ABSTRACT

Title of Dissertation:	PREDICTORS OF DELAYED COLLEGE ENROLLMENT AND THE IMPACT OF SOCIOECONOMIC STATUS.

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This study contributes to our understanding of the decision of students to delay enrollment in college by building on the work of Hearn (1992). This study uses constructs from models of traditional college student enrollment (Cabrera & LaNasa, 2001; Perna, 2000; St. John, 2003), and data from the NELS:88/2000 longitudinal study of 1992 high school graduates. Descriptive analyses are used to determine the appropriate break point between immediate and delayed enrollment, as well as compare differences in student characteristics based on timing of enrollment. Multinomial logit regression is used to determine the predictors of delaying college enrollment rather than enrolling in college immediately after high school or not enrolling, and to explore if socioeconomic status is related to timing of college enrollment after controlling for other variables.

At least six conclusions may be drawn from this study. First, the appropriate break point between immediate and delayed enrollment is the end of the calendar year that a student graduated from high school. This study also reveals the value of looking at

a delayed group in comparison to immediate enrollment and no enrollment, since there are differences among all three groups for measures such as background characteristics, academic preparation and achievement, and social and cultural capital. Third, a combined model of college access based on traditional students (Cabrera & La Nasa, 2001; Perna, 2000; St. John, 2003) is appropriate for examining the predictors of both immediate and delayed enrollment in college relative to no enrollment. Fourth, measures of social and cultural capital are related to the timing of college enrollment but seem to be relatively more important in the decision to enroll immediately than in the decision to delay enrollment. Fifth, graduates who delay enrollment average fewer resources and weaker preparation than graduates who enroll immediately, but average more resources and better preparation than graduates who do not enroll. Finally, even after controlling for other variables, socioeconomic status is related to timing of college enrollment. Students who enroll immediately as well as those who delay enrollment have higher socioeconomic status than those who do not enroll, with those who enroll immediately having higher socioeconomic status than those who delay enrollment.

PREDICTORS OF DELAYED COLLEGE ENROLLMENT AND THE IMPACT OF

SOCIOECONOMIC STATUS

by

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Dissertation submitted to the Faculty of the Graduate School of the
University of Maryland, College Park in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
2005

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DEDICATION

To my parents, Patrick and Linda Rowan, who have supported me in all of my

educational endeavors.

ACKNOWLEDGEMENTS

There are so many people who helped to make the completion of this dissertation possible. First, I would like to thank Laura Perna, my mentor, chair, and advisor. Her role modeling, quick and meaningful feedback, and support helped me to push my thinking and make this dissertation a much better finished product. I would also like to thank Jeff Milem for his advising, support and inclusion into many great research opportunities during the last four years. I would also like to thank Susan Komives, Jaci King, and Nancy Shapiro, who took time out of their busy schedules to be insightful members of my committee.

Next, I would not have made it through this program without the friendship, support, and assistance of the members of my cohort. We have come a long way from those first days when we didn't think we would ever make it to this point! Kathleen, Michelle, Michele, and Courtney, I am thankful that you were the women I started with and that we were able to share so many of life's experiences together over these last few years. Michelle, I would especially like to thank you for all of your editing help and all of the daily phone calls over the past few months.

I have also been very lucky during the past four years to have great colleagues, who encouraged me and supported me. To my University of Maryland colleagues in Office of Judicial Programs and in the Lumina Office, and my colleagues and friends at Mount St. Mary's College, I thank you for all of your support and laughter in helping me to achieve this.

I would also like to thank my parents, sister, and all of my friends, who were so supportive during this process, even if they did not always understand what I was doing. Your patience, understanding and encouragement were so valuable to my education, and I am so grateful to have you all be a special part of this.

Lastly, I would like to thank Mark for all of his love, patience, and support during my dissertation process. Thank you for believing in me and encouraging me on the days when I wanted to give up, and for wiping away the many tears that went into this dissertation.

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CHAPTER 1

INTRODUCTION

Introduction

College enrollment rates vary systematically based on income and socioeconomic

status, with lower enrollment rates for lower income students and students with low-

socioeconomic status. Fitzgerald and Delaney (2002) stated that the size of the gap in

college enrollment between low- and high-income families was the same in 1970 and

1997, 32 percentage points, even though there had been an increase in the college

enrollment rates for families of all income levels. Cabrera and LaNasa (2001) explored

college enrollment and the stages leading up to it-being college qualified, completing

high school, and applying to a four-year college. They found, after controlling for

relevant college-choice variables in their study using the NELS data , a 26.4 percentage

point gap in college application rates between low-socioeconomic status and high-

socioeconomic status students.

Research (Perna, 2000) shows that students from low-income families are less

likely to enroll in college even after controlling for other variables. Perna (2000), in her

examination of college enrollment among 1992 high school graduates of different

racial/ethnic groups, included family income as a variable in her conceptual model. In

her multivariate analyses, she found that students with a higher family income had a

significantly greater probability than students with a lower family income of enrolling in

college in the fall after graduation from high school. She also found that, when each

group was examined separately, that income was not a significant predictor of enrollment

for African American or Hispanic students after controlling for other variables, but was still a significant predictor of college enrollment for White students.

While research consistently shows lower rates of enrolling in college within one or two years of high school graduation for students with lower income and low-socioeconomic status than for other students, little is known about what happens to low-income students, or any student, who does not enroll in college immediately after high school. The vast majority of research (Cabrera & La Nasa, 2001; Hossler, Braxton, & Coopersmith, 1989; Hossler & Gallagher, 1987; Manski & Wise, 1983; Perna, 2000; St. John, 2003) examines the college enrollment of traditional aged students immediately after high school, i.e., within two years of high school graduation. While such work sheds light on the variables that affect traditional college enrollment, little is known about the decision-making process of students who may choose to enroll in college at a later date.

A review of trends in enrollment suggests that growing numbers of individuals who do not transition immediately from high school to college may be enrolling in college at some later point in time. About 39 percent of all students participating in any type of postsecondary education were over the age of 25 in 1999, up from 28 percent in 1970 (Choy, 2002). While these data may also reflect an increase in part-time and post-baccalaureate enrollment, a share of this growth in older student enrollment may be attributable to an increase in the number of students who are enrolling in college several years after graduating from high school.

Although the growing share of older students implies growth in delayed enrollment, there is limited research about the characteristics of students who delay

college enrollment, or how the predictors of delaying enrollment compare to the predictors of immediate enrollment or no enrollment. Since literature on traditional student access has shown that low-socioeconomic status students are less likely than high-socioeconomic status students to attend college immediately after high school (Cabrera & La Nasa, 2001; St. John, 2003) low-socioeconomic status students may represent a greater portion of the college population that delays enrollment to a later time. Examining this nontraditional form of enrollment may inform practitioners and policy makers of avenues where the socioeconomic gap in enrollment can be closed, and lead to further exploration of the persistence of this group. More generally, understanding the characteristics of students who delay entry and the predictors of the decision to delay enrollment may suggest ways to better assist all students in this group.

Some research identifies the characteristics of students who delay enrolling in college immediately after graduating from high school (Aslanian, 2001; Choy, 2002; Choy & Bobbit, 2000; Cook & King, 2004; Hearn, 1992; Horn & Carroll, 1996), and supports the notion that low-socioeconomic status students are overrepresented in this group. Choy and Bobbit (2000) found, through their analysis of data from the 1995-1996 National Postsecondary Student Aid Study, that40% of undergraduate students aged 24 to 29 who enrolled in college were classified as low-income.

With the exception of Hearn (1992), few researchers have examined the variables that influence the decision of a student to delay entry into college after high school graduation. Hearn explored the predictors of each of three non-traditional college enrollment behaviors: delaying enrollment by at least one year but not more than two years after graduating from high school, enrolling part-time, and enrolling in a non-

degree program. He defined delayed enrollment as a break of between one and two years after graduating from high school partly because his dataset included data only up to two years after high school graduation. Using the High School and Beyond datasetand logistic regression, he found that 1980 high school graduates who delayed enrollment were disproportionately students from low-socioeconomic backgrounds and low-levels of academic preparation for college after controlling for other variables.

Hearn's (1992) study sheds light on the effects of such variables as socioeconomic status, educational aspirations, and academic background on the decision to enroll in college more than one year but less than two years after graduating from high school. But, little is known about the predictors of the decision to enroll in college more than two years after graduating from high school. Moreover, Hearn's study used data describing students who graduated from high school in 1980. The generalizability of his findings to later cohorts of students is unclear, given changes in the economic, social and political landscape since 1980. Also, models of college student enrollment have advanced since the publication of Hearn's study. Attention to such concepts as social and cultural capital by researchers such as Perna (2000), McDonough (1997) and Cabrera and LaNasa (2001) has improved the understanding of the decision to enroll in college directly from high school, suggesting that these concepts may help explain the decision of students to delay enrollment as well.

This introductory chapter first presents an overview of the study and the theoretical framework that supports it. Next the problem statement, an overview of the research model, and research questions are presented. The chapter also describes the expected implications and significance, as well as the limitations, of the study.

Purpose

The proposed study builds on the work of Hearn (1992) by looking at a more recent group of students, expanding the time after high school when a student may decide to enroll in college, and utilizing a more comprehensive conceptual model of the college enrollment decision. This study also determines the most appropriate definition of delayed enrollment by examining the percentages of students who enroll in college each year after graduating from high school and comparing the characteristics of students who enroll in each year. Using a conceptual model that is based on what is known about decisions to enroll in college immediately after high school, this study examines the variables that differentiate a student's decision to enroll in a two- or four-year college immediately after high school graduation, delay first college enrollment, and not enroll in college within eight years of high school graduation. The study also explores the relationship between socioeconomic status and patterns of college enrollment to determine if the socioeconomic status gap that is present in traditional enrollment is also present in delayed enrollment.

Specifically, this study addresses the following five research questions:

1. What percent of high school graduates enroll in college in each of eight years after graduation from high school? What is the appropriate break point between immediate and delayed enrollment?

2. How do the characteristics of high school graduates who delay entry into a two- or four- year college degree program compare to the characteristics of high school graduates who enroll immediately after high school and the

characteristics of high school graduates who do not enroll within eight years

of high school graduation?

3. For high school graduates who delay enrollment, how does the timing of first

enrollment vary by student characteristics?

4. What are the predictors of delaying entry into a two or four-year college

degree program for up to eight years rather than enrolling immediately after

high school or not enrolling within eight years?

5. After controlling for other variables, is socioeconomic status related to the

decision to delay enrollment in college?

Theoretical and Conceptual Framework

Figure 1 shows the conceptual model that guides this examination of delayed

college enrollment. This study tests a conceptual model that is developed based on what

is known from prior research about "traditional" college enrollment (i.e., enrollment in

college immediately after graduation from high school), but especially the work of

Cabrera and LaNasa (2001) and Perna (2000). Cabrera and LaNasa focused on

understanding college enrollment processes of low-socioeconomic status students, while

Perna focused on understanding differences in college enrollment by race/ethnicity. Both

focused on the enrollment of high school graduates no more than two years after high

school graduation. Both also developed and tested conceptual models that incorporated

aspects of human capital, social capital, and cultural capital theoretical frameworks. A

review and synthesis of prior research suggests that measures of background

characteristics (e.g., socioeconomic status, race/ethnicity, gender), human capital (e.g.,

academic preparation and achievement), social capital (e.g., parental involvement in

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education), cultural capital (e.g., parental educational attainment), and financial resources (e.g., family income, tuition, and financial aid) all influence the decision of traditional age high school graduates to enroll in college within two years of graduating from high school.

| Background Characteristics |
| Financial Resources |
| Academic Preparation and Achievement |
| Social Capital |
| Cultural Capital |

| Timing of enrollment in a 2- or 4-year college degree program |
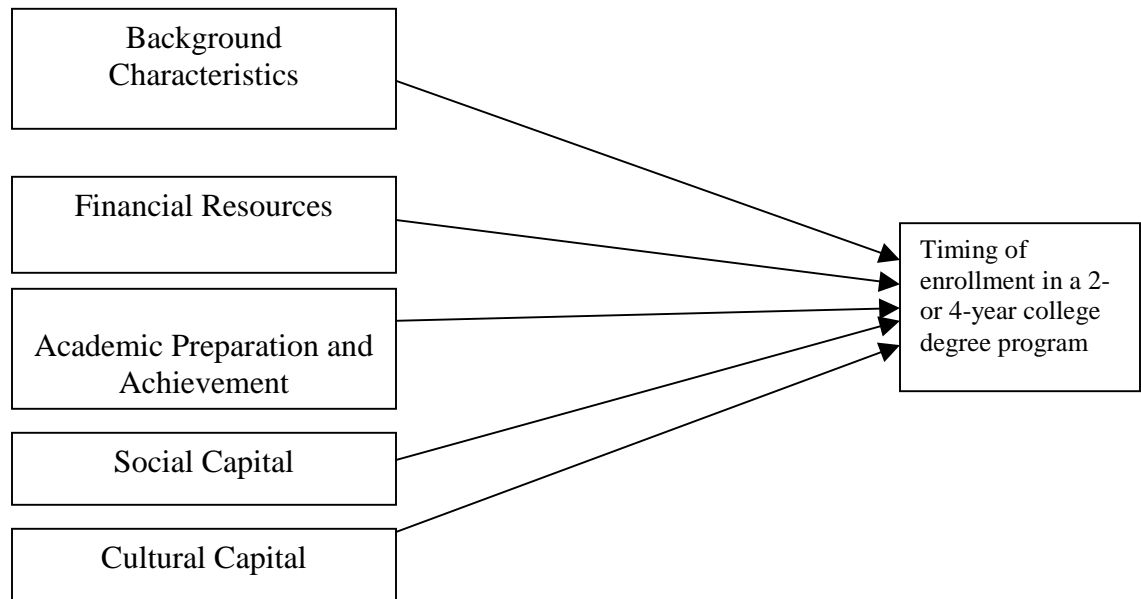
Figure 1. Conceptual Model of Traditional College Enrollment

The economic theory of human capital predicts that, as an individual invests in his/her human capital, he/she will realize higher returns in the form of income over the course of a lifetime (Becker, 1993). This traditional econometric approach assumes that students make a decision to enroll in college based on the weighting and ranking of all alternatives relative to their preferences. Enrollment in a two- or four-year degree program is an investment in human capital that can generate returns, but that has costs associated with it. Although the major economic return of higher education is higher lifetime earnings, participants also realize other benefits, including lower rates of unemployment and higher occupational status (Becker, 1993).

Students who enroll in college immediately after high school are more likely to receive a greater economic return over time than those who delay enrollment because they have more years over which to realize the return on their investment. This earnings profile may explain, at least in part, whycollege en rollment research generally focuses on early, rather than delayed, enrollment. Nonetheless, an individualwho begins an investment in higher education eight years after high school graduation may still have more than 30 years in the workforce to realize the earnings premium. Even a delay in college enrollment of up to eight years after high school graduation may generate substantial economic, social, and psychological benefits for the individual participant, as well as for society at large.

Costs of enrolling in higher education can be direct, such as tuition, fees, and books. The direct cost of college, aspects of which are typically included in traditional econometric models of college enrollment, is an important component in a student's college enrollment decision. Paulsen and St. John (2002) found that the cost of attending college and financial aid given to lower college costs were significant factors in a low-income student's college-choice decision. They found through their multivariate analyses of 1987 National Postsecondary Student Aid Study (NPSAS) data that a majority of low-income students chose a college based on low cost and financial aid. St. John (2003) posited that "students respond to prices and subsidies based on their situated circumstances" (p. 187) particularly their family income and academic ability. Heller (1997) also found, based on his review and synthesis of prior research, that the college enrollment of lower-income students tended to be affected to a greater degree by increases in tuition and decreases in aid than the college enrollment of students from

families with higher incomes. As a result of these findings, academic preparation and achievement, college costs, and financial aid are included in the conceptual model for this study.

I incorporated social capital and cultural capital into the conceptual model for this research, as suggested by Perna (2000), Paulsen (2001), and Hurtado, Inkelas, Briggs, and Rhee (1997), in order to test a more complete model of student decision making. Perna (2000) showed that adding social and cultural capital to a traditional econometric model improved the explanatory power of the model, thereby lending more insight into the predictors of college enrollment.

While human capital is an investment in education, training, health or mobility, social capital is an investment in relationships that helps the individual participating in the relationship or network to gain knowledge about resources available (Lin, 2001a). An individual accumulates social capital as he or she participates in a network and from that network gains access to information or other resources that the person can use to his or her advantage. Coleman's (1988) approach to social capital focuses on a person's connection to a social structure such as a family, community, or school, and the information and resources that one can gain from participation in that structure. More specifically, he focuses on the transmission of social capital both within and outside of the family. It is from the structure of the relationships between and among actors that information is gained and then can be converted into social capital. The resources gained from participation in the network make possible a particular achievement such as enrollment in college. Social capital in this study is measured by parental involvement in

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the student's education, number of financial aid contacts, student-teacher relations, high school based support, and high school control.

Cultural capital is the passing on of values and norms from one generation to the next, or "social reproduction" (Bourdieu & Passeron, 1977). This symbolic good is held by all socioeconomic groups, with middle and upper class groups having the most economically valued forms of cultural capital (McDonough, 1997). Those who have more valued forms of cultural capital (i.e., members of the dominant class) may work to exclude others who do not have the same forms of cultural capital (Bourdieu, 1986; Lamont & Lareau, 1988). The type of cultural capital that a student possesses can affect student enrollment choices, which are often influenced by cultures and values (Paulsen & St. John, 2002). Cultural capital in this study is measured by parental expectations, peer encouragement, parental involvement with the school, educational materials in the home, and participation in art, music, or dance classes.

Research Method

This study draws on data from the National Education Longitudinal Study: 1988-2000 (NELS) to examine the research questions. Sponsored by the National Center for Educational Statistics (NCES) of the United States Department of Education, the NELS tracked a group of students periodically from the 8th grade through eight years out of high school, to study the transitions that students experience over time from middle school through high school and their entrance into the workforce and/or postsecondary education. I utilize information from the second (1992), third (1994), and fourth (2000) follow-ups to gain information about the end of their 12th grade experience through eight

years out of high school. The sample is limited to students who graduated from high school on time in 1992, since college enrollment is usually limited to students who have completed high school.

The NELS is an appropriate dataset for this study for several reasons. This dataset provides a large number of cases (analytic sample size= 8,567). The dataset also has high response rates, ranging from 94.0% for the third follow-up (1994) to 77.6% for the fourth follow-up (Curtin, Ingels, Wu, & Heuer, 2002). The dataset includes many variables that I can utilize to address my research questions. Finally, the dataset is representative of the population of 1992 high school graduates nationwide when weighted by the normalized panel weight (F4F2PNWT).

Descriptive and multinomial logit regression analyses are used to address the research questions. Descriptive analyses are used to address the first, second, and third research questions, which require describing and comparing the characteristics of graduates. I use the results of the first research question to determinethe number of years that appropriately differentiate between "immediate" and "delayed" enrollment. For research questions four and five, multinomial logit regression is used to examine the differences in the decision of high school graduates to delay enrollment rather than enroll in college immediately after graduation from high school or not enroll within eight years.

Multinomial logit models are a type of loglinear model used for dependent variables that are categorical and have more than two responses(SPSS, 1999) . The dependent variable, time of enrollment, has three categories: enroll immediately after graduating from high school, delay enrollment, or not enroll within eight years. The multinomial logit model estimates the log-odds of one outcome occurring (e.g., no

enrollment) relative to the baseline category (SPSS, 1999). For this study the baseline category is delaying enrollment in college after graduating from high school.

Significance of the Study

Existing research on college enrollment is largely limited to traditional college enrollment patterns (i.e., enrollment into college immediately after graduation from high school). Little is known about the applicability of existing conceptual models of college enrollment to non-traditional college enrollment patterns such as delayed enrollment. Moreover, as Adelman (2002) stated based on his review of the literature, little is known about the initial college enrollment of socioeconomically disadvantaged students, with few exceptions (e.g., Cabrera & La Nasa, 2001; Hearn, 1992). Paulsen and St. John (2002) recommended, based on their research on the student-choice construct, the exploration of different patterns of student choice, such as differences in timing of enrollment, in order to refine college enrollment theory for different groups.

The research contributes to theory by testing the applicability of conceptual models that have been developed and tested on traditional college enrollment on the decision to delay college enrollment. The findings may suggest ways in which models of college enrollment may need to be modified to understand this behavior. This study may help inform other researchers of the applicability of a model that incorporates measures of human, cultural, and social capital for examining the decision of students to delay entry into college after graduation from high school.

This study also has implications for policy and practice. Results of this study shed light on how the characteristics of students who delay entry into college differ from the characteristics of students who enroll immediately after graduation from high school.

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Providing a more current description of the characteristics of graduates who delay entry

into college may shed additional light on the characteristics and nature of the

socioeconomic status stratification of higher education opportunity. Hearn (1992) found,

using a sample of students that is now more than 20 years old, thatstudents who delay

entry are less prepared academically and of lower socioeconomic status students than

students who do not delay college enrollment.

By exploring differences in the predictors of delayed versus immediate

enrollment, the results of this study may suggest modifications to and improvements in

policies and practices that promote enrollment in college at any point within eight years

of high school graduation. Such policies and programs may be particularly important for

students who, for whatever reason, have less of the resources that are required to enroll in

college immediately after graduation from high school.

Gaps in enrollment by socioeconomic status and race as documented by Cabrera

and LaNasa (2001) and Perna (2000) suggest persisting inequities in the opportunity to

access the benefits of higher education.   Cabrera and LaNasa (2001) found that low-

socioeconomic status students were less likely to enroll in college due to a lack of

academic qualifications and a lower rate of college applications. Perna (2000) found that

if students from underrepresented racial/ethnic groups had the same levels of academic

ability, finances, and social and cultural capital as Whites, they would be as likely to

enroll in college as White students. But, she found that many African American and

Hispanic students did not have access to these resources thereby perpetuating the

observed racial/ethnic enrollment gap. This study shows the extent to which

socioeconomic status gaps in college enrollment persist even when a longer-term view of

college enrollment is taken. The results may provide additionalinsight i nto ways to equalize educational attainment across socioeconomic status by recognizing that enrollment even two to eight years after high school graduation has potential benefits to individuals and society.

Promoting delayed college enrollment has benefits for both society and individuals. Society benefits from increased productivity, increased tax revenue, and less drain on the social welfare system. Individuals with a college education benefit not only in terms of higher returns but also in terms of cognitive learning, emotional and moral development, and good health (Bowen, 1997). Bowen argued that the most important benefit is intergenerational. When a parent attains a college degree, his/her children are more likely to enroll in college in the future (Bowen, 1997).

<center>Limitations and Delimitations of the Study</center>

This study has several limitations. Since the study involves secondary data analysis, the study is limited to the use of the variables that are available in the NELS. Since social capital and cultural capital are complex constructs, it is difficult to find appropriate measures of these constructs for the conceptual model in this study Proxies of social capital include parental involvement in a student's education, number of financial aid contacts, student-teacher relations, high school control, and high school based support. Parental expectations and involvement, peer encouragement, educational materials in the home, and visits to museums/participation in the arts act as proxies of cultural capital for this study. While these proxies are appropriate, many of them (e.g., parental involvement and financial aid contacts) measure the quantity of the aspect of capital, not its quality. High school control and the percent of students in the school

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receiving free or reduced price lunch is used as a proxy for resources available at the school attended, but again, more specific measures (e.g., quality of counseling for college), if available, would be preferred.

Predictors not included in the model which could be helpful to the study include a student's perception of the benefits of higher education. The NELS dataset does not have variables that are adequate proxies for student's perceived benefits of college or forgone earnings.

Reflecting the construction of the dataset, this study examines college enrollment only up to eight years after high school graduation. Data from more than eight years after high school graduation may provide greater information related to college enrollment patterns, if it were available. Nonetheless, the eight year time period may be an appropriate cut-off given the declining benefits of higher education to older individuals.

Another limitation is that the model does not account for changes in economic circumstances that occurred after 1992 which may play a role in the decision to enter college two to eight years after high school graduation. In the early 1990s when students in the sample graduated from high school, the economic picture was less stable than in more prosperous times of the late 1990s. These economic changes may have encouraged graduates to enroll immediately into college, but deterred individuals who might have otherwise enrolled at a later point to stay in the labor market.

Even with these limitations, the study is worth pursuing due to the likely contributions to theory, policy and practice. The strengths of the research design, including the size of the sample, the longitudinal nature of the NELS dataset, and the number of variables that are available to represent complex constructs in the analyses

also support the worth of the study. The study tests the applicability of a conceptual model of traditional college enrollment to the decision to delay college enrollment. The study also contributes to our understanding of the nature of socioeconomic status gaps in educational opportunity by examining socioeconomic gaps in delayed enrollment of 1992 high school graduates.

The following chapter explores the literature that informs this study. The third chapter describes the methodology for the study. Chapter four discusses findings of the study, and chapter five includes conclusions from the study.

CHAPTER 2

LITERATURE REVIEW

Introduction

This study uses descriptive and multinomial logistic regression to examine the predictors of a student's decision to enroll in a two- or four-year college degree program immediately after graduation from high school, to delay enrollment for up to eight years after graduation, or to not enroll in college within eight years of high school graduation. The study also explores how time of entry in a college degree program varies based on graduates' socioeconomic status. The following literature review provides background and support for this study.

This study examines differences between graduates who enroll in college immediately after high school and those who delay as part of the third or final phase of Hossler and Gallagher's (1987) model of the college enrollment process. Hossler and Gallagher developed a three stage model of college choice based on a review of literature on the subject. In their proposed model, developed for the immediate transition from high school to college, students gain understanding from multiple sources over time as to their higher education options. In the first stage students become predisposed to continue their education after high school. Hossler and Gallagher described the second stage as the search phase where a student gathers information about attending a postsecondary institution, including the characteristics and attributes of particular colleges and universities. In the third phase of the choice process students decide whether and where to attend. In their comprehensive review and synthesis of research, Hossler, Braxton, and Coopersmith (1989) further refined this model, labeling the third phase as "choice."

Hossler, Schmidt, and Vesper (1999) also further refined the third phase of the model, making choices, to emphasize "information processing." Research (Cabrera & La Nasa, 2001; Hurtado et al., 1997) suggests that this three phase model may be useful for understanding the characteristics of students who enroll in college directly after high school. The applicability of the model to students who delay college enrollment after high school is not clear. Regardless, this research focuses on the third phase of the process, choosing to enroll in college.

The literature review begins by describing what is known about the decision to delay college enrollment from the limited amount of research on this topic. Because few researchers have examined delayed college enrollment, the chapter then reviews and analyzes models of immediate college enrollment, with particular attention to research that focuses on the college enrollment of low-socioeconomic status and low-income students. I show how quantitative models for the immediate transition from high school to college have progressed from purely econometric, to models that include measures of sociological constructs, namely habitus, cultural capital, and social capital, to further understand the immediate college enrollment of high school students. The chapter concludes by summarizing what is known and not known about the decision to delay entry into college after graduation from high school and describing the ways in which this study addresses the knowledge gap.

Delayed College Enrollment

While much research has examined the decision of students to enroll in college, almost all of this research examines only the immediate transition to college from high

school. Entering the key words "nontraditional students," "enrollment" , and "delay" into the ERIC, Education Abstracts, Digital Dissertations, and Social Science Citation Index search engines generated over 200 journal articles, conference presentations, and dissertations published since 1985. Only one of these "hits" examined predictors of delayed college enrollment: Hearn (1992). The following section describes the method, results, and limitations of his study.

Hearn (1992) explored the predictors of delaying enrollment in college as a part of his examination of non-traditional college enrollment. Using data from the 1982 follow-up of the High School and Beyond (HS&B) longitudinal study of 1980 high school graduates, Hearn examined three aspects of non-traditional enrollment: enrolling in college part-time versus full-time; enrolling in a non-degree program rather than in a degree program at a two- or four-year institution; and delaying enrollment in college rather than enrolling in a two-year or a four-year institution within one year of graduation from high school. In his descriptive analyses, Hearn (1992) found that 52% of 1980 high school graduates enrolled in college within one year of graduating from high school, 10% enrolled between one and two years after graduating from high school, and 38% had not enrolled within two years. Descriptive analyses also showed that higher percentages of students who were Black, from a larger family, of a lower socioeconomic status, and of a lower academic track in high school, and who had lower high school grades, test scores, and lower educational aspirations had delayed entry into college than had enrolled in college immediately after high school.

Using logistic regression and limiting the analyses to students who enrolled in college within two years of high school graduation, Hearn (1992) examined the

predictors of enrolling in college within one year of high school graduation rather than enrolling in college between one and two years after graduating from high school. He found that some of the observed differences in time of enrollment disappeared after controlling for background characteristics, academic characteristics, and aspirations. The control variables were entered into the model in three blocks. The first block contained such background variables as race/ethnicity, gender, parental socioeconomic status, and family size. The second block included academic factors such as academic track in high school, high school grades, and test scores. The final block included educational aspirations.

The logistic analyses showed that students who delayed enrollment were less likely than those who enrolled in college immediately after high school to be academically prepared for college. With an index of concordant-pair predictions at 68%, the analysis showed that, compared with those students who enrolled immediately after high school graduation, those who delayed enrollment were 27% less likely to be female, 20% less likely to have been a part of an academic (college preparatory) curriculum, 26% less likely to have grades that were mostly A's and B's, and 17% less likely to aspire to attain a college or graduate degree. Race and parental socioeconomic status were found to be significant, when only background and academic factors were being considered, with Black students and low-socioeconomic status students more likely than White and high socioeconomic status students, respectively, to delay enrollment. When a measure of educational aspirations was added to the model, neither race nor socioeconomic status were significant predictors of delaying enrollment, suggesting that educational aspirations

mediated the direct effects of race and socioeconomic status on delaying enrollment (Hearn, 1992).

Hearn's (1992) study illustrated differences in the predictors of immediate and delayed enrollment in college after high school. His study also showed that the predictors of the decision to enroll in college vary based on the timing of the enrollment and that the characteristics of students who delayed enrollment after high school graduation by between one and two years were different from the characteristics of students who enrolled within one year.

Despite the contribution of Hearn (1992) to a virtually unresearched topic, his study also suggests several persisting knowledge gaps. First, he examined the college enrollment decision of 1980 high school graduates. The applicability of analyses describing high school graduates in 1980 to more recent cohorts is unclear given changes in economic, societal and political contexts in the United States.

Second, Hearn (1992) defined "delayed" college enrollment as enrolling in college within a limited period of graduating from high school (one to two years) rather than enrolling after a greater period of time. While his study illustrated differences between these two groups, his study did not explore predictors of delaying college enrollment beyond two years of graduation from high school. Although no available data describe trends in delayed enrollment per se, growth in the enrollment of older students suggests "delayed" enrollment becoming more prevalent. About 39 percent of all undergraduate student participating in any type of postsecondary education were over the age of 25 in 1999, compared with 28 percent in 1970 (Choy, 2002).

Third, while Hearn's (1992) conceptual model included measures of background characteristics, academic ability, and aspirations, a review of the body of research on traditional college enrollment that has been conducted since 1992 suggests that other variables also influence college enrollment decisions. Other researchers (Cabrera & La Nasa, 2001; McDonough, 1997; Perna, 2000; St. John, 2003) have found that social capital, cultural capital, college cost, and financial aid also impact the immediate enrollment into college of high school graduates.

Theoretical and Conceptual Approaches to Traditional College Enrollment

The bulk of the college enrollment literature has developed and tested models that defined college enrollment as enrollment no more than two years after graduating from high school. Quantitative studies on this topic have been shaped by two major theoretical perspectives, the econometric approach (Kane, 1994; Manski & Wise, 1983) and the sociological status attainment approach (Alwin, Hauser, & Sewell, 1973; Hearn, 1991). The most recent quantitative researchers used models that relied on a combination of the two approaches (Cabrera & La Nasa, 2001; Perna, 2000; St. John, 2003) that is informed, at least in part, by findings from qualitative sociological research (McDonough, 1997).

This section describes the primary theoretical approaches used to examine college enrollment. It starts with a description of the econometric model pioneered by Manski and Wise (1983) and describes components of econometric models, namely academic achievement, college costs, and college benefits. Then, sociological approaches focusing on habitus, social capital and cultural capital are examined. Finally, combined models,

which include components from both the econometric and sociological approaches, are discussed.

Econometric Approaches

Econometric approaches to college enrollment are based on the economic theory of human capital, which predicts that as an individual invests in human capital, he/she is more likely to recognize higher returns (Becker, 1993). An individual invests in human capital through education, training and medical care. Becker (1993) stated that the most important investments in human capital are education and training because participation in these activities increases knowledge, skills, and analytical ability and in turn causes increased productivity, which is rewarded by greater earnings.

Human capital theory assumes that an individual decides to invest in human capital based on the ranking and weighting of all options according to preferences (Becker, 1993). Hossler, Braxton, and Coopersmith (1989), in their review of research on college student enrollment, noted that econometric approaches assume that students will enroll in college if the net benefits of college are greater than the net benefits of all other alternatives. Manski and Wise (1983) found that students decided whether and where to attend college based on their skills and abilities balanced with their willingness and ability to pay for their education.

One of the early models of college enrollment was that of Manski and Wise (1983). They used econometric modeling, assuming that the decision to enroll in college is based on an assessment of costs and benefits of all alternatives, to explore student behavior affecting postsecondary school choices. Their model posited thatfive

components impacted the choices that a student made after high school graduation: academic aptitude, family income, cost and aid, high school quality, and labor market conditions. They believed that these components influenced various steps in the college choice process: applying to college, being admitted, receiving financial aid, and selecting institutions with particular characteristics.

Manski and Wise (1983) tested their model using the National Longitudinal Study (NLS) of 1972 high school graduates. They found that an individual's decision to apply to college within four years of graduating from high school was an important predictor of enrollment and was impacted by the student's class rank, SAT scores relative to other students at the institution, and the level of education that their parents had attained.

Kane (1994) also proposed an econometric model of college enrollment in his examination of Black and White students. His model assumed that five components influenced the choice to attend college: pre-college preparation, gender, high school characteristics, high school location, family background, and tuition and financial aid. Kane (1994) tested his model using High School and Beyond data of 1980 high school graduates. He found that the most important predictor of enrolling at a four-year college within two years of graduating from high school was standardized test scores, with high school grades, family income, and parental education also being important predictors of enrollment. He also found that rising tuition prices and/or a decrease in available financial aid produced a disproportionate affect for low-income students, in that they were then less likely to enroll in college, due to cost sensitivity.

The next sections will describe what is known from research about the primary components in the econometric models by Manski and Wise (1983) and Kane (1994),

(academic preparation and achievement, and college cost and aid) as well as the limitations of the econometric model.

Academic Preparation and Achievement

Academic preparation and achievement are key components of the econometric model of college enrollment, as demonstrated by Manski and Wise (1983), Kane (1994), and other researchers in their models of college student enrollment such as Perna (2000), Cabrera and La Nasa (2001) and St. John (2003). Perna (2004) demonstrated through her review and synthesis of prior literature that academic preparation, defined as the quality and quantity of high school coursework, is essential to college enrollment, with it being a primary predictor even after controlling for other variables. Adelman (2002), through his work with the NELS dataset, also found that academic preparation, defined as a composite measure of academic intensity of high school curriculum, standardized test scores, and high school class rank, was a strong positive predictor of college enrollment. He argued that academic preparation in high school helped motivate students to look towards a college education.

Cabrera and LaNasa (2001), in their study of low-socioeconomic status student college enrollment, argued that academic preparation is required to be academically qualified to attend college, a key step in the college enrollment process. Their college qualification index incorporated the following measures of academic preparation and achievement: high school grade point average, class rank, aptitude test scores, and SAT/ACT scores. Even after controlling for background characteristics, social capital, and aspirations, whether the students were college qualified made a significant positive

impact on whether the students would apply to a four-year college, which in turn impacted their enrollment.

Drawing on work by Adelman, St. John (2003) also measured academic preparation by using the "college qualification index". St. John split students into three groups: not college qualified, minimally/somewhat college qualified, and highly/very highly qualified. His descriptive analyses showed thatonly 53% of low -income students, while 86% and 68% of high- and middle-income students respectively, were college qualified. Of those low-income students who were college qualified, 52% went on to attend a four-year college, compared to 83% of the high-income group.

In her study of differences in college enrollment decisions based on race, Perna (2000) measured academic ability and achievement using test scores and whether a student participated in an academic curricular program. She found that both test scores and curricular track were significant positive predictors of the probability of a student enrolling in a four-year institution within two years of high school graduation regardless of the race or ethnicity of the student. In a study of the relationship between parental involvement and college enrollment also using the NELS, Perna and Titus (in press) found that academic preparation was a positive predictor of college enrollment for students. Their proxy for academic preparation was intensity of college courses, which they measured by the highest level of math courses that a student had completed.

College Cost

Econometric models assume that college cost and financial aid have an important impact on student college enrollment. A review of research shows that college cost and

financial aid impact enrollment in that real and perceived unmet need influences a

student's decision to enroll in college.

Kane (1994) explored college cost as one of the components of his study of 1980

high school graduates. He found that high tuition states had lower college enrollment

rates. He also found, through his use of the 1980 High School and Beyond study, that

every "$1,000 increase in tuition is associated with a ten percentage point decline in

enrollment rates among youth from below median family socioeconomic status and a 4.4

percentage point decline among youth above the median" (p. 24). Manski and Wise

(1983) also found in their descriptive analyses of the National Longitudinal Study of

1972 that, as the cost of an institution increased, students were less likely to choose that

institution.

In his reexamination of descriptive analyses of NELS data from *Access to Higher*

Postsecondary Education for the 1992 High School Graduates by the National Center for

Education Statistics (NCES), St. John (2003) found that finances impacted a student's

ability to attend college. Parent and student concerns about paying for college negatively

impacted enrollment, as did family finances and unmet need. College costs and the

amount of financial aid awarded especially impacted the enrollment of low-income

students. St. John found that, compared to higher income students, smaller percentages

of low-income students enrolled in college, and when they did enroll, were less likely to

enroll in a four-year institution, partly because of unmet need, concern of paying for

college, and family finances, which tended to be more of a challenge for low-income

students and their families than students with higher incomes.

Heller (1997), in his update to a prior review and synthesis by Leslie and Brinkman on student price response to higher education, concluded that there is a link between income and sensitivity to tuition and financial aid. Heller (1997) specifically found that "every $100 increase in tuition results in a drop in enrollments of .5 to 1 percentage point across all types of institutions" (p. 650). The increase in tuition is an even larger problem for low-income students as their enrollment is more sensitive than the enrollment of high-income students to an increase in the cost of college, whether the increase in cost is in the form of a rise in tuition, a drop in available financial aid, or a combination of the two.

Students' perception of college cost affects their college choice as well. Paulsen and St. John (2002) used the financial nexus model in their study of the effects of perceptions and expectations about costs of college. The financial nexus model examined the link between students' perceptions of the costs of college at time of enrollment compared to actual costs of college (e.g., tuition, aid, cost of living), and the relation of cost to choice. In their study, they analyzed the relationships between social class and cost sensitivity by income using 1987 NPSAS data. They found that low-income students often made their college choice based on the tuition of the institution and the financial aid offer.   Through descriptive analyses they found that 64% of low-income students chose an institution based on low tuition, student aid, or both of these variables, while less than 50% off upper-middle income students chose an institution based on these variables.

Forgone Earnings

Another direct cost of schooling is the forgone earnings that a student could earn as a full-time employee, rather than attending college on a full-time basis. Many students attending college full-time work part-time, thereby decreasing, but generally not eliminating, the costs of forgone earnings. The difference between the salary that students could be earning as a full-time employee and the part-time salary that students earn as a full-time student is the forgone earnings cost (Becker, 1993). For some, especially low-socioeconomic status students, forgone earnings alone limit participation in higher education (Kane, 1999). Kane found, through his analysis of NCES data, that if a male high school graduate under the age of 24 was to work full time his average salary would be $16,900. If this student was enrolled in college full-time for nine months a year without working, the student would lose $12,675. This cost was greater than the cost of tuition at the time. If the student has other family responsibilities, the forgone earnings may cause the student not to enroll.

Limitations of the Econometric Model

While the econometric approach helps researchers assess some of the predictors of college enrollment, there are limitations to this approach. One limitation to the econometric approach is the assumption that individuals act rationally with perfect information about the costs and benefits of all alternatives and have adequate resources with which to make a decision. Paulsen (2001) and St. John (2003) commented that lower income students may not have accurate information about the monetary and nonmonetary returns on their investment in higher education. Moreover, the costs and

benefits of participating in higher education may vary greatly across individuals due to variables such as socioeconomic status, background, access to information, and ability (Bowen, 1997; Paulsen, 2001).

Another limitation of this approach is that a person's personal preference about the desire to participate in college is often not measured. If the person has a negative attitude about college and studying, does not have an interest in the types of careers that college educated individuals have, and his/her parents do not expect the student to attend college, the individual may not be interested in continuing their education beyond high school, and be satisfied with the returns that he or she will receive (Becker, 1993). Nonetheless, these preferences are difficult to control for when testing human capital theory (Douglass, 1997).

Summary of Econometric Approaches

In summary, econometric models assume that students decide to enroll in college after assessing all costs and benefits of attendance. The models put forth by Manski and Wise (1983) and Kane (1994) show thatcompo nents of the decision process include academic preparation, cost and aid, and background characteristics. While these models identify important predictors of enrollment, there are weaknesses of the model, such as the assumption that every student has perfect information with which to make their decision, as well as that all students have similar preferences and tastes for college. Sociological constructs such as habitus, social capital, and cultural capital provide another perspective to college enrollment, which is the focus of the next section.

Sociological Approaches

Sociological status attainment models focus on the ways in which socioeconomic characteristics contribute to a student's educational and occupational attainment. The sociological status attainment models began with those developed by University of Wisconsin researchers (Alwin et al., 1973). The Alwin et. al. model focused on the effects of socioeconomic status, ability, and high school experiences on educational attainment.

Hearn (1991) drew on a sociological status attainment approach to examine students' choice of college to attend. His model focused on the effects of such background socioeconomic characteristics as parental income, parental educational attainment, family size, race, and gender on choice, defined as selectivity of the institution and institutional expenditures per student. The model also included academic characteristics such as standardized test scores, high school grades, curricular track and high-school activities (e.g., participation in student government, journalism, debate club), as well as postsecondary educational aspirations. He tested this model with data from the first follow-up (1982) of the High School and Beyond longitudinal study of 1980 high school seniors and limited the analyses to students who attended college within one year of graduation. In his descriptive analyses he found that low-socioeconomic status students and Black students were more likely than higher socioeconomic status students and White students to attend institutions that were less selective (i.e., lower average institutional average SAT scores) and that had lower costs. In his multivariate analyses, Hearn (1991) found that the strongest predictors of institutional selection were academic characteristics, namely grades, test scores, and academic track. Educational aspirations,

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socioeconomic status, and race were also significant predictors of institutional selection. Specifically, even after controlling for other variables, Black students and low-socioeconomic students were less likely than other students to attend selective and higher cost institutions.

McDonough (1997) identified and explained the role of a wider range of sociological constructs in her qualitative case study of the college choice process. As a qualitative study, her work also generated and contributed to theory underlying college enrollment. The theoretical framework that she developed based on her study was that students' college choices are affected by their cultural capital and bounded rationality, which are influenced by their habitus. She defined cultural capital as a symbolic good held by all socioeconomic groups, with those of higher socioeconomic classes possessing forms of this capital that are more economically valued. Her theoretical framework posited that the types of cultural capital that a student has will affect the type of college that a student will choose to attend. Drawing on the work of Pierre Bourdieu, she defined habitus as "a deeply internalized, permanent, system of outlooks, experiences, and beliefs about the social world that an individual gets from his/her immediate environment" (McDonough, 1997, p. 9). She hypothesized that habitus also impacted the student's college choice. McDonough (1997) defined bounded rationality as the idea that a person makes decisions with available information. She found that students made what can be considered rational college choices based on the information that was readily available to them at the time of the decision.

In her case study of the college choices of 12 White high school girls from four different high schools, McDonough (1997) also found that a student's habitus affected the

level and type of college education that a student intended to acquire.   The study

documented that cultural capital acquired by students from private schools often gave

them the advantage necessary by supplementing the capital that they already had in order

to maximize their educational choices. She also discussed the roles of organizational

habitus, which describes the effects of the organizational contexts and status cultures in

high schools, on the college-choice process, with the impact of the school on the decision

making process, and the consistency of views across the domains of schools, family and

friends. Her study showed that cultural capital and habitus are critical constructs to

consider when examining college enrollment. The next sections further examine these

sociological concepts as well as social capital in order to better understand the predictors

of college enrollment.

Habitus

Habitus, as described by Horvat (2001) in her chapter focusing on equity and

access in higher education and the contribution of Pierre Bourdieu to theory, is "rooted in

status group based familial history, and serves to generate and bound the range of

possible action in social settings" (p. 209). Habitus is a series of perceptions that are

unconsciously collected by individuals and internalized to provide an understanding of

rules of social interaction to determine a place in the world. Individual action is shaped

by a person's habitus. A person develops possibilities for action from their habitus

(Horvat, 2001).   Horvat (2001; 2003) found in her longitudinal qualitative study of the

college-choice process of 14 low- and high-income Black girls at three high schools that

the habitus of a student affected their educational choices by the implicit and explicit

expectations for college attendance that family and friends had. These expectations influenced where a student found it possible to go to college.

One example of habitus is from Horvat's (2001) study of how habitus operated for one high school female. Many students at the high school she attended did not go on to college. But, the girl's mother and siblings attended college. Their educational attainment influenced her, establishing college as within the student's realm of possibility. Many of this girl's peers did not have the same experience. Consequently, few went on to college.

McDonough (1997) also found that students' decisions to attend college were impacted by their habitus. The students in her study who attended the private preparatory high school internalized the belief that they would go to an elite college, and in turn considered only a narrow subset of institutions that fit this category. Attending an elite institution was understood to be within their realm of possibility. In contrast, at a public high school with fewer guidance resources, students did not perceive that they could go to any college they wanted, based on the messages of peers, family, and school personnel. As a result, students at this school made more conservative college choices, even when they had similar ability characteristics as students at the private school.

Habitus addresses an assumption of the econometric model of college enrollment that a person makes a decision with perfect and complete information and considers all possible alternatives. Horvat (2001) and McDonough (1997) both demonstrate that students do not have perfect information with which to make decisions about college choice and that they consider only a small range of options. Students consider only alternatives that are consistent with their habitus, or worldviews.

Horvat (2001) argued that habitus enables a person to activate his/her capital. If students do not perceive they can go to college, they will not enact their capital in order to do so. McDonough (1997) also found that a student will not activate cultural capital to help get to college if the student does not have the habitus to support it.

Cultural Capital

Pierre Bourdieu is the leading scholar of cultural capital. Horvat (2001) described the Bourdieuian construct of cultural capital "as the cultural resources such as high status cultural knowledge about art or music that can be legitimate power for an individual" (p. 211). Bourdieu and Passeron (1977) argued that the lack of this knowledge leads to exclusion from high status groups, thereby exerting a strong form of power. The power wielded through cultural capital "is a power to shape other peoples' lives through exclusion and symbolic imposition" (p. 18). While all socioeconomic groups have some form of this symbolic good, middle and upper class groups tend to define and have more economically valued forms of this good, and are able to invest in it and maintain it (McDonough, 1997).

Cultural capital can be mobilized to enhance human capital. Individuals benefit the most from the acquisition of cultural capital when they utilize it and invest it for things that are socially valued, like academic achievement and enrolling in college. Cultural capital is primarily transmitted by the values and activities of parents to their children through blatant and subtle messages about what is valued and important (e.g., enrolling in college) (Bourdieu, 1986; McDonough, 1997).

Bourdieu (1986) described three states of cultural capital: embodied, objectified, and institutionalized. The embodied state of accumulating cultural capital is investing time to build culture within oneself. In order to accumulate capital in this state a person must invest time to assimilate, or improve himself or herself in order to embody the desired culture. This is typically done unconsciously, as children often "inherit" their parents' cultural capital, which happens in all families regardless of income.

The objectified state of cultural capital is in a person's exposure to material goods such as books, computers, or the media (Bourdieu, 1986). Examples of this state include exposure to the arts or to a diverse society. The objectified state of cultural capital is connected to the embodied state, as the embodied state determines which materials are the most valued in a specific culture.

The institutionalized state of cultural capital "confers on its holder a conventional, constant, legally guaranteed value with respect to culture" (Bourdieu, 1986, p. 50). This acquisition of a formal credential, such as a college degree, gives an individual a formal means of capital that the person can then convert into economic capital and use to his or her advantage. An example of this would be academic qualifications, especially from a selective institution, which may expose a person to a different level of culture than previously experienced, and serves as a signal of status, which in turn increases the amount of desirable cultural capital.

Drawing on the work of Bourdieu and Passeron and Weber, Lamont and Lareau (1988) developed a theoretical model, based on previous literature, of how individuals can be excluded from access to sought after types of cultural capital. Lamont and Lareau defined cultural capital as institutionalized values, attitudes, preferences and formal

knowledge that are used for cultural and social exclusion from high status groups. They posited that there were four ways in which cultural capital can affect outcomes like college enrollment: self-selection, overselection, relegation, and direct exclusion. Self-selection, overselection, and relegation are all based on Bourdieuian concepts, while direct exclusion is a concept based on the work of Weber.

Lamont and Lareau (1988) described self-selection as where an individual estimates their chance of success based on their current knowledge and in turn adjusts aspirations accordingly. Applying this framework to college enrollment, low-income youth often self-eliminate themselves from attending college because of the perceived low chance of succeeding in college and/or their low academic ability. If they decide to attend college, low-income students must expend more effort because they possess less valued cultural resources. Low-income students often have less-valued cultural resources, but are often in competition for the same spaces in a college class with students who have access to more plentiful resources. These students are expected to perform to the same level as those with greater resources, and so need to perform more than others. Relegation may occur if low-income students do not possess desirable forms of cultural capital and thus are relegated to less desirable positions in educational institutions (e.g., community colleges). As a result they do not receive as a great a return on their educational investment. While self-selection, overselection, and relegation are indirect routes of exclusion, direct exclusion may occur if low-income individuals are locked out of an opportunity by those of higher classes because they do not have the requisite capital to participate. An example of this may be thatif a student has not taken the appropriate high school courses, they may not be qualified to attend college.

Findings on Cultural Capital

Parents, schools, and peers all transmit cultural capital to students. Research has shown that cultural capital has an effect on college enrollment. McDonough (1997), Gandara (2002), and Lareau (1987) all found that cultural capital, operationalized as parental involvement and support, positively influenced the educational progress of their children. McDonough's qualitative study of high school girls supported the premise that the more desirable cultural capital, operationalized as support and expectations from parents, that a student possessed, the more likely she was to attend a selective college or university. She found that parents were a key transmitter of cultural capital by communicating with their children about the value and process for attaining a college degree as well as informing them about the importance of that degree for future success. The student's peer group also influenced this decision making process, as suggested by the finding that peers often applied to similar schools.

Gandara (2002) also found parental support to be an important component of cultural capital that influenced college enrollment. She stated, based on her review of literature, that an aspect of cultural capital surrounding a child's education was parental knowledge of resources that may benefit one's children (e.g., school curricula, financial aid information). A parent's knowledge of these resources can help promote college attendance. Differences in types of cultural capital may also restrict the extent to which low-income parents engage in discussions about their child's education. She stated that low-income and minority parents often lack the cultural capital necessary in order to access the networks and resources that can benefit their student.

Lareau (1987), in her qualitative study of parental participation in elementary schools, also found evidence of how cultural capital affected parents' relationships with their child's school. Her study, which involved participant-observation and interviews at two first-grade classrooms in two community schools, one working-class and one middle-class, explored the quantity and quality of parental involvement. Her analyses show a difference in parental involvement in their student's education between working class and middle class parents, that the difference in involvement reflected differences in cultural, social, and economic resources, and that the resources of the middle class were more highly valued by those at the school. Parents at the middle-class schools spent more time volunteering in their child's classroom and attending parent/teacher conferences than parents at the working class school. Parents at middle-class schools activated their capital in order to participate in their child's education. Parents in the working class school also rarely contacted the school with academic concerns and when they did interact with school personnel they were very uncomfortable. While all parents believed that their child's education was extremely important, children of working class parents did not benefit in the same way due to their lower participation in the school. In contrast to parents in the working class school, parents in the middle-class school were able to request additional educational resources, monitor teacher behavior, and consult with other parents and teachers about the educational experience of their child.

DiMaggio and Mohr (1985) studied the effects of cultural capital on college attendance among students who graduated from high school in 1961, and were resurveyed ten years later. Cultural capital was measured as high cultural attitudes, activities, and information (e.g., attending symphony concerts, having a cultivated self-

image, and literature reading). They found that cultural capital was a significant positive predictor of enrolling in college even after controlling for background characteristics and ability.

Perna and Titus (in press) included measures of cultural capital in their study of the relationship between social capital and college enrollment using the NELS Proxies of cultural capital included level of parent education, parental educational expectations, primary language spoken at home, and participation in cultural classes. After controlling for background characteristics, economic capital, human capital, and social capital, level of parental education and parental expectations for the child's educational attainment were significant positive predictors of enrolling in a four-year college in the fall after graduating from high school.

Social Capital

Social capital is another important component of sociological models of college access. Portes (1998), after his review of writings on social capital, defined social capital as the ability of individuals to secure benefits through participation in a network or specific social structure. Portes found that there are often contradictions in processes defined as social capitalby different authors, but concluded that there is acommon growing understanding in the literature regarding a definition of social capital. This section identifies the prominent social capital theorists, Lin, Coleman, and Bourdieu, and highlights the similarities and differences in their approaches.

Coleman's (1988) approach to social capital focuses on a person's connection to a social structure such as a family, community, or school, and the information and resources that one can gain from participation in that structure. More specifically, he

focuses on the transmission of social capital both within and outside of the family. It is from the structure of the relationships between and among actors that information is gained and then can be converted into social capital. The connections make a particular achievement, such as enrollment in college, possible where it would not have been without the resources gained from participation in the network. Actors with resources or knowledge facilitate the transfer of information that others can use to their future benefit to produce different system-level behavior or individual outcomes. Social capital allows an individual to invest in human and other forms of capital, and as a result there will most likely be an increase in human capital for the future generations of the person who originally accessed social capital.

Coleman (1988) discussed that all social relations and social structures promote the transmission of some form of social capital. He believed that a closed network, where all actors are connected in some way, can create strong norms within a social structure and can be a powerful form of social capital. This closure to the social structure motivates trustworthiness that in turn creates obligations and expectations as well as the ability to have effective norms within the group.

Coleman (1988) argued that social capital within a family is a benefit for a child's development. This social capital comes from time and energy that parents focus on their children to help their development. The attention from, and physical presence of, the parent facilitates the passing on of the adult's human capital. McNeal (1999) used the NELS to study the effect of parental involvement as social capital on science achievement, truancy, and dropping out of high school. He found that parental-student

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involvement, parental involvement at the school, and parental monitoring of the child's behavior were all significant positive predictors of science achievement and truancy.

Despite the benefits, some parents may not have access to the social capital through involvement in the education thatsup ports their children. Coleman (1988) and others (e.g., Croninger & Lee, 2001) argue that social capital is not gained solely from the family but also from the school and the community. Research supports the hypothesis that schools and communities are sources of social capital. In both the schools and the community, a student can be a part of a network and in turn receive information that can be turned into social capital. Coleman found evidence of network promotion of social capital by schools in his study of high school drop-out rates. Using High School and Beyond data he found that students who attended Catholic high schools had lower drop out rates, a finding he attributed to the closed network of the school. This network had stronger ties and in turn fostered greater community and family influence on students' high school attendance decisions.

Using the NELS, Croninger and Lee (2001) found that social capital outside of the family reduced the likelihood of dropping out of high school between 10th and 12th grade after controlling for gender, academic achievement and academic behaviors. Their measures of social capital included students' beliefs about how much their 10th grade teachers supported their efforts to succeed in school and teacher reports about whether individual 10th grade students received guidance from teachers about school and personal issues. Results of the study showed that dropouts had less of the two forms of social capital than high school graduates, and that these two measures of social capital increased

the probability that a student completed high school after controlling for background characteristics, social risk factors, and academic background.

There are multiple criticisms to the work of Coleman. Morrow (1999) stated that Coleman's work does not consider the socioeconomic history of students and is gender-blind. She wrote that students who come from disadvantaged backgrounds may not have access to rewards for school achievement, and in turn may act reasonably based on their circumstances by not continuing with school. She also posited that Coleman did not take into account the differences in social networks between men and women, only noting that women's employment negatively impacted their children and the community.

Stanton-Salazar (1997) also disagreed with Coleman's notion that institutional agents such as teachers, counselors, and school peers can transmit resources and opportunities to disadvantaged students if they are given the necessary time and funding. He posited that institutional agents are often unable to transmit resources in the schools of minority students because of structural characteristics (e.g., high teacher/student ratio, fewer college preparation courses and programs). He found, through his review and analysis of literature, that low-status children and youth tended to accumulate low amounts of social capital because of a lack of institutional support. This lack of support made students' participation in school more challenging due to their perceived value of not being able to achieve as much based on class, ethnicity, and gender.

Stanton-Salazar (1997) defined social capital as "the degree and quality of middle-class forms of social support inherent in a young person's interpersonal network" (p. 5). This definition supported the notion that some types of social capital are more valued by society than others. Stanton-Salazar found that sources of valued social

support were most likely to include extended family, school, peers and other community organizations.

Lin (2001a) and Burt (2001) disagreed with Coleman's need for a closed social structure. Lin (2001a), based on the work of Granovetter, argued that closed social structures were too narrowly focused, and believed in the advantages of more open networks with many connections. She argued that open networks gave greater opportunity for mobility between groups which was especially beneficial for those from lower socioeconomic backgrounds. Lin also argued that closed networks are more beneficial for members of upper classes, individuals who already have access to resources within their network.

Burt (2001) also criticized Coleman's emphasis on closed networks for several reasons. First, he posited that not dropping out of school was a weak performance criterion for estimating the effects of social capital. Second, he stated that it is difficult to ascertain if it was the social capital of the parents or the students that affected dropping out of school. Burt argued, using a review of previous research, that open networks with the existence of structural holes were preferred to closed networks. Structural holes are created when individuals stay to themselves and only focus on the activities of their own network. Social capital is accessed through the brokerage of non-connected segments. Brokering connections between groups is one way to add value to a network, by enlarging the group and as a result having a greater number of resources to share information. Individuals who benefit the most from holes are those individuals who are able to bridge holes in the network, such as a low-income student who is able to

participate in a college preparation program that results in access to resources that he or she would not normally receive in their school setting.

In a different conceptualization, Bourdieu (1986) described social capital as resources, actual or potential, that are accessible due to membership as a part of a group. The amount of social capital possessed by an individual depends on the size and strength of the resources that the members of the network possess. The purpose of this network of relationships is to continue to reproduce social relationships that may be needed immediately or in the future to gain information or resources (Bourdieu, 1986).

Lin (2001a; 2001b) has closely aligned herself with the work of Bourdieu. Lin (2001b) described social capital theory as how "resources are embedded in one's social network and how access to and use of such resources benefit the individual's actions" (p. 55). These embedded resources produce profits in the form of information thatflows easily to members of the network, and that can be used to their advantage.

To better illustrate the concept of social capital, Lin (2001a) developed a model of a theory of social capital. This model is made up of three stages, inequality, capitalization, and effects, and centers around access to the quality and quantity of embedded resources. The first block of the model, inequality, looks at the precursors of social capital, such as access to technology, group participation, and the economy, as well as resources that are available to the individual. Also in this block is an individual's position in a social structure or community which can help or hinder an individual's ability to invest in social capital. The expectation is that the more available thatresources are, the more likely that the resources will be mobilized.

The second block in Lin's model of a theory of social capital is the capitalization of resources. This block examines where the resources are located and if they are accessible to an individual. If the resources are available then the individual can choose to utilize them. Inequality is again highlighted at this point in the model because those with lower collective assets are less likely to be able to mobilize capital (Lin, 2001a).

The third block of the model, or the outcome, is the return after the mobilization of resources. Lin (2001a) described two types of outcomes of social capital, instrumental and expressive. An instrumental outcome occurs when a person gains additional resources not previously possessed and uses these resources to make progress. A low-socioeconomic status high school student who enrolls in college as a result of gaining resources about enrolling in college from his/her teacher or another adult would be an instrumental outcome, because that student is able to make gains that family or community members before him or her were not able to achieve. This idea has been criticized by Stanton-Salazar (1997) who argued that structural barriers limit the transfer of such resources from teachers to low-income students.

Lin (2001a) defined expressive action as one which a person does not noticeably gain, but maintains the resources for their class or group. An example of this would be the college enrollment of a student from an upper socioeconomic status background since going to college is a norm for members of the upper socioeconomic status network. Thus there is not a noticeable gain in the outcome of that student in comparison to others in the individual's family or community.

Findings on Social Capital

Some research examines the role of social capital on college enrollment. Researchers (Cabrera & La Nasa, 2001; Perna, 2000; Perna & Titus, in press; Plank & Jordan, 2001) have utilized such measures of social capital in their studies of college enrollment as parental involvement in their child's education, assistance from school personnel, and amount of information received about financial aid. These researchers all found that social capital was a positive predictor of college enrollment.

Perna and Titus (in press) utilized data from the NELS to explore the relationship between social capital, defined as parental involvement, and college enrollment among 1992 high school graduates. Their study found that parent involvement, measured by the frequency of discussing education-related issues with their student, the frequency of contacting the school about volunteering, and the frequency of contacting the school about academic matters, was a positive predictor of enrolling in a four-year college in the fall after graduating from high school after controlling for measures of economic capital, human capital, and cultural capital.

Perna (2000) also included measures of social capital in her study of college enrollment among different racial/ethnic groups. Using measures of parental involvement and high school support in her analyses of NELS data, she found that parental involvement and encouragement from school personnel were significant positive predictors of enrolling in a four-year college in the fall after high school for 1992 high school graduates even after controlling for background characteristics, costs and benefits, and ability.

Cabrera and LaNasa (2001) included social capital in their research describing the path to college of low-socioeconomic status students. Cabrera and LaNasa measured this sociological concept using indicators of parental involvement in their student's education, information sources on financial aid, and high-school based support. Using data from the NELS, they found that all three measures were significant positive predictors of applying to college for high school students in all socioeconomic status groups after controlling for background characteristics, academic ability, and personal educational aspirations.

Also using the NELS, Plank and Jordan (2001) included measures of social capital in their study of the effects of information, guidance, and actions on postsecondary destinations. To testthe impact of social capital on their four category dependent variable of college enrollment (enrollment in a four-year institution, full-time enrollment at a two-year institution, part-time enrollment at a two-year institution, or no enrollment) within two years of graduating from high school, they utilized multiple variables as proxies of social capital: parental involvement with the student and the school, SAT test preparation and completion, information on financial aid resources, and support from school personnel. Parent-student involvement, test taking, financial aid information, and school guidance were all positive predictors of both enrolling in a four-year institution and enrolling at a two-year institution full- or part-time rather than not enrolling, even after controlling for background factors and academic achievement.

Summary of Sociological Approaches

Sociological approaches to college enrollment focus on the effects of socioeconomic characteristics of an individual'scollege enrollment. Components of

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sociological models put forth by Hearn (1991) and others examined family background characteristics, including family income, family size, parents' education, and race. In qualitative studies, McDonough (1997) and Horvat (2001) illustratedhe contribution of the sociological constructs of cultural capital and habitus to understanding college enrollment. Such quantitative analyses as Cabrera and LaNasa (2001), Perna (2000), Perna and Titus (in press), and Plank and Jordan (2001) illustrated the contribution of social capital to college enrollment.

Despite the contribution of this approach, sociological models lack the attention to the costs and benefits of enrollment, a focus of the econometric models. Components of both econometric and sociological models inform our understanding of college enrollment behaviors, suggesting thata combi nation of these models is most effective.

Combined Approaches

Among recent work are studies (Cabrera & La Nasa, 2001; Hossler & Gallagher, 1987; Perna, 2000; Plank & Jordan, 2001; St. John, 2003) that draw on econometric and sociological models as well as recent qualitative studies to explain college enrollment. Cabrera and LaNasa (2001), Perna (2000), and St. John (2003) include measures of academic achievement and college costs, which are parts of econometric models, but also include other forms of capital such as social capital and cultural capital to better measure the role of preferences, tastes, and values for higher education, factors that are acknowledged but generally not measured in traditional econometric models. Cabrera and LaNasa (2001), Plank and Jordan (2001), and St. John (2003) utilized the combined approach to further study the college enrollment of low-socioeconomic status students.

Perna (2000), in her study of differences in college enrollment decisions based on race/ethnicity, tested a conceptual model that expanded a traditional econometric model of college enrollment by including measures of cultural capital and social capital. Her model hypothesized that the decision to enroll in college was based on the cost of college, perceived future benefits, family income, academic ability, and social and cultural capital. Obscuring the difference between the two types of capital, Perna measured social and cultural capital by personal and parental educational aspirations, parental involvement, encouragement from peers and school personnel, assistance with college requirements, and use of test preparation tools.

Perna (2000) tested her model utilizing data from the NELS. She found that family income was a positive predictor of enrolling in a four-year college within two years of high school graduation, both in the overall sample and when each of three racial/ethnic groups (Black, Hispanic, Asian American) was examined individually, after controlling for measures of direct costs and expected benefits of college, and academic ability. When social capital and cultural capital were also controlled, income was no longer a significant predictor of enrollment for African American or Hispanic students, but was still a significant predictor of college enrollment for White students. This finding suggests that high school graduates with lower family income are less likely to have the types of social and cultural capital that promote college enrollment. Perna found that social capital and cultural capital impact the college enrollment decisions for all three racial/ethnic groups, but play a relatively bigger role in the decision to enroll for African Americans and Hispanics than Whites.

Combined Models for Low-Socioeconomic Status Students

Combined models of college enrollment are especially beneficial when exploring the enrollment patterns of low-socioeconomic status students. Integrating aspects of sociological approaches with econometric approaches helps to present a more holistic model of the student's experience that informs their college enrollment choice. Cabrera and LaNasa (2001) incorporated elements of both an econometric and a sociological approach in their study of low-socioeconomic status student enrollment. Utilizing data from the NELS, their model included measures of socioeconomic status, academic preparation, personal educational aspirations, and components of social and cultural capital such as high school support, parental involvement, and parental expectations. Their model assumed that in order for a student to enroll in college, he/she needed to first be academically qualified to attend, then graduate from high school, and then actually apply to a four-year institution.

Cabrera and LaNasa (2001) found a gap in college enrollment based on socioeconomic status, with lower percentages of low socioeconomic status students than high socioeconomic status students enrolling in college within two years of graduating from high school after controlling for other variables. They found variables that encouraged students to enroll in college included: having parents involved in their student's education, prior academic performance, resources available to students about the college process and personal aspirations. While application rates were similar for low-socioeconomic status students and higher socioeconomic status students after controlling for other variables, college attendance rates continued to be lower for students from low-socioeconomic status families than for students from high socioeconomic

families net of other variables. Cabrera and LaNasa hypothesized that this unexplained

gap may be attributed to differences between low- and high-socioeconomic status

students in ability to pay for college, quality of information about the college process, and

other components of cultural capital that may not have been adequately measured in the

study.

St. John (2003) developed the balanced access model after seeing an inequality in

college access over the last twenty years that he believed was related to more than just

academic preparation. He used this combined model to focus on the link between family

finances and college enrollment and to examine his hypothesis that financial, academic

and social factors impact college enrollment. The academic and social factors that St.

John (2003) included in his model were similar to those in other models (e.g., Cabrera &

La Nasa, 2001; Perna, 2000) already described. Socialfactors included family income

and background, and student plans and aspirations, while academic factors included

becoming academically prepared, taking college entrance exams, and applying and being

admitted to college. He identified two types of financial factors, both the perceived

unmet need as well as the actual unmet need, where unmet need is defined as the

difference between college costs and financial aid. St. John (2003) argued that this

combination of academic readiness and ability to pay, coupled with the influence of

financial aid, impacts enrollment in college.

St. John (2003) tested the balanced access model using NELS data and found that

financial aid was central to promoting college access since college cost and the ability to

pay influenced college enrollment. He found that the correlation between academic

preparation and enrollment was stronger for high income students than for low-income

students. He concluded that, in order for a student to access college, the student must have the appropriate academic qualifications as well as the ability to pay for initial and continuous enrollment in college, either on their own or with governmental or institutional support.

Plank and Jordan (2001) also tested a combined model of college enrollment using data from the NELS that measured the effects of information, guidance, and actions on college enrollment within two years of graduating from high school of low-socioeconomic status students. Their conceptual model, which utilized components of models developed by Hanson, Litten, and Hossler and Gallagher, included background characteristics, high school influences, media, social capital, college characteristics (e.g., costs) and public policy (e.g., financial aid). Their four-category dependent variable measured enrollment in a four-year institution, full-time enrollment at a two-year institution, part-time enrollment at a two-year institution, or no enrollment. They found through their multivariate analyses that low-socioeconomic status students were significantly less likely to enroll in a two-or four year college within two years of high school graduation than students of higher socioeconomic status. They also found that ability and social capital (measured by parental involvement, test preparation, and information about financial aid) were significantly positive predictors of enrollment in college.

In summary, combined models of college enrollment include components from both econometric and sociological approaches. Research using this approach shows that immediate college enrollment is impacted by a student's academic preparation, college costs, and amount and type of cultural and social capital (Cabrera & La Nasa, 2001;

Perna, 2000; Plank & Jordan, 2001; St. John, 2003). Because of these strengths, this study also draws on a combined model of college enrollment.

Summary

A review and synthesis of prior research demonstrates a lack of research on delayed enrollment, with only one study published since 1985 (i.e., Hearn, 1992) examining this topic. Hearn (1992) explored background characteristics, academic achievement, and aspirations as predictors of delaying college enrollment. He found that 1980 high school graduates who delayed enrollment in college for one to two years after graduating from high school were more likely than those who attended college within one year to be male and to have lower aspirations and achievement. While Hearn sheds light on the decision to delay college enrollment, more information about this behavior is needed using a more recent cohort of high school students, a more comprehensive conceptual model, and a longer time period to measure "delay."

Research focusing on immediate college enrollment draws on econometric, sociological, and combined econometric and sociological models. Econometric approaches focus on the academic preparation of students along with the costs and benefits of attending college. This approach, utilized by Manski and Wise (1983) and Kane (1994) showed that academic preparation, tuition and aid, and family background impacts the decision to enroll in college within four and six years of high school graduation. These models do not take into account the lack of information that a student may have about college and its benefits or other sociological concepts. Sociological approaches, such as those utilized by Hearn (1991) and McDonough (1997), explore how

socioeconomic characteristics and concepts such as social capital, cultural capital, and habitus impact a student's college enrollment decision, but do not take into account the components of the cost/benefit analysis found in the econometric models. Combined models, such as the work of Cabrera and LaNasa (2001), Perna (2000), and St. John (2003), draw on econometric and sociological approaches to test a more complete model and find thatmeasures of constructs such as background characteristics, academic preparation, finances, social capital, and cultural capital all play a role in a student's decision to enroll in college immediately after graduating from high school.

Building on prior research, this study utilizes a combined model to examine the decision of students to enroll in college within eight years of graduating from high school. This model includes measures of background and achievement explored by Hearn (1992), as well as college costs, social capital, and cultural capital. This study tests the applicability of the model using a more recent cohort of students (i.e., 1992 high school graduates). While Hearn (1992) defined "delayed enrollment" as enrollment within one to two years of high school graduation, this study uses a broader definition of delay, up to eight years out of high school. This study also explores the relationship between socioeconomic status and college enrollment since research consistently shows a relationship between enrollment and socioeconomic status even after controlling for other variables. The following chapter explains the components of the conceptual model in greater detail as well as the methodology for the study.

CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

Introduction

This study builds on the work of Hearn (1992) by looking at a more recent cohort of high school graduates, utilizing a more complete conceptual model, and expanding the time after high school when a graduate may decide to enroll in college. The appropriate definition of delayed enrollment is generated by examining the characteristics of students who enroll in college each year after graduating from high school. Using a conceptual model that is based on what is known about traditional student enrollment, this study utilizes multinomial logit regression to examine the variables that differentiate a student's decision to enroll in a two- or four-year college immediately after high school graduation, delay first college enrollment, and not enroll in college within eight years of graduating from high school. The study also explores the relationship between socioeconomic status and timing of college enrollment to determine if the socioeconomic status gap that is present in immediate enrollment is also present in delayed enrollment.

Specifically, this study addresses the following five research questions:

1. What percent of high school graduates enroll in college in each of eight years after graduation from high school? What is the appropriate break point between immediate and delayed enrollment?

2. How do the characteristics of high school graduates who delay entry into a two- or four- year college degree program compare to the characteristics of high school graduates who enroll immediately after high school and the

characteristics of high school graduates who do not enroll within eight years of high school graduation?

3. For high school graduates who delay enrollment, how does the timing of first enrollment vary by student characteristics?

4. What are the predictors of delaying entry into a two- or four-year college degree program for up to eight years rather than enrolling immediately after high school or not enrolling within eight years?

5. After controlling for other variables, is socioeconomic status related to the decision to delay enrollment in college?

The data to be analyzed for this research study are from the National Education Longitudinal Study: 1988-2000 (NELS). This chapter describes the dataset and the sample, the statistical analyses of the data, the dependent and independent variables in the analyses, and the limitations and delimitations of the study.

Data

This study uses data from the second (1992), third (1994) and fourth (2000) follow-up to the National Education Longitudinal Study of 1988 (NELS) eighth graders. The NELS is a product of the National Center for Education Statistics (NCES), which is a part of the United States Department of Education. The purpose of the NELS was to track the transitions that students experienced over time from middle school through their entrance into the workforce and/or postsecondary education. NELS includes a base year survey that was conducted with students who were in the 8th grade in 1988. Researchers attempted to follow-up with students in the initial sample four times, in 1990, 1992, 1994,

and 2000, eight years after most of the students had graduated from high school (Curtin et al., 2002).

NCES selected participants for the initial base year data collection period utilizing a two-stage stratified sample design. Approximately 39,000 schools nationally had eighth grade classes, and researchers first used stratified sampling to select schools to participate. To ensure adequate representation, private schools were oversampled. Schools were stratified first by school type and geographic region. After that, schools were further stratified by urban, rural, and suburban location, as well as minority classification of the school, and then sorted by school size. Schools were then randomly selected from within the stratified groups in order to have adequate representation of all types of schools. From the population, 1,734 schools were selected, and 1,057 schools participated in the base year data collection (817 public schools, 104 Catholic schools, and 136 private schools) (Curtin et al., 2002).

After schools were selected, approximately 26 eighth grade students were selected from each school to be a part of the sample. Students were excluded from the sample if the school did not deem them eligible to participate due to a disability or language barrier. Asian and Hispanic students were oversampled to make sure that there were adequate numbers of students of these groups in the sample. In total, 24,599 eighth grade students were selected to participate in the 1988 base year survey (Curtin et al., 2002).

The students who were part of the base year survey were resurveyed in each of four follow-up data collection periods. Before each follow-up, NCES contractors tracked the location of participants and sent letters letting them know that they would be contacted and asked for their assistance in updating contact information. Most

participants completed the third and fourth survey over the phone with the NCES

contractors using computer-assisted survey technology. For individuals who were unable

to participate in the survey over the phone, NCES contractors held in-person interviews

using a similar computer assisted technology system. High school and postsecondary

transcripts were also collected as a part of the fourth collection procedure in 2000 (Curtin

et al., 2002).

Since not all students were located for subsequent follow-up surveys, the sample

was freshened for the first (1990) and second (1992) follow-ups. The third (1994) and

fourth (2000) follow-ups utilized current participants (i.e., base year and freshened) with

no additional freshening. The researchers attempted to contact 15,257 participants for the

fourth follow-up, with 77.6 percent responding, for a total of 11,914 cases (Curtin et al.,

2002).

The analytic sample is limited to participants who were part of the second (1992),

third (1994), and fourth (2000) waves of data collection, and who graduated from high

school on schedule in spring 1992. The sample is limited to high school graduates since

a high school diploma is a requirement for college enrollment and I also wanted to have a

consistent measure of high school completion. I weighted the analytic sample using the

normalized panel weight, before conducting the analysis. Since this study explores

students in the second through fourth follow-ups, the F4F2PNWT is used (Curtin et al.,

2002). Weighting acounts for nonrandom selection, sampling error, and nonresponse.

Normalizing the weight, which equates the number of cases to the actual size of the

sample, reduces the impact of large sample sizes on statistical tests.

Design effects of the sample design are taken into account using a rigorous threshold of statistical significance for all statistical tests (p<.001). Specifically, the NELS sample design includes the clustering of students within schools. If design effects are not taken into account there may be an increased likelihood of committing a Type I error (Thomas & Heck, 2001).

The NELS is an appropriate dataset to utilize for my research for several reasons. First, the dataset is longitudinal in nature with a great deal of information available through the large number of variables that have been collected. I can utilize data from different points in time (e.g., grades, parental involvement, and other experiences during high school enrollment) to help discern differences in the predictors of the timing of enrollment in a two or four-year college degree program. Second, the timing of the 4th follow-up, eight years after high school graduation, allows an examination not only of immediate college enrollment (i.e., enrollment right after high school) as in most college access studies, but also of delayed college enrollment, an outcome less commonly examined. Third, the NELS is also an appropriate dataset because the sample is large in size (n=11,914) of those individuals who completed all three waves of the study that I am using.

The fourth advantage to using the NELS is its high response rate. Response rates for the second and third follow-ups exceeded 90%. There was a 92.5% completion rate for the second follow-up (1992), and a 94.0% completion rate for the third follow-up (1994) with 14,915 cases. There are 12,144 cases for the fourth follow-up (2000), for a completion rate of 77.6% (Curtin et al., 2002). When weighted the data are representative of the national population of 1992 high school graduates in 2000.

Instrumentation

The NELS data were collected by NCES researchers utilizing multiple methods in 1992 (second follow up), 1994 (third follow-up), and 2000 (fourth follow-up). For the base-year survey through the second follow-up survey, student surveys and achievement tests were administered through the schools. NELS project staff administered t hese paper and pencil instruments to students. Teachers, principals, and parents also completed paper and pencil surveys (Curtin et al., 2002).

In the second (1992) follow-up, students completed two separate types of instruments. First students completed a 60-minute questionnaire asking about their background, self-perceptions, aspirations, school experiences, and home environment. Students were also given a battery of cognitive tests on subjects including reading, math, science, and social studies. The school administrator survey was between 40 and 60 minutes in length and focused on school characteristics and environment. The teacher instruments asked teachers to answer about specific students in relation to their school environment (Curtin et al., 2002).

The third follow-up was designed to capture the experiences of the cohort two years out of high school. The questions focused on academic achievement, postsecondary access, work experiences, perceptions about school and job, and family structure and environment. The third follow-up instrument, administered by computer assisted phone interviews, had approximately 64 items with some questions including sub-items (Curtin et al., 2002).

The fourth follow-up surveyed students who were on average eight years out of high school. Participants were asked a battery of questions in 10 different areas including primary activities, such as current education and employment status, educational completion, employment and training, current income and expenditures, as well as an update of other characteristics such as marital status, number of dependents, and community integration (Curtin et al., 2002).

Statistical Analysis

I use descriptive analyses such as chi-square tests, and ANOVA to address the first three research questions. The first question is: What percent of high school graduates enroll in college in each of eight years after graduation from high school? What is the appropriate break point between immediate and delayed enrollment? The second question is: How do the characteristics of high school graduates who delay entry into a two- or four-year college degree program compare to the characteristics of high school graduates who enroll immediately after high school and the characteristics of high school graduates who do not enroll within eight years of high school graduation? The third question is: For high school graduates who delay enrollment, how does timing of first enrollment vary by student characteristics? These analyses describe the characteristics of students in the sample and examine observed college enrollment rates. Chi-square tests are used to describe categorical independent variables. ANOVA is used to examine differences in continuous independent variables across the three categories of the dependent variable: immediate enrollment in college, delayed enrollment in college, and no enrollment in college.

The appropriate multivariate technique to address the fourth and fifth research questions is multinomial logit regression, because the dependent variable, enrollment by 2000, has three categories. This method estimates the log-odds of one outcome relative to a baseline category, which in this case is delayed college enrollment after high school. The logit coefficients that result from the analyses may be interpreted as the change in log odds associated with a one-unit change in the independent variable (SPSS, 1999).

Odds-ratios are also utilized to show the change in odds of choosing a particular college enrollment status over the baseline category, delayed enrollment, that are associated with a one-unit change in each independent, or explanatory, variable. An odds ratio greater than one represents an increase in the likelihood of immediate enrollment or no enrollment, whereas an odds-ratio of less than one represents a decrease in the likelihood of immediate enrollment or no enrollment (Perna, 2001).

The variables are entered into the analyses in five conceptually related blocks. The first block includes background characteristics, while the other blocks are financial resources, academic preparation and achievement, social capital, and cultural capital. Adding the blocks in this order shows how the addition of different groups of variables impacts the observed relationship between socioeconomic status and enrollment timing.

Conceptual Model and Variable Description

Using a conceptual model of traditional student enrollment, this study compares predictors of delaying enrollment in college after high school with predictors of enrolling immediately and not enrolling. A review of the literature on college enrollment suggests that an individual's background characteristics, financial resources, academic preparation

and achievement, social capital, and cultural capital influence a student's decision to

enroll in a two- or four-year college degree program. Figure 2 shows the variables that

measure these components of the conceptual model.

```
┌─────────────────────────────────┐
│    Background Characteristics    │
│  *Socioeconomic Status           │
│  *Race/Ethnicity                 │
│  *Gender                         │
└─────────────────────────────────┘

┌─────────────────────────────────┐
│       Financial Resources        │
│  *Importance of college costs and│
│  financial aid                   │
│  *Tuition                        │
│  *Unemployment Rate              │
└─────────────────────────────────┘                    ┌──────────────────┐
                                                        │ Timing of        │
┌─────────────────────────────────┐                    │ enrollment in a 2-│
│   Academic Preparation and       │                    │ or 4- year college│
│        Achievement               │                    │ degree program   │
│  *High school achievement        │                    └──────────────────┘
│  *Coursework                     │
└─────────────────────────────────┘

┌─────────────────────────────────┐
│         Social Capital           │
│  *Number of financial aid        │
│  contacts                        │
│  *Parental involvement in        │
│  student's education             │
│  *Closed Networks                │
│  *Student-teacher relations      │
│  *HS based support               │
│  *HS control                     │
│  *School participation in free   │
│  and reduced lunch program       │
└─────────────────────────────────┘

┌─────────────────────────────────┐
│         Cultural Capital         │
│  *Parental expectations          │
│  *Peer encouragement             │
│  *Parental involvement with      │
│  school                          │
│  *Educational materials in the   │
│  home                            │
│  * Participation art, music, or  │
│  dance classes                   │
└─────────────────────────────────┘
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Figure 2. Variables in Conceptual Model of Timing of College Enrollment

Most of the independent variables are measured using data from the 1992 follow-up survey when students were seniors in high school. Background characteristics are measured by socioeconomic status, race, and gender. Financial resources are measured by the perceived importance of college costs and financial aid, as well as tuition and state unemployment rate. Academic preparation is measured by high school achievement and coursework. Social capital is measured by proxies forinformation about financial aid, closed networks, parental involvement with the student's education, teacher-student relations, high school based support, high school control, and school participation in free and reduced lunch program. Cultural capital is measured by parental expectations, peer encouragement, parental involvement with the school, amount of educational materials in the home, and participation in art, music, or dance classes.

Enrollment

The dependent variable has three categories: enroll immediately after graduating from high school, delay entry for up to eight years after graduating from high school, or not enroll within eight years of high school graduation. Enrollment is defined as enrollment in either a two-or four-year college or university. The variable is constructed based on the month and year of first attendance. I determine the cut-off point between immediate enrollment and delayed enrollment, based on the descriptive analyses used to address the first research question. I delayed this decision because some researchers have defined immediate enrollment as within two years of graduation from high school (Cabrera & La Nasa, 2001), or one year of high school graduation (Cabrera & La Nasa, 2001; Hearn, 1992), while others have defined immediate enrollment as enrollment by

the fall after graduating from high school (Perna, 2000). No prior study has systematically examined the most appropriate definition of "delayed enrollment."

Background Characteristics

Three variables measure background characteristics: socioeconomic status, race/ethnicity, and gender.

Socioeconomic Status

Socioeconomic status in the 12th grade is a continuous, composite measure created by NCES based on the educational levels of the mother and the father, the occupational status of the mother and the father, and the family income in 1987 (Curtin et al., 2002). I am using the standardized measure of socioeconomic status. Table 3.1 shows the relationship between this composite and three of its components: father's educational attainment, mother's educational attainment, and total family income in 1987. A clear pattern emerges between socioeconomic status quartile, income, and education, even though low-socioeconomic status does not necessarily equal low-income. Eighty-eight percent of individuals in the lowest socioeconomic status quartile have a father with no more than a high school education, while 77% of those student's in the highest socioeconomic status quartile have a father with at least some graduate education. The mother's highest level of education also increased by socioeconomic status quartile. The mothers of high school graduates in the first socioeconomic status quartile primarily had a high school degree or less (89%), while 62% of mothers in the highest quartile had at least a graduate degree. As for family income, over 50% of high school graduates in

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the lowest quartile had a total family income of less than $15,000, while 62% of those in

the highest quartile made at least $50,000.

Table 3.1. Percentage of socioeconomic status composite components by socioeconomic
status quartile

Variable	Socioeconomic Status				
	Quartile 1 (Low)	Quartile 2	Quartile 3	Quartile 4 (High)	Total
Father's Education***	100.0	100.0	100.0	100.0	100.0
Not finish HS	46.8	16.2	4.8	1.3	12.7
HS Graduate	41.3	53.6	37.4	7.3	31.6
Junior College	5.9	15.2	21.0	6.9	12.5
College LT 4 Yrs	2.7	7.5	14.5	8.0	8.8
Graduate College	2.6	6.2	16.3	34.7	18.1
Master's Degree	0.5	0.9	4.7	25.1	10.1
Ph.D, M.D., etc.	0.2	0.5	1.2	16.7	6.1
Mother's Education***	100.0	100.0	100.0	100.0	100.0
Not finish HS	42.9	12.3	4.5	0.7	11.2
HS Graduate	46.2	58.6	44.2	13.7	38.1
Junior College	5.3	15.2	19.7	10.7	13.4
College LT 4 Yrs	3.7	7.2	14.3	12.6	10.3
Graduate College	1.5	5.2	12.5	34.9	16.3
Master's Degree	0.1	0.8	3.5	22.3	8.5
Ph.D, M.D., etc.	0.2	0.6	1.2	5.1	2.2
Total Family Income in 1987***	100.0	100.0	100.0	100.0	100.0
Less than $10,000	32.2	5.6	0.9	0.1	6.8
$10,000-$24,999	47.9	38.6	18.3	3.4	23.1
$25,000-$49,999	19.3	49.5	61.5	34.9	43.3
$50,000 or more	0.6	6.3	19.4	61.6	26.9

Source: Analyses of NELS:92/2000
***p<.001
Note: Data are weighted by normalized F4F2 panel weight

The use of socioeconomic status rather than separate measures of family income

and parental education in examination of college enrollment has been criticized by some

researchers (e.g., Paulsen & St. John, 2002). Paulsen and St. John argue that

socioeconomic status alone is not a complex enough measure to cover social class

adequately. In a differing opinion, Adelman (2002) recommended the use of

socioeconomic status over parent income with NCES data that were collected before 1996 because family income is self-reported by students and thus it is difficult to know if the data are reliable. Also, since the NELS does not account for family size, it is difficult to correctly define "low-income." He also recommended using socioeconomic status because, as a composite measure with multiple components, the measure is more reliable than any of its components alone, and because a smaller number of cases are missing for socioeconomic status components than for the family income variable. Cabrera and LaNasa (2001) and Perna and Titus (2004) make similar arguments to justify the use of socioeconomic status in their work. Socioeconomic status is an appropriate measure for this study, especially since the conceptual model for this study includes other measures of social and cultural capital.

Cabrera and LaNasa (2001) utilized the 1988 version of the socioeconomic status composite variable in their examination of college enrollment for low-socioeconomic status traditional-age students. Cabrera and LaNasa found differences in rates of college enrollment based on socioeconomic status, with low-socioeconomic status students less likely to enroll in a four-year college within one year of high school graduation after controlling for academic preparation, parental and individual aspirations, and financial aid information. Using data from the High School and Beyond (HS&B) survey, a precursor to the NELS, Hearn (1992) utilized a similar measure, parental socioeconomic status, in his study of nontraditional college enrollment, and found that low-socioeconomic status students were more likely than upper socioeconomic status students to "delay" enrollment (i.e., enroll between one and two years after high school graduation

rather than enroll within one year) after controlling for background and academic characteristics such as high school academic track, high school grades, and test scores.

Race/Ethnicity

The four categoriesof race/ethnicity are White, Hispanic, Black, and Asian American. White is the reference group. Native Americans/Alaska Natives are excluded from the analyses due to their small sample size (n=78), which is 0.9% of the unweighted sample.

Hurtado et. al. (1997) found differences in college application behaviors, while Perna (2000) and Cabrera and LaNasa (2001) found some differences in the probability of college enrollment based on race/ethnicity after controlling for other variables. Hearn (1992), when comparing delayed and immediate attendance, found no significant difference in the enrollment of Blacks and Whites after controlling for other variables. In contrast, Perna (2000) found, after controlling for measures of social and cultural capital, family income, and academic achievement, that Blacks were 11% more likely than Whites to enroll in a four-year college within the semester after graduating from high school. She also found that there was no difference between enrollment rates of Hispanics and Whites after controlling for other variables. Other research (e.g., Cabrera & La Nasa, 2001) also shows higher enrollment rates for Black than White students when controlling for other variables.

Gender

Gender is measured by a dichotomous variable, with men serving as the reference group. Prior research (Hearn, 1992; Manski & Wise, 1983; Perna, 2000) consistently

shows that women are more likely than men to enroll in college after controlling for other variables. Hearn (1992) also found, after controlling for other variables, that students who delayed enrollment in college beyond one year but no more than two years after high school tended to be male, while women were more likely than men to enroll in college immediately after high school graduation.

<p align="center">*Academic Preparation and Achievement*</p>

Two variables are utilized to measure academic preparation: academic achievement and coursework.

Academic Achievement

Academic achievement is measured by the standardized composite reading and math IRT score in the 12[th] grade. This measure has less missing data than other possible measures of academic achievement, such as high school grade point average and college admission test scores. Perna (2000) and Perna and Titus (in press) utilized this measure and found that test scores were positively related to the probability of enrolling in a four-year college net of other variables. Also using the NELS, Plank and Jordan (2001), in their exploration of the effects of information and guidance on postsecondary destinations, utilized the 1990 composite reading and math IRT score (i.e., the test score from the first follow-up when students were in the tenth grade). They found that academic achievement was a positive predictor of enrolling in a four-year institution net of controlsfor background characteristics, and social capital . Croninger and Lee (2001) utilized a similar measure, but from the 8[th] grade, in exploring high school drop-out rates.

<p align="center">70</p>

They found that this measure of academic achievement was a significant negative

predictor of high school drop-out rates after controlling for background characteristics

and social capital.

Coursework

The rigor of coursework completed is measured by a series of dichotomous

variables that reflect the highest math course that a student took in high school. These

variables were computed using data on math courses from student high school transcripts.

This measure has five categories: advanced math, algebra 2, algebra 1, other or no math,

and missing or unknown math. Other or no math is the reference group.

Adelman (2002) recommended rigor of coursework as a more reliable measure of

academic preparation than curricular track. Perna and Titus (2004; in press) utilized the

highest level of math coursework taken in high school as a measure of academic

preparation. They found that taking at least algebra 1 was a significant positive predictor

of college enrollment after controlling for such variables as background characteristics,

parental involvement, and school characteristics.

Financial Resources

Three variables are utilized to measure college cost: perceived importance of

college cost and financial aid, actual tuition in home state, and state unemployment rate.

Importance of Costs and Financial Aid

The importance of college costs to a student is measured by a composite variable comprised of two items from the second (1992) follow-up: theperceived importance of college expenses and the importance of financial aid. Both of these variables are on a scale of one to three with one being not important to three being very important. These two variables were summed with a new range from one to six. The variable was then recoded to create the new measure with three categories, from little importance (1) to very important (3). Little importance is the reference category.

Tuition

The cost of college is measured by the average in-state tuition and fees at two-year public colleges and universities in the student's home state in 1992, when the student graduated from high school. Tuition data are not included in the dataset, but are added using data from the *Digest of Education Statistics* (NCES, 1993). The data are weighted by the number of full-time equivalent undergraduates, but were not adjusted to reflect student residency. Arkansas, South Dakota, and the District of Columbia did not have two-year institutions listed, so the average in-state tuition and fees at four-year institutions was used, since this would most likely be the least expensive option for graduates in those states   Kane (1994), Perna (2000), and Schwartz (1985) utilized a similar variable and found that higher tuition is negatively related to college enrollment, regardless of other variables.

Unemployment Rates

Manski and Wise (1983) utilized a measure of forgone earnings to test their econometric model of college enrollment. This measure was the expected monthly earnings of a student based on his or her race, gender, and ability level. They found that as expected forgone earnings increased, enrolling in college became a less likely decision. While actual forgone earnings would be the ideal measure, when the sample of those graduates not enrolled by 1994 was broken down by race and ability level, there were too few cases in most of the categories (i.e., less than 50 in each group except for Whites) to determine reliable estimates of forgone earnings.

Instead of a measure of earnings, I utilize June 1992 state unemployment rates, obtained from the Bureau of Labor Statistics (*1992 Unemployment Rates*, 2004), in order to provide a measure of labor market conditions. Kane (1999) found that the higher unemployment rates, the more likely that a student was to enroll in college.

Social Capital

Seven variables are utilized to measure social capital: number of financial aid contacts that a student had in the 12th grade, parental involvement in a student's education, existence of closed networks, student-teacher relations, high school based support, high school control, and the percentage of students in a particular school participating in the free and reduced price lunch program.

Number of Financial Aid Contacts

A composite variable, information sources on financial aid, is included as one measure of social capital. The composite is created utilizing five variables from the 1992 follow-up. The variables, which all asked for yes/no responses, are: whether the student read information from the school on financial aid, whether the student talked to the school representative about financial aid, whether the student talked to a teacher/school counselor about financial aid, whether the student read Department of Education information on financial aid, and whether the student talked to an adult about financial aid. The composite variable is created byadding the number of financial aid contacts . The composite variable has five categories: no financial aid contacts, one to two financial aid contacts, three to four financial aid contacts, and five or more financial aid contacts. No financial aid contacts is the reference group.

Cabrera and LaNasa (2001), in their study using the same dataset, found that a composite of these items was reliable (α=.73) and that the composite was a positive predictor of applying to a four-year college for students graduating from high school in 1992. Plank and Jordan (2001) also utilized a similar variable and found that the number of information sources that a student utilized was a positive predictor of enrolling at a four-year institution, rather than not enrolling or enrolling part-time at a two-year institution, after controlling for background characteristics, parental involvement, and college search activities.

Parental Involvement in Student's Education

Parental involvement in their student's education, is a measure reflecting social capital within the family. This measure utilizes information from six variables in the 1992 follow-up. Exploratory factor analysis is utilized to create this measure and the results are provided in Table 3.2. Factor analysis allows for identification of an unobservable variable that is common to other variables (Pedhazur & Schmelkin, 1991). The variables that are considered in the factor analysis are the frequency that the student and parent: discussed school courses, discussed school activities, discussed things studied in class, discussed grades, discussed preparation for the ACT/SAT test, and discussed going to college. Each of these items is measured on a Likert scale with 1=never to 3=often. A factor composite of these variables was used in a study employing the same dataset by Perna (2000) and the items together created a highly reliable factor (α =.83). Perna (2000) found that, after controlling for race and sex, costs and benefits, ability and other measures of social and cultural capital, this measure of parental involvement was positively related to the likelihood that White students would enroll in college immediately after high school, but was not related to the likelihood of enrolling for students of other racial and ethnic groups. Cabrera and LaNasa (2001) also utilized a similar composite measure and found that students with higher levels of parental involvement were more likely to apply to a four year college, a necessary precursor to enrollment, after controlling for socioeconomic status, race, gender, aspirations, and other social and cultural capital measures.

Table 3.2. Components of the Factor Composite   Parental Involvement in Student's Education

Factor Components	Loadings
Discussed school courses with parent	.770
Discussed school activities with parent	.769
Discussed things studied in class with parent	.746
Discussed grades with parent	.741
Discussed preparation for the ACT/SAT test with parent	.696
Discussed going to college with parent	.680
Alpha reliability coefficient	.828

Source: Analyses of NELS:92/2000
Note: Data are weighted by normalized F4F2 panel weight

Closed Networks

The number of other parents to whom a parent talks is a measure of a closed network, another aspect of social capital. This categorical measure reflects whether a parent reports talking to no other parent, one or two parents, three to five parents, six to ten parents, eleven to twenty parents, or more than twenty parents. More than twenty parents is the reference category. Perna and Titus (in press) utilized this measure in their study of parental involvement and college enrollment. While Perna and Titus did not find this to be a significant predictor of college enrollment after controlling for other variables, Coleman (1988) argues that such a measure is an important dimension of social capital. He stated that social capital is formed through social structures and relationships. He argued that a key way that social capital may be formed was through a closed network, where all actors are connected in some way. He believed that a closed network could create strong norms within a social structure. These closed social structures may serve as a powerful form of social capital by motivating trustworthiness that in turn creates obligations and expectations as well as the ability to have effective group norms.

Student-Teacher Relations

A composite variable, student-teacher relations, is computed from three variables from the 1992 follow-up survey that reflect the extent to which students agree or disagree that teachers: are interested in them, are good at teaching, and help them with their homework. Two of the variables: teachers are interested in students and are good at teaching are recoded into dichotomous variables so that all variables are on the same metric. The variables were then summed and then recoded to create the new variable. The metric for this variable is on a 1 to 4 scale, with 1 labeled as strongly agree and 4 labeled as strongly disagree. Strongly disagree is the reference category.

Croninger and Lee (2001), who used the NELS in their study of dropping out of high school, employed a similar measure of social capital and found that it was a significant negative predictor of dropping out of high school. The reliability of the factor was high ($\alpha = .79$). Croninger and Lee argued that social networks developed with teachers may impact a student's educational progress, especially if other forms of social capital are not present in their lives.

High School Based Support

Croninger and Lee (2001) and Perna and Titus (in press) argued that school programs may have a large impact on the social capital of the students and may supplement resources from family and the community. In this study, three variables are combined into a dichotomous variable to measure high school based support: if a student received help from high school personnel with college application procedures, if a

student received help from high school personnel with financial aid application procedures, and if a student received assistance from high school personnel in writing college application essays. These items are yes/no items. If a student answered "yes" to at least one of the items, then it was classified as a "yes" for the composite. No is the reference category.

Cabrera and LaNasa (2001) utilized the three separate measures of high school support to study the college choice of low-socioeconomic status students and found that two of the measures, high school assistance in completing college applications and high school assistance in completing college essays were significant positive predictors of applying to a four-year college among the overall sample. None of the three were related to the probability of applying among low-socioeconomic status students. Perna (2000) measured high school support in her study by combining the three items into a dichotomous variable as to whether or not a student received any of these three forms of assistance (yes/no). She found that receiving no help from high school personnel with college requirements was a significant negative predictor of college enrollment after controlling for other variables.

High School Control

High school control is also a measure of social capital used in this study. The variable has two categories, public and private. Public is the reference category. McDonough (1997) found that students who attend private schools may have higher expectations of attending college and have more capital available from personnel at these schools. She posited greater availability of networks and resources that promote college

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enrollment at private than public schools. Perna (2000) utilized this variable in studying immediate enrollment into college of 1992 high school graduates and found that school control was unrelated to college enrollment after controlling for other variables. Coleman (1988) found, using the High School and Beyond dataset, that the type of high school that a student attends affected high school persistence, a necessary step toward college enrollment.

Free and Reduced Price Lunch

The final measure of social capital used in this study is the percentage of students at a school who participate in the free and reduced lunch program. This variable was negatively skewed so it was recoded into quartiles. The fourth quartile is the reference category. The percent of students receiving free and reduced price lunch is a proxy for the resources available at a student's school. The rationale is that, the more students who participated in this program, the less likely that other students and parents at the school had adequate resources to promote college enrollment. A similar measure was utilized by Hamrick and Stage (1998) to identify students from resource-poor schools. Hamrick and Stage stated that at resource-poor schools, such as those with high percentages of students in the free and reduced price lunch program, the less time that school personnel spent on promotion of college enrollment. At resource-poor schools, school personnel were more likely to be spending time with students with academic or behavioral problems. Hamrick and Stage found that, for students from schools with high participation in free and reduced lunch programs, gender, socioeconomic status and parental expectations were all predictors of college predisposition.

Cultural Capital

Five variables are utilized to measure cultural capital: parental expectations, peer encouragement, parental involvement with the child's school, educational materials in the home, and participation in art, music, or dance classes.

Parental Expectations

The highest expectation for the student's educational attainment of the student's mother is included as a measure of cultural capital because it illustrates the value of a college education to a parent. WhileCabrera and LaNasa (2001) chose the parent with the highest expectations, I utilize the expectations of the mother only, as Perna (2000) did, in order to make the implications of the findings clearer. The categories for this variable are (1) no postsecondary expectations, (2) expected to attend a two-year academic or technical college, (3) expected to complete a bachelor's degree, or (4) expected to attain a graduate or professional degree. The categorical variable is coded into a series of dummy variables with expected graduate education as the reference category.

Cabrera and LaNasa (2001) found that there was a greater probability of a student applying to a four-year college if at least one parent expected a bachelor's degree or higher from their child. Perna (2000) also found that a mother's educational expectation had a significant positive effect on college enrollment of a high school graduate net of other variables.

Parental Involvement with a Child's School

The involvement of parents with the student's school is also considered as a measure of cultural capital. The factor composite is comprised of four variables measuring the frequency with which the parent contacted the school about their student's academic performance, academic program, plans after high school, and college preparation course selection. Each of these variables is coded on a one to four scale, with one being never to four being more than four times. Table 3.3 shows that the alpha reliability coefficient for the variable is .802.

Table 3.3. Components of the Factor Composite: Parental Involvement with a Child's School

Factor Components	Loadings
Contacted School About Academic Program	.827
Contacted School About College Preparation Course Selection	.825
Contacted the School About Teen's Plans After High School	.820
Contacted School About Academic Performance	.709
Alpha reliability coefficient	.802

Source: Analyses of NELS:92/2000
Note: Data are weighted by normalized F4F2 panel weight

Lareau (1987) and Lareau and Horvat (1999) both consider parental involvement in the schools to be measure of cultural capital. Parents are activating their capital in order to participate in their child's education, which is a cultural norm in middle and upper class families (Lareau, 1987). Although both of their qualitative studies focused on elementary school children, both found that families who activated their cultural capital by interacting with the school, such as attending school events and having regular individual contact with the classroom teacher had children who were more likely to succeed in school.

Educational Materials in the Home

Educational materials in the home is another proxy of cultural capital. A person's exposure to material goods such as books or computers can be classified as the objectified state of cultural capital (Bourdieu, 1986). Three survey items are utilized to construct the variable: students have a daily newspaper, students have a home computer, and students have more than fifty books. The new variable reflects whether a student has any of these three items (yes/no). No is the reference category.

Peer Encouragement

In order to capture peer attitudes, a composite variable, peer encouragement, is created using factor analysis and three variables from the 1992 follow-up survey. The variables that are considered in the exploratory factor analysis are how important it is for friends to get good grades, study, and finish high school. The metric for these variables is on a one to three scale, with one being not important to three being very important. Table 3.4 shows three variables load on one factor with an alpha reliability coefficient of .734.

Perna (2000) found that a similar composite was not significantly related to college enrollment among White, Black, or Hispanic students after controlling for other variables. Nonetheless, McDonough (1997) found that peers can be a strong transmitter of cultural capital through the values that they place on education, which in turn influence other students. She found a seamless environment for high socioeconomic status girls, in

the expectation that a student would attend college was present from friends, family, and the school.

Table 3.4. Components of the Factor Composite Peer Encouragement

Factor Components	Loadings
Among friends, how important is it to get good grades	.871
Among friends, how important is it to study	.821
Among friends, how important is it to finish high school	.735
Alpha reliability coefficient	.734

Source: Analyses of NELS:92/2000
Note: Data are weighted by normalized F4F2 panel weight

Participation in Cultural Activities

Downey and Powell (1993) recommended the use of a variable taking cultural classes (i.e., art, music, or dance) at least one time a week, as a proxy for cultural capital. Perna and Titus (in press) utilized a measure of participation in cultural classes such as those mentioned above in their study of the impact of parental involvement or racial group differences in college attendance. The variable from the NELS reflects whether a student has taken music, art, or dance classes. Response categories are (1) never/rarely, (2) less than one time per week, (3) one to two times a week, (4) almost every day. Never is the reference category. While Perna and Titus (in press) did not find this variable to be a significant predictor of college enrollment, Horvat (2001) argues that such a measure is an important dimension of cultural capital.

Post-Graduation Characteristics

In order to provide a more complete picture of graduates who delay enrollment, additional post-high school characteristics are included for use in the descriptive

analyses. Seven variables are utilized to measure post-high school characteristics for those students who delay enrollment in college: married before enrollment, children before enrollment, working full- or part-time in 1993, occupation in 1993, expected occupation in 2000, earnings in 1993, and expected income at age 30. These variables were chosen based on the assumption that, the further a student was from their high school experience, the greater chance that a student's decision to enroll in college was influenced by post-high school graduation activities and experiences.

Married before enrollment

The measure for whether a student was married before he or she enrolled in college is based on date of first marriage. This variable was recoded into categories by calendar year. This date was then compared to year of enrollment to create a dichotomous variable, married before enrollment-yes or no. Teachman and Polonko (1988) found in their longitudinal study of data from the 1972 NLS that marriage reduced the probability of college enrollment.

Children before enrollment

The measure for whether a student had a child before enrollment in college is based on date of first child. The variable was recoded into categories by calendar year. The year of first child was then compared to year of enrollment to form a dichotomous variable, child before enrollment-yes or no. Having children was found to reduce the probability of college enrollment in their longitudinal study of data from the 1972 NLS (Teachman & Polonko, 1988).

Employment Status in 1993

Work experience immediately after high school graduation is measured by a dichotomous variable that asks whether a student is working full-time or part-time. If a student works part-time while enrolled in school, the decreased earnings compared to someone who works full-time is a direct cost of college enrollment. The student may forgo some of the earnings that they would make as a full-time employee if he or she was not enrolled in school. Low-socioeconomic status students may not have the option to only work part-time and the forgone earnings alone may keep an individual from participating in higher education (Kane, 1999). Also, students may choose not to forgo earnings, and continue to work full-time while going to school either part-time or full-time, or delay time of enrollment in order to save money for college.

Occupation in 1993

An additional measure of employment status immediately after high school graduation is occupation in 1993. This 30 category variable was recoded into 15 categories. Occupations were grouped together based on type of position (e.g., clerical-secretarial, clerical-financial, clerical-other). The 15 categories are: clerical, craftsman, farmer, laborer, manager, military, arts or entertainment, professional, owner, service, sales, education, technical, and not working.

Expected occupation in 2000

The variable, expected occupation in 2000, was asked as a part of the third follow-up in 1994. Participants were asked to project their occupation six years in the future. The categories of this variable were the same as occupation in 1993, so the same recoding process was utilized. This variable may suggest whether the student has an interest in a career thatrequires a college education. These future occupation goals influence the decision to attend college in the econometric model (Becker, 1993).

Income in 1993

The continuous standardized measure, total earnings from jobs January to December 1993 is utilized to measure 1993 income. This measure is standardized for use in these analyses. If a graduate chooses to attend college, he or she may forgo some of his or her earnings in order to attend school (Becker, 1993). He or she may not be willing to forgo earnings in order to enroll in college, or may choose to delay enrollment. Also, the higher a graduate's income, the less likely he or she may be to see a need to enroll in college.

Expected income at age 30

The continuous measure, expected income at age 30 is a measure that was collected from participants in 1994, when the average age of the participants was 20. This measure is standardized for use in these analyses. Future income expectations may influence an individual to enroll in college due to the increased earnings potential of an individual with a college degree (Becker, 1993).

Limitations of the Study

This study has at least five limitations. The first limitation is that data are missing for many independent variables. Table 3.5 shows that a few variables such as academic achievement (13.3%), closed networks (16.0%), parental expectations (13.7%) and parental involvement with the school (13.9%) have relatively large amounts of missing data. Listwise deletion reduces the number of cases by 48.5%, resulting in an analytic sample of 4,415 cases.

Table 3.5. Number and percentage of cases that are missing for each of the variables in the analyses from the final sample (n=8,567)

Variable	Number Complete	Number Missing	Percent Missing
Socioeconomic Status	8476	91	1.3
Race	8552	15	0.2
Gender	8567	0	0.0
Academic Achievement	7424	1143	13.3
Coursework	8407	160	1.9
College Costs	7899	668	7.8
Tuition	8546	21	0.2
Unemployment	8546	21	0.2
Number of Financial Aid Contacts	7889	679	7.9
Parental Involvement in Student's Education	7510	1057	12.3
Closed Networks	7197	1370	16.0
Student Teacher Relations	8342	225	2.6
High School Based Support	7961	606	7.1
High School Control	8546	2121	0.2
Free and Reduced Price Lunch Quartile	8290	277	3.2
Parental Expectations	7397	1170	13.7
Parental Involvement with School	7379	1188	13.9
Educational Materials	8267	301	3.5
Peer Encouragement	8012	555	6.5
Involvement in Cultural Activities	8220	347	4.0
Number of cases with data for all variables	4,415	4,152	48.5

Source: Analyses of NELS:92/2000
Note: Data are weighted by normalized F4F2 panel weight

Moreover, missing data analysis showed that the data are not randomly missing (Table 3.6). Students who delayed enrollment (55.0%) and students who did not enroll (66.5%) in college were more likely to have missing data on one or more variables than students who enrolled in college immediately (35.0%). Higher percentages of Hispanic (65.0%) and Black (63.6%) students were missing data on one or more variables than Asian (45.3%) or White (44.6%) students. Missing data were more common among men (50.9%) than women (46.4%). A higher percentage of students from the lowest socioeconomic status quartile (62.7%) than of students in the second, third, and fourth quartiles (51.6%, 47.2, and 37.8 respectively) had missing data on one or more variables. Missing data were also more common among students in the lowest academic achievement quartile (67.7%) than among students in the second, third, and fourth quartiles (46.9%, 37.7%, and 24.2% respectively).

Because of the magnitude and non-randomness of the missing data, I considered potential strategies for minimizing missing data. Other researchers utilizing the NELS have described missing data as a limitation in their studies. Croninger and Lee (2001) dealt with their missing data by excluding cases that were missing data on key variables. This substantially decreased the sample size for their study. For my study missing data analysis revealed that listwise deletion of missing data would result in a large reduction of number of cases in the sample from 8,567 to 4,415. Pairwise deletion is another way to deal with missing data, but this is only recommended for randomly missing data (Cohen & Cohen, 1983). This procedure is not adopted in this study procedure due to the non-randomness of the missing data, as described above. Perna (2000), in order to maintain the size of the sample, imputed missing data for some continuous variables

based on the average value for cases with the data for the variable by race and

socioeconomic status quartile.

Table 3.6. Percentage of cases with missing data for selected characteristics of 1992
high school graduates

Characteristics	% Missing
Enrollment	
Enrolled Immediately	35.0
Delayed Enrollment	55.0
No Enrollment	66.5
Race	
Asian	45.3
Hispanic	65.0
Black	63.6
White	44.6
Gender	
Men	50.9
Women	46.4
Socioeconomic Status Quartile	
1st	62.7
2nd	51.6
3rd	47.2
4th	37.8
Academic Achievement Quartile	
1st	67.7
2nd	46.9
3rd	37.7
4th	24.2

Source: Analyses of NELS:92/2000
Note: Data are weighted by normalized F4F2 panel weight
***$p < .001$

      In order to maintain the size of my sample, I imputed missing data for the three

continuous variables with at least ten percent missing data: academic achievement,

parental involvement with the school, and parental involvement in a student's education.

Imputation was based on the average value for students of the same race/ethnicity and

gender. I was not able to include socioeconomic status in the imputation procedure

because there were too few cases in many of the socioeconomic quartile, race/ethnicity,

and gender cells for the average to be a reliable measure. Nonetheless, this process may

cause an underestimation of standard errors thereby causing the coefficient for imputed variables to be falsely statistically significant. For categorical variables, math coursework, closed networks, and parental expectations, I added a dummy variable to indicate whether the data were missing (Cohen & Cohen, 1983). The implications of the missing data techniques will be kept in mind when interpreting the results of the analyses.

Since I am conducting this study using secondary data analysis, a second limitation is that I must use variables that have already been collected. Since complex constructs such as social and cultural capital are utilized in the conceptual model, it is difficult to find appropriate proxies. Proxies of social capital in the analyses include parental involvement in a student's education, number of financial aid contacts, student-teacher relations, high school control and high school based support. Parental expectations and involvement, peer encouragement, educational materials in the home, and visits to museums/ participation in the arts, act as proxies of cultural capital for this study. While these proxies appear to be adequate, many of the measures such as parental involvement in both home and school and type of financial aid contacts measure the quantity of interaction, not the nature of the interaction or its quality. These measures cannot identify the type of resource accessed through involvement or the quality of the resources available through networks. High school control is also used as a proxy for what resources a school has, but again, a more adequate proxy, would be recommended.

The third limitation of the study is that predictors not included in the model which could be helpful to the study include a student's perception of the benefits of higher education. The NELS does not have variables as part of the dataset that are adequate proxies for benefits of college.

Reflecting the construction of the dataset, college enrollment only up to eight years after high school graduation is examined, which is a fourth limitation. Data from more than eight years after high school graduation may provide greater information related to college enrollment patterns, if it were available. Nonetheless, the eight year time period may be an appropriate cut-off given the declining benefits of higher education to older individuals (Becker, 1993).

A fifth limitation is that, in the early 1990's, when students in the sample graduated from high school, the economy was different than in the late 1990s. These economic changes may have encouraged students to enroll immediately into college, but encouraged individuals who might have otherwise enrolled at a later point to stay in the labor market. The model does not include measures of changes in economic forces that occurred after 1992 which may play a role in the decision to enter college two to eight years after high school graduation.

A final limitation is that I have only included those students who graduated from high school on time in 1992. I made this decision because students need to graduate in order to qualify for college, and because I wanted to examine students who completed high school in a similar manner. This decision excludes some students who may have completed high school later, or who completed a GED in lieu of high school graduation.

Even with these limitations, the study is worth pursuing due to the likely contribution to theory, policy and practice. The strengths of the research design, including the size of the sample, the longitudinal nature of the NELS dataset, and the number of variables that are available to represent complex constructs in the analyses also support the worth of the study. The study tests the applicability of a conceptual

model of traditional college enrollment to the decision to delay college enrollment. The study also contributes to our understanding of the nature of socioeconomic status gaps in educational opportunity by examining socioeconomic gaps in delayed enrollment of 1992 high school graduates.

CHAPTER 4

RESULTS

Introduction

This study uses descriptive and multivariate analyses to examine college

enrollment patterns of 1992 high school graduates within eight years of graduation. The

study determines the most appropriate definition of delayed enrollment based on

differences in student characteristics at year of enrollment. The relationship between

socioeconomic status and timing of college enrollment is also explored to determine if

the socioeconomic status gap that is present in immediate enrollment is also present in

delayed enrollment.

The chapter addresses the first research question by presenting the percentage of

1992 high school graduates who enrolled in college in each of eight calendar years after

high school graduation. Next, a break point between immediate and delayed enrollment

is determined, by examining differences in time of enrollment for enrolling in 1992, 1993

and 1994. Moving on to the second research question, the chapter presents descriptive

statistics that compare the characteristics of three groups: high school graduates who

enroll immediately in college, those who delay enrollment, and those who do not enroll in

college within eight years of graduating from high school. The third research question is

addressed by presenting descriptive statistics that examine the characteristics of graduates

who delay enrollment by each year of delayed enrollment. To address the fourth and fifth

research questions, the results of multivariate analyses are presented. These results

examine the predictors of delaying college enrollment after graduating from high school

rather than enrolling in college immediately or not enrolling. The relationship between socioeconomic status and time of enrollment is also addressed through the multivariate analyses.

Research Question One: Timing of College Enrollment

The first research question explores the percent of students that enroll each year after graduation from high school. This information helps to determine the break point between immediate and delayed college enrollment. Table 4.1 shows the number and percentage of 1992 high school graduates in the sample who enrolled in college in each of eight years after high school graduation. The majority of 1992 high school graduates (68%) first enrolled in college during the 1992 calendar year. A small percentage of 1992 high school graduates (1%) enrolled in college before 1992, possibly through dual enrollment programs or other special programs that allow high school students to take classes before earning a high school diploma. Graduates continued to enroll in college in subsequent years, with about 9% of 1992 high school graduates enrolling in 1993 and between 0.1% and 2.4% enrolling each year between 1994 and 2000. About 14% of 1992 high school graduates had not enrolled in college within eight years of graduating from high school.

The initial analyses broke down years of enrollment by academic year rather than calendar year. However, disaggregating the 1992-1993 academic year showed significant differences between graduates who first enrolled in college in 1992 and graduates who first enrolled in spring 1993 in terms of race, socioeconomic status, achievement test scores, highest level of math coursework, parental involvement, high school control, and

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mother's expectations (Appendix A). In contrast, chi-square and ANOVA analyses

revealed no significant differences between graduates who first enrolled in spring 1993

and graduates who enrolled in the 1993-1994 academic year, except for race and high

school based support (See Appendix B). In other words, the analyses suggest that 1992

high school graduates who enrolled in college in fall 1992 are different from high school

graduates who first enrolled in spring 1993. But, high school graduates who first enrolled

in spring 1993 show few differences from high school graduates who first enrolled in the

1993-1994 academic year. Therefore, the analyses are based on calendar year rather than

academic year of first enrollment.

Table 4.1. Number and percentage of 1992 high school graduates who first enrolled in
college in each of nine calendar years after graduating from high school

Year	Unweighted Frequency	Weighted Frequency	Weighted Percent
Pre 1992	87	99	1.2
1992	5,981	5,786	67.5
1993	747	793	9.3
1994	205	203	2.4
1995	120	160	1.9
1996	78	69	0.8
1997	95	110	1.3
1998	80	84	1.0
1999	62	58	0.7
2000	15	11	0.1
Not Enrolled	1,113	1,196	14.0
Total	8,583	8,567	100.0

Source: Analyses of NELS:92/2000
Note: Data are weighted by normalized F4F2 panel weight

Table 4.1 shows that in six of the ten years, the unweighted number of graduates

who enrolled in college was less than 100: pre-1992, 1996, 1997, 1998, 1999, and 2000.

In order to increase the reliability of the analyses, I collapsed the ten years into six: 1992

(includes those who enrolled pre-1992), 1993, 1994, 1995-1996, 1997, and 1998-2000.

Chi-square and ANOVA analyses suggest that 1995 and 1996 should be considered together rather than 1996 and 1997 (Appendices C & D). Chi-square and ANOVA analyses revealed no significant differences between graduates who first enrolled in 1995 and graduates who first enrolled in 1996 exceptfor race and the number of parents that other parents talk to (Appendix C), but significant differences between graduates who first enrolled in 1996 and graduates who first enrolled in 1997 for four variables: race, gender, parental involvement in a student's education, and educational materials in the home (Appendix D). Chi-square and ANOVA tests revealed no significant differences among graduates who first enrolled in 1998, 1999, or 2000, supporting the decision to combine these three categories (Appendix E).

In order to determine the appropriate break point for immediate and delayed enrollment, I ran chi-square and ANOVA tests comparing 1992 and 1993 enrollment, and chi-square and ANOVA tests comparing 1993 and 1994 enrollment. These results are displayed in Appendix F. I found that there were significant differences between graduates who first enrolled in 1992 and graduates who first enrolled in 1993 for race, socioeconomic status, test scores, highest level of math, social capital characteristics including number of financial aid contacts, parental involvement with the student, number of parents that other parents talk to, positive student-teacher relations, high school based support, high school control, free and reduced price lunch quartile, and cultural capital characteristics, including mother's educational expectations, peer encouragement, and educational materials in the home. A comparison of 1993 and 1994 enrollment revealed no significant differences (Appendix F) for any of the categorical or continuous variables examined. Based on the examination of these three years, I define

immediate enrollment as enrolled in college before the end of the 1992 calendar year, and

delayed enrollment as enrolled in college between January 1993 and 2000.

Research Question Two: Differences in High School Characteristics by Time of College
Enrollment

The second research question explores how the characteristics of graduates who

delay enrollment in college compare to the characteristics of graduates who enroll

immediately and those who do not enroll. Table 4.2 shows the distribution of 1992 high

school graduates bytiming of college enrollment. While 68% of the students who

graduated from high school in 1992 enrolled in college immediately (i.e., 1992 calendar

year), 17% delayed enrollment (i.e., enrolled between 1993 and 2000), and 14% of

graduates did not enroll in college by 2000.

Table 4.2. Distribution of 1992 high school graduates by timing of college enrollment

Year	Weighted Frequency	Percent
Immediate Enrollment	5,885	68.4
Delayed Enrollment	1,486	17.3
No Enrollment	1,196	13.9
Total	8,567	100.0

Source: Analyses of NELS:92/2000
Note: Data are weighted by normalized F4F2 panel weight

In order to further understand the immediate and delayed groups, Table 4.3 shows

the distribution of graduates who enroll by type of institution (i.e., public/private, 2-

year/4-year) as well as a proxy of full or part-time enrollment (i.e., if they are primarily a

student or an employee). The type of institution in which a graduate enrolls varies

significantly by time of enrollment. Higher percentages of graduates who enroll

immediately attended four-year institutions (68%), while higher percentages of those who

delayed enrollment attended two-year institutions (70%). In terms of enrollment status,

the majority of graduates view themselves primarily as students, although the percentage

is higher for those who enroll immediately (85%) than for those who delay enrollment

(65%).

Table 4.3. Percentage of 1992 high school graduates who enroll in college by 2000 by school type and status

Student Characteristics	Immediate	Delayed	Total
Type of Institution***	100.0	100.0	100.0
Private 2-year	1.1	2.7	1.4
Public 2-year	30.7	67.4	37.0
Private 4-year	23.1	7.4	20.4
Public 4-year	45.1	22.5	41.2
Enrollment Status***	100.0	100.0	100.0
Primarily a student	84.9	65.2	81.3
Primarily an employee	15.1	34.8	18.7

Source: Analyses of NELS:92/2000
Note: Data are weighted by normalized F4F2 panel weight
***$p<.001$

A comparison of the characteristics of 1992 high school graduates by type of

enrollment showssi gnificant differences among the three categories for all characteristics

except the importance of cost and aid and two-year tuition rates. In terms of background

characteristics, Table 4.4 shows that timing of enrollment varies based on race/ethnicity,

gender, and socioeconomic status. Black graduates represent a higher percentage of high

school graduates who delay enrollment (17%) than high school graduates who do not

enroll (12%) and high school graduates who enroll immediately (9%). Men make up a

higher percentage of graduates who delay enrollment (54%) and do not enroll (60%) than

of high school graduates who enroll immediately (48%). Graduates who enrolled

immediately in college had higher socioeconomic status (0.236) than those graduates who

delayed first enrollment (-0.323) or did not enroll in college by 2000 (-0.763).

In terms of financial resources, neither importance of cost and aid nor two-year

tuition vary by timing of enrollment. Table 4.4 shows state unemployment rates vary

among the three groups. The standardized mean is about 8% of a standard deviation lower for those graduates who did not enroll (-0.108) than those who enrolled immediately (0.020).

In terms of academic preparation and achievement, graduates who delay enrollment or do not enroll have lower achievement test scores and lower levels of math than graduates who enroll immediately. Table 4.4 shows that graduates who enrolled immediately in college averaged more than ½ standard deviation higher on achievement test scores than graduates who delayed first enrollment and about one standard deviation higher on test scores than graduates who did not enroll in college by 2000. Table 4.4 also shows that 37% of graduates who enrolled in college immediately after high school took advanced math compared to only 10% of those who delayed enrollment and 6% of those who did not enroll.

With regard to social capital characteristics, there were statistically significant differences among the three enrollment groups for all characteristics: number of financial aid contacts, parental involvement with the student's education, number of parents that other parents talk to, positive student-teacher relations, high school based support, high school control, and free and reduced price lunch quartile. Table 4.4 shows that only 17% of the immediate enrollment group had zero financial aid contacts in the 12th grade compared with 24% of those graduates who delayed enrollment and 33% of those graduates who did not enroll. Parental involvement was also higher for graduates who enrolled immediately in college with average parental involvement scores nearly ½ of a standard deviation lower for graduates who delayed enrollment and about 2/3 of a

standard deviation lower for graduates who did not enroll than for graduates who enrolled

immediately.

Table 4.4. Characteristics of 1992 high school graduates by enrollment timing

Student Characteristics	Immediate (1)	Delayed (2)	None (3)	Total
Race***	100.0	100.0	100.0	100.0
APA	5.0	3.6	1.4	4.2
Hispanic	8.0	10.6	9.0	8.6
Black	8.5	17.0	11.8	10.5
White	78.0	67.7	75.6	75.9
Amer. Indian/AK Native	0.6	1.1	2.1	0.9
Gender***	100.0	100.0	100.0	100.0
Male	47.7	53.6	59.5	50.4
Female	52.3	46.4	40.5	49.6
Socioeconomic Status*** [a, b, c]				
Mean	0.236	-0.323	-0.763	0.002
Standard deviation	0.950	0.947	0.788	0.999
Importance of Cost and Aid	100.0	100.0	100.0	100.0
Little Importance	10.5	9.4	11.6	10.5
Some Importance	42.6	40.6	39.8	42.0
Very Important	46.9	50.0	48.6	47.6
Two-Year Tuition				
Mean	0.002	-0.033	0.062	0.004
Standard deviation	1.018	0.961	0.939	0.997
1992 Unemployment Rate*** [b]				
Mean	0.020	-0.013	-0.108	-0.003
Standard deviation	1.027	0.916	0.956	0.999
Reading and Math IRT Score *** [a, b, c]				
Mean	0.248	-0.389	-0.738	0.005
Standard deviation	0.937	0.895	0.904	0.999
Highest Level of Math***	100.0	100.0	100.0	100.0
Advanced Math	36.6	10.1	5.6	27.6
Algebra 2	36.1	27.9	18.2	32.2
Algebra 1	22.8	48.8	48.6	30.9
Missing or Unknown	1.0	4.2	3.3	1.9
Other or None	3.5	9.0	24.3	7.4

Table 4.4. Characteristics of 1992 high school graduates by enrollment timing (continued)

Student Characteristics	Immediate (1)	Delayed (2)	None (3)	Total
Financial Aid Contacts***	100.0	100.0	100.0	100.0
None	16.5	24.1	32.9	19.7
One or Two	29.3	35.0	35.7	31.0
Three or Four	41.1	31.3	25.7	37.6
At least five	13.1	9.6	5.8	11.7
Parental Involve w/ Student*** [a, b, c]				
Mean	0.178	-0.253	-0.574	0.003
Standard deviation	0.943	1.003	0.987	0.999
# of Parents Talk To***	100.0	100.0	100.0	100.0
None	5.5	9.1	9.6	6.6
1 or 2	18.6	26.0	24.9	20.6
3 to 5	28.8	31.6	30.1	29.4
6 to 10	22.2	16.0	19.6	20.9
11-20	12.4	8.6	9.7	11.4
20+	12.5	8.7	6.1	11.1
+ Student-Teacher Relations***	100.0	100.0	100.0	100.0
Strongly Disagree	2.6	5.1	3.5	3.2
Disagree	7.3	11.5	11.6	8.6
Agree	21.0	24.1	27.7	22.5
Strongly Agree	69.1	59.3	57.2	65.8
High School Based Support***	100.0	100.0	100.0	100.0
No	32.0	48.7	51.8	37.1
Yes	68.0	51.3	48.2	62.9
High School Control***	100.0	100.0	100.0	100.0
Public	88.8	95.8	98.8	91.4
Private	11.2	4.2	1.2	8.6
Free and Reduced Lunch Quart***	100.0	100.0	100.0	100.0
First	72.7	65.0	61.1	69.8
Second	19.9	22.9	25.7	21.2
Third	5.2	7.1	10.8	6.3
Fourth	2.2	5.0	2.4	2.7

Table 4.4. Characteristics of 1992 high school graduates by enrollment timing (continued)

Student Characteristics	Immediate (1)	Delayed (2)	None (3)	Total
Level of Educ Expect by Mother ***	100.0	100.0	100.0	100.0
No Postsecondary Expectations	2.8	6.8	25.1	6.0
2-Year College	12.5	25.2	33.3	16.9
Bachelor's	46.7	47.6	30.5	45.0
Graduate or Professional Degree	38.0	20.4	11.1	32.1
Parental Involve w/ School*** [b, c]				
Mean	0.030	-0.100	-0.148	0.000
Standard deviation	0.989	1.023	1.022	1.000
Peer Encouragement*** [a, b]				
Mean	0.076	-0.165	-0.158	0.003
Standard deviation	0.981	1.006	1.044	1.000
Educational Materials in Home***	100.0	100.0	100.0	100.0
No	2.2	7.3	4.9	3.5
Yes	97.8	92.7	95.1	96.5
Takes Music, Art or Dance***	100.0	100.0	100.0	100.0
Never	84.1	87.1	89.3	85.3
Less than 1 time a week	4.5	3.7	3.4	4.2
1 to 2 times a week	8.4	6.6	3.1	7.4
Almost very day	3.0	2.7	4.3	3.1

Source: Analyses of NELS:92/2000
Note: Data are weighted by normalized F4F2 panel weight
***$p < .001$
[a] Denotes significance in comparison between Column 1 (Immediate Enrollment) and Column 2 (Delayed Enrollment), $p < .001$
[b] Denotes significance in comparison between Column 1 (Immediate Enrollment) and Column 3 (No Enrollment), $p < .001$
[c] Denotes significance in comparison between Column 2 (Delayed Enrollment) and Column 3 (No Enrollment), $p < .001$

Higher percentages of graduates whose parents spoke to two or fewer other parents delayed enrollment (35%) or did not enroll (35%) than enrolled immediately (24%). A higher percentage of graduates who enrolled in college immediately agreed or strongly agreed that they had positive student teacher relations (90%) than of graduates

who delayed enrollment (83%) or did not enroll (85%). A higher percentage of graduates who enrolled immediately in college stated that they received support from their high school (68%) than graduates who delayed first enrollment (51%) or did not enroll in college (48%).

Private school attendance was higher for those graduates who enrolled in college immediately (11%) than for graduates who delayed enrollment (4%) or did not enroll (1%). Higher percentages of graduates who delayed enrollment (12%) or did not enroll (13%) than of graduates who enrolled immediately (7%) attended a school that was in the third or fourth quartile (high) of free and reduced price lunch program participation.

Cultural capital characteristics including mother's educational expectations, parental involvement with the school, peer encouragement, educational materials in the home, and participation in art, music, or dance also vary significantly by type of enrollment. A higher percentage of graduates who did not enroll than of graduates who delayed or enrolled immediately had mothers with no postsecondary expectations for their children. Table 4.4 shows that 25% of those who did not enroll had a mother without postsecondary expectations compared with 7% of those who delayed enrollment and 3% of those who enrolled immediately. In contrast, more than one-third (38%) of those who enrolled immediately had a mother who expected a graduate or professional degree versus only 20% of those who delayed enrollment and 11% of those who enrolled immediately.

In terms of parental involvement with the school, the standardized mean is lower for those graduates who did not enroll (-0.148) than those who enrolled immediately (0.030). In terms of peer encouragement, the standardized mean is lower for those

graduates who delayed enrollment (-0.165) and did not enroll (-0.158) than for those who enrolled immediately (0.076). While high percentages of graduates in all groups had educational materials in the home, higher percentages of graduates who delayed enrollment (7%) or did not enroll (5%) did not have these educational materials in their home compared to those graduates who enrolled immediately (2%). Finally, there are statistically significant differences in the percentages of graduates who took art, music, or dance classes but the differences are not substantive. About 85% of all 1992 high school graduates never took a music, art, or dance class during high school.

Research Question 3: Characteristics of Graduates Who Delay Enrollment

The third research question examines the characteristics of graduates who delay enrollment (Table 4.5). The characteristics include those already shown above as well as additional post-high school characteristics. The analyses reveal differences in student characteristics by year of enrollment, but no clear patterns emerge in the nature of the differences. For virtually all characteristics, 1997 is an outlier from other years.

The initial characteristics examined are background characteristics. Table 4.5 shows that race/ethnicity does not vary by year of delayed enrollment. Among high school graduates who delay, 17% are Black, 11% are Hispanic, 4% are Asian, 1% are Native American, and 68% are White. In each year except 1997, at least half of enrollees were men. Men represented only 38% of enrollees in 1997 but about 50% of enrollees in 1993 and 1994, and more than 60% of enrollees in 1995-1996 and 1998-2000. Table 4.5 also shows that graduates who enrolled after 1996 had about ¼ (1998-2000) to ½ (1997) of a standard deviation lower socioeconomic status than those who enrolled in 1993.

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In terms of financial resources, year of enrollment varied by the importance of cost and aid and state unemployment rates, but not by two-year tuition rates. For those who delayed enrollment, the percentages reporting little importance of cost and aid in the 12th grade ranged from 7% to 9% in 1993, 1994, and 1998-2000, to 17% in 1995-1996 and 1997 (Table 4.5). Unemployment rates also vary by year of enrollment but with no pattern. The standardized average 1992 unemployment rate was lowest for those enrolling in 1995-1996 (-0.290) and the highest for those who first enrolled in 1998-2000 (0.177).

In terms of academic achievement, average test scores were substantially below the mean for all 1992 high school graduates regardless of year of enrollment. Average test scores were somewhat higher for 1992 high school graduates who first enrolled in 1993 (-0.273) than for high school graduates who first enrolled between 1995-1996 (-0.591) and 1997 (-0.670). The percentage of graduates who completed advanced math varied by year of enrollment, ranging from 6% to 7% in 1994 and 1997 to 14% in 1998-2000.

The following social capital characteristics vary by year of enrollment: number of financial aid contacts, parental involvement with the student's education, the number of parents that other parents talked to, and free and reduced lunch quartile. Table 4.5 shows that year of enrollment was unrelated to positive student-teacher relations, high school based support, and high school control. The percentage of graduates with less than two financial aid contacts in the 12th grade increased from 56% in 1993 to 72% in 1996 and then decreased to 53% in 1998-2000. Average parental involvement with their student's education was below the average for all 1992 high school graduates regardless of year of

delayed enrollment. Average parental involvement ranged from 15% of a standard

deviation below the mean in 1993 and 18% of a standard deviation below the mean in

1998-2000 to nearly 1 standard deviation below the mean in 1997. The percentage of

graduates whose parents talked to fewer than two other parents also varied by year of

enrollment. More than 40% of graduates who enrolled after 1997 had parents who spoke

to fewer than two other parents compared with only about 1/3 of graduates who enrolled

in 1993 and 1995-1996. About 13% of graduates who enrolled between 1998 and 2000

attended a high school that was in the fourth quartile (high) of free and reduced price

lunch program participation compared to less than 5% of graduates who enrolled in

college in 1993, 1995-1996, and 1997.

Table 4.5. Characteristics of 1992 high school graduates who delayed first enrollment in college by year of enrollment

Characteristics	1993 (1)	1994 (2)	1995-1996 (3)	1997 (4)	1998-2000 (5)	Total
Race	100.0	100.0	100.0	100.0	100.0	100.0
APA	4.3	3.5	4.0	0.0	2.0	3.6
Hispanic	10.7	9.4	8.8	15.5	10.5	10.6
Black	16.9	12.4	20.7	10.9	22.4	17.0
White	67.1	73.3	64.8	73.6	63.8	67.7
Amer. Indian/AK Native	0.9	1.5	1.8	0.0	1.3	1.1
Gender***	100.0	100.0	100.0	100.0	100.0	100.0
Male	51.7	49.8	65.5	38.2	61.4	53.6
Female	48.3	50.2	34.5	61.8	38.6	46.4
Socioeconomic Status***c,f,g						
Mean	-0.247	-0.326	-0.239	-0.806	-0.491	-0.323
Standard deviation	0.959	1.054	0.831	0.930	0.782	0.947
Importance of Cost and Aid***	100.0	100.0	100.0	100.0	100.0	100.0
Little Importance	7.1	8.8	16.5	16.5	8.9	9.5
Some Importance	44.7	30.8	29.3	56.5	37.0	40.5
Very Important	48.2	60.4	54.3	27.1	54.1	50.0
Two-Year Tuition						
Mean	-0.040	-0.158	0.024	0.011	0.016	-0.037
Standard deviation	0.958	1.012	0.873	1.095	0.948	0.963
Unemployment Rate*** b,e,h						
Mean	0.013	0.076	-0.290	-0.008	0.177	-0.010
Standard deviation	0.885	0.881	0.933	0.954	0.992	0.917

Table 4.5. Characteristics of 1992 high school graduates who delayed first enrollment in college by year of enrollment (continued)

Characteristics	1993 (1)	1994 (2)	1995-1996 (3)	1997 (4)	1998-2000 (5)	Total
Test Score *** [b, c]						
Mean	-0.273	-0.372	-0.591	-0.670	-0.495	-0.389
Standard deviation	0.855	0.923	0.955	0.962	0.808	0.895
Highest Math Coursework***	100.0	100.0	100.0	100.0	100.0	100.0
Advanced Math	11.0	6.9	9.2	6.3	13.7	10.1
Algebra 2	28.4	26.6	27.5	28.8	26.1	27.8
Algebra 1	45.7	51.7	54.6	55.9	46.4	48.7
Other or None	7.4	13.8	7.9	8.1	13.7	9.1
Missing or Unknown	7.4	1.0	0.9	0.9	0.0	4.3
# of Financial Aid Contacts***	100.0	100.0	100.0	100.0	100.0	100.0
None	22.0	20.2	25.7	37.5	29.5	24.1
One or Two	33.6	39.9	46.5	29.5	23.7	35.0
Three or Four	35.0	30.6	22.5	11.4	37.4	31.3
At least five	9.4	9.3	5.3	21.6	9.4	9.6
Parental Involvement w/ Student*** [c,f,g,i]						
Mean	-0.150	-0.257	-0.367	-0.922	-0.180	-0.257
Standard deviation	0.972	0.958	0.977	0.932	1.114	1.004
# of Parents Talk To***	100.0	100.0	100.0	100.0	100.0	100.0
None	6.9	8.0	11.8	20.5	9.2	9.0
1 or 2	26.0	29.4	19.2	26.0	32.8	26.0
3 to 5	28.5	33.1	45.3	24.7	26.1	31.6
6 to 10	18.8	10.4	13.3	12.3	16.8	16.1
11-20	9.7	9.8	4.4	8.2	9.2	8.6
20+	10.1	9.2	5.9	8.2	5.9	8.7

Table 4.5. Characteristics of 1992 high school graduates who delayed first enrollment in college by year of enrollment (continued)

Characteristics	1993 (1)	1994 (2)	1995-1996 (3)	1997 (4)	1998-2000 (5)	Total
Positive Student-Teacher Relations	100.0	100.0	100.0	100.0	100.0	100.0
Strongly Disagree	4.9	7.0	7.5	0.9	2.7	5.1
Disagree	10.5	11.4	13.3	18.7	9.5	11.6
Agree	23.9	24.4	23.9	14.0	32.0	24.1
Strongly Agree	60.7	57.2	55.3	66.4	55.8	59.3
High School Based Support	100.0	100.0	100.0	100.0	100.0	100.0
No	46.2	55.9	55.3	39.3	49.6	48.7
Yes	53.8	44.1	44.7	60.7	50.4	51.3
High School Control	100.0	100.0	100.0	100.0	100.0	100.0
Public	94.1	98.5	96.1	99.1	98.0	95.8
Private	5.9	1.5	3.9	0.9	2.0	4.2
Free and Reduced Lunch Quartile***	100.0	100.0	100.0	100.0	100.0	100.0
First	67.7	62.0	65.3	67.0	52.7	65.0
Second	22.6	26.0	25.8	13.8	24.0	23.0
Third	5.6	4.7	6.7	17.4	10.3	7.0
Fourth	4.2	7.3	2.2	1.8	13.0	5.0
Mother's Educ Expectation ***	100.0	100.0	100.0	100.0	100.0	100.0
None	4.7	8.5	9.3	15.9	8.6	6.8
2-year institution	21.7	24.2	33.7	31.7	30.5	25.1
Bachelor's	52.9	46.4	37.8	38.1	37.1	47.6
Graduate or Professional Degree	20.7	20.9	19.2	14.3	23.8	20.4

Table 4.5. Characteristics of 1992 high school graduates who delayed first enrollment in college by year of enrollment (continued)

Characteristics	1993 (1)	1994 (2)	1995-1996 (3)	1997 (4)	1998-2000 (5)	Total
Parental Involvement w/ School						
Mean	0.017	-0.021	-0.176	-0.199	0.250	-0.010
Standard deviation	0.980	0.979	0.986	0.910	1.316	1.022
Peer Encouragement						
Mean	-0.120	-0.326	-0.149	-0.232	-0.192	-0.168
Standard deviation	0.988	1.096	0.944	1.107	0.979	1.006
Educational Materials in Home***	100.0	100.0	100.0	100.0	100.0	100.0
No	5.9	7.2	4.5	26.9	3.4	7.2
Yes	94.1	92.8	95.5	73.1	96.6	92.8
Takes Music, Art or Dance Classes	100.0	100.0	100.0	100.0	100.0	100.0
Never	86.3	88.8	88.8	86.8	86.1	87.0
Less than 1 time a week	3.7	4.3	4.5	3.8	2.8	3.8
1 to 2 times a week	7.3	4.3	2.2	9.4	10.4	6.6
Almost very day	2.7	2.7	4.5	0.0	0.7	2.6
Married Before Enrolled***	100.0	100.0	100.0	100.0	100.0	100.0
Yes	6.1	10.0	9.3	25.7	8.1	8.8
No	93.9	90.0	90.7	74.3	91.9	91.2
Child Before Enrolled***	100.0	100.0	100.0	100.0	100.0	100.0
Yes	4.0	4.0	5.7	14.7	5.6	5.2
No	96.0	96.0	94.3	85.3	94.4	94.8

Table 4.5. Characteristics of 1992 high school graduates who delayed first enrollment in college by year of enrollment (continued)

Characteristics	1993 (1)	1994 (2)	1995-1996 (3)	1997 (4)	1998-2000 (5)	Total
1993 Total Earnings from Jobs***[a b c d]						
Mean	0.106	0.454	0.542	0.604	0.618	0.313
Standard deviation	0.933	1.000	0.852	0.948	1.340	1.013
Income Expected at Age 30						
Mean	-0.011	-0.119	0.060	-0.153	-0.094	-0.033
Standard deviation	1.165	0.316	1.400	0.356	0.352	1.037
Working Full- or Part-Time 1993	100.0	100.0	100.0	100.0	100.0	100.0
Full-time	69.9	63.4	62.0	65.5	66.0	67.0
Part-time	30.1	36.6	38.0	34.5	34.0	33.0
Occupation 1993***	100.0	100.0	100.0	100.0	100.0	100.0
Clerical	31.7	30.2	18.4	39.6	32.9	30.1
Craftsman	9.8	9.5	12.9	8.5	15.0	10.6
Farmer	2.4	2.1	1.0	0.0	2.1	1.9
Laborer	11.6	7.4	10.9	5.7	10.0	10.2
Manager	4.6	9.5	4.5	5.7	10.0	5.9
Military	2.1	6.9	11.9	6.6	5.7	5.0
Art or Ent. Professional	1.0	1.1	0.5	0.0	2.9	1.1
Professional	1.8	0.0	1.0	0.0	0.7	1.1
Owner	0.1	0.0	0.0	2.8	0.7	0.4
Service	20.3	18.0	22.4	12.3	10.0	18.5
Sales	12.9	14.8	9.0	15.1	7.1	12.1
Education	0.1	0.0	0.0	0.0	0.7	0.2
Technical	1.5	0.5	7.5	3.8	2.1	2.6
Not Working	0.1	0.0	0.0	0.0	0.0	0.1

Table 4.5. Characteristics of 1992 high school graduates who delayed first enrollment in college by year of enrollment (continued)

Characteristics	1993 (1)	1994 (2)	1995-1996 (3)	1997 (4)	1998-2000 (5)	Total
Expected Occupation at Age 30***	100.0	100.0	100.0	100.0	100.0	100.0
Clerical	4.1	6.7	3.9	22.0	6.3	5.7
Craftsman	3.5	6.1	12.1	8.5	7.0	5.9
Farmer	2.2	1.7	1.5	1.2	1.4	1.9
Homemaker	0.4	0.6	1.0	3.7	0.0	0.7
Laborer	0.0	0.0	1.0	2.4	0.7	0.4
Manager	7.8	4.4	6.3	4.9	4.9	6.7
Military	1.1	0.0	7.8	2.4	2.8	2.2
Art or Ent. Professional	7.2	5.6	6.8	3.7	4.2	6.4
Professional	40.1	27.2	22.3	17.1	39.9	34.1
Owner	5.9	5.6	8.3	4.9	7.0	6.2
Service	7.9	12.8	18.9	13.4	11.9	11.0
Sales	0.5	2.8	1.0	1.2	1.4	1.0
Education	6.8	16.1	2.4	7.3	2.1	6.9
Technical	9.9	9.4	6.3	6.1	10.5	9.1
Not Working	2.6	1.1	0.5	1.2	0.0	1.7

Source: Analyses of NELS:92/2000

***$p < .001$

[a] Denotes significance in comparison between Column 1 (1993 Enrollment) and Column 2 (1994 Enrollment), $p < .001$

[b] Denotes significance in comparison between Column 1 (1993 Enrollment) and Column 3 (1995-1996 Enrollment), $p < .001$

[c] Denotes significance in comparison between Column 1 (1993 Enrollment) and Column 4 (1997 Enrollment), $p < .001$

[d] Denotes significance in comparison between Column 1 (1993 Enrollment) and Column 5 (1998-2000 Enrollment), $p < .001$

[e] Denotes significance in comparison between Column 2 (1994 Enrollment) and Column 3 (1995-1996 Enrollment), $p < .001$

[f] Denotes significance in comparison between Column 2 (1994 Enrollment) and Column 4 (1997 Enrollment), $p < .001$

[g] Denotes significance in comparison between Column 3 (1995-1996 Enrollment) and Column 4 (1997 Enrollment), $p < .001$

[h] Denotes significance in comparison between Column 3 (1995-1996 Enrollment) and Column 5 (1998-2000 Enrollment), $p < .001$

[i] Denotes significance in comparison between Column 4 (1997 Enrollment) and Column 5 (1998-2000 Enrollment), $p < .001$

Notes: Data are weighted by normalized F4F2 panel weight. Continuous variables are standardized

In terms of cultural capital, mother's educational expectations and the presence of education materials in the home varied by year of enrollment (Table 4.5). Year of enrollment did not vary by the following variables: parental involvement with the school, peer encouragement, and participation in music, art, or dance classes. While a pattern did not emerge, the percentage of students whose mothers had no postsecondary expectations for them appears to be lower for those graduates who enrolled in 1993 (5%) than for graduates in other enrollment years (over 9%). Over 93% of all graduates who delayed enrollment had educational materials in their home with the exception of those who enrolled in 1997 (73%).

Table 4.5 also shows the post-high school characteristics of graduates who delay enrollment after high school. In terms of family responsibilities, Table 4 shows that the percentages of graduates who were married and/or had a child before enrollment were stable and low with the exception of 1997. Between 6% and 10% of the graduates who delayed enrollment in college were married at the time of enrollment, with the exception of those graduates who enrolled in 1997 (26%). Between 4% and 6% of graduates had a child when they first enrolled, again with the exception of those graduates who enrolled in 1997 (15%).

Table 4.5 shows that year of delayed enrollment did not vary by expected income at age 30 (collected in 1993), but by actual earnings in 1993. Post hoc tests with a Bonferoni adjustment showed significant differences between 1993 earnings of graduates who first enrolled in 1993 and 1993 earnings of high school graduates who first enrolled in each of the other years. Average 1993 earnings were between 1/3 and ½ standard deviation lower for graduates who enrolled in 1993 than for graduates who enrolled in later years.

About two-thirds of all graduates who delayed enrollment, regardless of when they first enrolled, were working full-time in 1993. Exploring the occupations that members of

the sample had in 1993 shows variation by year of enrollment. Table 4.5 shows the most represented occupations for all years of delayed enrollment were clerical (30%), service (19%), and sales (12%). About 12% of graduates who enrolled in college in 1995-1996 were in the military in 1993, a higher percentage than other years of first enrollment. Approximately 6% to 7% of graduates who enrolled in 1994, 1997, and 1998-2000 and only 2% of graduates who enrolled in 1993 reported being in the military as their 1993 occupation.

In the 1994 NELS follow-up graduates were asked their expected occupation at age 30. Table 4.5 shows that the most popular response was a professional position, reported by 34% of all respondents who delayed enrollment. The percent of high school graduates who reported in 1993 that they expected to hold a professional position (e.g., medical non-MD, engineering, physician, legal) at age 30 ranged from 17% of graduates who enrolled in college in 1997 to 40% of high school graduates who first enrolled in college in 1993 or between 1998 and 2000.

Research Question 4: Predictors of Timing of College Enrollment

The fourth research question examines the predictors of enrolling immediately into college or not enrolling rather than delaying enrollment. Multinomial logit analyses show that background characteristics such as race, gender, and socioeconomic status are significant predictors of enrollment, as are measures of academic preparation and achievement. None of the financial factors are significant predictors of time of enrollment net of other variables. Some social capital characteristics are significant predictors of time of enrollment, and only two cultural capital characteristics, mother's postsecondary expectations and peer encouragement are significant predictors of time of enrollment.

Table 4.6 shows the odds-ratios for enrolling in college immediately after graduating from high school and for not enrolling in college by 2000 relative to delaying college enrollment after controlling for all components of the conceptual model. The model includes the background characteristics of race, gender, and socioeconomic status. Financial resources, academic preparation and achievement, social capital, and cultural capital are also components of the model. Including measures of these constructs improves the explanatory power of the model but it is not easy to determine goodness of fit in the multinomial logit model. The final model correctly classifies the timing of enrollment for 75% of the cases.

With regard to research question four, the predictors of timing of enrollment, the results show that Asian, Hispanic, and Black high school graduates are less likely than White high school graduates to not enroll in college rather than delay enrollment in college when controlling for other background characteristics as well as measures of financial resources, academic achievement and preparation, social capital, and cultural capital (odds-ratios= 0.19, 0.39, and 0.54 respectively). Asian and Hispanic graduates are as likely as White graduates to enroll in college immediately after high school graduation after controlling for the above-mentioned variables. Black graduates are less likely than White graduates to enroll immediately rather than delay enrollment net of other variables (odds ratios= 0.56).

Women are less likely than men to not enroll in college than to delay enrollment (odds-ratio=0.67), but women are as likely as men to enroll immediately after high school graduation as they are to delay enrollment after controlling for other variables. Socioeconomic status is also a positive predictor of immediate enrollment (odds-ratio=1.40) and a negative predictor of not enrolling (odds-ratio=0.57) compared to delaying enrollment,

even after controlling for race, gender, financial resources, academic achievement and preparation, social capital, and cultural capital.

Academic achievement and preparation are important predictors of enrollment timing even after controlling for measures of background characteristics, social capital, and cultural capital. Table 4.6 shows that test scores are negatively related to the odds of not enrolling (odds-ratio=0.79) rather than delaying enrollment in college net of other variables. Test scores are unrelated to the probability of immediate enrollment rather than delayed enrollment. Table 4.6 shows that the odds of enrolling in college immediately after high school graduation rather than delaying enrollment increase with the level of math completed (odds-ratio for Algebra 2=2.00; odds-ratio for advanced math=3.41). Table4.6 also shows that high school graduates who completed at least algebra 2 are less likely than high school graduates with lower or no math to not enroll than they are to delay enrollment (odds-ratios= 0.51 for Algebra 1 and Algebra 2). The odds-ratio for advanced math on no enrollment is comparable in magnitude to the odds-ratios for algebra 1 and algebra 2 but it is not significant, likely because of the relatively small percentage of high school graduates who both took advanced math and delayed enrollment (Table 4.6).

The analyses revealed that one measure of social capital is related to not enrolling in college rather than delaying enrollment: number of financial aid contacts. The likelihood of not enrolling rather than delaying enrollment decreases only when a high school graduate has at least five financial aid contacts compared to zero contacts (odds ratio=0.32). Parental involvement in a student's education and high school support are also related to time of enrollment. Table 4.6 shows that after controlling for other variables, parental involvement in a student's education is a positive predictor of immediate enrollment rather than delayed

enrollment (odds-ratio=1.16). Table 4.6 also shows that, after controlling for other variables, the likelihood of enrolling immediately rather than delaying enrollment is higher (odds-ratio=1.63) for graduates who report high school support than for high school graduates who do not report this support. The other measures of social capital, number of parents that other parents talk to, student-teacher relations, school type, and free and reduced lunch quartile, were unrelated to timing of enrollment net of other variables.

Table 4.6 shows that two measures of cultural capital are related to timing of enrollment after controlling for other variables: mother's expectations for postsecondary education and peer encouragement. The odds of enrolling in college immediately after high school graduation rather than delaying enrollment are lower for those whose mothers expect them to attain no postsecondary education (odds ratio=0.50), complete two-years of college (odds ratio= 0.52), or earn a bachelor's degree (odds ratio= 0.61) than for those whose mothers expect them to attend graduate school, net of other variables. A graduate is substantially more likely to not enroll than to delay enrollment when a graduate's mother has no postsecondary expectations rather than expectations for graduate school attendance (odds-ratio=3.25). Table 4.6 shows that, after controlling for other variables, peer encouragement is a positive predictor of immediate enrollment compared to delaying enrollment (odds-ratio=1.78). Parental involvement with the school, educational materials in the home, and participation in art, music, and dance are all unrelated to timing of college enrollment net of other variables.

Table 4.6. Coefficients, standard errors, and odds-ratios for predictors of time of enrollment among 1992 high school graduates

Independent Variable	Immediate Enrollment			No Enrollment		
	B	Stand Error	Exp(B)	B	Stand Error	Exp(B)
Race/ethnicity						
Asian	0.14	0.19	1.15	-1.69	0.50	0.19***
Hispanic	0.09	0.15	1.09	-0.96	0.23	0.39***
Black	-0.58	0.12	0.56***	-0.63	0.18	0.54***
White (ref.)						
Gender						
Women	0.19	0.08	1.21	-0.41	0.11	0.67***
Men (ref.)						
SES	0.43	0.40	1.40***	-0.56	0.07	0.57***
Importance of Cost & Aid						
Very Important	0.07	0.13	1.07	0.05	0.18	1.05
Some Importance	0.05	0.13	1.05	-0.04	0.18	0.97
Little Importance (ref.)						
Tuition	-0.01	0.04	0.99	0.14	0.06	1.15
Unemployment	0.05	0.04	1.05	-0.20	0.05	0.98
Test Scores	0.15	0.04	1.16	-0.24	0.07	0.79***
Highest Level of Math						
Advanced Math	1.23	0.19	3.41***	-0.72	0.25	0.49
Algebra 2	0.69	0.17	2.00***	-0.67	0.19	0.51***
Algebra 1	0.11	0.16	1.12	-0.67	0.17	0.51***
Missing	-1.21	0.27	0.30***	-1.52	0.38	0.22***
None or other (ref.)						
# of Financial Aid Contacts						
One or Two	0.26	0.10	1.30	-0.20	0.13	0.82
Three or Four	0.21	0.11	1.24	-0.48	0.15	0.62
At Least Five	0.22	0.15	1.24	-1.13	0.24	0.32***
None (ref.)						
Par Involve with Stu Educ	0.15	0.04	1.16***	-0.02	0.06	0.98
# of Parents Talk To						
Missing	-0.55	0.16	0.58***	0.37	0.24	1.44
None	-0.46	0.20	0.63	0.20	0.30	1.23
1 or 2	-0.38	0.15	0.69	0.28	0.24	1.32
3 to 5	-0.19	0.15	0.82	0.23	0.24	1.26
6 to 10	0.10	0.16	1.11	0.02	0.25	1.02
11-20	0.24	0.18	1.27	0.49	0.28	1.63
20+(ref.)						
Student-Teacher Relations						
Strongly Agree	-0.69	0.20	0.93	0.24	0.27	1.27
Agree	-0.29	0.20	0.75	0.20	0.28	1.22
Disagree	-0.27	0.22	0.77	0.09	0.30	1.09
Strongly Disagree (ref.)						
High School Support						
Yes	0.49	0.08	1.63***	0.02	0.11	1.02
No (ref.)						

Table 4.6. Coefficients, standard errors, and odds-ratios for predictors of time of enrollment among 1992 high school graduates (continued)

Independent Variable	Immediate Enrollment			No Enrollment		
	B	Stand Error	Exp(B)	B	Stand Error	Exp(B)
School Type						
Private	0.49	0.16	1.64	-1.07	0.37	0.34
Public (ref.)						
Free and Reduced Lunch						
1st Quartile (Low %)	0.38	0.20	1.47	0.99	0.37	2.70
2nd Quartile	0.42	0.21	1.52	0.47	0.18	2.03
3rd Quartile	0.54	0.24	1.72	0.12	0.17	3.13
4th Quartile (ref.)						
Mother's PSE Expectations						
Missing	-1.01	0.13	0.36***	0.34	0.19	1.40
None	-0.70	0.20	0.50***	1.18	0.24	3.25***
Two-Year	-0.65	0.12	0.52***	0.47	0.18	1.60
Bachelor's	-0.50	0.10	0.61***	0.12	0.17	1.12
Grad School (ref.)						
Parental Involve w/ School	-0.02	0.04	0.98	-0.01	0.05	0.98
Peer Encouragement	0.16	0.04	1.78***	0.12	0.05	1.13
Educ Materials in Home						
Yes	0.35	0.19	1.42	0.75	0.25	2.11
No (ref.)						
Took Art, Music, or Dance						
Almost daily	0.29	0.23	1.34	0.39	0.29	1.47
1 to 2x Week	-0.21	0.15	0.81	-0.39	0.25	0.68
1x Wk	-0.16	0.19	0.85	0.18	0.28	1.20
Never (ref.)						
Number of Cases in Analyses	6,825					
(change -2 log likelihood)	8,122					
Pseudo R^2 (Cox & Snell)	0.30					
Percent Classified Correctly	75.4					

Notes: Enrollment status is relative to delayed enrollment in college.
Data weighted by normalized F4F2 panel weight.
***p<.001
Source: Analyses of NELS data

Research Question 5: Socioeconomic Status as a Predictor of Timing of College Enrollment

The fifth and final research question examines the relationship between socioeconomic status and timing of enrollment in college. The multinomial logistic regression analyses were conducted using no enrollment as the reference category. Using the blocked entry strategy suggested by the conceptual framework, the analyses show the change

in coefficients for socioeconomic status when additional blocks were added to the model (Table 4.7). The analyses reveal that, after controlling only for race/ethnicity and gender, 1992 high school graduates with higher socioeconomic status are more likely to both immediately enroll in college and delay enrollment than to not enroll in college by 2000 (columns 1 & 2). Table 4.7 shows the magnitude of the positive effect of socioeconomic status is larger for immediate enrollment (odds ratio=3.68) than for delayed enrollment (odds ratio=1.97). Adding measures of financial resources does not change the relationship between socioeconomic status and enrollment timing (columns 3 & 4). Adding measures of academic preparation and achievement somewhat reduces the magnitude of the positive effect of socioeconomic status on immediate enrollment from an odds-ratio of 3.6 to an odds-ratio of 2.7 (columns 3 & 5). Adding academic preparation and achievement to the model has little impact on the relationship between socioeconomic status and the likelihood of delayed enrollment rather than no enrollment. Also controlling for measures of social capital (columns 7 & 8) and cultural capital (columns 9 & 10) has minimal effect on the relationship between socioeconomic status and enrollment timing. Even after controlling for all other variables in the model, timing of enrollment continues to vary by socioeconomic status. As socioeconomic status increases so does the likelihood of both enrolling immediately and delaying enrollment rather than not enrolling. The magnitude of the positive effect of socioeconomic status continues to be larger for immediate enrollment (odds ratio= 2.45) than for delayed enrollment (odds ratio= 1.75) relative to no enrollment, even after controlling for other variables.

Table 4.7. Odds-ratios for predictors of enrollment timing of 1992 high school graduates (See Appendix G for Coefficients and Standard Errors for Complete Model)

	Background Characteristics		Financial Resources		Academic Prep and Achievement		Social Capital		Cultural Capital	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Independent Variable	Immed	Delay	Immed	Delay	Immed	Delay	Immed	Delay	Immed	Delay
Race/ethnicity										
Asian	4.68***	3.68***	4.08***	3.04***	4.38***	3.85***	4.68**	3.46***	6.20***	5.41***
Hispanic	2.75***	2.56***	2.87***	2.77***	3.25***	2.89***	3.62***	3.14***	2.83***	2.60***
Black	1.28	2.24***	1.23	2.21***	1.88***	2.73***	1.45	2.37***	1.04	1.88***
White (ref.)										
Gender										
Women	2.03***	1.40***	1.94***	1.37***	1.91***	1.37***	1.73***	1.33	1.82***	1.53***
Men (ref.)										
SES	3.68***	1.97***	3.62***	1.97***	2.66***	1.81***	2.52***	1.76***	2.45***	1.75***
Importance of Cost & Aid										
Very Important			1.62***	1.28	1.33	1.16	0.96	0.94	1.02	0.95
Some Importance			1.34	1.24	1.19	1.16	1.06	1.05	1.08	1.04
Little Importance (ref.)										
Tuition			0.92	0.89	0.90	0.89	0.86***	0.95	0.86	0.87
Unemployment			1.11	1.10	1.13	1.11	1.11	1.03	1.07	1.02
Test Scores					1.65***	1.36***	1.69***	1.34***	1.48***	1.27***
Highest Level of Math Taken										
Missing					1.27	3.46***	0.98	3.06***	1.36	4.57***
Advanced Math					10.00***	2.28***	6.22***	1.83	7.00***	2.05
Algebra 2					5.34***	2.61***	4.09***	2.12***	3.89***	1.95***
Algebra 1					2.11***	2.15***	2.12***	2.03***	2.19***	1.96***
None or other (ref.)										

Table 4.7. Odds-ratios for predictors of enrollment timing of 1992 high school graduates (continued)

Independent Variable	Background Characteristics (1) Immed	(2) Delay	Financial Resources (3) Immed	(4) Delay	Academic Prep and Achievement (5) Immed	(6) Delay	Social Capital (7) Immed	(8) Delay	Cultural Capital (9) Immed	(10) Delay
# of Financial Aid Contacts										
One or Two							1.60***	1.28	1.58***	1.22
Three or Four							2.05***	1.54	2.00***	1.62
At Least Five							3.91***	2.84***	3.82***	3.08***
None (ref.)										
Par Involve with Stu Educ							1.28***	1.04	1.18	1.02
# of Parents Talk To										
Missing							0.44***	0.72	0.40***	0.69
None							0.57	0.86	0.51	0.82
1 or 2							0.53	0.77	0.52	0.76
3 to 5							0.70	0.80	0.65	0.79
6 to 10							0.92	0.83	1.09	0.98
11-20							0.79	0.58	0.78	0.61
20+ (ref.)										
Student-Teacher Relations										
Strongly Agree							0.70	0.78	0.73	0.79
Agree							0.58	0.80	0.62	0.82
Disagree							0.70	0.91	0.70	0.92
Strongly Disagree (ref.)										
High School Support										
Yes							1.61***	0.97	1.59***	0.98
No (ref.)										
School Type										
Private							4.86***	2.82	4.76***	2.91
Public (ref.)										

Table 4.7. Odds-ratios for predictors of enrollment timing of 1992 high school graduates (continued)

	Background Characteristics		Financial Resources		Academic Prep and Achievement		Social Capital		Cultural Capital	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Independent Variable	Immed	Delay	Immed	Delay	Immed	Delay	Immed	Delay	Immed	Delay
Free and Reduced Lunch										
1st Quartile (Low %)							0.68	0.48	0.54	0.37
2nd Quartile							0.87	0.59	0.75	0.49
3rd Quartile							0.48	0.34***	0.55	0.32
4th Quartile (ref.)										
Mother's PSE Expectations										
Missing									0.26***	0.71
None									0.15***	0.31***
Two-Year									0.32***	0.63
Bachelor's									0.54***	0.89
Grad School (ref.)										
Parental Involve w/ School									1.00	1.02
Peer Encouragement									1.04	0.88
Educ Materials in Home										
Yes									0.67	0.47
No (ref.)										
Took Art, Music, or Dance										
Almost daily									0.91	0.68
1 to 2x Week									1.20	1.48
1x Wk									0.71	0.84
Never (ref.)										
# of Cases in Analyses	8,472		7,794		7,770		7,365		6,825	
(-2 log likelihood)	10,343		10,983		10,107		9,151		8,122	
Pseudo R^2 (Cox & Snell)	0.16		0.14		0.24		0.27		0.30	
Percent Classified Correctly	69.6		71.8		73.2		74.5		75.4	

Notes: Enrollment status is relative to not enrolling in college. Continuous variables are standardized. Data weighted by normalized F4F2 panel weight. ***$p<.001$ Source: Analyses of NELS data

CHAPTER 5

DISCUSSION, CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS
FOR FUTURE RESEARCH

Introduction

Using a combined conceptual model that is based on what is known about

traditional student enrollment (Cabrera & La Nasa, 2001; Perna, 2000; St. John, 2003),

and the National Education Longitudinal Study: 1992-2000 (NELS), this study builds on

the work of Hearn (1992) to examine the variables that differentiate a student's decision

to enroll in a two- or four-year college immediately after high school graduation, delay

first enrollment, or not enroll within eight years of graduating from high school. The

study also explores the relationship between socioeconomic status and timing of college

enrollment to determine if the socioeconomic status gap that is present in immediate

enrollment is also present in delayed enrollment.

Specifically, this study addresses the following five research questions:

1. What percent of high school graduates enroll in college in each of eight years
    after graduation from high school? What is the appropriate break point
    between immediate and delayed enrollment?

2. How do the characteristics of high school graduates who delay entry into a
    two- or four- year college degree program compare to the characteristics of
    high school graduates who enroll immediately after high school and the
    characteristics of high school graduates who do not enroll within eight years
    of high school graduation?

3. For high school graduates who delay enrollment, how does the timing of first enrollment vary by student characteristics?

4. What are the predictors of delaying entry into a two- or four-year college degree program for up to eight years rather than enrolling immediately after high school or not enrolling within eight years?

5. After controlling for other variables, is socioeconomic status related to the decision to delay enrollment in college?

The first section of this chapter discusses the findings of the study. Next, conclusions that may be drawn from the results are presented. Finally, the chapter discusses the implications of the study and suggests directions for future research.

Discussion

Research Question One: Timing of College Enrollment

Previous research does not utilize a consistent definition of immediate versus delayed enrollment. Hearn (1992) defined delayed enrollment as enrollment between one and two years of high school graduation. Other researchers have defined immediate college enrollment as enrollment in the fall after high school graduation (Perna, 2000), or within two years after high school graduation (Cabrera & La Nasa, 2001). Based on comparisons of the characteristics of students who enroll in 1992, 1993, and 1994, this study demonstrates that the end of the fall semester of the year of high school graduation is the appropriate break point between immediate and delayed enrollment.

While previous research (e.g., Hearn, 1992) has not examined delaying enrollment in college beyond two years after graduation from high school, the results of

this study provide a more complete picture as to the timing of college enrollment within eight years of high school graduation. The majority of 1992 graduates (69%) enrolled in college immediately after graduation from high school (i.e., during the 1992 calendar year), while only 17% delayed enrollment and 14% did not enroll within eight years of graduation from high school. The results of this study suggestthat 1992 high school graduates enrolled in college, immediately and after a delay, at a higher rate than 1980 high school graduates. Hearn found that 52% of high school graduates enrolled in college immediately after high school, while 10% delayed entry into college.

Research Question Two: Differences in High School Characteristics Based on Time of

College Enrollment

Hearn's (1992) descriptive analyses showed that higher percentages of graduates who were Black, and who had lower socioeconomic status, lower academic track, and lower test scores delayed entry into college than enrolled immediately after high school graduation. Consistent with Hearn's findings, this study shows that, compared to high school graduates who enrolled immediately, a higher percentage of high school graduates who delayed enrollment in college were Black, and had lower socioeconomic status and lower levels of academic preparation (as measured by test scores and highest level of math taken). The descriptive analyses also show that higher percentages of graduates who delayed enrollment rather than enrolled immediately were men, had no financial aid contacts, had parents who spoke to two or fewer other parents, attended public schools, and had a mother with no postsecondary expectations. Compared with high school graduates who enrolled immediately, higher percentages of graduates who delayed

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enrollment also had parents with lower levels of parental involvement with the student and the school.

In comparing delayed enrollment and no enrollment, the descriptive analyses show that higher percentages of graduates who delayed enrollment than of graduates who did not enroll were Black and women, took either advanced math or algebra 2, had three or more financial aid contacts, and had a mother who expected a bachelor's or graduate degree. Compared with graduates who did not enroll, graduates who delayed enrollment also had higher socioeconomic status, test scores, and parental involvement with the student and the school.

When looking at these three groups a pattern emerges. Graduates who delayed enrollment were in between graduates who enrolled immediately and graduates who did not enroll. For graduates who delayed enrollment, levels of socioeconomic status, test scores, average math coursework, mother's educational expectations , and parental involvement were lower than for graduates who enrolled in high school immediately after high school, but higher than for graduates who did not enroll within eight years of graduation from high school.

Research Question Three: Characteristics of Graduates Who Delay Enrollment

When the delayed enrollment group is broken out by year of enrollment, descriptive analyses show no clear patterns. Those who enrolled in 1997 tended to be outliers for most of the characteristics, with no clear rationale as to why this occurs. For example, race, level of math taken, high school support, and high school control, had similar percentages for those graduates who enrolled between 1995 and 2000. The

distributions vary for variables such as gender, importance of cost and aid, and number of

financial aid contacts. All graduates in the delayed group had test scores below the mean.

The importance of cost and aid and unemployment rates varied by year of enrollment, but

a pattern of difference did not emerge. As for post-high school characteristics, low

percentages of graduates who delayed enrollment were married and had a child. This is

consistent with previous research (Teachman & Polonko, 1988), which found that people

who were not married and did not have children were more likely to enroll in college.

This study also shows that the majority of those who delayed enrollment worked full-

time after graduating from high school, with large percentages holding jobs in clerical,

service, and sales fields. Large portions of graduates who delayed college enrollment

also aspired to hold a professional position by the age of 30.

Research Question Four: Predictors of Timing of College Enrollment

Due to a lack of research on delayed enrollment, the conceptual model for this

study is drawn primarily from combined models of college access developed for

traditional college enrollment (Cabrera & La Nasa, 2001; Perna, 2000; St. John, 2003).

These models focus on the decision to enroll in a four-year college immediately after

high school graduation compared to not enrolling. In this study, multinomial logit

analyses examine the relationship between variables measuring student background

characteristics, financial resources, academic preparation and achievement, social capital,

and cultural capital and timing of college enrollment. Timing of college enrollment has

three categories: enroll in a two-year or four-year college immediatelyafter high schoo l

graduation in 1992, delay enrollment into a two-year or four-year college, and not enroll

in college by 2000. The multinomial logit analyses show that background characteristics, academic preparation and achievement, and some measures of social capital and cultural capital were significant predictors of timing of enrollment.

Race/ethnicity was related to enrollment timing even after controlling for other variables.   Asian and Hispanic graduates were as likely as Whites to enroll immediately in college as they were to delay enrollment, but less likely than White graduates to not enroll than they were to delay enrollment. Black graduates were both less likely than Whites to enroll immediately and not enroll than they were to delay enrollment. This is consistent with findings of Hearn (1992) who found that Black graduates were more likely than Whites to delay college enrollment than enroll immediately. But, these findings are different than those of previous researchers comparing immediate enrollment to no enrollment. Cabrera and LaNasa (2001) and Perna (2000) found that Hispanic graduates were as likely as White graduates to enroll immediately in a four-year college, while Black graduates were more likely than Whites to enroll immediately in a four-year college after controlling for other variables. These different findings may be attributable to differences in the dependent variable. This study considers enrollment in a two-year or four-year college or university, while Cabrera and LaNasa and Perna consider only enrollment in four-year institutions. Differences in these findings may also suggest the importance of considering timing of enrollment when examining racial/ethnic group differences in college enrollment.

While Hearn (1992), in his comparison of immediate enrollment to delayed enrollment, found that men were more likely to delay enrollment than women, this study found that men and women were as likely to enroll immediately as to delay enrollment in

college. This study also found that women were more likely than men to delay enrollment than to not enroll after controlling for other variables. These findings, that overall women were more likely to enroll in college than men, are consistent with previous research on traditional college enrollment. Such research on immediate versus no enrollment at four-year colleges and universities generally shows that women are more likely than men to enroll in college immediately rather than not enroll after controlling for other variables (Manski & Wise, 1983; Perna, 2000).

This study shows that graduates who delayed enrollment in college had lower socioeconomic status net of other variables than those who enrolled immediately, but higher socioeconomic status than graduates who did not enroll. This relationship between enrollment timing and socioeconomic status is consistent with the work of Hearn (1992), who found that those who delayed enrollment tended to have lower socioeconomic status than those graduates who enrolled immediately. Other researchers (Cabrera & La Nasa, 2001; Perna & Titus, 2004) showed that high school graduates with higher incomes and socioeconomic status were more likely to enroll in college immediately rather than not enroll within one or two years of high school graduation.

Previous findings on the impact of financial resources on immediate versus no college enrollment highlighted the importance of college cost as a predictor (Kane, 1994; Manski & Wise, 1983; Paulsen & St. John, 2002; St. John, 2003). Contrary to those findings, none of the measures of financial resources were significant predictors of enrollment timing.

Measures of academic preparation and achievement were also significant predictors of enrollment timing. The multinomial analyses showed that academic

preparation and achievement were related to the timing of enrollment. Students with above average test scores were less likely to not enroll than they were to delay enrollment. Level of math was related to timing of enrollment as well. Graduates who took at least algebra 2 were more likely than graduates with lower levels of math to enroll immediately than to delay, while graduates with at least algebra 1 were less likely to not enroll than to delay. Hearn (1992) also found that academic preparation and achievement were positively related to immediate rather than delayed enrollment. Specifically, Hearn found that graduates who took a college preparatory curriculum and/or had grades that were mostly A's and B's were more likely than other graduates to enroll immediately rather than delay enrollment. Research on traditional college enrollment, which focused on immediate enrollment compared to no enrollment (e.g., Adelman, 2002; Cabrera & La Nasa, 2001; Perna, 2000; Perna & Titus, in press; Plank & Jordan, 2001), also showed that academic preparation and achievement were significant positive predictors of immediate rather than no college enrollment for high school graduates.

In terms of measures of social capital, parental involvement in a student's education and high school based support were positive predictors of enrollment timing. After controlling for other variables, graduates with higher parental involvement in student's education and greater high school support were more likely than others to enroll immediately than they were to delay enrollment. This finding is in line with research surrounding traditional college enrollment, comparing immediate and no enrollment (Cabrera & La Nasa, 2001; Perna, 2000), which found that graduates with higher levels of parental involvement were more likely to enroll in college immediately. Perna (2000)

also found that the lack of high school support was a negative predictor of immediate college enrollment.

Financial aid contacts were also related to enrollment timing. Graduates with at least five financial aid contacts were less likely to not enroll by 2000 than to delay enrollment, net of other variables. Cabrera and LaNasa (2001) and Plank and Jordan (2001) found financial aid contacts to be a positive predictor of enrolling in college immediately after high school rather than not enrolling within one to two years.

In terms of measures of cultural capital, only mother's postsecondary expectations for her student and peer encouragement were related to timing of college enrollment, net of other variables. Graduates whose mothers expected them to atain less than graduate school were less likely to immediately enroll than to delay enrollment, while graduates whose mothers did not expect them to enroll in postsecondary education were more likely to not enroll than to delay enrollment. Research examining immediate college enrollment also showed that parental expectations were positively related to enrollment in four-year colleges (Cabrera & La Nasa, 2001; Perna, 2000).

Peer encouragement was positively related to the likelihood of immediate college enrollment rather than delayed enrollment, but was unrelated to the likelihood of no enrollment rather than delayed enrollment. This finding suggests that as a high school graduate moves away from the high school experience, high school peers are no longer important to the college enrollment decision. Prior research on the role of peers is inconsistent. In her study of immediate college enrollment, McDonough (1997) found peers to be an important component of the four-year college choice process. In contrast,

using data from NELS:92/94, Perna (2000) found peers to be unrelated to immediate

enrollment in a four-year college.

Research Question Five: Socioeconomic Status as a Predictor of Timing of College

Enrollment

Like other research (Cabrera & La Nasa, 2001; Perna, 2000; Perna & Titus,

2004), this study shows that socioeconomic status is an important predictor of timing of

college enrollment, even after controlling for other variables. Graduates with above

average socioeconomic status were more likely than graduates with below average

socioeconomic status to both enroll immediately in college and delay enrollment than to

not enroll within eight years of high school graduation. Socioeconomic status had a

greater positive impact on the likelihood of immediate than delayed enrollment relative to

no enrollment. Controlling for other variables, especially measures of academic

preparation and achievement, explained only a small portion of the observed

socioeconomic status differences in enrollment timing. Similarly, Hearn (1992) found

that graduates who delayed enrollment tended to have lower socioeconomic status than

those graduates who enrolled immediately. Researchers who examined traditional

college enrollment (Cabrera & La Nasa, 2001; Perna, 2000; Perna & Titus, 2004) also

found that graduates with higher income and socioeconomic status were more likely to

enroll immediately in college than to not enroll within one to two years of high school

graduation.

Conclusions

There are at least six conclusions from this study. First, the appropriate break point between immediate and delayed enrollment is the end of the calendar year that a student graduates from high school. This finding will be helpful for other researchers because, until this point, there has been no consistent definition of immediate enrollment, due at least in part of a general lack of research on those who delay enrollment. Future research, policy and practice should adopt this definition of immediate versus delayed enrollment.

Second, this study revealed the value of distinguishing among delayed enrollment, immediate enrollment, and no enrollment. This research shows that there are differences in background characteristics, academic preparation and achievement, social capital, and cultural capital based on time of enrollment. Most existing research on college enrollment has been limited to traditional college enrollment patterns. However, this study shows that a substantial minority of high school graduates (17%) delay enrollment into college, that students who delay enrollment differ in important respects from other students, and that the predictors of delayed enrollment are different than the predictors of immediate and no enrollment.

Third, graduates who delay enrollment average fewer resources and weaker preparation than graduates who enroll immediately, but average more resources and better preparation than graduates who do not enroll. That is, compared with graduates who enrolled immediately, graduates who delayed enrollment had lower levels of socioeconomic status, math coursework, parental involvement in the school, high school support, peer encouragement, and mother's expectation for their postsecondary

attainment. But, compared to graduates who did not enroll by 2000, graduates who delayed enrollment had higher socioeconomic status, test scores, and math coursework, higher numbers of financial aid contacts, and higher maternal expectations for postsecondary attendance. Thus, the results of this study suggest that graduates who decide to enroll in college more than six months after graduation from high school differ in important respects from graduates who enroll immediately after high school graduation and graduates who do not enroll within eight years of graduation from high school.

Fourth, the combined model of college access for traditional students (Cabrera & La Nasa, 2001; Perna, 2000; St. John, 2003) is appropriate for examining the predictors of both immediate and delayed enrollment in college relative to no enrollment. The analyses in this study show that measures of background characteristics, academic preparation and achievement, social capital, and cultural capital are all predictors of enrollment timing. While research by others (Cabrera & La Nasa, 2001; Perna, 2000; Perna & Titus, in press; Plank & Jordan, 2001) on the immediate college enrollment of high school graduates showed the benefits of a model that includes concepts from economic human capital theory and cultural capital and social capital theories, this study shows the benefits of a conceptual model that draws on these theories for understanding delayed college enrollment. Specifically, the multinomial logit analyses show that some level of academic, cultural and social resources is required not only to enroll immediately into college after graduation from high school (as demonstrated in prior research), but also to delay enrollment in college.

Fifth, the multinomial logit analyses show that measures of social and cultural capital are related to the timing of college enrollment but seem to be relatively more

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important to the decision to enroll immediately than to the decision to delay enrollment. This finding suggests that graduates who delay enrollment are less connected with the home environment from their youth than graduates who enroll immediately, thereby reducing the influence of high-school-based measures of cultural and social capital. Post-high school experiences (e.g., marriage, children, home ownership, occupation) may play a greater role in the decision to delay enrollment than high school characteristics and experiences.

Finally, even after controlling for other variables, socioeconomic status is related to timing of college enrollment. Consistent with other research, those with lower socioeconomic status are less likely than their higher socioeconomic status peers to gain access to college at any time. St. John (2003) found that only 52% of college-qualified, low-income students enrolled in college within two years after high school, while 83% of high-income students enrolled immediately. He concluded that family income and lack of financial aid influence college-going. In this study, after controlling for other variables, socioeconomic status had a large positive impact on immediate enrollment into college, and a smaller but still positive impact on delayed enrollment into college, relative to not enrolling.

The continued statistical significance of socioeconomic status even after controlling for other variables suggests that there are barriers to immediate enrollment and delayed enrollment based on socioeconomic status that are not explained by this study. While the barriers are greater for immediate than delayed enrollment, the sources of the continued barriers to both types of enrollment are not measured by the variables in this model. The lower effect of socioeconomic status on delayed than immediate

enrollment suggests that individuals who delay may engage in some types of behaviors after leaving high school (e.g., saving money for college, receiving additionalguidance or direction) that helps mitigate at least some of the barriers to college enrollment that are related to socioeconomic status.

<center>Implications</center>

This study has at least five implications for theory, policy and practice. First, the research contributes to theory by testing the applicability of a conceptual model of traditional college enrollment to the decision to delay college enrollment. The findings suggest that measures of background characteristics and academic preparation and achievement are significant predictors of delaying enrollment. This study also shows that, while some measures of social and cultural capital used in traditional models may be relevant, more current proxies of these measures including post-high school characteristics may be necessary to understand enrollment timing.

Second, the findings from this study provide campus leaders and others at colleges and universities with additional information about the characteristics of students who delay enrollment. Specifically, this study shows that high school graduates who delay college enrollment have lower socioeconomic status, less academic preparation, and lower parental involvement, mother's expectations, and high school support for enrollment than students who enroll in college immediately after graduating from high school. Consistent with research showing that students who delay enrollment are less likely than others to persist (Choy, 2002), these findings suggest that students who delay enrollment may face greater challenges than students who enroll immediately in terms of adjusting to and succeeding in college once enrolled. In order to promote the academic

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success of students who delay enrollment, colleges and universities should consider the availability of programs to assist this population, including remedial education, tutoring, advising, and academic skills development. Colleges and universities should also consider adapting orientation programs to address the needs of students who delay enrollment and with encouraging a peer support system of graduates who delayed enrollment. Research shows that low-income adult students who receive such institutional support as advising, peer support programs, and childcare are more likely to complete their education (Matus-Grossman & Gooden, 2001).

Third, the findings from this study suggest that there is a need for greater special attention by policy makers and administrators to delayed enrollment behavior, in order to be able to improve college access for those who do not enroll immediately, in order to increase college access at all levels. Many policies and practices seem to focus almost exclusively on increasing immediate enrollment. For example, the Indiana 21[st] Century Scholars program provides scholarships only to those who enroll in college within two years of high school graduation. But, this research shows that 17% of graduates delay enrollment into college, and that students who delay enrollment rather than enroll immediately differ in several respects. That is, compared with graduates who enroll immediately, graduates who delay enrollment have lower levels of socioeconomic status, academic preparation, parental involvement, and mother's expectations for their postsecondary attainment. New policies and programs must focus on providing information about college at locations beyond the high school, at places such as social service agencies, job sites, shopping malls, and directed mailings. College preparation and remedial programs for those students who have graduated from high school, and did

not enroll in college immediately are also possible options to increase college-going for those who delay enrollment, since students who do not enroll in college immediately often have lower levels of participation, and lower levels of support for their college going.

Fourth, the finding that graduates who are from low socioeconomic status families are more likely to delay enrollment or not enroll than enroll immediately has implications for policy and practice. Controlling for other variables, especially measures of academic preparation and achievement, explains only a small portion of the observed socioeconomic status differences in enrollment timing. Since Hearn's (1992) study documenting socioeconomic status as a predictor of delaying enrollment in college, college enrollment rates have increased for all groups, but the enrollment gap between low- and high- socioeconomic status students is still present. The results of this study show that the likelihood of both enrolling immediately and delaying enrollment increase with socioeconomic status. These results suggest the continued need for policies and practices that address the barriers to both types of enrollment for high school graduates with low socioeconomic status.

One example of a state program that addresses the college access issue is the Indiana 21st Century Scholars program. Lower-income students in the state with a 2.0 grade point average who receive a high school diploma and agree to be alcohol and drug free can participate in a college preparation program and receive a full tuition award to an Indiana public college or university or the comparable amount the attend a private institution within the state, if the student enrolls within two years of graduating from high

school. For the 1999-2000 year, over 5,554 scholarships were awarded (*Twenty-first century scholars 1990-2001 progress report*, 2002).

Higher education institutions should also partner with schools and communities serving low-socioeconomic status graduates to sponsor outreach programs for students and parents that provide information about, and preparation for, college. Programs like The College Opportunity and Career Help (C.O.A.C.H.) program is an example of a partnership thatpairs Harvard students, faculty, and staff with Bosto n Public School students to provide information and assistance with the college admission process (*College Opportunity and Career Help Program*, 2005). In order to benefit students, it is recommended that college preparation programs such as these be structured as long term programs that create a supportive peer group, involve parents, and focus on academic preparation (Gandara & Bial, 2001; Swail & Perna, 2002).

Another example of a collaborative effort between an institution and the community in order to educate women who did not enroll in college immediately after high school is the Women in Community Development (WICD) program, established in 1997 at Wellesley College. This Boston-based collaborative program works within the confines of welfare reform to provide higher education access to low-income women. The goals of the program are to provide access to women so that they can achieve an undergraduate degree and increase their opportunities in the workforce. Program components include peer support, financial assistance, academic guidance, job referral, and leadership training (Marx, 2002). While this program has been successful at graduating students who were part of the program, this is a small program (less than 10 students), so does not impact a large group of people. A recommendation is for

programs such as this one to be replicated in order to increase the number of people who will gain access to college.

Fifth, a potential explanation for the failure of a substantial minority of students to not enroll immediately in college after high school graduation is the "disconnect" between K-12 and higher education (*A shared agenda: A leadership challenge to improve college access and success.*, 2004). The findings also suggest that students who are relatively less prepared and with relatively fewer resources are most affected by the disconnect. From her work with The Bridge Project, Venezia (2003) recommended that there needs to be better alignment in the K-16 system between state assessment tests, college placement tests, and coursework so that students are better able to understand what is needed to academically prepare for college.

Since individuals with a college education benefit not only in terms of higher personal economic returns but also in terms of cognitive learning, emotional and moral development, and good health, it is in the best interest of society to promote college enrollment at all ages (Bowen, 1997). Bowen concluded that educational attainment also has generational benefits for the children of these individuals. In other words, when a parent attains a college degree, his/her children are more likely to enroll in college in the future. Bowen also concluded that society benefits from individual participation in education through increased productivity, and a decreased need for public assistance and decreased unemployment. Funding and implementing policies to promote enrollment and completion for graduates who enroll immediately as well as delay enrollment will result in numerous benefits for individuals and society. Policymakers may be able to promote the use of resources for higher education, by highlighting the benefits of higher

education in order to improve economic development, and to provide greater stability in society (IHEP, 2005).

Recommendations for Future Research

The findings of this study add to a limited body of knowledge on delayed enrollment since graduates who delayed enrollment have not been studied since Hearn's (1992) work. This study demonstrates that the appropriate break point in differentiating between immediate and delayed enrollment is the end of the calendar year that a student graduates from high school. This study shows the importance of using a combined model of college enrollment which includes background characteristics, academic preparation and achievement, financial resources, social capital, and cultural capitalto examine the predictors of delaying college enrollment. While Hearn's (1992) model focused primarily on background characteristics and academic preparation and achievement, this research also explored the constructs of financial resources, social capital, and cultural capital. Measures of background characteristics, academic preparation and achievement, social capital, and cultural capital were related to timing of enrollment.

This study suggests at least four recommendations for future research. First, future research should further explore at least three aspects of the predictors of enrollment timing. This study found no relationship between financial factors and timing of enrollment in the multivariate analyses, but past research (Kane, 1994; Perna, 2000; Schwartz, 1985; St. John, 2003) found that higher tuition is negatively related to immediate college enrollment even after controlling for other variables. The descriptive analyses show that, regardless of timing, approximately 90% of graduates found cost and

aid to have at least some importance in their decision to enroll in college. These results suggest that the importance of cost and aid were unrelated because they are a high priority for all three categories of enrollment. Additional measures of financial resources, such as actual financial aid received, perceived cost and perceived availability of aid, impact of college cost increases, availability of tuition remission from the workplace, and actual cost of college attendance may provide more insight into the relationship between financial resources and enrollment timing.

Future research should also examine the effects on enrollment timing of post-high school characteristics and experiences (e.g., marriage, children, occupation, income). The descriptive analyses revealed no clear patterns except that rates of marriage and childbirth are generally low for individuals who delay enrollment. Further exploration of the relationship between post-high school characteristics and enrollment timing will likely enhance understanding of the predictors of delayed college enrollment.

Further research should also develop and examine additional and more complete proxies for social capital and cultural capital. This study found measures of the home environment and high-school environment are relatively less important to the decision to delay enrollment than the decision to enroll immediately suggesting that post-high school measures of social and cultural capital, such as the influence of the world of work after high school, may be required to more completely understand enrollment timing. Finding appropriate measures in the NELS dataset of these complex constructs is challenging. Many of the available proxies in NELS look at the quantity of interactions and not the quality, while other proxies measure "valued" forms of capital that may not be seen as equally important by all groups (Stanton-Salazar, 1997). Future research should identify

and explore additional measures of cultural and social capital, particularly measures for post-high school experiences and measures that go beyond quantity to indicate quality.

Second, future research should further explore delayed enrollment through qualitative research methods. Research that includes interviews or focus groups of high school graduates who delay enrollment would allow researchers to explore predictors of enrollment including quality and specifics about interactions with parents, teachers, and school counselors, a limitation of this study. A qualitative study would also allow for a broader study that may capture the importance of other predictors of timing of college enrollment that were not a part of the conceptual model that was tested.

Third, future research should study a more current group of high school graduates, and also include GED recipients. This study examined students who graduated from high school over ten years ago, and there have been many changes in society since that point. The changing economy and world events such as September 11th may limit the generalizability of findings from this study to later cohorts. Characteristics of the economy during the 1990s may have motivated some graduates to enroll in college in order to receive skills to get a better job with a higher rate of return, but changes in college costs may havedeterred the immediate and delayed enrollment of other graduates. World events may have impacted the number of graduates entering the military rather than enrolling immediately in college, which may lead to larger numbers of graduates who delay college enrollment.

Finally, further research should further explore the enrollment characteristics of the delayed enrollment group. While the characteristics of delayed enrollment (e.g., type of institution, full-time or part-time) were mentioned briefly, attentin to these

characteristics was not a primary focus of this dissertation. These descriptive analyses show that a higher percentage of students who delayed enrollment than of students who enrolled immediately choose to attend a two-year public institution. Nonetheless, the causes of this finding were not explored. More research is also needed about the experience of students who delay enrollment after they enroll, including their persistence to degree completion. Such research will generate a more complete picture of this enrollment group and suggest additional approaches for promoting college access and success for all students.

APPENDIX

Appendix A. Comparison of 1992 high school graduates who first enrolled in fall 1992 and spring 1993 by selected student characteristics

Student Characteristics	1992	1993	Total
Race***	100.0	100.0	100.0
APA	5.0	5.4	5.1
Hispanic	7.8	10.4	7.9
Black	8.6	22.7	9.4
White	78.0	61.5	77.1
Amer. Indian/AK Native	0.6	0.0	0.5
Gender	100.0	100.0	100.0
Male	47.8	43.5	47.6
Female	52.2	56.5	52.4
Socioeconomic Status***			
Mean	0.247	-0.366	0.214
Reading and Math IRT Score ***			
Mean	0.260	-0.306	0.229
Highest Level of Math Coursework***	100.0	100.0	100.0
Algebra 1	22.5	42.9	23.6
Algebra 2	36.2	26.2	35.7
Advanced Math	37.1	8.9	35.6
Missing, other or unknown math	4.2	22.0	5.1
Parental Involvement w/ Child***			
Mean	0.182	-0.166	0.172
Number of Parents Other Parents Talk To	100.0	100.0	100.0
None	5.4	3.9	5.4
1 or 2	18.6	25.8	18.9
3 to 5	28.4	33.2	28.6
6 to 10	22.4	21.0	22.3
11-20	12.6	10.0	12.5
20+	12.6	6.1	12.3
Positive Student-Teacher Relations	100.0	100.0	100.0
Strongly Disagree	2.6	3.3	2.6
Disagree	7.3	10.7	7.5
Agree	21.2	19.5	21.1
Strongly Agree	68.9	66.4	68.8

Appendix A. Comparison of 1992 high school graduates who first enrolled in fall
1992 and spring 1993 by selected student characteristics (continued)

Student Characteristics	1992	1993	Total
High School Based Support	100.0	100.0	100.0
No	31.7	36.1	31.9
Yes	68.3	63.9	68.1
High School Control***	100.0	100.0	100.0
Public	88.5	96.5	88.9
Private	11.5	3.5	11.1
Free and Reduced Lunch Quartile	100.0	100.0	100.0
First	72.9	69.3	72.7
Second	20.0	20.6	20.0
Third	4.9	5.6	4.9
Fourth	2.3	4.6	2.4
Mother's Highest Level of Education Expected***	100.0	100.0	100.0
No postsecondary Expectations	2.8	4.7	2.9
2-year academic or technical college	12.1	20.8	12.5
Bachelor's	46.8	52.7	47.1
Graduate or Professional Degree	38.3	21.9	37.4
Peer Encouragement			
Mean	0.079	-0.009	0.075
Parental Involvement w/ School			
Mean	0.024	-0.073	0.020
Educational Materials in the Home	100.0	100.0	100.0
No	2.3	3.6	2.3
Yes	97.7	96.4	97.7
Takes Music, Art or Dance Classes	100.0	100.0	100.0
Never	84.4	85.8	84.5
Less than 1 time a week	4.4	5.3	4.4
1 to 2 times a week	8.5	4.6	8.3
Almost very day	2.7	4.3	2.8

Source: Analyses of NELS:92/2000
Note: Data are weighted by normalized F4F2 panel weight
***p<.001

Appendix B. Comparison of 1992 high school graduates who first enrolled in college in spring 1993 versus academic year 1993-1994 enrollment by selected student characteristics

Student Characteristics	Sp 1993	1993-1994	Total
Race***	100.0	100.0	100.0
APA	5.4	3.8	4.4
Hispanic	10.4	10.3	10.3
Black	22.7	11.9	15.7
White	61.5	72.6	68.6
Amer. Indian/AK Native	0.0	1.4	0.9
Gender	100.0	100.0	100.0
Male	43.5	54.5	50.6
Female	56.5	45.5	49.4
Socioeconomic Status			
Mean	-0.366	-0.190	-0.252
Reading and Math IRT Score			
Mean	-0.306	-0.255	-0.274
Highest Level of Math Coursework	100.0	100.0	100.0
Algebra 1	42.9	48.3	46.4
Algebra 2	26.2	29.1	28.1
Advanced Math	8.9	11.5	10.6
Missing, other, or unknown math	22.0	11.1	14.9
Parent Involvement w/ Child			
Mean	-0.166	-0.256	-0.172
Number of Parents Other Parents Talk To	100.0	100.0	100.0
None	3.9	8.3	6.9
1 or 2	25.8	25.8	25.8
3 to 5	33.2	27.6	29.4
6 to 10	21.0	16.6	18.1
11-20	10.0	9.4	9.6
20+	6.1	12.3	10.2
Positive Student-Teacher Relations	100.0	100.0	100.0
Strongly Disagree	3.3	6.4	5.3
Disagree	10.7	10.9	10.9
Agree	19.5	26.1	23.8
Strongly Agree	66.4	56.5	60.0

Appendix B. Comparison of 1992 high school graduates who first enrolled in college in spring 1993 versus academic year 1993-1994 by selected student characteristics (continued)

Student Characteristics	Sp 1993	1993-1994	Total
High School Based Support***	100.0	100.0	100.0
No	36.1	52.6	46.7
Yes	63.9	47.4	53.3
High School Control			
Public	96.5	93.5	94.6
Private	3.5	6.5	5.4
Free and Reduced Lunch Quartile	100.0	100.0	100.0
First	69.3	66.7	67.6
Second	20.6	23.8	22.7
Third	5.6	5.9	5.8
Fourth	4.6	3.6	3.9
Mother's Highest Level of Education Expected	100.0	100.0	100.0
No postsecondary Expectations	4.7	5.4	5.1
2-year academic or technical college	20.8	22.3	21.8
Bachelor's	52.7	51.4	51.8
Graduate or Professional Degree	21.9	20.9	21.2
Parental Involvement w/ School			
Mean	-0.073	0.052	0.010
Peer Encouragement			
Mean	-0.009	-0.199	-0.132
Educational Materials in the Home	100.0	100.0	100.0
No	3.6	7.1	5.8
Yes	96.4	92.9	94.2
Takes Music, Art or Dance Classes	100.0	100.0	100.0
Never	85.8	86.8	86.5
Less than 1 time a week	5.3	3.1	3.9
1 to 2 times a week	4.6	8.1	6.9
Almost very day	4.3	2.0	2.8

Source: Analyses of NELS:92/2000

***p<.001

Note: Data are weighted by normalized F4F2 panel weight

Appendix C. Comparison of 1992 high school graduates who first enrolled in college in 1995 and 1996 calendar years by selected student characteristics

Student Characteristics	1995	1996	Total
Race***	100.0	100.0	100.0
APA	1.3	10.4	4.0
Hispanic	7.5	11.9	8.8
Black	26.9	6.0	20.7
White	64.4	65.7	64.8
Amer. Indian/AK Native	0.0	6.0	1.8
Gender	100.0	100.0	100.0
Male	65.6	65.2	65.5
Female	34.4	34.8	34.5
Socioeconomic Status			
Mean	-0.131	-0.486	-0.239
Standard deviation	0.759	0.938	0.831
Reading and Math IRT Score			
Mean	-0.631	-0.508	-0.591
Standard deviation	0.970	0.925	0.955
Highest Level of Math Coursework	100.0	100.0	100.0
Algebra 1	55.6	52.2	54.6
Algebra 2	25.2	33.3	27.6
Advanced Math	12.5	2.9	9.6
Missing, other or unknown math	6.7	11.6	8.2
Parent Involvement w/ Child			
Mean	-0.333	-0.428	-0.363
Standard deviation	1.032	0.848	0.976
Number of Parents Other Parents Talk To***	100.0	100.0	100.0
None	14.1	7.3	12.3
1 or 2	18.8	20.0	19.1
3 to 5	52.3	25.5	45.1
6 to 10	6.0	32.7	13.2
11-20	3.4	7.3	4.4
20+	5.4	7.3	5.9
Positive Student-Teacher Relations	100.0	100.0	100.0
Strongly Disagree	10.1	1.5	7.5
Disagree	12.0	14.7	12.8
Agree	21.5	30.9	24.3
Strongly Agree	56.3	52.9	55.3

Appendix C. Comparison of 1992 high school graduates who first enrolled in college in 1995 and 1996 calendar years by selected student characteristics(continued)

Student Characteristics	1995	1996	Total
High School Based Support	100.0	100.0	100.0
No	57.7	50.0	55.3
Yes	42.3	50.0	44.7
High School Control	100.0	100.0	100.0
Public	98.1	91.3	96.1
Private	1.9	8.7	3.9
Free and Reduced Lunch Quartile	100.0	100.0	100.0
First	65.4	64.7	65.2
Second	26.4	23.5	25.6
Third	6.3	7.4	6.6
Fourth	1.9	4.4	2.6
Mother's Highest Level of Education Expected	100.0	100.0	100.0
No postsecondary Expectations	8.8	10.2	9.3
2-year academic or technical college	30.1	40.7	33.7
Bachelor's	44.2	25.4	37.8
Graduate or Professional Degree	16.8	23.7	19.2
Parental Involvement w/ School			
Mean	-0.120	-0.321	-0.176
Standard deviation	1.084	0.663	0.988
Peer Encouragement			
Mean	-0.026	-0.428	-0.146
Standard deviation	0.844	1.101	0.944
Educational Materials in the Home	100.0	100.0	100.0
No	3.7	6.2	4.5
Yes	96.3	93.8	95.5
Takes Music, Art or Dance Classes	100.0	100.0	100.0
Never	91.7	83.1	89.2
Less than 1 time a week	4.5	3.1	4.1
1 to 2 times a week	0.6	6.2	2.3
Almost very day	3.2	7.7	4.5

Source: Analyses of NELS:92/2000

***p<.001

Note: Data are weighted by normalized F4F2 panel weight

Appendix D. Comparison of 1992 high school graduates who first enrolled in college in 1996 and 1997 calendar years by selected student characteristics

Student Characteristics	1996	1997	Total
Race***	100.0	100.0	100.0
APA	10.4	0.0	4.0
Hispanic	11.9	15.5	14.1
Black	6.0	10.9	9.0
White	65.7	73.6	70.6
Amer. Indian/AK Native	6.0	0.0	2.3
Gender***	100.0	100.0	100.0
Male	65.2	38.2	48.6
Female	34.8	61.8	51.4
Socioeconomic Status			
Mean	-0.486	-0.806	-0.682
Standard deviation	0.938	0.930	0.943
Reading and Math IRT Score			
Mean	-0.508	-0.670	-0.607
Standard deviation	0.925	0.962	0.948
Highest Level of Math Coursework	100.0	100.0	100.0
Algebra 1	52.2	56.4	54.7
Algebra 2	33.3	29.1	30.7
Advanced Math	2.9	6.4	5.0
Missing, other or unknown math	8.7	8.1	9.6
Parental Involvement w/ Child***			
Mean	-0.428	-0.918	-0.733
Standard deviation	0.848	0.931	0.929
Number of Parents Other Parents Talk To	100.0	100.0	100.0
None	7.3	20.5	14.8
1 or 2	20.0	26.0	23.4
3 to 5	25.5	24.7	25.0
6 to 10	32.7	12.3	21.1
11-20	7.3	8.2	7.8
20+	7.3	8.2	7.8
Positive Student-Teacher Relations	100.0	100.0	100.0
Strongly Disagree	1.5	0.9	1.1
Disagree	14.7	18.7	17.1
Agree	30.9	14.0	20.6
Strongly Agree	52.9	66.4	61.1

Appendix D. Comparison of 1992 high school graduates who first enrolled in college in 1996 versus 1997 by selected student characteristics. (continued)

Student Characteristics	1996	1997	Total
High School Based Support	100.0	100.0	100.0
No	50.0	39.3	43.6
Yes	50.0	60.7	56.4
High School Control	100.0	100.0	100.0
Public	91.3	99.1	96.1
Private	8.7	0.9	3.9
Free and Reduced Lunch Quartile	100.0	100.0	100.0
First	64.7	67.0	66.1
Second	23.5	13.8	17.5
Third	7.4	17.4	13.6
Fourth	4.4	1.8	2.8
Mother's Highest Level of Education Expected	100.0	100.0	100.0
No postsecondary Expectations	10.2	15.9	13.1
2-year academic or technical college	40.7	31.7	36.1
Bachelor's	25.4	38.1	32.0
Graduate or Professional Degree	23.7	14.3	18.9
Parental Involvement w/ School			
Mean	-0.321	-0.199	-0.252
Standard deviation	0.663	0.911	0.812
Peer Encouragement			
Mean	-0.428	-0.229	-0.304
Standard deviation	1.101	1.107	1.106
Educational Materials in the Home***	100.0	100.0	100.0
No	6.2	26.9	19.1
Yes	93.8	73.1	80.9
Takes Music, Art or Dance Classes	100.0	100.0	100.0
Never	83.1	86.8	85.4
Less than 1 time a week	3.1	3.8	3.5
1 to 2 times a week	6.2	9.4	8.2
Almost very day	7.7	0.0	2.9

Source: Analyses of NELS:92/2000
***$p < .001$
Note: Data are weighted by normalized F4F2 panel weight

Appendix E. Comparison of 1992 high school graduates who first enrolled in college in 1998, 1999, and 2000 calendar years by selected student characteristics

Student Characteristics	1998	1999	2000	Total
Race	100.0	100.0	100.0	100.0
APA	1.2	3.4	0.0	2.0
Hispanic	14.3	5.2	9.1	10.5
Black	26.2	15.5	27.3	22.2
White	57.1	74.1	63.6	64.1
Amer. Indian/AK Native	1.2	1.7	0.0	1.3
Gender	100.0	100.0	100.0	100.0
Male	67.9	51.7	63.6	61.4
Female	32.1	48.3	36.4	38.6
Socioeconomic Status				
Mean	-0.364	-0.586	-0.976	-0.491
Standard deviation	0.791	0.722	0.827	0.782
Reading and Math IRT Score				
Mean	-0.431	-0.623	-0.308	-0.495
Standard deviation	0.725	0.895	0.914	0.808
Highest Level of Math Coursework	100.0	100.0	100.0	100.0
Algebra 1	40.5	51.7	63.6	46.4
Algebra 2	25.0	25.9	36.4	26.1
Advanced Math	23.8	1.7	0.0	13.7
Missing, other or unknown math	10.7	20.7	0.0	13.8
Parent Involvement w/ Child				
Mean	-0.013	-0.382	-0.418	-0.176
Standard deviation	1.171	0.989	1.167	1.113
Number of Parents Other Parents Talk To	100.0	100.0	100.0	100.0
None	2.9	22.5	0.0	9.2
1 or 2	42.9	17.5	22.2	32.8
3 to 5	27.1	25.0	22.2	26.1
6 to 10	15.7	17.5	22.2	16.8
11-20	5.7	12.5	22.2	9.2
20+	5.7	5.0	11.1	5.9
Positive Student-Teacher Relations	100.0	100.0	100.0	100.0
Strongly Disagree	2.5	0.0	10.0	2.1
Disagree	8.6	10.9	10.0	9.6
Agree	43.2	20.0	10.0	32.2
Strongly Agree	45.7	69.1	70.0	56.2

Appendix E. Comparison of 1992 high school graduates who first enrolled in college in 1998, 1999, and 2000 calendar years by selected student characteristics (continued)

Student Characteristics	1998	1999	2000	Total
High School Based Support	100.0	100.0	100.0	100.0
No	44.4	52.9	75.0	49.3
Yes	55.6	47.1	25.0	50.7
High School Control	100.0	100.0	100.0	100.0
Public	98.8	96.6	100.0	98.0
Private	1.2	3.4	0.0	2.0
Free and Reduced Lunch Quartile	100.0	100.0	100.0	100.0
First	46.9	61.1	60.0	53.1
Second	18.5	31.5	20.0	23.4
Third	13.6	7.4	0.0	10.3
Fourth	21.0	0.0	20.0	13.1
Mother's Highest Level of Education Expected	100.0	100.0	100.0	100.0
No postsecondary Expectations	9.3	6.8	12.5	8.5
2-year academic or technical college	31.5	29.5	37.5	31.1
Bachelor's	40.7	34.1	25.0	36.8
Graduate or Professional Degree	18.5	29.5	25.0	23.6
Parental Involvement w/ School				
Mean	0.531	-0.152	-0.053	0.250
Standard deviation	1.525	0.855	0.746	1.137
Peer Encouragement				
Mean	-0.288	-0.108	0.193	-0.189
Standard deviation	0.929	1.064	0.858	0.979
Educational Materials in the Home	100.0	100.0	100.0	100.0
No	2.4	1.9	18.2	3.4
Yes	97.6	98.1	81.8	96.6
Takes Music, Art or Dance Classes	100.0	100.0	100.0	100.0
Never	80.2	90.7	100.0	85.5
Less than 1 time a week	4.9	0.0	0.0	2.8
1 to 2 times a week	14.8	7.4	0.0	11.0
Almost very day	0.0	1.9	0.0	0.7

Source: Analyses of NELS:92/2000

***p<.001 Note: Data are weighted by normalized F4F2 panel weight

Appendix F. Comparison of 1992 high school graduates who first enrolled in college in 1992, 1993, and 1994 calendar years by selected student characteristics

Student Characteristics	1992	1993	1994	Total
Race*** [a]	100.0	100.0	100.0	100.0
APA	5.0	4.3	3.5	4.2
Hispanic	8.0	10.7	9.4	8.6
Black	8.5	16.9	12.4	10.5
White	78.0	67.1	73.3	75.9
Amer. Indian/AK Native	0.6	0.9	1.5	0.9
Gender***	100.0	100.0	100.0	100.0
Male	47.7	51.7	49.8	50.4
Female	52.3	48.3	50.2	49.6
SES*** [a]				
Mean	0.236	-0.247	-0.326	0.002
Standard deviation	0.950	0.959	1.054	0.999
Importance of Cost and Aid***	100.0	100.0	100.0	100.0
Little Importance	10.5	7.1	8.8	10.5
Some Importance	42.6	44.7	30.8	42.0
Very Important	46.9	48.2	60.4	47.6
Two-Year Tuition				
Mean	0.002	-0.366	-0.154	0.004
Standard deviation	1.018	0.956	1.009	0.997
Unemployment Rate***				
Mean	0.020	0.010	0.072	-0.003
Standard deviation	1.027	0.884	0.880	0.999
Test Score *** [a]				
Mean	0.248	-0.273	-0.372	0.005
Standard deviation	0.937	0.855	0.923	0.999
Highest Math Coursework*** [a]	100.0	100.0	100.0	100.0
Algebra 1	22.8	45.7	52.0	30.9
Algebra 2	36.1	28.4	26.6	32.2
Advanced Math	36.6	11.0	6.9	27.7
Missing or Unknown	1.0	7.4	1.0	1.9
Other or None	3.8	7.5	14.5	7.9

Appendix F. Comparison of 1992 high school graduates who first enrolled in college in 1992, 1993, and 1994 calendar years by selected student characteristics (continued)

Student Characteristics	1992	1993	1994	Total
# of Fin Aid Contacts***[a]	100.0	100.0	100.0	100.0
None	16.5	22.0	20.2	19.7
One or Two	29.3	33.6	39.9	31.0
Three or Four	41.1	35.0	30.6	37.6
At least five	13.1	9.4	9.3	11.7
Parental Involvementw/ Stu dent***[a]				
Mean	0.025	0.019	-0.011	-0.001
Standard deviation	0.931	0.871	0.898	0.930
# of Parents Talk To*** [a]	100.0	100.0	100.0	100.0
None	5.5	6.9	8.0	6.6
1 or 2	18.6	26.0	29.4	20.6
3 to 5	28.8	28.5	33.1	29.4
6 to 10	22.2	18.8	10.4	20.9
11-20	12.4	9.7	9.8	11.4
20+	12.5	10.1	9.2	11.1
+ Student-Teacher Relations*** [a]	100.0	100.0	100.0	100.0
Strongly Disagree	2.6	4.9	7.0	3.1
Disagree	7.3	10.5	11.4	8.6
Agree	21.0	23.9	24.4	22.5
Strongly Agree	69.1	60.7	57.2	65.8
HS Based Support*** [a]	100.0	100.0	100.0	100.0
No	32.0	46.2	55.9	37.1
Yes	68.0	53.8	44.1	62.9
High School Control*** [a]	100.0	100.0	100.0	100.0
Public	88.8	94.1	98.5	91.4
Private	11.2	5.9	1.5	8.6
Free & Reduced Lunch Quart*** [a]	100.0	100.0	100.0	100.0
1st (Low Participation)	72.7	67.7	62.0	69.7
2nd	19.9	22.6	26.0	21.2
3rd	5.2	5.6	4.7	6.3
4th (High Participation)	2.2	4.2	7.3	2.7

Appendix F. Comparison of 1992 high school graduates who first enrolled in college in 1992, 1993, and 1994 calendar years by selected student characteristics (continued)

Student Characteristics	1992	1993	1994	Total
Mother's Educ Expectations*** [a]	100.0	100.0	100.0	100.0
No Expectations	2.8	4.7	8.5	6.0
2-year Institution	12.5	21.7	24.2	16.9
Bachelor's	46.7	52.9	46.4	45.0
Grad or Prof Degree	38.0	20.7	20.9	32.1
Parental Involvement w/ School***				
Mean	0.160	-0.125	-0.204	0.004
Standard deviation	0.894	0.913	0.872	0.939
Peer Encouragement*** [a]				
Mean	0.076	-0.117	-0.323	0.172
Standard Deviation	0.981	0.988	1.096	1.22
Educ Materials in the Home*** [a]	100.0	100.0	100.0	100.0
No	2.2	5.9	7.2	3.5
Yes	97.8	94.1	92.8	96.5
Particpate in the Arts***	100.0	100.0	100.0	100.0
Never	84.1	86.3	88.8	85.3
Less than 1 time a week	4.5	3.7	4.3	4.2
1 to 2 times a week	8.4	7.3	4.3	7.4
Almost very day	3.0	2.7	2.7	3.1

Source: Analyses of NELS:92/2000
***p<.001
[a] Denotes significance in comparison between Column 1 (Enrollment in 1992) and Column 2 (Enrollment in 1993), p< .001
Note: Data are weighted by normalized F4F2 panel weight
All continuous variables are standardized

Appendix G. Odds-ratios, co-efficients, and standard errors based on time of enrollment, with no enrollment as the baseline group

Independent Variable	Immediate Enrollment			Delayed Enrollment		
	B	Stand Error	Exp(B)	B	Stand Error	Exp(B)
Race/ethnicity						
Asian	1.83	0.48	6.20***	1.69	0.50	5.41***
Hispanic	1.04	0.22	2.83***	0.96	0.23	2.60***
Black	0.04	0.17	1.04	0.63	0.18	1.89***
White (ref.)						
Gender						
Women	0.60	0.10	1.82***	0.41	0.11	1.51***
Men (ref.)						
SES	0.90	0.07	2.45***	0.56	0.07	1.75***
Importance of Cost and Aid						
Very Important	0.02	0.17	1.02	-0.05	0.18	0.95
Some Importance	0.08	0.17	1.08	0.04	0.18	1.04
Little Importance (ref.)						
Tuition	-0.15	0.05	0.86	-0.14	0.06	0.87
Unemployment	0.07	0.05	1.07	0.02	0.05	1.02
Test Scores	0.39	0.06	1.48***	0.24	0.07	1.27***
Highest Level of Math						
Adv Math	1.95	0.23	7.00***	0.72	0.25	2.05
Algebra 2	1.36	0.18	3.90***	0.67	0.19	1.95***
Algebra 1	0.78	0.16	2.19***	0.67	0.17	1.96***
Missing	0.31	0.40	1.36	1.52	0.38	4.57***
None or other (ref.)						
# of Financial Aid contacts						
One or Two	0.46	0.13	1.58***	0.20	0.13	1.22
Three or Four	0.70	0.14	2.00***	0.48	0.15	1.62
At Least Five	1.34	0.23	3.82***	1.13	0.24	3.08***
None (ref.)						
Par Involve with Stu Educ	0.17	0.06	1.18	0.02	0.06	1.02
# of Parents Talk To						
Missing	-0.913	0.22	0.40***	-0.37	0.24	0.69
None	-0.67	0.28	0.51	-0.20	0.30	0.82
One or Two	-0.66	0.22	0.52	-0.28	0.24	0.76
Three to Five	-0.42	0.22	0.65	-0.23	0.24	0.79
Six to Ten	0.08	0.23	1.09	-0.17	0.25	0.98
Eleven to Twenty	-0.25	0.25	0.78	-0.49	0.28	0.61
20+ (ref.)						
Student-Teacher Relations						
Strongly Agree	-0.31	0.25	0.73	-0.24	0.27	0.79
Agree	-0.49	0.26	0.62	-0.20	0.28	0.82
Disagree	-0.35	0.28	0.70***	-0.09	0.30	0.92
Strongly Disagree (ref.)						

Appendix G. Odds-ratios, co-efficients, and standard errors based on time of enrollment, with no enrollment as the baseline group (continued)

Independent Variable	Immediate Enrollment			Delayed Enrollment		
	B	Stand Error	Exp(B)	B	Stand Error	Exp(B)
High School Support						
Yes	0.47	0.10	1.59***	-0.02	0.11	0.98
No (ref.)						
School Type						
Private School	1.56	0.35	4.76***	1.07	0.37	2.91
Public (ref.)						
Free and Reduced Lunch						
1st Quartile (Low %)	-0.61	0.33	0.54	-0.99	0.34	0.37
2nd Quartile	-0.29	0.34	0.75	-0.71	0.34	0.49
3rd Quartile	-0.60	0.36	0.55	-1.14	0.36	0.32
4th Quartile (ref.)						
Mother's PSE Expectations						
Missing	-1.35	0.18	0.26***	-0.34	0.19	0.71
None	-1.88	0.22	0.15***	-1.18	0.24	0.31***
Two-Year	-1.12	0.17	0.33***	-0.47	0.18	0.63
Bachelor's	-0.61	0.16	0.54***	-0.12	0.17	0.89
Grad School (ref.)						
Par Involve w/ School	-0.00	0.05	1.00	0.02	0.05	1.02
Peer Encouragement	0.04	0.05	1.04	-0.12	0.05	0.89
Educ Materials in Home						
Yes	-0.40	0.25	0.67	-0.75	0.25	0.47
No (ref.)						
Took Art, Music, or Dance						
Almost daily	-0.10	0.25	0.91	-0.39	0.29	0.68
1 to 2x Week	0.18	0.24	1.20	0.39	0.25	1.48
1x Wk	-0.34	0.26	0.70	-0.18	0.28	0.84
Never (ref.)						
Number of Cases in Analyses	6,825					
change -2 log likelihood	8,122					
Pseudo R^2 (Cox & Snell)	0.30					
Percent Classified Correctly	75.4					

Notes: Enrollment status is relative to not enrolling in college.
Data weighted by normalized F4F2 panel weight.
***p<.001
Source: Analyses of NELS data

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