Measuring the Educational Attainment of Proprietary Students:

An Assessment of Equal Opportunity from National Data

by

Xing Cheng

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APPROVED:

Darrel A. Clowes, Chairman

Loyd D. Andrew

Samuel D. Morgan

John A. Muffo

David J. Parks

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(ABSTRACT)

This study was designed to provide an overall estimate of proprietary schools' contribution to the equality of educational opportunity in the postsecondary educational system. Two compatible data bases, the National Longitudinal Study of the High School Class of 1972 (NLS) and High School and Beyond (HSB), were used to draw two parallel proprietary samples. Each proprietary sample was compared with its counterparts in the community college and the four-year institution sectors. Gender, race, socioeconomic status, aptitude, and students' and their mothers' educational aspiration were the factors tested in the study to determine the extent to which they contribute to students' choice of proprietary schools and their educational attainment in a given period of time.

Discriminant analysis was utilized to differentiate the characteristics of proprietary school enrollees from the characteristics of those who entered community colleges and four-year institutions. Multiple regression was

conducted on each group of students to identify the major factors associated with students' educational attainment by the type of institution of first enrollment.

The major findings of this study include: (1) Proprietary schools enrolled a considerable number of "disadvantaged" students: women, minorities, people from low socioeconomic background, and those with low aptitude scores. (2) Students' and their mothers' educational aspirations were the most influential factors affecting students' choice among the three types of postsecondary institutions, and proprietary students' aspirations were lower than that of community college and four-year institution students. (3) Most proprietary students did not reach the level of a two-year degree or beyond, and those who eventually attained a two-year degree or beyond were very likely to be students with high aptitude. (4) Study of the delayed entrants into proprietary schools confirmed the major findings derived from the initial entrants, except the aspiration variable played a less significant role in determining the educational attainment of delayed entrants than that for the initial entrants.

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Chapter I

Introduction

1.1 Background

As a result of the civil rights movement and the women's movement, minority, female, and working class access to postsecondary education has steadily increased in the past few decades, even at prestigious institutions (Karen, 1990). But an often neglected category in most of the existing studies on educational attainment is that of postsecondary vocational and technical schools, the schools "charged with providing most career training at the postsecondary level" (Wilms, 1975: 2). Specifically, this category is comprised of "community colleges and technical schools in the public sector and proprietary schools in the private sector" (Wilms, 1975: 2).

The present study focuses on postsecondary proprietary schools, the schools that are privately owned and operated, profit-making, and vocationally oriented. However, it was not until 1973, when the National Center for Educational Statistics (NCES) first published the *Directory of Postsecondary Schools with Occupational Programs* (Kay, 1973, 1975, 1978, 1982), where proprietary schools were listed as an independent category of postsecondary educational institutions. And it was in the 1975 edition of the *Digest of Education Statistics* that these schools were first listed under the category of "Privately Controlled [Postsecondary Vocational] Schools." According to Kay (1975: xxii), proprietary schools (accredited only) accounted for 59% of all the postsecondary schools with occupational programs in 1973. In 1980, this number increased to 63%, and most of them (82%) offered programs in the areas of vocational/technical training, business, trade, and cosmetology (NCES, 1982).

In comparison with the now considerable body of literature on community colleges, proprietary schools have just begun to draw research attention (Clark & Sloan, 1966; Belitsky, 1969; Wilms, 1975; Levin, 1985; Yankosky, 1989). Up to this point, very little has been known about to what extent these postsecondary vocational schools have contributed to students' educational attainment and, in a final analysis, to the equality of educational opportunity in this country. Dougherty (1987), after a careful study of the role played by community colleges in equalizing educational opportunity, calls for a reexamination of the effectiveness of community colleges relative to both four-year colleges and proprietary schools. The reason for doing so lies in the fact that proprietary

schools "... share varying combinations of the characteristics typical of community colleges: low tuition, accessibility, unselectiveness, and vocational emphasis" (Dougherty, 1987: 102). Wilms (1980) in his study suggests that proprietary schools are more effective than public two-year colleges at developing vocationally prepared students. Related to this finding, Yankosky's (1989: iii) recent study shows that, in proprietary schools, "... over four-fifths (84%) of the students received financial aid, and that about 88% of this aid came from the federal government, with the Guaranteed Student Loan and Pell Grant programs the predominate sources."

These conclusions are thought provoking, not only raising the issue of the function and effectiveness of proprietary schools relative to two- and four-year colleges, but also addressing the social role of vocational education, which is "... an important consideration both as public policy and as a pragmatic curriculum concern for the institutions offering these programs" (Levin & Clowes, 1981: 294).

On the theoretical level, there has been a lengthy debate over whether postsecondary education is offering opportunity for individual mobility (the functionalist position) or actually preparing students for unequal futures and thus legitimizing large-scale structural inequality (the class-reproductionist position) (cf., Dougherty & Hammack, 1990). When functionalists argue that social mobility has taken place as a result of an enormous equalization of educational opportunity, they are more likely to find favorable evidence in four-year colleges and universities. For example, most graduates of these schools are seen to have

attained higher occupational strata than their fathers (Featherman & Hauser, 1978). But this may not be the case for the proprietary school sector, because the latter is known to attract the most "disadvantaged" students. In other words, many schools in this sector have more than often served those who are academically and socioeconomically inferior to those who are enrolled in four-year institutions. Therefore, even if four-year colleges and universities did show some positive signs of providing equal opportunity for nonwhites, female, or working-class people on a meritocratic basis, it is still possible for a class reproduction model to be functioning in the proprietary school sector.

Nevertheless, the assumption about proprietary schools' function in class reproduction is not necessarily contradictary to their role in the equalization of educational opportunity. The question is, what criteria should be used to assess equality of educational opportunity? Markward and Phelps (1990) summarize two different ways of defining equality as being equality which implies sameness (MacMillian, 1965) or uniqueness (Phenix, 1964). The former suggests that "... each step taken to provide equality should bring individuals closer to the ideal of giving the same treatment to each individual," no matter whether the individual is academically or socially ready for that treatment. The latter asserts that "... each person receives the educational opportunities which are right for that person to have, given individual and environmental conditions" (Markward & Phelps, 1990:10).

It is obvious that the "sameness" definition is an ideal yardstick to measure equality, but the "uniqueness" definition seems to be more realistic and feasible. Especially when the variance of an individual's aptitude or intelligence is considered, equality of educational opportunity should be the extent to which all students, regardless of race and circumstance, are able to fulfill their educational aspirations. (Institute for the Study of Educational Policy, 1976).

Given these many contradictary questions and arguments, the present study was first designed to find whether proprietary schools function as providers of equal opportunities for students from a wide spectrum of social and academic backgrounds, especially for the "disadvantaged," as compared with two- and four-year colleges and universities. A second purpose of this study was to explore the issue of whether proprietary schools aid or hinder students' educational and socioeconomic attainment when compared to other types of institutions. A third purpose was to identify the factors that significantly contribute to an individual's decision to choose proprietary schools.

1.2 Statement of the Problem

The question of equal educational opportunity is of vital interest to many researchers and practitioners in the field of postsecondary education. The

Education Amendments of 1972 and the Civil Rights Act of 1964 are federal laws whose intent is to increase equal educational opportunity through legislation. But in the daily practice of educational research and administration, public policy has to be based on the evidence of effectiveness of different types of institutions in providing equal opportunity to various ethnic groups, social classes, and females. Due to inadequate research on proprietary schools, plus some poor measures of the effects of these schools (cf., Levin & Clowes, 1981), proprietary schools have been by and large put in a very contradictary situation. On the one hand, these schools seem to have broadened opportunities for "disadvantaged" learners to receive vocational training and to acquire skilled jobs and respectable wages in the job market; on the other hand, the strictly job-oriented programs in these schools do in fact limit students' ability to pursue further academic study and thus maintain the inequality with which they began.

The purpose of this study was to explore the actual educational attainment of students in proprietary schools as compared with those in two- and four-year institutions. Students' gender, race, socioeconomic status (SES), and aptitude were included as background variables, and both students' and their mothers' aspirations were used as measures of the extent to which a student's promise and ambition were fulfilled. In so doing, the National Longitudinal Study of the High School Class of 1972 (NLS-72) and the High School and Beyond (HSB) (both senior and sophomore cohorts) were used to approach these issues from a national perspective. Specifically, this study was guided by the following research questions:

1. From 1972 to 1986, what was the actual composition of students' gender, race, SES, and aptitude in the proprietary school sector as compared with that in community colleges and four-year institutions?

2. What were the factors associated with an individual's decision to choose proprietary schools instead of community colleges or four-year institutions?

3. Did students in proprietary schools have significantly lower educational attainment than those who attended community college or four-year institutions? What were the factors associated with this difference, if any?

4. Did proprietary schools provide any opportunity for high school dropouts to attain the level of education they had desired?

5. When delayed entrants of proprietary schools are checked against initial entrants immediately after high school, are the major findings consistent, i.e., did delayed entrants show any significant difference from the initial ones?

1.3 Significance of the Study

This study contributes to the understanding of equal educational opportunity from a national perspective by focusing on the educational attainment of

proprietary school students. As equal access to postsecondary education has always been the focal point of the whole issue of equal educational opportunity, recent researchers tend to approach students' postsecondary educational experience longitudinally and to look beyond the initial point of enrollment. Some researchers argue that equal access must be coupled with equal opportunity for success (cf., Harcleroad, et al., 1981). This argument raises some truly intriguing issues. For example, Karabel and McClelland (1987) suggest that, at a time when so many young people are attending college, *where* one goes to college is consequential for various economic outcomes. But Dougherty (1987) in his study implies that a college's effects may differ greatly by students' educational aspirations. Between these two examples, the former leads us to think about the inequality of educational opportunity in terms of the "inherently" unequal opportunity to access different types of schools, while the latter seems to suggest that it is the individual's aspiration that makes the difference. Dougherty & Hammack (1990), tracing back to the very beginning of the whole issue, suggest that a careful exploration of the impact of social class, race, sex, and ability on educational attainment is still very important, though the influence of many "traditional" variables have changed dramatically in the past decades.

The existing literature clearly indicates that great efforts have been made to explore enrollment and graduation pattern of various types of postsecondary institutions. However, studies on proprietary schools appear to be relatively inadequate, especially in terms of these schools' contribution to the equalization of educational opportunity in this country. According to recent estimates (NCES,

1988), there were 6,552 proprietary schools that enrolled approximately 1.2 million students during the 1986-87 academic year. These schools "account for nearly two-thirds (65%) of all postsecondary institutions offering vocational / occupational education in the United States" (Yankosky, 1989). A sector comprised of such a large number of schools and students deserves more attention from researchers and policymakers.

As a matter of fact many researchers have recently raised the issue of equal educational opportunity once again and have called for providing better access and equitable opportunity to the nation's poor, minority, and women (Committee for Economic Development, 1987; Parnell, 1984). It is believed that "... the largest challenge(s) facing the nation's educational system during the 1990's will be providing at-risk and other special population students with both general and specific knowledge and skills, which will enable them to participate fully in the nation's rapidly changing economy" (Markward & Phelps, 1990: 3).

With these broad issues as background, the present study approached proprietary school students' educational attainment from a national perspective. Previously, Wilms (1975, 1980, 1982, 1983, 1984a, 1984b, 1987) has been the primary researcher who studied the history and development of proprietary schools and who published a series of studies advocating the effectiveness of proprietary schools. Many later studies in this area were by and large based on his data and research findings (e.g., Friedheim, 1982). One position is that proprietary schools "... are able to act in educational matters with a minimum of

restraint and a maximum of direct action, both of which contribute to their effectiveness in satisfying an education need" (Friedheim, 1982: 1474). However, Levin and Clowes (1981) found many significant flaws in one of Wilms' (1980) major studies with problems ranging from sampling inaccuracies to illogical inferences. These problems may easily be ignored if proprietary schools did not receive funds directly from the government. But Yankosky's (1989) recent study reveals that in fact a large proportion of proprietary school students do receive financial aid from the government, so that millions of dollars from the federal government have been spent on supporting these schools indirectly. This fact raises serious policy issues concerning the actual operation of proprietary schools as well as the background composition of the students served in these schools. The present study was designed to address these issues on the basis of two nationwide data bases.

A study like this can also provide evidence to those involved in the debate between the two contrasting theories concerning education's function in social mobility, with functionalists in favor of education as the provider of social mobility (Blau & Duncan, 1967; Featherman & Hauser, 1978, Sewell & Hauser, 1975), and with the other school in favor of education being the cause of social class reproduction (Althusser, 1971; Bowles & Gintis, 1976; Apple, 1982). The present study began with the assumption that the class reproduction model describes the proprietary schools better, and it aimed at throwing light on these theoretical problems from a more realistic point of view.

1.4 Limitations of the Study

Since this study aimed at addressing the issue of equal educational opportunity from a national perspective, the National Longitudinal Study of High School Class of 1972 (NLS-72) and the High School and Beyond (HSB) were selected as the data bases representing the general trends of the 1970's and the 1980's respectively. But certain limitations were also recognized as the inevitable results of using these extant data bases: the limitations resulted from sampling error, inconsistencies between NLS and HSB, and missing responses, to name just a few. The present study employed both the merged files of the fourth follow-up of NLS and the third follow-up of HSB, thus a one-year gap exists between these two data bases. In other words, while the NLS tapes allow a comparison of enrollment and attainment seven years after high school, the HSB (senior cohort) only gives a six-year period for the study of the educational attainment of the 1980 senior cohort. Although there is no way of knowing how seriously this gap may affect the estimation of proprietary school students' educational attainment, the whole 1980 senior cohort may be underestimated as compared to the 1972 senior cohort, if the delayed entrants are included.

Another limitation is that both the NLS and HSB (senior cohort) data used in this study are senior cohorts. It has been well documented that minorities have higher dropout rates than whites, thus the minority students included in this sample were a very special group (Velez, 1985). According to Yankosky (1989),

about 30% of the students in proprietary schools do not have a high school diploma. To overcome this problem, the sophomore cohort of the HSB data was also used to make the sample as complete as possible. However, it turned out that there were only 11 out of 245 cases in the sample identified as high school dropouts who attended proprietary schools. The sampling bias is one of the possible explanations. Therefore, the over-representation of high school persisters and the under-representation of high school dropouts may still be a potential problem when any generalization is made concerning the characteristics of proprietary school students.

Finally, an attempt was also made to build a profile of all the delayed entrants of propreitary schools as a contrasting group to those who got enrolled immediately after high school. However, the major problem encountered later became how to identify the proprietary school a student attended after 1973 in the NLS data base because, starting from the second follow-up (1974), the questionnaire simply did not ask about the control of the school a student attended. This means that nothing could be done to check if the school was proprietary or not. In order to avoid the contamination of the propreitary sample, a decision was made to give up the study on delayed entrants for NLS and to build a proprietary subsample only for HSB.

Chapter II

Literature Review

This chapter contains a review of the literature related to proprietary schools and their functions in the equalization of educational opportunity in this country. It is comprised of five sections: 1) theoretical framework; 2) policy issues; 3) studies on educational attainment; 4) studies on proprietary schools; and 5) demographic characteristics.

2.1 Theoretical Framework

It is generally agreed that postsecondary education has become crucial in determining an individual's socioeconomic status in the society; this is

particularly true for upwardly mobile young people, for the attainment of postsecondary education is almost the only avenue to career success (Beardslee & O'Dowd, 1967). However, as Dougherty and Hammack (1990) point out, various theories of the social role of education disagree sharply on the implications of these changes on social mobility. While functionalists argue that the equalization of educational opportunity is the key to social mobility, class-reproductionists maintain that "... education does not so much provide social mobility as 'reproduce' or transmit inequality from one generation to another" (Dougherty & Hammack, 1990: 248).

There is a considerable body of literature on the functionalists' position. An early study shows that social mobility did occur as a result of postsecondary education: 63% of manual workers' sons who attended or graduated from colleges obtained their first jobs in nonmanual occupations (Lipset & Bendix, 1959). Blau and Duncan (1967) in their widely cited study observe the same phenomenon, and they emphasize the egalitarian function of education. According to them, a well-educated son of a working class father has the same chance in life as a poorly educated son of a middle-class father. This result was once again supported in a 1973 survey in which 51% of college graduates were in a higher occupational stratum than their fathers, while only 17% were lower (Featherman & Hauser, 1978).

Against the functionalists are the class-reproductionists, whose studies show that the socioeconomic status of one's parents has a significantly direct influence

on how well one is educated and what kind of job he/she may end up with (Bowles & Gintis, 1976; Farley, 1987). Bowles and Gintis (1976) represent a typical Marxist approach to the social function of education in a capitalist society. According to them, not only does education integrate youth into the economic system "... through a structural correspondence between its social relations and those of production" (Bowles & Gintis, 1976: 131), but students learn attitudes and modes of behavior suited to that level in the production process that they will ultimately occupy (cf., Weis, 1988).

Here Bowles and Gintis raise a question that is of concern for many researchers: to what extent do educational institutions actually shape the attitude and behavior of their students and thus prepare them to enter a certain social level in the future? As long as we agree that different types of institutions do play a significant role in differentiating people in the society (Karen, 1990), the inquiry into the issue of equal access to all types of institutions will be of vital interest to both researchers and policymakers. During the 1960's and the 1970's, two subordinate groups -- blacks and women -- mobilized politically: their access to higher education increased in general and to elite institutions in particular, but the same did not happen to the working class (Karen, 1990). This phenomenon, seen from a class-reproductionist perspective, can easily be interpreted as education's real, although unfortunate, role of preserving inequality in society (Dougherty & Hammack, 1990). This approach, undoubtedly, was attacked by many functionalists, who see education as a way to resolve rather than to perpetuate inequality.

But behind this debate are differing ways of defining equality. As already noted, while the "sameness" definition emphasizes that everybody is treated the same at all levels of education, the "uniqueness" definition considers relative improvement rather than absolute achievement as the indicator of equality. As a matter of fact, in the real world people are not born equal, socially or intellectually. Early in the 1960's, Deutsch (1964) pointed out that working class and nonwhite students perform poorly because their families do not raise them in such a fashion as to develop the skills and attitudes that contribute to school success. He further asserted that, because of the parents' poor socialization practices, disadvantaged students have low educational and occupational aspirations.

More than two decades have passed since Deutsch made these comments, and both functionists and class-reproductionists have produced evidence in their own favor. But there is one thing that has changed very little, namely, the existence of the "disadvantaged" students and their disadvantaged family backgrounds. When most researchers interested in equal educational opportunity direct their attention to how four-year colleges have enhanced their graduates' socioeconomic status (Blau & Duncan, 1967; Featherman & Hauser, 1978), the lack of basic facts with regard to those in the lowest sector of postsecondary institutions can be felt all the time. In his study of the socioeconomic attainment of community college students, Dougherty (1987: 87) finds that "community college entrance definitely hinders both the educational and economic attainment of students who aspire to a baccalaureate but probably aids the educational attainment of

students who aspire to a vocational degree." A really intriguing question following this conclusion is: What about proprietary schools? Are proprietary schools an aid or a hindrance to educational and socioeconomic attainment?

2.2 *Policy Issues*

The question of how proprietary schools should be evaluated with respect to the effectiveness of their operation and the role they play in equalizing educational opportunity is not a merely philosophical matter; it is of practical concern related to federal government policy, resource allocation, and even to the reconstruction of the postsecondary educational system (Belitsky, 1969; Hyde, 1976; Yankosky, 1989).

In the past two decades, when proprietary schools were finally recognized by policymakers and researchers as an integral part of the postsecondary system, community colleges appeared to face strong competition (Friedheim, 1982). This competition was further enhanced by the Higher Education Amendments of 1972, which provided access for proprietary students to Basic Education Opportunity Grants. Usually, community colleges attract their student population with low tuition cost, but Friedheim (1982: 1474) argues that "... when state and federal subsidies are taken into consideration, the costs of proprietary

education are significantly less." Moreover, community colleges are finding it necessary to raise costs at a faster rate than others in recent years ("Tuition Increase," 1981).

On the contrary, the direct linkage between the training programs and the job market makes proprietary schools a favorable choice for those who do not aspire to any higher achievement. Proprietary educators are aware of this advantage and aim at providing their students with immediate employment. According to the annual report of the Association of Independent Colleges and Schools (AICS) (1979-80), approximately 85% of their graduates gain employment immediately or shortly after graduation. And the chairman of the board of directors of the AICS maintains: "We have to have as our primary concern the students' ability to function effectively on the job. If they can't, we simply won't get more students -- we'll go out of business. Ours is a very market-oriented business" (Friedheim, 1982: 1475).

Are proprietary schools really more effective than community colleges? Up to this point, community colleges have not appeared to be actively seeking evidence to convince the public of their effectiveness. Such unusual silence may lead the public to hold a more favorable attitude toward proprietary schools and, in the long run, may cause significant policy changes.

In fact, by the end of the 1960's Belitsky (1969) already envisioned the resultant broadening of educational and occupational choices by proprietary

schools. He believed that "... this ought to advance attainment of the goal of equal educational opportunity, whereas the unrealistic emphasis upon the college preparatory curriculum actually detours any movement toward the goal" (Belitsky, 1969: 151). No matter whether these comments have had any direct influence on the policy-makers, the past twenty years did witness a great policy shift in favor of proprietary schools. Yankosky's (1989) recent study shows that, in the proprietary school sector, over four-fifths (84%) of the students received financial aid. About 88% of this aid came from the federal government, with the Guaranteed Student Loan and Pell Grant programs the predominant sources.

2.3 Studies on Educational Attainment

In the now considerable body of literature on educational access and attainment, three sets of studies significantly contribute to our understanding of the issue of equal educational opportunity on a nationwide basis. First, great efforts have been made to assess the entire process of students' college attendance, from enrollment to graduation. Karen (1990) provides a historical review of various patterns of access to higher education during this century. Clowes, Hinkle, and Smart (1986) address the egalitarian functions of education by studying the enrollment patterns of 1961-1982 from national data. And the studies done by Duncan, Featherman, and Duncan (1972) and Sewell, Hauser,

and Featherman (1976) make it possible for us to see the whole process of educational attainment from different angles. Second, many empirical studies have been done to study the phenomena of persistence and attrition (cf., Pascarella, 1982), and theoretical models are proposed to conceptualize such a longitudinal process (Spady, 1970; Tinto, 1975; Pascarella, 1980; Bean, & Vesper, 1990; Velez, 1985). A number of variables, such as socioeconomic status (SES), ability, gender, educational aspiration, and college grades, are identified as having significant impact on students' persistence or withdrawal behavior. Third, the statistics published by the U.S. Census, the U.S. Office of Education, and other organizations present a profile of students' enrollment and graduation patterns from year to year and from decade to decade. These figures are broken down by institutional type and enable us to see the long-term trends in access and achievement of American education in the past few decades. These studies have built up a solid knowledge basis about how many and what kind of students are enrolled and graduated each year and about what variables may significantly affect students' persistence and attrition after they are enrolled.

What is especially worth mentioning are two studies measuring educational enrollment and attainment upon which the present study is built. In the first study, Clowes, Hinkle, and Smart (1986) address the social mission of postsecondary education by employing the data bases of Project Talent, NLS, and HSB. As a result, four-year colleges and universities are identified as primary providers of access to minorieties and to students from the lower socioeconomic strata. Community colleges served all social strata, but drew most

heavily from the middle two quartiles on socioeconomic strata and from the white student population. A modest egalitarian function was identified for all of postsecondary education but especially for the four-year college and university sector.

In the second study, Clowes, Cheng, and Hinkle (in press) focus on attainment measures; NLS and HSB are again used as the data bases. The study shows a modest increase in enrollment rates for two-year colleges and postsecondary vocational institutions which is balanced by modest declines in the other institutional types. Females are more likely than males to enter postsecondary vocational schools, but in general their increased attainment may be seen at all levels. From NLS to HSB, the increased attainment of the lowest SES quartile at all levels illustrates a modest shifting toward a more egalitarian function. Meanwhile, blacks and Hispanics have increased their representation in a higher attainment level; white representation is still dominant, but it is declining.

These two studies provide an overview of educational access and attainment for different social groups. Specifically, that these groups' enrollment and graduation rates are broken down by school type enables us to see the different roles played by various types of institutions in equalizing educational opportunity. At the same time, these and related studies show the inadequacy of studies on the lowest sector of postsecondary education -- the proprietary schools.

2.4 *Studies on Proprietary Schools*

For a long time proprietary schools were like an old old story, long forgotten even by storytellers. For instance, there is a sharp disagreement on when the first proprietary school was originated: 1635 (Wilms, 1975), 1790 (Yankosky, 1989), or 1835 (Friedheim, 1982). Nevertheless, proprietary schools have survived and prospered, despite the fact that vocational education has been introduced to senior colleges, junior and community colleges, and even high schools.

Levin (1985) and Yankosky (1989) in their doctoral dissertations synthesize various sources of studies on proprietary schools and provide an overview of these schools' past and present development. Levin's (1985) work is particularly good at providing an historical survey of proprietary schools. He reviews a vast number of writers who either briefly mentioned proprietary schools (Moreland, 1977; Venn, 1964; Braden & Paul, 1971) or did intensive investigation into this phenomenon and significantly contributed to our understanding of modern proprietary school education (Clark & Sloan, 1966; Belitsky, 1969; Trivett, 1974; Hyde, 1976; Kay, 1979; Wilms, 1975, 1980). Yankosky (1989), however, emphasizes proprietary schools' long struggle for recognition, for legitimacy, and for a fair share of the federal student financial aid funds in the past three

decades. The two milestones in the history of proprietary schools, according to Yankosky (1989), were the 1965 Higher Education Act, in which the U.S. Congress made proprietary students eligible for the GSL program, and the 1972 Amendments to the Higher Education Act, which permitted proprietary students' access to the BEOG (Pell) program, NDSL Loans, and other aid programs offered under the Act. These may be considered as the sign of proprietary schools' becoming finally recognized by the federal government as a legitimate sector of the postsecondary education system.

Meanwhile, the past three decades also witnessed the emerging interests of educational researchers and the public in proprietary schools. Hyde (1976: 3) classified the studies on proprietary schools prior to his into three categories: "descriptions or historical studies of individual schools or the industry, surveys that deal primarily with measures of size, or [sic.] comparisons of specific characteristics of proprietary schools and their students in relation to those of their closest counterpart in the public sector." Clark and Sloan (1966) were among the first researchers to point out that the essence of proprietaty schools is their endless variety. Belitsky (1969), however, goes one step further by surveying 127 trade and technical proprietary schools accredited by the National Association of Trade and Technical Schools. He concludes his study with such strong recommendations as:

> The resultant broadening of educational and occupational choices would encourage and reward diversity; this ought to advance attainment of the goal of equal educational opportunity, whereas the unrealistic emphasis upon the college preparatory curriculum actually detours any movement toward the goal. (Belitsky, 1969: 151)

This is one of the earliest stated concerns with the function of proprietary schools in broadening and equalizing educational opportunity in this nation.

One of the "hot" topics in proprietary school research is to compare community colleges with proprietary schools and to decide whether the former or the latter is more effective in vocational training. Some researchers conclude that proprietary schools are either less effective than (Hoyt, 1970) or equally effective as (American Institute for Research, 1972) public or nonproprietary schools. These conclusions are criticized by Wilms (1975) as being biased due to low survey response or methodological shortcomings. Wilms' (1975, 1980) research in general favors proprietary school in providing effective vocational training, but he further concludes that proprietary vocational education is not an effective way to provide equal opportunity. His allegation is: because of "the distinctive middle-class flavor" of public schools, "people who lack middle-class advantages, particularly if they are from ethnic minorities, tend not to participate in middle-class institutions" (Wilms, 1975: 183). As a result, "[t]hose with the most resources choose four-year universities and get higher-status jobs;" "[t]hose with the least resources choose two-year or less occupational programs in public or proprietary schools and get low-status jobs" (Wilms, 1975: 184). In other words, proprietary schools are inherently inferior to public, especially four-year, colleges and universities in providing opportunity for their students to achieve educationally and socioeconomically in the future, despite the fact that they do provide effective training for the "disadvantaged."

Hyde (1976) approaches proprietary schools from a different point of view. He treats these schools as an industry and analyzes the individual school as an economic entity. He believes that the reason why proprietary schools survived lies in their responding to a specific demand for services that is not being met by other schools. In this way, proprietary schools have actually offered an important option in the overall postsecondary education system. This issue of educational diversity was cited in the Second Newman Report in the context of egalitarian commitment for educational purposes:

> public policy ... should encourage much more than just access to some institutions labeled "college." What we believe *is* an appropriate goal of public policy beyond that of access, is the provision for meaningful choices among *many* forms of postsecondary education ... [especially] ... for those whose educational capabilities and interests do not square with the existing institutions. (Special Task Force to the Secretary of Health, Education, and Welfare, 1973:6)

However, as the competition between proprietary schools and public community colleges gets stiffer as a result of public policy shifts and economic changes, proprietary schools will inevitably face challenges in the future. Friedheim (1982) foresees that the proprietary sector of education will soon be affected by a scarcity of qualified teachers and by the decline in the number of students graduating from high school. Meanwhile, proprietary schools will continue to find their public and nonprofit counterpart institutions competing head to head for the shrinking faculty and student pool.

2.5 Demographic Characteristics

There is very limited literature available concerning the demographic characteristics of proprietary school students. What we have heard about the most is that proprietary schools drew heavily from the "disadvantaged" -- females, minorities, low SES and low aptitude people (Wilms, 1987; AIR, 1972). But Levin's (1985) study yields considerably different results from the conventional wisdom. He found that students at proprietary schools were more likely to be whites, females, and middle-class people. This kind of disagreement is very common in the literature on proprietary schools. The major findings of the current research on these issues are summarized in the following sections.

2.5.1 Gender

It is well documented that "... traditional societal values, socialization practices, and situational constraints have generally worked to the advantage of males" (Velez, 1985: 192), enabling them to achieve educational goals more successfully than women (cf., Hollahan, Green, & Kelly, 1983). However, a direct result of the women's movement in the past three decades is the increased participation of women in postsecondary education. Karen (1990) synthesizes different sources of official statistics and shows that, from 1960 to 1978, the

greatest increase in women's access to higher education was in "elite" rather than "mass" institutions. But in terms of absolute numbers, women's enrollment also rose sharply at community colleges.

However, very little is known about women's participation in proprietary schools. Wilms (1983, 1987) briefly mentions that proprietary schools attracted a large number of women, and he points out that proprietary school women were overrepresented in need-based financial aid programs relative to their proportion among all proprietary students (cf., Yankosky, 1989). Levin (1985) discovers that women tended to overchoose proprietary school relative to men, although men were still dominant in the proprietary school sector. This finding is confirmed by Clowes, Cheng, and Hinkle (in press), whose study shows that in the 1970's and the 1980's females outnumbered males in postsecondary education, but that was primarily attributable to the high female enrollment in vocational-technical institutions; males actually enrolled directly from high school in two- and four-year institutions in greater proportion than did females.

If researchers look merely at numerical increases, they may agree that the political mobilization in the past three decades has made gender a less significant variable in the issue of equal educational opportunity (Dougherty & Hammack, 1990). But far more complicated problems may be anticipated if more sophisticated measures are applied to the gender issue, and a thorough investigation into women's representation in the proprietary school sector may throw light on these problems.

2.5.2 Race

The participation of blacks and other minorities in postsecondary education has always been a major concern of educators and policymakers. Beginning in the mid-1960's blacks' enrollment in postsecondary education had accelerated and peaked in 1976. This was attributable by many educators and policy analysts to government action (Williams, 1988). However, the underrepresentation of minorities, including blacks, in postsecondary education persisted, and the actual decline of the black postsecondary enrollment nationwide from 9.4 to 8.9% between 1976 and 1982 raised a serious issue of the compliance of the Title VI Regulation (Williams, 1988).

In the literature, very little information is available with regard to racial composition in the proprietary school sector. Several studies have found that proprietary schools served a much higher proportion of minority students than other postsecondary institutions (Wilms, 1983, 1984a). But no exact figures are available that can be used to identify the minority participation in these schools. Clowes, Cheng, and Hinkle (in press) report a dramatic increase of Hispanics in postsecondary education from the 1970's to the 1980's, but there is no way to tell from their study what role proprietary schools have played in promoting this increase.

One example may throw light on the complex racial composition of the proprietary school sector. Hyde (1976), in analyzing the cosmetology training industry in the Chicago area, points out that even within the proprietary school sector there is never a homogeneous group of schools. He compared three types of proprietary schools -- the majority, the black, and the Spanish -- and found that majority schools are larger, offer better quality, and are reasonable in price compared to black and Spanish area schools. Seen from this point of view, the question about racial composition is greatly complicated due not only to inadequate research on different types of postsecondary institutions, but also to the great diversity within the proprietary school sector.

2.5.3 Socioeconomic Status (SES)

There are many contradictory reports on the socioeconomic status of the students attending proprietary schools. It is generally believed that students attending proprietary schools were mostly from "lower middle socioeconomic background" (Hoyt, 1968:170). Freeman (1974: 312) maintains that "... proprietary students have come from poorer socioeconomic backgrounds than the typical member of their age group," and Wagner's (1982) study also displays that the median full-time proprietary student came from a lower income family than did the median full-time community college student. But Levin's (1985) study shows that, though proprietary schools attracted fewer students from the upper

class than did public schools (16% vs. 24%), they certainly attracted more students from the middle class (62%) than did public schools (53%).

With respect to the financial situation of proprietary school students, it is believed that proprietary students are the least financially advantaged of all postsecondary students (Friedlander, 1980; Wilms, 1973). Trivett (1974) asserts that few students in proprietary schools are supported by their parents or by their own savings; most of them borrow money to attend the schools. This assertion is supported by Yankosky (1989: 171), whose study shows that "... over two-fifths (43%) [of aid recipients in proprietary schools] were from minority groups with over 70% having incomes of less than $11,000."

In fact, the reason why there is such great uncertainty concerning whether low SES is an important characteristic of proprietary students lies again in the inadequacy of the research on the proprietary school sector itself. In other areas of educational research, SES has long been recognized as having a strong impact on college-going behavior (Duncan, Featherman, & Duncan, 1972; Sewell & Shah, 1967; Trent, 1970). This argument is particularly favored by class-reproductionists, whose major evidence is that "[C]hildren of the upper and middle classes accumulate more and better education than working class children" (Dougherty & Hammack, 1990: 248).

Moreover, to many researchers, SES can hardly be studied separately from its racial and gender context. Weis (1988: 10) emphasizes the interaction among

race, sex, and social class, and maintains that these three variables, though existing autonomously, "... intersect and are dependent upon each other for their reproduction and persistence."

2.5.4 Aptitude

If class-reproductionists have paid more attention to how SES functions in reproducing or perpetuating social classes through education, functionalists are obviously tied to the ideal of "meritocracy," which relies on schooling to sort by aptitude and to reward the talented. Dougherty and Hammack (1990: 14) explain that, "In a meritocratic society, inequality would be tolerated if it is based on individual capacity and achievement rather than inherited advantage."

However, very little research evidence is available with regard to the educational background and the academic ability of proprietary students. Wilms (1987: 12), in describing a Santa Barbara proprietary school, maintains that "... there is little doubt that much of this proprietary school's appeal is for students who didn't do well in high school and lack confidence in their ability to succeed in a more conventional educational setting." But this assertion can hardly be confirmed by the existing literature.

Levin (1985) in his dissertation presents a very controversial picture of the academic credentials of proprietary students. He cites Hoyt's (1966-67) study which shows that 98% of his sample of proprietary business students were high school graduates, but Hanson and Parker (1977: 108) stated that proprietaty students were "primarily secondary school leavers [sic.]" (Levin, 1985: 47-48). Yankosky (1989: 172) states that "nearly 35 percent of aid recipients enrolled in *less than two-year [proprietary] school* did not have a high school diploma compared to 17 percent in *two-year* proprietary schools and five [sic.] percent of the undergraduate students in all other sectors of proprietary education."

As to how these proprietary students perform academically and what their academic ability may actually be, there is no information available. The only thing we can be sure of is that proprietary schools do enroll a disproportionate number of students "unprepared academically for most other types of postsecondary schools or programs" (Yankosky, 1989: 172).

2.5.5 Aspiration

Proprietary schools are known for serving a large number of "disadvantaged," a group that "could include those high school graduates of a college preparatory program who lack either interest or ability for college study and are also unprepared vocationally" (Belitsky, 1969: 143). And these schools usually limit

their goals to specific occupational training in scores of fields and to preparing students for employment. Maybe that is the reason why researchers of proprietary schools rarely bother to ask whether proprietary students aspire to any higher educational status and to what extent their ambition and promise are fulfilled.

Both Astin (1977) and Dougherty (1987) claim that attendance at two-year colleges significantly hinders the educational achievement of those who still aspire to a four-year college degree. Seen from the same point of view, it is also a legitimate concern whether attendance of proprietary school hinders students who aspire to higher educational attainment. This viewpoint is particularly important for those who are used to evaluating equality of educational opportunity by educational outcomes (Coleman, 1969). The existing literature, however, provides little information on what proportion of students in proprietary schools do aspire to higher achievement. We do not even know whether a higher educational and socioeconomic status, which motivates conventional students, still applies to proprietary students.

Belitsky (1969) is convinced that it makes perfect sense to encourage proprietary students to stay in the occupation they prepare for by attending proprietary schools, and that policymakers and educators should not unrealistically emphasize college preparatory curriculum. Wilms (1980) expresses reservations. On the one hand, he sees proprietary education as an effective form of vocational training; on the other hand, he also realizes the negative impact of

proprietary school on students' educational and socioeconomic achievement. Both Belitsky and Wilms make their points without the support of solid evidence concerning proprietary students' actual educational aspirations.

In the other areas of educational research, aspiration has always been a powerful predictor of continuation and achievement at the postsecondary level (Sewell & Shah, 1975; Otto & Haller, 1979). Bean and Vesper (1990: 21), in their study on student attrition, tend to believe that parents' aspirations may turn out to be more important than the students' in making educational decisions: "When socialization to a new environment is incomplete, or fails, individuals (students) depend on previous socializing agents (parents) for guidance."

Educational aspiration is also a variable closely related to other variables such as race, gender, and SES. For instance, ISEP (1976: 91) reports that "... more Black [sic.] females than Black males wanted advanced degrees. However, compared to females of the same race, more white males in college wanted advanced degrees." In general, because black students' aspiration for college education increased, "aspiration alone, therefore, failed to explain differences in college enrollment and attainment of whites and Blacks" (ISEP, 1976: 95).

Chapter III

Methodology

This chapter includes a description of the data bases used, the procedure of case selection, the specification of the variables selected, and the methods of analysis.

3.1 Data Bases

The National Longitudinal Study of the High School Class of 1972 (NLS-72) was instituted to study "the educational, vocational, and personal development of high school graduates, and the personal, familiar, social, institutional, and cultural factors that contribute directly or indirectly to that development" (Peng,

Stafford, & Talbert, 1977, 1). High School and Beyond (HSB) was designed to build on the NLS-72 data file and to expand the NLS focus by collecting data on a range of lifecycle factors (cf., HSB user's manual). The following description of the data bases is adopted from Strickland (1988).

NLS base-year data were collected in the spring of 1972 via three instruments: a test battery, a school record information form, and a student questionnaire. The base-year student questionnaire was for the first follow-up, resulting in 21,350 student responses. The second follow-up was in 1974 with 20,872 responses; the third follow-up two years later in 1976 retained 93.9% of the second follow-up respondents. The fourth follow-up was in 1979 and obtained 18,630 responses. Overall, a total of 12,980 individuals provided information on all questionnaires (base year and the four follow-ups) representing 78% of the base-year respondents.

The HSB data contain two cohorts: sophomore and senior. The base-year survey was conducted in 1980 via several instruments: a senior questionnaire and a sophomore questionnaire, a school questionnaire, a student identification form, a series of cognitive tests by cohort, a teacher comment checklist, and a parent questionnaire. There were a total of 58,270 responses to the base-year student questionnaires, 28,240 seniors and 30,030 sophomores. First follow-up data were collected in spring 1982 and included 29,737 of the 1980 sophomores and a subset of the 1980 seniors. The sophomore sample for the first follow-up was based on the entire base-year sample (including nonrespondents). The senior sample for

the first follow-up, however, was based on a subsample of 11,500 students randomly selected from the senior base-year participants supplemented with a special sample of 495 students selected from the base-year nonrespondents. The HSB second follow-up was conducted in 1984. The 1980 sophomore cohort was subsampled for the second follow-up: 14,825 respondents are included (92% of whom participated in the first follow-up). The senior file contains responses from 11,995 individuals (retaining the second follow-up sample). The third follow-up was conducted in 1986, and the sample design for both the senior and sophomore cohorts remained unchanged from the second follow-up. The sophomore sample of 14,825 from the second follow-up was retained with a response rate of 91%, and the senior sample of 11,995 from the previous follow-up was also retained with a response rate of 92%.

The NLS variables used in the present study are drawn from the final merged file of base year through fourth follow-up (1979) data, and the HSB variables used are drawn from the merged file of base year through third follow-up (1986) data.

3.2 Case Selection

The selection of a proprietary case was by the following procedure.

1. FICE codes were utilized to generate the names of the institutions respondents attended in October 1972 for the NLS sample and that of the first institutions respondents attended after high school for the HSB sample, if the respondents identified the institutional type as "vocational, trade, business, or other training school" and the control as being private.

2. The *Directory of Postsecondary Schools with Occupational Programs* (Kay, 1975, 1982) were used as the major reference source, and a case was selected if the institution a respondent attended was identified as "proprietary" or "independent" in these directories. Although at the beginning of this study a proprietary school was defined as privately-owned, profit-making, and vocationally-oriented, the actual case selection allowed certain flexibility. For instance, no deliberate effort was made to exclude nonprofit private vocational schools from the profit-seeking ones, because "... some tax-paying proprietary schools have become tax-exempt by organizing into nonprofit corporations" (Friedheim, 1982: 1477). However, "... they maintain their proprietary attitude and dedication to vocational instruction for the employment opportunities of the students" (Friedheim, 1982: 1475). Also, a religiously-affiliated institution was

selected if its stated purpose was vocational training. Bible colleges were excluded.

3. If there was no match of a FICE code on the above-mentioned directories, more reference works were consulted and decision was made on an individual basis.

4. In addition, the HSB subsample of delayed entrants into proprietary schools was selected by merging the cases from three time periods: those who attended proprietary school as the second postsecondary institution after high school, as the first during 1982 and 1984, or the first during 1984 and 1986 were included. These three sets of cases were merged and recorded as a separate data file, along with other variables that would be used in the analysis. The rest of the selection procedure was the same for all others.

In general, the selected cases include mostly business and technical institutions, cosmetology or beauty schools, and secretarial schools. Many nursing, X-ray, and radiology schools are hospital-related or often religiously-affiliated, and they were included in the sample. A few public schools were detected and dropped from the sample of cases surviving the first step of screening, and the reason for their inclusion in the original data may be due to the respondent's wrong impression about the nature and control of the institution attended.

3.3 Variable Specifications

A list of variables and their definitions is provided in the following section. NLS and HSB are in general compatible in the way the variables are prepared and categorized. However, there are differences between these two data sets, such as the categorization of race and college type, and compromises are made to match the variables categorized differently in the two data sets. The tape positions are given in parentheses. For the HSB data set, if a variable's tape position varies from the sophomore cohort to senior cohort, then the position for the sophomore variable is given in a second parenthesis.

SEX -- *NLS (4471-4472):* This is a composite of the individual's responses to items in the base year, first, second, and fourth follow-up questionnaires indicating sex.

HSB (30): Since there were several sources of information on sex from the base year through the first follow-up, SEX was constructed to produce a variable with the least missing data and most agreement. The one used here is simply a copy of the same variable within the second follow-up section.

CODING: 0 = FEMALE; 1 = MALE.

RACE -- *NLS (4469-4470):* This is a composite of the individual's responses to items indicating race in the base year, first and second follow-up

questionnaires. Original categorization: 1=AMERICAN INDIAN; 2=BLACK; 3=MEXICAN-AMERICAN; 4=PUERTO-RICAN; 5=LATIN-AMERICAN; 6=ASIAN-AMERICAN; 7=WHITE; 8=OTHER.

HSB (31): This is a composite based on race and ethnic origin codes which were available from both the base year and first follow-up questionnaires. Original categorization: 1=HISPANIC OR SPANISH; 2=AMERICAN INDIAN OR ALASKAN NATIVE; 3=ASIAN OR PACIFIC ISLANDER; 4=BLACK; 5=WHITE; 6=OTHER.

RECODING (for descriptive statistics): 1=BLACK 2=WHITE; 3=HISPANIC; 4=OTHER.

RECODING (for discriminant analysis and multiple regression): 0=MINORITIES; 1=WHITE.

APT -- Aptitude.

NLS (2803-2804): This is a computed index of aptitude, coded 1-4 by lower, middle two, and upper quartile ranges, derived from the base-year test scores. The base-year tests covered four content areas: vocabulary, reading, letter, and mathematics.

HSB (37): This is a composite score covering the base-year tests in vocabulary, reading, and mathematics.

CODING: 1=the lowest quartile, 2=the second quartile, 3=the third quartile, 4=the highest quartile.

SES -- Socioeconomic status.

NLS (2805-2806): This is a computed index of SES, coded 1-4 by lower, middle two, and upper quartile ranges, derived from five components: father's education, mother's education, parents' income, father's occupation, and household items.

HSB (43): The procedures used to construct this composite adhered as closely as possible to those used in NLS.

CODING: 1 = the lowest quartile, 2 = the second quartile, 3 = the third quartile, 4 = the highest quartile.

TYPE -- Type of institution.

TYPE72 (2825-2826): This variable specifies the type of school the respondent attended in October 1972 according to NLS. And it is further defined by CONTROL72 (1760-1762), a variable indicating whether the school is private or public.

TYPE80 (1659): This variable specifies the type of the first school a respondent in HSB senior cohort attended after high school. *TYPE82 (3296)*: This variable specifies the type of the first school a respondent in HSB sophomore cohort attended after high school. *TYPE--DELAYED* (1660, 2598, 4122): This variable specifies the type of school a respondent in HSB senior cohort attended as the second school after high school, the school attended during 1982 and 1984, and that during 1984 and 1986.

Each school attended is further defined by the corresponding CONTROL variables.

CODING: 1 = PROP (proprietary school); 2 = 2YR (junior or community college); 3 = 4YR (four- to five-year college or university).

ASPST -- Student aspiration.

NLS (791-792): This variable is based on the base-year questionnaire in which the respondent was asked to indicate the highest educational level he/she planned to attain. Original categorization: 1 = LT HS GR; 2 = GRAD HS ONLY; 3 = VOC-TECH-ETC.; 4 = JR COLL; 5 = 4YR COLL OR UNIV; 6 = GRAD OR PROF SCH.

HSB (625-626): This variable is based on the base-year questionnaire in which the respondent was asked to indicate how far in school he/she would get. Original categorization: 1 = LT HS GRAD; 2 = HS GRAD ONLY; 3 = VOC, TRADE, OR BUSINESS SCH AFTER HS (including: LT 2YR; GT 2YR); 4 = COLL PROGRAM (including: LT 2YR COLL; GT 2YR COLL; 4-5YR DEGREE; MASTER; PH.D., M.D., ETC.).

RECODING: 1 = HS GRAD OR LESS; 2 = VOC-TECH OR 2YR DEGREE; 3 = 4-5YR DEGREE; 4 = ADV DEGREE.

ASPMO -- Mother aspiration.

NLS (825-826): This variable is based on the base-year questionnaire in which the respondent was asked to indicate the highest educational level his/her mother wants him/her to attain. Original categorization: 1 = LT HS GR; 2 = GRAD HS ONLY; 3 = VOC-TECH-ETC.; 4 = JR COLL; 5 = 4YR COLL OR UNIV; 6 = GRAD OR PROF SCH.

HSB (627-628): This variable is based on the base-year questionnaire in which the respondent was asked to indicate how far in school his/her mother wants him/her to go. Original categorization: 1 = LT HS GRAD; 2 = HS GRAD ONLY; 3 = VOC, TRADE, OR BUSINESS SCH AFTER HS (including: LT 2YR; GT 2YR); 4 = COLL PROGRAM (including: LT 2YR COLL; GT 2YR COLL; 4-5YR DEGREE; MASTER; PH.D., M.D., ETC.).

RECODING: 1 = HS GRAD OR LESS; 2 = VOC-TECH OR 2YR DEGREE; 3 = 4-5YR DEGREE; 4 = ADV DEGREE.

HSDIP -- High school diploma.

NLS (1336-1337): This variable is based on the first follow-up questionnaire in which the respondent was asked to indicate whether he/she completed high school. Original categorization: 1 = NO-STILL IN HS; 2 = NO-LEFT HS; 3 = YES-GRAD; 4 = YES-LEFT HS-HS EQUIV.

HSB (4871)(5577): This is a composite variable indicating whether the respondent obtained high school diploma. Original categorization:

1=HAVE DIP OR GED, NEVER LEFT; 2=HAVE DIP BUT RETURNED; 3=NO DIP BUT RETURNED; 4=NO DIP, NEVER RETURNED.

RECODING: 1=HS GRAD; 2=DROPOUT.

EDATT -- Educational attainment.

NLS (10543-10544): This is a composite of the individual's responses to fourth follow-up questionnaires items indicating educational attainment. Original categorization: 1=NO COLL[ege], NO VOC[ational training]; 2=NO COLL, SOME VOC; 3=LT (less than) 2YRS (years) COLL, NO VOC; 4=LT 2YRS COLL, SOME VOC; 5=GT (greater than) 2YRS, NO VOC; 6=GT 2YRS, SOME VOC; 7=4-5YR DEGREE; 8=ADV[anced] DEGREE.

HSB (4929-4930)(5628-5629): This variable was created by searching first, second, and third follow-up data to determine the highest level of education attained. Original categorization: 1=LT HS (high school); 2=HS DIP[loma] OR EQUIV[alent]; 3=LICENCE OR CERTIFICATE, 4=2-3 YRS VOC DEGREE; 5=4-5YR BACHELOR'S DEGREE; 6=MASTER'S DEGREE OR EQUIV; 7=PH.D., M.D., L.L.B., J.D., etc..

RECODING: 1=LT 2YR (less than two-year degree); 2=GT 2YR (two-year degree or more, but less than four-year degree); 3=GT 4YR (four-year or advanced degree).

3.4 Methods of Analysis

1. The NLS and HSB (senior cohort) data bases were used to build a profile of the sample of proprietary school students in terms of gender, race, SES, and aptitude. Two similar profiles were also built for the students in two- and four-year institutions for the sake of comparison. The descriptive statistics presented allow comparisons in three dimensions: 1) a comparison between proprietary schools and two-year institutions; 2) a comparison between proprietary schools and four-year institutions; and 3) a comparison between the general trends of the 1972 senior cohort and the 1980 senior cohort.

2. Discriminant analyses were performed to determine the major factors associated with students' choice of proprietary schools. Gender, race, SES, aptitude, and aspiration were used as the independent variables. In order to get clearer and more straightforward discriminant function coefficients, two-group instead of three-group analyses were performed, namely, the proprietary versus the two-year and the proprietary versus the four-year. In addition, each discriminant analysis was followed by a classification accuracy test to demonstrate the discriminant power of the analysis.

3. A multiple regression was conducted for each group of students to identify the factors that significantly contribute to their educational attainment as a result of attending a certain type of institutions. The results were both to confirm the descriptive statistics in the profile and to examine the predicting power of the selected independent variables. The general multiple regression equation is:

$$EDATT = Beta1(SEX) + Beta2(RACE) + Beta3(SESQ) + Beta4(APTQ) + Beta5(ASPST) + Beta6(ASPMO)$$

Both NLS and HSB (senior cohort) were used to conduct the analyses described in the previous two sections.

4. With the sophomore cohort of HSB presumably containing more high school dropouts than the senior cohort, a subsample was pulled out from the sophomore data of HSB. Descriptive statistics was first presented to see if proprietary schools provided opportunities for those who identified themselves as high school dropouts. However, only 11 out of 245 cases were identified as high school dropouts in the sample. The HSB data might be biased in sampling high school dropouts, but the existing literature about the proportion of high school dropouts in proprietary schools may also be inaccurate. No further statistical analysis was executed.

5. The senior cohort of HSB data was used again to build a subsample of delayed entrants into proprietary schools. The purpose of doing so was two-fold. First, delayed entrants were used as a check-point to see if the major findings derived from the initial entry group were consistent with that from the delayed

ones. Second, delayed entrants were studied to see if they are characteristically different from the initial entrants. Descriptive statistics concerning the educational attainment of delayed proprietary students were first presented with respect to gender, race, SES, and aptitude. A multiple regression was then conducted to check the predicting power of the same independent variables used in the analyses of initial entrants.

Chapter IV

Results of the Study

The results of analyses of data are presented in this chapter according to the order of the research questions proposed in Chapter 1. The four divisions of this chapter are: (1) demographic characteristics, (2) school choice, (3) educational attainment, and (4) delayed entry.

4.1 Demographic Characteristics

Included in this section are descriptive statistics showing the distribution of students' first enrollment after high school by gender, race, socioeconomic status, and aptitude. These enrollment figures are then followed by the descriptive

statistics of educational attainment of the same groups of students in a seven-year (NLS) or six-year (HSB) period. Finally, individual variables used in this study are presented with their means, standard deviations, and correlation coefficients, which provide a basis for further statistical analysis.

4.1.1 Enrollment

The most striking fact shown in Table 1 is that females outnumbered males in proprietary schools (73% vs. 27% for NLS and 65% vs. 35% for HSB), while in community colleges and four-year institutions males and females were by and large evenly distributed. The high enrollment rate of blacks in the HSB sample and the lower enrollment rate in the NLS sample, as presented in Table 2 on page 52, contradict the existing literature that shows the decline of black enrollment from the 1970's to the 1980's, and sampling bias of either NLS or HSB is the only possible explanation so far. Meanwhile, Hispanic was the minority group that had the greatest increase in enrollment rates in all types of postsecondary institutions.

Table 3 on page 53 shows that proprietary schools attracted 57% of the students from the lower two SES quartiles in the NLS sample compared to 65% in the HSB sample. On the contrary, students from upper social classes chose four-year institutions disproportionately (41% for NLS and 32% for HSB).

Table 1. Distribution of Student First Enrollment after High School by Gender and by Type of Institution

	Type of School*					
	PROP		2YR		4YR	
GENDER	NLS	HSB	NLS	HSB	NLS	HSB
MALE	71(27)	56(35)	508(51)	827(44)	888(51)	1629(45)
FEMALE	197(73)	106(65)	488(49)	1058(56)	857(49)	2006(55)
Total**	**268(100)**	**162(100)**	**996(100)**	**1885(100)**	**1745(100)**	**3635(100)**

* Percentages are given in parentheses.

** Number of cases: NLS - 3009; HSB - 5682.

Table 2. Distribution of Student First Enrollment after High School by Race and by Type of Institution

	Type of School*					
	PROP		2YR		4YR	
RACE	NLS	HSB	NLS	HSB	NLS	HSB
BLACK	32(12)	37(23)	107(11)	344(18)	206(12)	921(25)
WHITE	220(83)	97(60)	771(78)	918(49)	1436(83)	1973(54)
HISPANIC	6(2)	21(13)	55(6)	485(26)	33(2)	520(14)
OTHER	8(3)	7(4)	58(6)	133(7)	65(4)	213(6)
Total**	**266(100)**	**162(100)**	**991(100)**	**1880(100)**	**1740(100)**	**3627(100)**

* Percentages are given in parentheses.

** Number of cases: NLS - 2997; HSB - 5669.

Table 3. Distribution of Student First Enrollment after High School by SES and by Type of Institution

	Type of School*					
	PROP		2YR		4YR	
SESQ	NLS	HSB	NLS	HSB	NLS	HSB
LOW 1	65(24)	49(32)	220(22)	566(32)	258(15)	891(26)
2	87(33)	51(33)	237(24)	423(24)	341(20)	710(20)
3	62(23)	34(22)	268(27)	427(24)	425(24)	787(23)
HIGH 4	54(20)	20(13)	272(27)	364(20)	722(41)	1102(32)
Total**	**268(100)**	**154(100)**	**997(100)**	**1780(100)**	**1746(100)**	**3490(100)**

* Percentages are given in parentheses.

** Number of cases: NLS - 3011; HSB - 5424.

Community colleges served all social strata, as already pointed out by Clowes, Hinkle, and Smart (1986), though not necessarily showing their particular favor to the middle two quartiles.

Students' aptitude appears to make minor differences in determining their choice of postsecondary institutions (Table 4 on page 55). High aptitude students did outnumber low aptitude ones in four-year institutions, but the contrary did not occur in proprietary schools in the NLS sample. There is a considerable difference between the number of the highest and the lowest aptitude students in proprietary schools for the HSB sample (31% the lowest and 16% the highest), but generalizations can hardly be made based on this difference due to the small sample sizes and the great number of missing cases for this variable.

4.1.2 Attainment

Graduating high school seniors were then followed to see what educational level they eventually attained in a seven-year (NLS) or six-year (HSB) period. Tables 5 to 12 present both column and row percentages, showing students' educational attainment by different levels as well as by the factors considered. Table 5 shows that those who entered proprietary schools were far less likely to

Table 4. Distribution of Student First Enrollment after High School by Aptitude and by Type of Institution

	Type of School*					
	PROP		2YR		4YR	
APTQ	NLS	HSB	NLS	HSB	NLS	HSB
LOW 1	48(26)	47(31)	163(23)	441(27)	139(11)	395(12)
2	48(26)	43(29)	183(26)	446(27)	186(15)	612(19)
3	54(29)	36(24)	191(27)	427(26)	362(30)	872(27)
HIGH 4	38(20)	24(16)	162(23)	318(20)	541(44)	1365(42)
Total**	**188(100)**	**150(100)**	**699(100)**	**1632(100)**	**1228(100)**	**3244(100)**

* Percentages are given in parentheses.

** Number of cases: NLS - 2115; HSB - 5026.

Table 5. Students' Educational Attainment by Gender and by Type of Institution (Presented with Row Percentages)

	Educational Attainment							
	LT 2YR		GT 2YR		GT 4YR		TOTAL*	
	NLS	HSB	NLS	HSB	NLS	HSB	NLS	HSB
PROP MALE	44(75)	43(77)	9(15)	12(21)	6(10)	1(2)	**59(100)**	**56(100)**
FEMALE	149(88)	85(80)	15(9)	17(16)	6(3)	4(4)	**170(100)**	**106(100)**
2YR MALE	257(63)	591(71)	95(23)	137(17)	57(14)	99(12)	**409(100)**	**827(100)**
FEMALE	257(62)	761(72)	101(24)	190(18)	55(13)	106(10)	**413(100)**	**1057(100)**
4YR MALE	260(35)	927(57)	200(27)	54(3)	290(38)	648(40)	**750(100)**	**1629(100)**
FEMALE	279(37)	1108(55)	190(25)	74(4)	288(38)	824(41)	**757(100)**	**2006(100)**

* Number of cases: NLS - 2558; HSB - 5681.

complete the bachelor's degree than their counterparts at community colleges. This is truer for females than for males in the NLS sample. However, in terms of getting two-year degrees, community college students did not appear to have too great an advantage over proprietary ones, especially in the HSB sample. Here gender seemed to make little difference, and the slightly higher rates of female attainment were attributable to the higher enrollment rates of females in both proprietary and community colleges (Table 6 on page 58). The much higher educational attainment of four-year school students is an obvious fact.

In Table 7 and Table 8, when the race factor was taken into account, it became very clear that those who attended proprietary schools and eventually got two-year degrees were mostly whites (96% for NLS and 59% for HSB). What is noticeable is that, in the NLS sample, no black proprietary student received a two-year degree and only 4 cases did in the HSB sample. The same low attainment rates of minority students happened to community college students. Although the small number of the proprietary sample who attained two-year degrees makes any generalization to the population extremely difficult, the ascendent tendency of SES quartiles consistent with the ascendence of educational levels across all the three types of institutions reveals the persistent influence of social classes on students' educational attainment (Table 9 and Table 10).

Aptitude is the variable that has the most missing observations in all the variables used in this study, thus estimations derived from this variable are risky.

Table 6. Student Education Attainment by Gender and by Type of Institution (Presented with Column Percentages)

	Educational Attainment					
	LT 2YR		GT 2YR		GT 4YR	
	NLS	HSB	NLS	HSB	NLS	HSB
PROP MALE	44(23)	43(34)	9(38)	12(41)	6(50)	1(20)
FEMALE	149(77)	85(66)	15(63)	17(59)	6(50)	4(80)
TOTAL*	**193(100)**	**128(100)**	**24(100)**	**29(100)**	**12(100)**	**5(100)**
2YR MALE	257(50)	591(44)	95(49)	137(42)	57(51)	99(48)
FEMALE	257(50)	761(56)	101(52)	190(58)	55(49)	106(52)
TOTAL*	**514(100)**	**1352(100)**	**196(100)**	**327(100)**	**112(100)**	**205(100)**
4YR MALE	260(48)	927(46)	200(51)	54(42)	290(50)	648(44)
FEMALE	279(52)	1108(54)	190(49)	74(58)	288(50)	824(56)
TOTAL*	**539(100)**	**2035(100)**	**390(100)**	**128(100)**	**578(100)**	**1472(100)**

* Number of cases: NLS - 2558; HSB - 5681.

Table 7. Student Education Attainment by Race and by Type of Institution (Presented with Column Percentages)

	Educational Attainment					
	LT 2YR		GT 2YR		GT 4YR	
	NLS	HSB	NLS	HSB	NLS	HSB
PROP BLACK	22(12)	33(26)	0	4(14)	2(17)	0
WHITE	160(83)	77(60)	23(96)	17(59)	10(83)	3(60)
HISPANIC	4(2)	14(11)	1 (4)	5(17)	0	2(40)
OTHER	6(3)	4(3)	0	3(10)	0	0
TOTAL*	**192(100)**	**128(100)**	**24(100)**	**29(100)**	**12(100)**	**5(100)**
2YR BLACK	44(9)	282(21)	20(10)	47(14)	7(6)	14(8)
WHITE	413(80)	619(46)	148(76)	171(53)	96(86)	128(62)
HISPANIC	31(6)	358(27)	9(5)	83(26)	4(4)	44(21)
OTHER	26(5)	89(6)	18(9)	25(7)	5(4)	19(9)
TOTAL*	**514(100)**	**1348(100)**	**195(100)**	**326(100)**	**112(100)**	**205(100)**
4YR BLACK	66(12)	637(31)	58(15)	32(25)	43(7)	252(17)
WHITE	444(82)	928(46)	305(78)	74(58)	507(88)	971(66)
HISPANIC	14(3)	345(17)	5(1)	14(11)	8(2)	161(11)
OTHER	15(3)	121(6)	22(6)	8(6)	20(3)	84(6)
TOTAL*	**539(100)**	**2031(100)**	**390(100)**	**128(100)**	**578(100)**	**1468(100)**

* Number of cases: NLS - 2556; HSB - 5659.

Table 8. Students' Educational Attainment by Race and by Type of Institution (Presented with Row Percentages)

	Educational Attainment							
	LT 2YR		GT 2YR		GT 4YR		TOTAL*	
	NLS	HSB	NLS	HSB	NLS	HSB	NLS	HSB
PROP BLACK	22(92)	33(89)	0	4(11)	2(8)	0	**24(100)**	**37(100)**
WHITE	160(83)	77(79)	23(12)	17(18)	10(5)	3(5)	**193(100)**	**97(100)**
HISPANIC	4(80)	14(67)	1(20)	5(24)	0	2(9)	**5(100)**	**21(100)**
OTHER	6(100)	4(57)	0	3(43)	0	0	**6(100)**	**7(100)**
2YR BLACK	44(62)	282(82)	20(28)	47(14)	7(10)	14(4)	**71(100)**	**343(100)**
WHITE	413(62)	619(67)	148(23)	171(19)	96(15)	128(14)	**657(100)**	**918(100)**
HISPANIC	31(70)	358(74)	9(20)	83(17)	4(10)	44(9)	**44(100)**	**458(100)**
OTHER	26(53)	89(67)	18(37)	25(19)	5(10)	19(14)	**49(100)**	**133(100)**
4YR BLACK	66(40)	637(69)	58(35)	32(4)	43(25)	252(27)	**167(100)**	**921(100)**
WHITE	444(36)	928(47)	305(24)	74(4)	507(40)	971(49)	**1256(100)**	**1973(100)**
HISPANIC	14(52)	345(66)	5(19)	14(3)	8(29)	161(31)	**27(100)**	**520(100)**
OTHER	15(26)	121(57)	22(39)	8(4)	20(35)	84(39)	**57(100)**	**213(100)**

* Number of cases: NLS - 2556; HSB - 5659.

Table 9. Student Education Attainment by SES and by Type of Institution (Presented with Column Percentages)

	Educational Attainment					
	LT 2YR		GT 2YR		GT 4YR	
	NLS	HSB	NLS	HSB	NLS	HSB
PROP SESQ 1	50(26)	39(32)	3(13)	10(36)	1(8)	0
2	70(36)	42(35)	5(21)	8(29)	2(17)	1(20)
3	42(22)	27(22)	7(29)	4(14)	4(33)	3(60)
4	31(16)	13(11)	9(37)	6(21)	5(42)	1(20)
TOTAL*	**193(100)**	**121(100)**	**24(100)**	**28(100)**	**12(100)**	**5(100)**
2YR SESQ 1	113(22)	445(35)	36(18)	84(27)	18(16)	36(18)
2	143(28)	314(25)	42(21)	78(25)	18(16)	31(16)
3	145(28)	284(22)	52(27)	81(26)	25(22)	62(31)
4	113(22)	224(18)	66(34)	69(22)	51(46)	71(35)
TOTAL*	**514(100)**	**1267(100)**	**196(100)**	**312(100)**	**112(100)**	**200(100)**
4YR SESQ 1	121(22)	607(31)	46(12)	33(27)	53(9)	251(18)
2	129(24)	446(23)	79(20)	31(25)	90(16)	233(16)
3	143(27)	424(22)	103(26)	31(25)	118(20)	332(23)
4	146(27)	478(24)	162(42)	27(23)	317(55)	597(43)
TOTAL*	**539(100)**	**1955(100)**	**390(100)**	**122(100)**	**578(100)**	**1413(100)**

* Number of cases: NLS - 2558; HSB - 5423.

Table 10. Students' Educational Attainment by SES and by Type of Institution (Presented with Row Percentages)

	Educational Attainment							
	LT 2YR		GT 2YR		GT 4YR		TOTAL*	
	NLS	HSB	NLS	HSB	NLS	HSB	NLS	HSB
PROP SESQ 1	50(93)	39(80)	3(6)	10(20)	1(1)	0	**54(100)**	**49(100)**
2	70(91)	42(82)	5(6)	8(16)	2(3)	1(2)	**77(100)**	**51(100)**
3	42(79)	27(79)	7(13)	4(12)	4(8)	3(9)	**53(100)**	**34(100)**
4	31(69)	13(65)	9(20)	6(30)	5(11)	1(5)	**45(100)**	**20(100)**
2YR SESQ 1	113(68)	445(79)	36(22)	84(15)	18(10)	36(6)	**167(100)**	**565(100)**
2	143(70)	314(75)	42(21)	78(18)	18(9)	31(7)	**203(100)**	**423(100)**
3	145(65)	284(67)	52(23)	81(19)	25(12)	62(14)	**222(100)**	**427(100)**
4	113(49)	224(62)	66(29)	69(19)	51(22)	71(19)	**230(100)**	**364(100)**
4YR SESQ 1	121(55)	607(68)	46(21)	33(4)	53(24)	251(28)	**220(100)**	**891(100)**
2	129(43)	446(63)	79(27)	31(4)	90(30)	233(33)	**298(100)**	**710(100)**
3	143(40)	424(54)	103(28)	31(4)	118(32)	332(42)	**364(100)**	**787(100)**
4	146(23)	478(44)	162(26)	27(2)	317(51)	597(54)	**625(100)**	**1102(100)**

* Number of cases: NLS - 2558; HSB - 5423.

Table 11. Students' Educational Attainment by Aptitude and by Type of Institution (Presented with Row Percentages)

	Educational Attainment							
	LT 2YR		GT 2YR		GT 4YR		TOTAL*	
	NLS	HSB	NLS	HSB	NLS	HSB	NLS	HSB
PROP APTQ 1	37(94)	43(91)	1(3)	4(9)	1(3)	0	**39(100)**	**47(100)**
2	38(88)	33(77)	5(12)	9(21)	0	1(2)	**43(100)**	**43(100)**
3	41(89)	26(72)	4(9)	7(19)	1(2)	3(9)	**46(100)**	**36(100)**
4	27(75)	18(75)	6(17)	5(21)	3(8)	1(4)	**36(100)**	**24(100)**
2YR APTQ 1	96(79)	379(86)	18(15)	50(11)	8(6)	12(3)	**122(100)**	**441(100)**
2	103(64)	325(73)	35(22)	76(17)	22(14)	45(10)	**160(100)**	**446(100)**
3	99(58)	269(63)	49(29)	98(23)	22(13)	59(14)	**170(100)**	**426(100)**
4	76(54)	176(55)	38(27)	72(23)	28(19)	70(22)	**142(100)**	**318(100)**
4YR APTQ 1	63(53)	311(79)	30(25)	19(5)	25(22)	65(16)	**118(100)**	**395(100)**
2	72(47)	401(66)	36(24)	30(5)	45(29)	181(29)	**153(100)**	**612(100)**
3	105(33)	500(57)	93(29)	31(4)	119(38)	341(39)	**317(100)**	**872(100)**
4	132(27)	602(44)	123(25)	35(3)	241(48)	728(53)	**496(100)**	**1365(100)**

* Number of cases: NLS - 1842; HSB - 5025.

Table 12. Student Education Attainment by Aptitude and by Type of Institution (Presented with Column Percentages)

	Educational Attainment					
	LT 2YR		GT 2YR		GT 4YR	
	NLS	HSB	NLS	HSB	NLS	HSB
PROP APTQ 1	37(26)	43(36)	1(6)	4(16)	1(20)	0
2	38(27)	33(28)	5(31)	9(36)	0	1(20)
3	41(29)	26(22)	4(25)	7(28)	1(20)	3(60)
4	27(18)	18(14)	6(38)	5(20)	3(60)	1(20)
TOTAL*	**143(100)**	**120(100)**	**16(100)**	**25(100)**	**5(100)**	**5(100)**
2YR APTQ 1	96(25)	397(33)	18(13)	50(17)	8(10)	12(6)
2	103(28)	325(28)	35(25)	76(26)	22(28)	45(24)
3	99(27)	269(24)	49(35)	98(33)	22(28)	59(32)
4	76(20)	176(15)	38(27)	72(24)	28(34)	70(38)
TOTAL*	**374(100)**	**1149(100)**	**140(100)**	**296(100)**	**80(100)**	**186(100)**
4YR APTQ 1	63(17)	311(17)	30(10)	19(17)	25(6)	65(5)
2	72(19)	401(22)	36(13)	30(26)	45(10)	181(14)
3	105(28)	500(28)	93(33)	31(27)	119(28)	341(26)
4	132(36)	602(33)	123(44)	35(30)	241(56)	728(55)
TOTAL*	**372(100)**	**1814(100)**	**282(100)**	**115(100)**	**430(100)**	**1315(100)**

* Number of cases: NLS - 1842; HSB - 5025.

Table 11 on page 63 shows that most proprietary students did not get two-year degrees, no matter which level of aptitude they were in. Even for the proprietary students with the highest aptitude, 75% of them failed to get two-year degrees. On the contrary, community college students achieved higher, and the high aptitude ones did even better (Table 12). For those who entered four-year institutions, the high aptitude students achieved considerably higher than low aptitude ones, which may be a sign of a meritocratic system in four-year institutions.

4.1.3 Overview of Independent Variables

Table 13 on page 66 provides means and standard deviations of the variables used for the statistical analyses in the following two sections. The means of SEX show that only 19% of the proprietary sample were males in NLS, and this figure became 33% in HSB. When all the minority groups were collapsed into one as a contrasting group to whites, it turned out that whites accounted for more than 80% in all the three types of institutions in NLS. This ratio declined in HSB, and especially in community colleges whites and minorities tended to be evenly distributed.

The average SES quartiles increased from the proprietary sector to the community college sector to four-year institutions, indicating differential

Table 13. Means and Standard Deviations of the Variables Used for the Analysis of Initial Entrants

Independent Variables**	Type of Sch	NLS*	HSB*
SEX	PROP	0.19(0.39)	0.33(0.47)
	2YR	0.49(0.50)	0.43(0.50)
	4YR	0.50(0.50)	0.44(0.50)
RACE	PROP	0.89(0.31)	0.63(0.48)
	2YR	0.84(0.37)	0.50(0.50)
	4YR	0.87(0.33)	0.56(0.50)
SESQ	PROP	2.39(0.99)	2.24(1.02)
	2YR	2.70(1.08)	2.35(1.12)
	4YR	2.98(1.09)	2.65(1.16)
APTQ	PROP	2.74(0.99)	2.23(1.06)
	2YR	2.74(1.04)	2.43(1.07)
	4YR	3.22(0.92)	3.03(1.03)
ASPST	PROP	2.10(0.58)	2.20(0.68)
	2YR	2.50(0.72)	2.69(0.85)
	4YR	3.14(0.55)	3.33(0.69)
ASPMO	PROP	2.18(0.53)	2.42(0.83)
	2YR	2.67(0.70)	2.91(0.85)
	4YR	3.16(0.52)	3.33(0.69)

* Standard deviations are given in parentheses.

** Number of cases: NLS: PROP - 127; 2YR - 435; 4YR - 949.
HSB: PROP - 114; 2YR - 1302; 4YR - 2768.

compositions of students' family background in different types of postsecondary institutions. The average aptitude quartiles were higher in four-year institutions, but no great difference can be observed between proprietary and schools and community colleges. Students attending proprietary schools did show lower educational aspiration than those attending community colleges and four-year institutions, and the aspirations of mothers were in general consistent with their children's.

Table 14 and Table 15 are two matrices showing the overall correlations among the variables used in the study. Because the computer deletes missing observations automatically, the number of cases varies from one one pair of variables to another. It should be noted that the correlations between mother's aspiration and student's are high as expected (.66 for NLS and .67 for HSB). This is helpful in the later estimation of missing observations so as to increase the small sample size of the proprietary sector, but the risk of high multicollinearity should also be kept in mind when the results of multiple regressions and discriminant analyses are interpreted.

Table 14. Correlation Matrix for the Variables Used in the Analysis of Initial Entrants -- NLS

Variable	EDATT	SEX	RACE	SESQ	APTQ	ASPST	APTMO
EDATT	1.0000						
SEX	-0.0599	1.0000					
RACE	0.0132	-0.0439	1.0000				
SESQ	0.3393	-0.0528	0.0784	1.0000			
APTQ	0.3755	0.0124	0.0602	0.3833	1.0000		
ASPST	0.4858	-0.1248	-0.0515	0.3283	0.3907	1.0000	
ASPMO	0.4237	-0.1348	-0.0195	0.3139	0.3786	0.6648	1.0000

Table 15. Correlation Matrix for the Variables Used in the Analysis of Initial Entrants -- HSB (senior cohort)

Variable	EDATT	SEX	RACE	SESQ	APTQ	ASPST	APTMO
EDATT	1.0000						
SEX	0.0189	1.0000					
RACE	0.0402	-0.0234	1.0000				
SESQ	0.2823	-0.0693	0.0494	1.0000			
APTQ	0.3621	-0.0621	0.1030	0.3280	1.0000		
ASPST	0.3837	0.0171	0.0090	0.3310	0.4276	1.0000	
ASPMO	0.2516	0.0022	-0.0083	0.2643	0.2941	0.6736	1.0000

4.2 School Choice

Discriminant analyses were conducted respectively on both the NLS and HSB samples to determine the major factors associated with students' choice among different types of postsecondary institutions. In order to get clearer and more straightforward discriminant results, two-group instead of three-group discriminant analyses were performed between proprietary and community college groups and between proprietary and four-year institution groups. Due to the high correlations (.66 for NLS and .67 for HSB) between the variables of ASPST and ASPMO, the same discriminant analysis procedure was performed thrice, with both ASPST and ASPMO included and with only one of them included at one time. It turned out that ASPST and ASPMO always yielded the highest discriminant function coefficients in the model when one of them was absent. Table 16 presents the standardized canonical discriminant function coefficients ($p = .05$) when both ASPST and ASPMO were taken into account at the same time. The most obvious fact is that the educational aspiration of both mother and student played the single most important role in determining the student's choice among different types of postsecondary institutions. For the NLS sample, gender did make a great difference in students' choice between proprietary schools and community colleges ($D = .51$), which agrees with the previous finding that females outnumbered males in proprietary schools in the 1970's. The race factor did not appear to be very important in discriminating students' choices of postsecondary institutions, except in HSB whites showed a

preference for proprietary schools over community colleges (D=-.32). In the NLS sample, community colleges did attract students from higher socioeconomic background (D=.26) than proprietary schools, but this was not the case for the HSB sample, neither for four-year institutions in the NLS sample. Finally, the importance of a student's aptitude level in choosing postsecondary institutions tended to be greater in HSB than in NLS, indicating the possibility that in the 1980's students paid more attention to their own aptitude level while deciding which type of schools they would attend.

In order to demonstrate the effectiveness of discriminant analyses in differentiating students' choice of postsecondary institutions by the chosen independent variables, a classification accuracy test was performed for every individual using discriminant analysis. Table 17 presents a summary of the percentages of correctly classified cases for each group. The lowest percentages are community college groups, which may be attributable to the fact that those choosing community colleges were the least different from their proprietary counterparts. The proprietary groups had relatively high percentages (75% for NLS and 71% for HSB) of cases being correctly classified, indicating the chosen variables were good predictors that successfully differentiated proprietary enrollees from those attending other types of postsecondary institutions. Moreover, the highest percentages of the four-year groups (92% for NLS and 84% for HSB) show that those attending four-year institutions were really a special group of students whose socioeconomic, academic, and other backgrounds

Table 16. Standardized Canonical Discriminant Function Coefficients (D)

Independent Variable**	NLS*		HSB*	
	PROP v. 2YR	PROP v. 4YR	PROP v. 2YR	PROP v. 4YR
SEX	0.5052	0.1440	0.2186	0.0747
RACE	--	-0.0625	-0.3155	-0.1344
SESQ	0.2550	0.0775	0.0275	0.0201
APTQ	-0.1609	0.0558	0.2221	0.2715
ASPST	0.2383	0.5528	0.4882	0.6732
ASPMO	0.5542	0.5555	0.4291	0.3125

* All the coefficients shown are significant at the .05 level.

** Number of cases: NLS: PROP - 127; 2YR - 435; 4YR - 949.
HSB: PROP - 114; 2YR - 1302; 4YR - 2768.

Table 17. Percent of cases Correctly Classified with Discriminant Analysis (DA)

Data Base	Grouping	Type of Sch	N	% Correct with DA
NLS	PROP v. 2YR	PROP	127	74.8
		2YR	435	65.1
	PROP v. 4YR	PROP	127	74.8
		4YR	949	91.6
HSB	PROP v. 2YR	PROP	114	71.1
		2YR	1302	60.9
	PROP v. 4YR	PROP	114	71.1
		4YR	2768	84.0

were in general higher than their proprietary and community college counterparts.

4.3 Educational Attainment

Multiple regressions were employed next to identify the factors that significantly contribute to the educational attainment of students attending different types of postsecondary institutions.

Table 18 provides a summary of the results of multiple regressions concerning the educational attainment of proprietary students as compared with community college and four-year school students. Each multiple regression procedure was performed thrice, with both ASPST and ASPMO included and with only one of them included at one time. The purpose of doing so was to avoid high multicollinearity. Nonetheless, Table 18 only reports the regressions that yield the highest R^2 values. It should be noted that, because the computer program used automatically deletes the cases with missing observations, the two proprietary subsamples suffered a great loss of cases initially. Therefore, estimations were conducted to make up the loss. The estimation procedure followed two steps. First, with the variables with missing observations taken as the dependent variables and other variables as the independent, multiple

Table 18. Summary of the Results of Multiple Regressions on Educational Attainment

	NLS			HSB		
Predictor[a]	**PROP**	**2YR**	**4YR**	**PROP**	**2YR**	**4YR**
SEX	0.0168*	-0.0336	--	-0.0584	-0.0195	-0.0376
RACE	-0.0662*	-0.0138	-0.0769*	0.0165	-0.0012	0.0959*
SESQ	0.0577	0.1012*	0.2087*	0.0513	0.1130*	0.1259*
APTQ	0.1819*	0.0201	0.1499*	0.1545*	0.2134*	0.1481*
ASPST	0.0406	0.3839*	0.0910*	0.2456*	0.1364*	0.1076*
ASPMO	--	--	0.0418	0.0460	--	--
R^2	0.0559	0.1645	0.1004	0.1127	0.1013	0.1003
F	2.0612	14.5273	15.6356	3.0274	29.1927	61.6003
P	0.0725	0.0000	0.0000	0.0081	0.0000	0.0000
N	180	375	848	150	1301	2768

[a] Reported in the table are standardized beta weights.

*$p < 0.05$

regression equations were thus established. Second, existing observations were used in the equations to estimate the missing ones. In so doing, the NLS sample recovered 71 cases, and the HSB, 36. EDATT, SESQ, ASPST, and ASPMO were the variables that benefited from the estimation procedure, but APTQ, though having the most missing cases, did not seem to have any logical connection with other variables and thus had no reason to be made up through the existing variables.

Table 18 on page 75 shows that, except for the proprietary sample in NLS, all the other regression equations yielded significant F's at the .05 level. For proprietary students, aptitude was the only factor associated with their educational attainment in both the NLS and HSB samples (betas = .18 [NLS] and .15 [HSB], $p < .05$). This fact implies that, though proprietary students were not necessarily lower in aptitude upon entering proprietary schools, they certainly need to be academically strong enough to move further on the educational ladder. Gender played a significant, though not strong, role in determining proprietary students' educational attainment in the NLS sample (beta = .02, $p < .05$), which again provides supporting evidence about females' higher achievement over males. The HSB sample also shows that a student's own educational aspiration determined his/her further educational attainment (beta = .25, $p < .05$), even if he/she started postsecondary education at the proprietary level.

In comparison with proprietary students, community college students seemed to be affected by similar factors in rising on the educational ladder, except their

eventual achievement was also heavily influenced by their socioeconomic backgrounds (betas = .10 [NLS] and .11 [HSB], $p < .05$). However, almost all the chosen variables showed significant predicting power in determining the educational attainment of those attending four-year institutions. With the preceding descriptive statistics in the background, this phenomenon points to the fact that, as soon as a student chose to attend a proprietary school, it did not matter any more what socioeconomic, racial and other background he/she had, for he/she would rarely have the opportunity to move further in postsecondary education, at least within a certain period of time. On the contrary, for those who attended four-year institutions, the chance of moving forward was much higher than for proprietary and community college enrollees. In other words, four-year school students could theoretically reach whichever level of education they wanted, though in reality the factors of gender, race, SES, aptitude and personal aspiration combined to shape every individual's educational and economic future.

4.4 Delayed Entry

The delayed entrants into proprietary schools were studied to see if major findings from this group are consistent with that from the initial entrants and to find if any significant difference exists between these two groups.

Table 19. Educational Attainment of Delayed Entrants -- HSB (Row percentages are given in parentheses.)

Variable	Educational Attainment			
	LT 2YR	GT 2YR	GT 4YR	TOTAL
SEX MALE	140(74)	42(22)	7(4)	**189(100)**
FEMALE	251(85)	37(13)	7(2)	**295(100)**
RACE BLACK	132(92)	10(7)	2(1)	**144(100)**
WHITE	150(73)	50(24)	7(3)	**207(100)**
HISPANIC	86(18)	14(14)	3(3)	**103(100)**
OTHER	19(73)	5(13)	2(8)	**26(100)**
SESQ LOW 1	142(88)	20(12)	0	**162(100)**
2	91(81)	17(15)	5(4)	**113(100)**
3	79(77)	20(19)	4(4)	**103(100)**
HIGH 4	52(71)	17(23)	4(6)	**73(100)**
APTQ LOW 1	137(90)	13(9)	1(1)	**151(100)**
2	98(85)	13(11)	4(4)	**115(100)**
3	67(70)	26(27)	3(3)	**96(100)**
HIGH 4	33(62)	15(28)	5(10)	**53(100)**

N = 484.

Table 19 on page 78 presents the educational attainment of delayed proprietary entrants in terms of gender, race, SES, and aptitude. The proportion of males and females attaining different levels of postsecondary education are very close to that for initial entrants, and most of them (74% males and 85% females) were still not able to get two-year or four-year degrees. Whites were still the group that had the highest educational attainment level. With respect to socioeconomic status, the largest group that attained less than two-year degrees was the lowest SES quartile group. Aptitude is the variable that has the most missing cases in all the variables used. However, because of the larger sample size for the delayed entrants than for the initial ones, the results ought to be more stable. As a matter of fact, the delayed group did yield similar results to the initial one. Most low aptitude students (90%) failed to attain a two-year degree or beyond; even for those whose aptitude is in the highest quartile: about two-thirds of them (62%) failed to attain a two-year degree.

A comparison between the correlation matrices of the variables used for the initial entrants (Table 15 on page 69) and the delayed ones (Table 20 on page 80) shows that the aspiration variables for the delayed are no longer so closely related to the EDATT variable (ASPST, .02; ASPMO, -.05) as they are for the initial entrants. This is confirmed by multiple regression analysis, in which neither ASPST nor ASPMO shows significant effect on educational attainment at the .05 level (Table 21 on page 82). This may indicate that, for those who entered the labor force immediately after high school, their educational aspiration may change over time. There is apparently a gap between what one aspires to

Table 20. Correlation Matrix for the Variables Used in the Analysis of Delayed Entrants -- HSB

Variable	EDATT	SEX	RACE	SESQ	APTQ	ASPST	APTMO
EDATT	1.000						
SEX	0.140	1.000					
RACE	0.138	0.022	1.000				
SESQ	0.128	0.091	0.353	1.000			
APTQ	0.245	0.120	0.472	0.250	1.000		
ASPST	0.017	-0.025	-0.149	0.063	0.203	1.000	
ASPMO	-0.047	-0.051	-0.257	0.109	0.097	0.643	1.000

at the time of high school graduation and what he/she can actually attain in the real world. Nevertheless, a student's aptitude is the single most important variable that determines his/her educational attainment, as shown in Table 21.

Table 21. Summary of the Results of Multiple Regressions on Educational Attainment -- HSB delayed Entrants (Proprietary Only)

Predictor	Standardized Beta Weights
SEX	0.1026
RACE	-0.0190
SESQ	0.0773
APTQ	0.2261*
ASPST	0.0267
ASPMO	-0.0945
R^2	0.0820
F	4.5549
P	0.0002
N	313

*$p < 0.05$

Chapter V

Conclusions

This chapter is comprised of four sections: 1) summary of the study; 2) major findings; 3) discussions; and 4) caveats and recommendations.

5.1 Summary of the Study

This study was designed to provide an overall estimate of proprietary schools' contribution to the equality of educational opportunity in this country. Two compatible nationwide data bases, NLS and HSB, were used so that major research questions related to proprietary schools could be addressed against a national background. Meanwhile, two parallel profiles of community colleges

and four-year institutions were built against the proprietary sector, thus all the major findings concerning the latter sector were compared with the former two sectors. Gender, race, SES, aptitude, and students' and their mothers' educational aspiration were the factors identified from the existing literature as being associated with students' college-going behavior as well as with the key issue of equal educational opportunity. They were tested in the study to find to what extent they contributed to a student's choice of proprietary school and his/her educational attainment in a certain period of time.

Discriminant analysis was the statistical strategy utilized to differentiate those who chose proprietary schools from those who entered community colleges or four-year institutions. Meanwhile, multiple regression was conducted with each group of students attending a certain type of postsecondary institutions in order to identify the major factors related to students' educational attainment. Finally, a subsample of the delayed entrants into proprietary schools in the HSB data was obtained by combining three sets of cases attending proprietary schools in three different periods. This subsample was used to check the major findings derived from the initial entrants and to answer the question of whether delayed entry affected students' educational attainment.

5.2 *Major Findings*

1. If the so-called "disadvantaged" in postsecondary education could be defined as minorities, females, people from lower socioeconomic background, and those with low aptitude scores, proprietary schools did serve this group of people to a certain extent. The present study shows that females outnumbered males in proprietary schools, and the students from lower socioeconomic status accounted for over one half to two-thirds of all the proprietary enrollees. Proprietary schools attracted a considerable number of minority students, but the greater increase of black enrollment was in four-year institutions and community colleges. In comparison with four-year institutions, proprietary schools enrolled more low aptitude students than high aptitude ones, especially in the HSB sample. Nonetheless, the most impressive difference made by aptitude was not in terms of enrollment but attainment.

2. The study shows that students' and their mothers' educational aspirations were the most important factors associated with students' choice among different types of postsecondary institutions. Moreover, the average level of postsecondary education which proprietary students aspired to attain was considerably lower than that of four-year institution or even of community college students. Students' mothers' aspiration was higher than, though in general consistent with, their children's, indicating that mothers felt they knew what their children wanted to attain and what they could actually attain (cf., Table 13). In this

sense, most proprietary students did have their educational ambition and promise fulfilled by attending proprietary schools. In addition, the gender factor in NLS and the aptitude factor in HSB yield high discriminant function coefficients, with the former confirming females' overrepresentation in proprietary schools, and with the latter showing that students' choices among different types of postsecondary institutions were sorted by aptitude in the HSB sample.

3. The interpretation of the role played by the aptitude variable in determining students' educational attainment may be two-fold. First, most proprietary students were not able to attain a two-year degree or more, no matter what aptitude level they belonged to. Second, the proprietary students who eventually attained the two-year degree or beyond were very likely to be high aptitude ones. On the contrary, for community college students, even low aptitude ones had a higher chance to attain a two-year degree or beyond than their counterparts in proprietary schools. That four-year institution students had a much higher chance to get a two-year or four-year degree is an obvious fact.

4. The results derived from the study of delayed entrants into proprietary schools turned out to be very similar to that from the initial entrants. The patterns of student enrollment and attainment with regard to gender, race, SES, and aptitude are in general consistent from the initial entry group to the delayed one. The importance of this supplementary study of the delayed entry group is its relatively large sample size of proprietary students, which really makes up the shortcomings caused by the small sample size of the initial entry group and adds

to the confidence level concerning the major findings derived only from the initial entry group. The only noticeable difference between the initial and the delayed groups lies in the fact that the aspiration of both students and their mothers did not seem to be related to the educational attainment of the delayed entrants any more, indicating how a student's aspiration might change over time in the real world. Therefore, a student's aptitude became the single most important factor that determined his/her educational attainment.

5.3 Discussions

The two-fold goal of this study was to evaluate the contribution of proprietary schools to the equality of educational opportunity and to study the issue of equality in the theoretical context of functionalists versus class-reproductionists.

In the field of postsecondary education, providing the "disadvantaged" group with equality of educational opportunity has been the primary concern of policymakers and the public. This has become such a central issue that the effort an institution makes to equalize opportunities is often measured by how well it has served females, minorities, and low SES students. But in a meritocratic system, colleges and universities, especially the prestigious institutions, have to be very selective to keep their academic standard. Maybe that is why community

colleges, with their "open-door" policy, are embraced as "a democratizing force in higher education" (Rouche & Baker, 1987: 3), or as "the Ellis Island of higher education" (Vaughan, 1983: 9).

However, with the re-discovery of proprietary schools, it appears that all the merits carried previously by community colleges are actually shared by these private, vocationally-oriented, and less-demanding schools. The present study shows that there are many similarities between community colleges and proprietary schools, such as a large proportion of females and low-aptitude students, and students' lower educational attainment in comparison with four-year institutions. Nevertheless, proprietary schools are not a simple replication of community colleges. For instance, it was found that the educational attainment of proprietary students was significantly lower than that of community college students. But this does not mean that community colleges did better in providing opportunities for their students to achieve higher. The fact of the matter is, community colleges carry a double mission of vocational training and college transfer, while proprietary schools concentrated only on the former.

Seen from this point of view, the question of whether proprietary schools aid or hinder students' educational attainment should be addressed in a different way. When Dougherty (1987) maintains that community colleges hinder educational attainment, he is holding an ideal yardstick that everyone should achieve the same no matter what type of schools he/she attends. But this study

shows that proprietary students aspired lower in educational level than community college students, and community college students, lower than four-year school students. Moreover, students' and their mothers' aspirations were found to be the most important factors that determined students' choice between different types of institutions. Therefore, when a student chooses to attend a proprietary school, he/she should already have his/her educational goal in mind. He/She may change their mind after entering a proprietary school and want to move forward on the educational ladder, but the study shows that aptitude is the factor that determines if it is possible or not.

This argument also sheds light on the debate between functionalists and class-reproductionists. When the latter criticize the postsecondary educational system as perpetuating the existing social classes, they tend to believe that every individual has the same potential to achieve as high as possible on the educational ladder. Thus they attribute students' unequal attainment to different types of postsecondary institutions. But this study shows that students not only differ in social economic background and academic potential, but also have different levels of educational aspiration. In this sense, proprietary schools only make social mobility difficult for those who are "disadvantaged" in background and who do not aspire any higher.

On the other hand, since functionalists hold a deep belief in the function of postsecondary education as social mobility, they are inclined to find evidence about equal educational opportunity from relative improvement rather than

absolute achievement of students' educational status. But the systematic difference between proprietary students and junior and senior college students with regard to SES, aptitude, and aspiration indicates certain "inherent" inferiority of proprietary students to those enrolled in other types of institutions. In this aspect, Deutsch (1964) was probably right that students' school choice and educational success reflect their parents' socialization practices. Moreover, students' attitudes and modes of behavior, including their educational and occupational aspiration, may also be shaped by the academic and disciplinary atmosphere of the type of institutions they attend. It is in this sense that proprietary schools hinder students' educational attainment.

Nevertheless, this study shows that the functionalist model and the class-reproductionist model worked differently with different types of institutions. While the enrollment patterns of proprietary schools and four-year institutions were not as different as expected, the attainment rates were really polarized between these two types of institutions. In four-year institutions, high aptitude students were very likely to achieve a baccalaureate or beyond, while in proprietary schools even high aptitude ones could barely reach a two-year degree or beyond. This to a certain extent confirms the assumption that functionalism describes four-year institutions somewhat better than proprietary schools and that the class-reproductionist model fits proprietary schools.

This study also provides an insight into Karen's (1990) observation that blacks and women were mobilized politically during the 1960's and the 1970's,

but the same did not happen to the working class. Needless to say, this study covered only the 1970's and extended to the 1980's, but the results remain consistent. Females' access to postsecondary education was in general equal to the male, though in the 1970's this equality was attributable to females' over-representation in proprietary schools. In the past two decades, black accessibility to all three types of institutions was greatly enhanced, but great efforts are still needed for them to persist in schools and to gain the degree to which they aspire. SES is the variable filled with confusions and controversies in the literature, and this mess was not cleaned up too much through this study. It is an obvious fact that four-year institutions enrolled a large proportion of high SES students and these students achieve the highest in all the groups. But in the proprietary sector, the largest group was the second SES quartile students, which accounted for over two-thirds of all the proprietary students. This fact may be regarded as evidence of the equal opportunity provided by proprietary schools to the low SES people, but a chilling implication may also be derived from here: people from the lowest SES quartile, or the real "disadvantaged," are still ignored by the entire postsecondary educational system.

5.4 Caveats and Recommendations

The present study was an attempt to contextualize proprietary schools in the postsecondary educational system and to approach various issues concerning proprietary students' educational attainment from a national perspective. NLS and HSB were the best nationwide data bases available, and they served the purpose very well.

However, further studies on proprietary schools need to avoid various inconveniences caused by using existent data designed for very general purposes. For instance, NLS and HSB provide less than 300 cases of proprietary enrollees each and less than 450 cases in HSB when delayed entrants are included, which were a small proportion of all the postsecondary institution enrollees according to the national population. These numbers were further reduced when missing observations occurred. This points to the fact that proprietary schools could hardly be the first choice of high school graduates, at least for a considerable period of time following high school graduation. Therefore, further research attention needs to be directed to the older student group in proprietary schools.

Meanwhile, due to various restrictions caused by using the existing data sets, this study was not able to go one step further and present parallel subsamples of the delayed entrants in both NLS and HSB data, nor to even take into account the factor of student transfer. These may be crucial to the generalizability of

studies on proprietary schools, especially on proprietary students' educational attainment. Therefore, if it is possible, to collect data dealing specifically with proprietary schools is really the best solution to these problems.

As already pointed out, more than one decade ago Hyde (1976) classified all the research on proprietary schools into three categories: descriptive studies, survey studies, and comparative studies. The present study, though applying parametrical statistical strategies and trying to envision the whole picture from the existing knowledge base, has not really gone beyond Hyde's categories. The independent variables used did yield significant F's in most regression models with regard to students' educational attainment, but the variance explained by the models (R^2) was lower than expected. In other words, the independent variables derived from the literature are good predictors of proprietary students' educational attainment, but they are not all, nor even necessarily the most significant ones. Especially the large number of missing observations in the aptitude variable opens to question whether this is a variable worth using in NLS and HSB data. Could a student's high school performance, high school program orientation, or just math scores make all the difference expected? What was the impact of a student's own socialization practice on his/her educational attainment? These are variables untouched in the literature and untested in the present study, but certainly worth exploring in the future.

Bibliography

Althusser, L. (1971). Ideology and ideological state apparatuses. In *Lenin and Philosophy and Other Essays.* New York: Monthly Review Press.

American Institutes for Research (AIR). (1972). *A Comparative Study of Proprietary and Nonproprietary Vocational Training Programs.* Palo Alto, CA: Author. (ED 067 523)

Apple, M. W. (1982). *Education and Power.* Boston,MA: Routledge & Kegan Paul.

Association of Independent Colleges and Schools (AICS). (1979-80). *Annual Reports.* Washington, D.C.: the Association.

Astin, A. (1977). *Four Critical Years.* San Francisco: Jossey-Bass.

Bean, J. P. & Vesper, N. (1990). Quantitative approaches to grounding theory in data: Using LISREL to develop a local model and theory of student attrition. Paper presented at the annual meeting of the American Educational Research Association (Boston, MA, April).

Beardslee, D. C. & O'Dowd, D. D. (1967). Students and the occupational world. In Sanford, N. (ed.) *The American College: A Psychological and Social Interpretation of the Higher Learning.* New York: John Wiley & Sons.

Belitsky, A. H. (1969). *Private Vocational Schools and Their Students: Limited Objectives, Unlimited Opportunities.* Cambridge, MA: Shenkman Publishing.

Blau, P. & Duncan, O. D. (1967). *The American Occupational Structure.* New York: Wiley.

Bowles, S. & Gintis, H. (1976). *Schooling in Capitalist America: Educational Reform and the Contradictions of Economic Life.* New York: Basic Books.

Braden, P. V. & Paul, K. K. (1971). Vocational education and private schools. In Law, G. F. (ed.) *Contemporary Concepts in Vocational Education.* Washington, D.C.: American Vocational Association. 200-204.

Clark, H. F. & Sloan, H. S. (1966). *Classrooms on Main Street.* New York: Teachers College Press.

Clowes, D. A.; Cheng, X.; & Hinkle, D. E. (in press). Addressing the void: Educational attainment measures from national data. *Community College Journal of Research and Practice.*

Clowes, D. A., Hinkle, D. E., & Smart, J. C. (1986). Enrollment patterns in postsecondary education, 1966-1982. *Journal of Higher Education,* 57(2), 121-133.

Coleman, J. S. (1969). The concept of equality of educational opportunity. In *Harvard Educational Review, Equal Educational Opportunity.* Cambridge, MA: Harvard University Press, 9-24.

Committee for Economic Development. (1987). *Children in Need: Investment Strategies for the Educationally Disadvantaged.* Washington, D.C.: Committee for Economic Development.

Deutsch, M. and Associates. (1964). *The Disadvantaged Child.* New York: Basic Books.

Dougherty, K. (1987). The effects of community colleges: aid or hindrance to socioeconomic attainment? *Sociology of Education,* 60, 86-103.

Dougherty, K. J. & Hammack, F. M. (1990). *Education and Society: A Reader.* San Diego: HBJ.

Duncan, O. D., Featherman, D. L., & Duncan, B. (1972). *Socioeconomic Background and Achievement.* New York: Seminar Press.

Farley, J. E. (1987). *American Social Problems: An Institutional Analysis.* Englewood, NJ: Prentice-Hall.

Featherman, D. L. & Hauser, R. M. (1978). *Opportunity and Change.* New York: Academic Press.

Freeman, R. B. (1974). Occupational training in proprietary schools and technical institutes. *Review of Economics and Statistics,* 56(3), 310-318.

Freidlander, M. C. (1982). *Characteristics of Students Attending Proprietary Schools and Factors Influencing their Instructional choice.* Monograph 501. Cincinnati: Southwestern Publishing Company.

Friedheim, S. B. (1982). Proprietary schools. In H. E. Mitzel (ed.) *Encyclopedia of Educational Research,* 5th edition, Vol. 3. 1474-1477. New York: The Free Press.

Hanson, G. A. & Parker, E. C. (1977). The vocational education industry. In Meyer, W. G. (ed.) *Vocational Education and the Nation's Economy.* Washington, D.C.: American Vocational Association, pp. 99-116.

Harcleroad, F. F. and others. (1981). *Serving Ethnic Minorities. Topic Paper 73.* Washington, D.C.: National Institute of Education.

Hollahan, C. K., Green, J. L., & Kelly, H. P. (1983). A six-year Longitudinal analysis of transfer student performance and retention. *Journal of college Student Personnel,* 24, 305-310.

Hoyt, K. B. (1966-67). The vanishing American. *Delta Pi Epsilon Journal,* 9(2), 1-8.

----. (1968). The specialty oriented student research program: A five year report. *Vocational Guidance Quarterly,* 16, 169-176.

----. (1970). Unpublished follow-up of proprietary and public vocational students. Cited in Wilms, 1975:3.

Hunter, R. & Sheldon, M. S. (1981). Statewide longitudinal study: Report on academic year 1979-1980, Part 4 - Spring 1980 results. Woodland Hills, CA: Los Angeles Pierce College.

Hyde, Jr. W. D. (1976). *Metropolitan Vocational Proprietary Schools.* Lexington, MA: Lexington Books.

Institute for the Study of Educational Policy (ISEP). (1976). *Equal Educational Opportunity for Blacks in U.S. Higher Education: An Assessment.* Washington, D.C.: Howard University.

Karabel, J. & McClelland, K. E. (1987). Occupational advantage and the impact of college rank on labor market outcomes. *Sociological Inquiry,* 57, 323-347.

Karen, D. (1990). Access to Higher Education in the United States, 1900 to the present. In K. J. Dougherty & F. Hammack (eds.) *Education & Society: A Reader.* San Diego: HBJ.

Kay, E. R. (1973, et seq). *Directory of Postsecondary Schools with Occupational Programs.* Washington, D.C.: National Center for Educational Statistics.

----. (1979). *Enrollment and Programs in Noncollegiate Postsecondary Schools, 1978.* Washington, D.C.: National Center for Educational Statistics.

Kleinfeld, J. and others. (1982). Native college success in the seventies: Trends at the University of Alaska at Fairbanks. Institute of Social and Economic Research, Alaska University, anchorage. (ED239814).

Levin, B. H. (1985). *Characteristics of Postsecondary Proprietary School Students.* Unpublished doctoral dissertation. Blacksburg, VA: Virginia Tech.

Levin, B. H. & Clowes, D. A. (1981). [Review of *Vocational Education and Social Mobility: A Study of Public and Proprietary School Dropouts and Graduates*, by Wilms, W. W.]. *Community/ Junior College Research Quarterly,* 5(3), 293-297.

Lipset, S. M. & Bendix, R. (1959). *Social Mobility in Industrial Society.* Berkeley, CA: University of California Press.

MacMillan, C. J. B. (1964). Equality as sameness. *Studies in Philosophy and Education*, 3(4), 320-332.

Markward, M. J. & Phelps, L. A. (1990). Enhancing equitable opportunity in vocational education: A framework and recommendations for research. Paper presented at the annual meeting of the American Educational Research Association (Boston, MA, April 16-20).

Moreland, P. A. (1977). *A History of Business Education.* Toronto: Pitman Publishing.

National Center for Educational Statistics. (NCES) (1980, et seq). *Digest of Education Statistics.* Washington, D.C.: Government Printing Office.

----. (1988). *1987-88 Directory of Postsecondary Institutions.* Vol. 2. Washington, D.C.: U.S. Department of Education, Office of Educational Research and Improvement.

Otto, L. & Haller, A. (1979). Evidence for a social psychological view of the status attainment process: Four studies compared. *social Force,* 887-91.

Parnell, D. (1984). *The Neglected Majority.* Washington, D.C.: American Association of Community and Junior colleges.

Pascarella, E. T. (1980). Student-faculty informal contact and college outcomes. *Review of Educational Research.* 50 (4), Winter, 545-595.

Pascarella, E. T. (1982). *Studying Student Attrition.* San Francisco: Jossey-Bass.

Phenix, P. (1964). Equality as uniqueness. *Studies in Philosophy and Education,* 3(4), 332-335.

Roneche, J. E. & Baker III, G. A. (1987). *Access & Excellence: The Open-Door College.* Washington, D.C.: The Community College Press.

Sewell, W. H. & Hauser, R. M. (1975). *Education, Occupation, and Earning in the Early Career.* New York: Academic Press.

Sewell, W. H.; Hauser, R. M.; & Featherman, D. L. (1976). *Schooling and Achievement in American Society.* New York: Academic Press.

Sewell, W. H. & Shah, V. P. (1967). Socioeconomic status, intelligence, and attainment of higher education. *Sociology of Education,* 40.

Spady, W. (1977). Dropout from higher education: Toward an empirical model. *Interchange,* 2, 38-62.

Special Task Force to the Secretary of Health, Education, and Welfare. (1973). *The Second Newman Report: national Policy and Higher Education.* Cambridge, MA: The MIT Press.

Strickland, D. C. (1988). Using NLS-72 and HS&B data file. Unpublished seminar presentation. Blacksburg, VA: VPI&SU.

Tinto, V. (1975). Dropout from higher education. *Review of Educational Research,* 45, 89-125.

Trent, J. W. (1970). *In and Out of School.* San Francisco: Jossey-Bass.

Trivett, D. A. (1974). *Proprietary Schools and Postsecondary Education.* Wasington, D. C.: American Association for Higher Education.

"Tuition Increase". (1981). *Chronicle of Higher Education.* February.

Vaughan, G. B. & Associates. (1983). *Issues for Community college Leaders in a New Era.* San Francisco: Jossey-Bass.

Velez, W. (1985). Finishing college: the efforts of college type. *Sociology of Education.* 58, 191-200.

Venn, G. (1964). *Man, Education, and Work.* Washington, D.C.: American Council on Education.

Wagner, A. P. (1982). Postsecondary education and training: An inventory of programs and sources of support. *Education and Urban Society,* 14, 271-300.

Weis, L. (ed.) (1988). *Class, Race, and Gender in American Education.* New York: SUNY Press.

Williams, III, J. B. (ed.) (1988). *Desegregating America's colleges and Universities: Title VI Regulation of Higher Education.* New York: Teachers College Press.

Wilms, W. W. (1984b). Complementing public education with job training. *Career Training,* 1(1), 19-23.

----. (1984a). Expanded access to job training through federal student aid: A national study of proprietary vocational schools and students. *Journal of Student Financial Aid,* 14(2), 17-31.

----. (1983). Proprietary schools and student financial aid. *Journal of Student Financial Aid,* 13(2), 7-17.

----. (1987). Proprietary schools: Strangers in their own land. *Change,* 19(1), 11-22.

----. (1973). *Proprietary Versus Public Vocational Training.* Berkeley: University of California, Center for Research and Development in Higher Education.

----. (1982). *Proprietary Vocational Schools: Significant Sector of American Postsecondary Education.* Washington, D.C.: National Commission on Student Financial Assistance.

----. (1975). *Public and Proprietary Vocational Training: A Study of Effectiveness.* Lexington, MA: D.C. Heath and Company.

----. (1980). *Vocational Education and Social Mobility: A Study of Public and Proprietary School Dropouts.* Los Angeles: University of California.

Yankosky, R. E. (1989). *The Proprietary School Sector: A Demographic and Financial Aid Profile.* Unpublished doctoral dissertation. Blacksburg, VA: Virginia Tech.

Vita

Xing Cheng

EDUCATION: **Doctor of Education,** Higher Educational Administration.
August 1990
Virginia Polytechnic Institute and State University. Blacksburg, Virginia.

Master of Arts, English.
August 1987
Virginia Polytechnic Institute and State University. Blacksburg, Virginia.

Bachelor of Arts, Chinese Language and Literature.
January 1982
Soochow University, China

EXPERIENCE: AMERICA

Graduate Assistant, worked with
President of the Faculty Association, College of Education, VPI & SU
Blacksburg, Virginia, August 1988-June 1990

Internship, institutional Research Office, Virginia Western Community College
Ronoake, Virginia, September 1989-January 1990

CHINA
Instructor, Department of Chinese Language and Literature, Soochow University
Soochow, China, March 1982-June 1985

Director of Student Affairs, Department of Chinese Language and Literature, Soochow University
Soochow, China, March 1982-June 1985

PRESENTATIONS: "Addressing the void: Educational attainment measures from national data"

-Co-authored with Drs. D. Clowes and D. Hinkle

-Presented at Southeastern Association for Community College Research (SACCR), August 7-9, 1989

-Selected as the best paper at SACCR, 1989, and presented in a distinguished paper session of AERA, 1990, Boston

PUBLICATIONS:

Clowes, D. A., Cheng, X. & Hinkle, D. (in press). Addressing the void: Educational attainment measures from national data. *Community College Journal of Research and Practice.*

Cheng, X. (1990). The establishment of a national data base and the improvement of educational administrative system in China.* *Forum of Higher Education,* 1.

Cheng, X. (1988). Hawthorne: In search of the American dream.* *Studies in Foreign Literature,* 3.

Cheng, X. (1988). God's will and Man's stories: On Fielding's *Tom Jones.** *Journal of Soochow University,* 6.

Cheng, X. (1986). Meditation on the idea of fate in Greek tragedies.* *Journal of Soochow University,* 3.

Cheng, X. (1985-1986). (A series of articles exploring various issues in both Chinese and American societies.*) *The Younger Generation.*

Cheng, X. (1985). An exploration of the system of Rameau's nephew's character: On Diderot's *Rameau's Nephew.** *Academic Monthly,* 6.

Cheng, X. (1983). God, hero, and man: The primitive mentality in the Greek mythology.* *Journal of Soochow University,* 3.

Cheng, X. (1982). Thoreau's *Walden*: A remarkable achievement in the 19th-century American literature.* *Literature, History, and Philosophy,* 2.

Cheng, X. (1982). *Seawolf:* An important sign in the development of Jack London's thought.* *Journal of Soochow University,* 2.

Cheng, X. (1981). Humanism in Western literature.* *Journal of Jiangsu Teacher's College,* 4.

* The paper is published in Chinese.