table 2-a). As one would expect from this high mean, when examining the distribution of these scores, these high aspirations are heavily negatively skewed. Thus, data exhibited a ceiling effect and therefore, it is difficult to differentiate between the aspiration levels of the students in the sample because less variation in graduate school aspirations exists at the high end. This ceiling effect and the heavily skewed distribution may have limited the development of a more complex model and could have impacted the results of this study.

The third limitation also relates to graduate school aspirations for the students in the sample. These aspirations develop over time. Surveying students about their aspirations early in their college careers may be premature. For one thing, students have not completed a sufficient number of classes to see how their grade point average is developing. Since that average is instrumental in their admissibility to graduate school, asking them about their aspirations so soon in their undergraduate career may result in ill-informed aspirations. Additionally, this time frame does not give students an opportunity to fully develop their graduate school aspirations, though it does improve the chances that they accurately recall parental behaviors that were exhibited at ages six and 13. These kinds of issues may have impacted the findings.

Conclusion

In conclusion, the findings suggest that human, cultural, and social capital transmitted to students by their parents during elementary, middle school, and high school years are related to their graduate school aspirations regardless of generation status. This relationship between parental capital and graduate school aspirations, however, is only a marginal one. Also, graduate school aspirations did differ by race/ethnicity and gender independently, but the amount of difference was not significantly different between first-generation and non-first generation college students in this study. Finally, the type of institution (liberal arts, private research, or public research) does not relate to graduate school aspirations for students attending highly selective institutions.

These findings are noteworthy because limited empirical research has been conducted on the relationship between parental capital and graduate school aspirations especially among first generation students at highly selective institutions. Significant challenges often exist in the lives of first generation students that are associated with race/ethnicity, socioeconomic status, and parental influence. In this study, forms of parental capital, although relatively small, were more clearly related to graduate school aspirations than generation status. There were mean differences in forms of human, cultural, and social capital based on race/ethnicity and gender that can be associated with differences in cultural parenting behaviors and the treatment of female and male children.

These findings reveal what factors are not particularly influential on graduate school aspirations for students attending highly selective, elite institutions in the U.S. Clearly, more research is needed to explore what factors actually do influence graduate school aspirations among these students. Such information is needed if we hope to increase the numbers of underrepresented students in graduate education.

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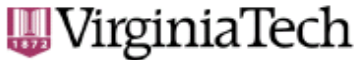
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Appendix A: Colleges and Universities in the NLSF Study

List of Colleges and Universities included in Study Sample

Institution Name	City, State
Barnard College	New York City, NY
Bryn Mawr College	Bryn Mawr, PA
Columbia University	New York City, NY
Denison College	Granville, OH
Emory University	Atlanta, GA
Georgetown University	Washington, DC
Howard University	Washington, DC
Kenyon College	Gambier, OH
Miami University	Oxford, OH
Northwestern University	Evanston, IL
Oberlin College	Oberlin, OH
Penn State University	State College, PA
Princeton University	Princeton, NJ
Rice University	Houston, TX
Smith College	Northampton, MA
Stanford University	Palo Alto, CA
Swarthmore College	Swarthmore, PA
Tufts University	Somerville, MA
Tulane University	New Orleans, LA
University of California-Berkeley	Berkeley, CA
University of Michigan-Ann Arbor	Ann Arbor, MI
University of North Carolina-Chapel Hill	Chapel Hill, NC
University of Notre Dame	South Bend, IN
University of Pennsylvania	Philadelphia, PA
Washington University	St. Louis, MO
Wesleyan University	Middletown, CT
Williams College	Williamstown, MA
Yale University	New Haven, CT

APPENDIX B: IRB Approval Letter




Office of Research Compliance
Carmen T. Green, IRB Administrator
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Blacksburg, Virginia 24061
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PWA00000572 expires 1/20/2010
IRB # is IRB00000667

DATE: December 3, 2007

MEMORANDUM

TO: Joan B. Hirt
Melanie L. Hayden

FROM: Carmen Green 

SUBJECT: **IRB Exempt Approval:** "Parental Influence on Graduate School Aspirations for First-Generation and Non-First-Generation Students Attending Highly Selective Institutions", IRB # 07-599

I have reviewed your request to the IRB for exemption for the above referenced project. I concur that the research falls within the exempt status. Approval is granted effective as of December 3, 2007.

As an investigator of human subjects, your responsibilities include the following:

1. Report promptly proposed changes in previously approved human subject research activities to the IRB, including changes to your study forms, procedures and investigators, regardless of how minor. The proposed changes must not be initiated without IRB review and approval, except where necessary to eliminate apparent immediate hazards to the subjects.
2. Report promptly to the IRB any injuries or other unanticipated or adverse events involving risks or harms to human research subjects or others.

cc: File

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