1. SUMMARY OF PROPOSED RESEARCH

While higher education has expanded dramatically worldwide over the past few decades, access to higher education continues to vary by social background, race, ethnicity and gender (Usher and Cevernman 2005). In those countries with differentiated systems of higher education (such as those with an elite tier alongside several progressively less selective tiers), access to the upper tiers is also found to be influenced by social background factors (Shavit, Arum and Gamoran 2007). The U.S. system is a case in point. This postsecondary system is remarkably stratified with a small number of highly selective colleges and universities at the top and a large number of institutions with either minimal or open admissions standards clustering at the bottom. Studies there have shown that even when academic ability is held constant, more advantaged youth are both more likely to enter higher education and are more likely to enter top-tier institutions. Students’ educational choices, and the factors that contribute to them, then, play a significant role in maintaining patterns of stratification in higher education.

This study takes up the topic of college choice among a large, nationally-representative group of U.S. high school students. Controlling for academic preparation, we compare the likelihood of applying and being accepted to top-tier institutions by gender, race, ethnicity, immigration status and socio-economic status. We also explore the possible role of several sets of explanatory factors. Specifically, this study answers the following empirical questions:

1. Among academically qualified students, how do gender, race, ethnicity, immigration status and socio-economic status (SES) correlate with the likelihood of applying and being accepted to a top-tier institution?

2. What factors help explain the differing application behaviour of qualified students? In order to better understand why qualified students vary in their likelihood of applying to top-tier institutions, we analyze the effects of six possible explanatory factors.

- High School Type
- High School Curriculum
- Cultural Capital
- Educational Expectations
- Access to Information
- Tuition Costs

We will merge and analyze data from three sources. Our main source of data is a large, nationally-representative survey of U.S. high school students provided by the National Center for Education Statistics at the U.S. Department of Education. This survey is ideally suited to our research because it began in 1988 with a sample of eighth-graders and followed these same students through high school and into postsecondary through subsequent waves of the survey, in 1990, 1992, 1994 and 2000. The final waves include detailed information on each student’s postsecondary participation, including each institution attended. To complement this data source, we will also utilize the Integrated Postsecondary Education Data System of 1992 and the U.S. News and World Report. From these data, we will:

A. Create a descriptive profile of the application behaviour of qualified students, comparing the likelihood of applying to top-tier universities by gender, race, ethnicity, immigration status and SES;

B. Conduct logistic and conditional regression analyses to test several explanatory factors, including the role of cultural capital, access to information, high school type and tuition costs; and

C. Build our theoretical understanding of access and student choice in education.
2. DETAILED DESCRIPTION

Objectives
Over the past few decades, higher education has expanded dramatically, with worldwide enrollment growth now exceeding even the most optimistic forecasts (Daniel, Kanwar and Uvalic-Trumbic 2006). However, in spite of a prevailing rhetoric of equality of opportunity, access to higher education in many parts of the world continues to vary by social background, race, ethnicity and gender (Usher and Cevernian 2005). Further, in those countries with highly differentiated systems of higher education (such as those with an elite tier alongside several progressively less selective tiers), access to the upper tiers is also found to be influenced by social background factors. Surprisingly, while students’ previous academic achievement explains some of this variation, even when academic ability is held constant, more advantaged youth are both more likely to enter higher education and more likely to enter top-tier institutions. Thus, patterns of stratification in higher education may be explained in part by qualified students’ educational choices.

The objective of this study is to expand our understanding of this important mechanism of stratification by examining students’ likelihood of applying, and of being accepted, to top-tier universities in the United States. The U.S. represents an important site for studying these dynamics because its higher education system is remarkably stratified: at the top can be found a small number of highly selective colleges and universities while at the bottom cluster a large number of institutions with either minimal or open admissions standards. In addition, a number of studies have demonstrated that graduates of more selective institutions reap a rich array of advantages. Compared to their equally talented peers at less selective institutions, they are more likely to earn higher salaries, enter more prestigious occupations, and move on to high-status positions, such as top corporate management. They are also more likely to pursue graduate education and more likely to do so in highly selective programs. Finally, they are more likely to experience higher levels of life satisfaction (Bowen and Bok 1998; Kingston and Lewis 1999a; Mullen et al 2003; Smart 1986, 1988; Trusheim and Crouse 1981, Xie and Goyette 2003). Within this stratified system, women, racial and ethnic minorities, and economically disadvantaged students tend to cluster in the lower rungs of the system. Thus, the stratification of higher education helps perpetuate broader patterns of social and economic stratification.

Our study moves beyond previous ones by focusing on the decision to apply to top-tier institutions and considering not only students’ choice by SES, but also by race, ethnicity, immigration status and gender. In addition, we explore the factors that may be associated with the decision to apply to a top-tier institution. Specifically, this study answers the following empirical questions:

1. Among academically qualified students, how do gender, race, ethnicity, immigration status and SES correlate with the likelihood of applying to a top-tier institution? Earlier research on this topic concentrates solely on SES without examining other demographic variables. We explore the independent and interactive effects of race, ethnicity, gender, immigration status and SES on the probability of applying to top-tier institutions.

2. What factors help explain the differing application behaviour of qualified students? In order to better understand why qualified students vary in their likelihood of applying to top-tier institutions, we analyze the effects of six possible explanatory factors.

- **High School Type:** Studies have demonstrated the links between Catholic and private high schools and university attendance. To what extent does attending a private or Catholic high school influence the likelihood of applying to a top-tier institution?

- **High School Curriculum:** Existing studies have relied on standardized achievement scores as predictors of application behaviour. However, high school academic curriculum provides a fuller measure of academic preparation. We explore the effect of high school curriculum on application behaviour.
• **Cultural Capital:** Family cultural capital has been shown to be an important predictor of attending university. However, studies have only just begun to explore the influence of cultural capital on the choice of institution. We extend this line of analysis.

• **Educational Expectations:** Students’ educational expectations are strongly linked to their eventual academic achievement. It is not yet clear whether they may also be linked to the type of institution students apply to. We test whether higher educational expectations influence the choice of a top-tier institution.

• **Access to Information:** Several qualitative studies point to the important role of access to information regarding universities and the application process. We examine whether access to information through parents and schools influences students’ choice of institution.

• **Tuition Costs:** It has been shown that low-SES students often have misperceptions of the real costs of attending university and may be dissuaded by the high “sticker” prices at more selective universities. We model for this possibility to understand whether or not this is the case.

**Context**

*Stratification in U.S. Higher Education*

The higher education system in the United States is distinctive for its steep prestige hierarchy (Davies and Hammack 2005). This system both reflects and reinforces the social stratification within American society more broadly. The top institutions disproportionately educate the most privileged students. An analysis of the student body at the 146 most selective institutions found that 74 percent of the student body come from families in the top quarter of the socio-economic status scale, while only 3 percent come from the bottom quartile of families (Carnevale and Rose 2003). These patterns apply to top-tier public institutions as well. At the University of Michigan in 2005, more students from families with annual incomes over $200,000 attended than did students from families with incomes less than the national median of about $53,000 (Brooks 2006). If the student body at top institutions comes predominantly from the upper reaches of the social structure, they also come predominantly from white and Asian-American families, with African-American and Hispanic students making up only small fractions of the student body. Women are also under-represented (Davies and Guppy 1997; Hearn 1990; Persell, Catsambis and Cookson 1992).

Further, the trends suggest that students from wealthy families have increased their proportional representation at highly selective colleges and universities in recent years. A study of 28 colleges and universities with academically selective admissions policies (including four of the eight Ivy League institutions), reveals that the percentage of students from families in the top income quartile grew from 39 percent of the student body in 1976 to 50 percent in 1995. On the other hand, students from families in the bottom income quartile represented only about 10 percent of the student population during this time (Bowen, Kurzweil and Tobin, 2005). Similarly, Karen (2002) reports that between the years 1980 and 1992, the relative effects of family background (especially father’s education and parental income) on the selectivity of institutions attended by their children approximately doubled. During the same time period, students from lower educational backgrounds appear to have become more concentrated in the lowest tier of institutions (Karen 1991). In addition to reflecting the inequalities already in place in American society, the stratification in higher education serves to advantage those already most advantaged, thus amplifying social stratification. As a number of studies have demonstrated, graduates of more selective institutions reap a rich array of benefits, such as being more likely to earn higher salaries, enter more prestigious occupations, move on to high-status positions, such as top corporate management, and pursue graduate education; finally, they are more likely to experience higher levels of life satisfaction (Bowen and Bok 1998; Kingston and Lewis 1990a; Mullen et al 2003; Smart 1986, 1988; Trusheim and Crouse 1981, Xie and Goyette 2003).
Explanations for the Stratification of Higher Education

Studies to date have primarily attributed the continued stratification of higher education in the U.S. to two factors. First, a number of scholars and critics have charged top-tier institutions with intentionally utilizing admissions policies (including the use of standardized tests) and prohibitive tuition costs to exclude socially disadvantaged students (Karabel 2005; Geiser and Studley 2002; Soares 2007, Willingham et al. 1990). Second, other researchers have examined high school academic preparation and performance. Such studies have found, for example, that white, Asian and high-SES students are more likely to complete the high school courses required by selective colleges and to outperform their less advantaged peers on measures such as high school grades and standardized test scores (Owings, McMillen and Burkett 1995). By the time students reach their last year of high school, a much higher proportion of advantaged students meet the criteria for admissions to selective colleges and universities.

The Role of Student Choice

While the vast majority of researchers and policy-makers interested in the under-representation of disadvantaged students at top-tier institutions have directed their efforts towards analyzing admissions practices and studying social background variations in academic preparation, new research suggests that the decision making process may differ by students’ social background characteristics. Indeed, James Hearn refers to the matching of colleges and students as a “little understood black box” and cautions that “the most fundamental threat to equality of opportunity may lie in the realm of choice” (1991, p. 168-169).

A small body of research suggests that even when as academically talented, low-SES students are considerably less likely to apply to top-tier institutions than are their more privileged peers. McPherson and Schapiro (1991) conducted a study of the application behaviour of students scoring 1300 or above on the combined SATs (placing them in approximately the top 10 percent of all test takers). They found a direct connection between income and the likelihood of applying to a group of 31 highly selective institutions. Of those with annual family incomes of $90,000 and above, a full 85 percent applied, compared to only 50 percent of those students with family incomes less than $20,000. Likewise, Richard Spies reports that about only one-third of all high-testing, low-income students applied to a group of 40 selective colleges compared to over half of high-testing, high-income students (Spies 2001, qtd. in Bowen et al 2005). In fact, while the application process is often portrayed as one in which students competitively vie for spots in the best institutions, in reality approximately 74 percent of all undergraduates attend their first choice college, and 20 percent attend their second choice (Astin, Green and Korn 1987: 89; Sax, Astin, Korn, and Mahoney 1996: 70). Further, after controlling for SAT scores, low-income students are as likely as high-income students to be admitted to highly selective institutions and slightly more likely to accept the offer and enroll (Bowen et al 2005). Thus, exclusion from top universities is in part a process of self-selection. One reason for the under-representation of low-SES students at elite institutions is that they are much less likely to apply.

Relationship to Previous and Ongoing Work

My research to date has focused primarily on the manifestations and implications of the stratification of the U.S. higher education system. For example, in my early work, I investigated how opportunities to earn bachelor’s degrees a: selective institutions in science fields vary by gender, race, ethnicity and social background. My research examined the disparities regarding the institutions where students earn their degrees as well as patterns of concentration within the sciences and revealed that women and minority students are more disadvantaged than studies of their simple representation in science would suggest (Mullen 1998; 2001). More recently, I extended this line of research to include educational continuation. In a co-authored study (Mullen, Goyette and Soares 2003), we examined entry into graduate and professional programs. Contrary to earlier studies, we find strong effects of parent’s education level on a student’s continuation into First-Professional and Ph.D. programs, revealing the
enduring effects of social background on educational continuation at all levels. The role of parental education is largely indirect, working primarily through the characteristics of a student’s undergraduate institution, educational aspirations, college major and academic performance. In addition, college performance maintains a strong, independent effect on graduate enrollment.

In another paper (with co-author Kimberly A. Goyette), titled “College for What? Social Background and the Choice and Consequences of Fields of Study” (Goyette and Mullen 2006) we continue the exploration of the mechanisms through which college level processes contribute to patterns of labor market stratification. In this work, we examine and explain the influence of SES on major choice and then document the influence of major on career outcomes and educational continuation. Our findings reveal that high SES students are more likely to select liberal arts fields of study over occupationally-oriented fields. Further, while liberal arts students enter the labor market at a disadvantage, they are far more likely to continue their education at the graduate level. These patterns then contribute to occupational stratification. Each of these studies in some way addresses issues of the horizontal and vertical stratification of U.S. institutions of higher education by race, class and gender and the consequences, in terms of choice of field of study, continuation to graduate school and career outcomes.

My most recent work takes on issues of educational choice. In a qualitative study of students at an Ivy League university, I show the effects of social class, high schools and peers on students’ pathways to college. For students from wealthy and highly educated families, the choice of an Ivy League institution becomes normalized through the inculcated expectations of families, the explicit positioning of schools, and the peer culture. Without these advantages, less privileged students more often place elite institutions outside the realm of the possible, in part because of concerns of elitism (Mullen 2007a). In another study using survey data, I find that cultural capital positively influences students’ decisions to apply to socially elite institutions (Mullen 2007b). The intriguing findings from these two studies provide the motivation for the current study, which allows me to examine college choice among a much larger and more diverse sample of students.

Contributions to the Field

This study builds upon the previous literature to analyze and explain the process of self-selection that contributes to the stratification of higher education in the U.S. Given that higher education has become the primary means for sorting people into the occupational structure, illuminating this important mechanism of social stratification will help inform public policy on access to higher education. This knowledge will also be applicable to other countries with stratified higher education systems, such as Israel, Sweden, Korea, Taiwan and Japan (Shavit, Arum and Gamoran 2007). This research will also contribute to the literature on college choice. Currently, the literature is divided between those suggesting students make choices based on rational calculations of costs and benefits (Manski and Wise 1983), and those identifying the role of peer groups, high school environments and cultural capital (McDonough 1997; Mullen 2007a, 2007b; Reay, David and Ball 2005). Our study will help address that debate and move the field forward by examining college choice specifically in terms of application to top-tier institutions.

Methodology

This study investigates the college choice process among a large, nationally-representative group of U.S. high school students. Controlling for academic preparation, we compare the likelihood of applying to top-tier institutions by gender, race, ethnicity, immigration status and SES. We also explore the possible role of several sets of explanatory factors. We will merge and analyze data from three sources.

Data Sources

Our primary source of data comes from the National Education Longitudinal Study (NELS), conducted by the National Center for Education Statistics at the U.S. Department of Education. This survey is ideally suited to our research because it began in 1988 with a large, nationally representative
sample of eighth-graders and followed these same students through high school and into postsecondary education through subsequent waves of the survey, in 1990, 1992, 1994 and 2000. Critical for our interests, the survey asked students (in their final year of high school) to name the colleges and universities to which they had applied. The final waves include detailed information on each student’s postsecondary participation, including each institution attended. The survey also includes information on students’ gender, race, ethnicity, immigration status, SES, high school type, educational expectations, academic performance, and region. Students also answered a battery of questions pertaining to their cultural activities inside and outside of school, ideal for creating an indicator of cultural capital.

Because the NELS data may be individually identifiable, they are confidential and protected by law. Further, the U.S. Department of Education only grants data licenses to organizations within the U.S. The collaborator in this study, Professor Kimberly Goyette, currently holds a license through her university. She will request an amendment to the license to include myself and the graduate student working on this research as project staff (neither citizenship nor residency are requirements for the designation of project staff).

To complement this data source, we will also utilize the Integrated Postsecondary Education Data System (IPEDS) of 1992 and the U.S. News and World Report. Both of these sources are publicly accessible. The IPEDS data come from an annual census of postsecondary institutions in the U.S. conducted by the National Center for Education Statistics. From this source, we will draw on data for student charges at each institution (including tuition and fees, room and board, books and supplies, and other expenses). Using the IPEDS code of each institution, we will then match these data with the NELS data. Finally, the third source of data (also publicly accessible) is the U.S. News and World Report. Using the U.S. News and World Report data, we will compile our list of top-tier institutions. This report annually publishes a ranking of the best colleges and universities in the U.S., based on a survey of the academic quality of accredited four-year institutions. We will include all top-tier national universities and all top-tier liberal arts colleges in our designation. There will be approximately 130 institutions in each category for a total of 260 institutions.

Work plan

My research assistant and I will prepare and manage the IPEDS and U.S. News and World Report data while Professor Goyette will be responsible for preparing the NELS data. Once we have secured access to the NELS database, my research assistant and I will travel to Philadelphia in order to merge the three data sources together and to conduct the majority of the analyses during these research meetings. Professor Goyette will then carry the responsibility for refining our initial analyses and conducting any additional analyses that may be required. The statistical analysis portion of the project will be equally divided between us and will be completed in years one and two.

The bulk of the preparation of conference presentations and journal article submissions will take place in Toronto. My research assistant and I will work closely with Professor Goyette as we develop drafts. In addition, Professor Goyette will travel twice to Toronto for research team meetings. I will be responsible for approximately two-thirds of the content of the written materials generated from this research, while Professor Goyette will contribute approximately one-third. I expect this project to be my primary research work during the time of the grant.

Measurement and Analysis

Once we have merged the three sources of data, we will conduct statistical analyses using SAS statistical software. Because our full data set must remain housed at Temple University due to the restricted access of the NELS data, we will conduct analyses during research team visits to Philadelphia. Our primary dependent variables will be whether a student applied to and whether a student was accepted at a top-tier college or university. For the first variable, we code the names of the two institutions that respondents in high school listed as having applied to as top-tier or otherwise according to our criteria developed from the U.S. News and World Report rankings. If one of the institutions was
top-tier, we code the youth as having applied to a top-tier college. The second outcome variable indicates whether a student was accepted by a top-tier college or university. The data for this variable come from students’ answers to whether they were accepted by the top-tier institution to which they had applied, complemented with data from the 2000 transcript study, listing institution of first attendance.

To create a profile of applicants to top-tier universities, we will first create descriptive statistics indicating the probabilities of applying by student background characteristics. Second, we will examine probabilities of application among academically qualified high school students (those who have completed the standard, required high school curriculum requirements and scored above 1200 on the SAT exam.

The third part of our study will consist of logistic regression analyses modeling the effects of our explanatory variables on the two dependent variables. Data for the principle explanatory factors are taken from the NELS. We will examine: high school type (public, religious, or private), access to information (variables include whether students talk to their parents about university, whether they receive help from teachers on college applications or essays, and whether they receive information on financial aid), and tuition costs (measured as the gap between tuition costs of the institutions to which the student applied compared to the average tuition costs of the range of institutions for which they are qualified). In order to measure cultural capital, we will rely on the data regarding whether the parent or child visited art museums (asked in the base year survey, 1988), since this works as the closest proxy to a measure of cultural capital as defined by Bourdieu (1984). Statistical models will also include controls for educational aspirations, occupational expectations and region (to control for distance to top-tier institutions).

We will also employ conditional logistic regression analysis in order to account for both the characteristics of the respondent and the characteristics of those institutions in their choice set. Conditional logistic regression is an under-utilized regression technique well-suited to the study of college application choices. When using conditional logit models, cases in a data set are arranged such that the unit of analysis is no longer the respondent, but the options from the choice set of each respondent. In this model, predictors vary according to both the individual respondent and that respondent’s array of choices. The effects of these predictor variables are assumed to be the same across all options in the choice set.

**Communication of Results**

We will present four papers at national and international conferences: the American Sociological Association Annual Meetings in 2009 and 2010, the Research Committee 28 on Social Stratification and Mobility, International Sociological Association, in 2009, and the Annual Meeting of the Canadian Sociological Association in 2010. The conference papers will be developed into substantive papers that will be submitted to peer-reviewed journals (American Journal of Sociology, Sociology of Education, Journal of Higher Education, and the Review of Higher Education). We anticipate that one paper, intended for the American Journal of Sociology, will present our key findings on gender, race, SES and the differential application to top-tier institutions for academically qualified students. Additional papers will provide more detailed analyses of specific groups. One paper will provide a detailed examination of the role of gender, while another will take on race and ethnicity. We also anticipate devoting a single paper to our exploration of the role of cultural capital across demographic groups. Two conference presentations, and the subsequent journal articles, will be co-authored with the graduate research assistant.

Beyond the academic community, the findings of this research will be made available to policy makers and practitioners through publication in venues such as the Chronicle of Higher Education and Change: the Magazine of Higher Learning. The reports appearing in these outlets will stress the practical issues resulting from the research and discuss the policy implications.
3. LIST OF REFERENCES


—. 2007c. *Degrees of Inequality: Culture, Class and Gender in American Higher Education*. Book manuscript currently under review at Harvard University Press.


