CHAPTER 1

INTRODUCTION

The role of females' and minorities' occupational status is a vital social issue in America in the 1990s. As we prepare to enter the 21st century, it is imperative that educators and public policy officials learn more about the factors that influence our young people's aspirations to professional and non-professional careers. As we learn more about their decision process, we may develop more insight into education, counseling and training of our young people for higher-level productive careers.

Although much has been written about the individual variables that affect career aspirations and of the relationships among them, a search of literature and analytical studies revealed that little has been done to analyze statistical data over time with a focus on female and minority high school seniors.

The primary objectives of this study were to determine the significant factors in high school seniors' selection of a career, and to determine any statistical difference in their aspirations from 1986-1996. Because of the rapid changes in the job market, the choice of careers and a study of the concomitant factors, personal and institutional, which influenced that selection become even more important (Schwartz & Neikirk, 1983). Fields (1981) found that gender, ethnicity, grade-point average, parents' education, vocational trends and opportunities were important influences on career selection. Two other factors may be critical with regard to gender and ethnicity: prior success in school and self-perception in terms of future aspiration.

With the volume of gender equity and affirmative action legislation and litigation over the past decade, it was anticipated that high school senior females and minorities would choose careers with a higher societal rank. It was also anticipated that more high school senior females and minorities would pursue the highest ranking high school diploma, that

would include higher math and science courses. Finally, it was anticipated that more females and minorities would aspire to pursue a two-or four year college education. The outcomes of this study were to confirm or refute these expectations. These results could aid educators and guidance counselors in creating better curriculum and career opportunity programs in order for students to overcome the inequalities brought about by institutional sexism and racism. This study will also be important for education and public policy makers, as well as school administrators, as they seek to improve educational delivery and empower females and minorities in this country.

In 1996 most high school senior females and minorities had a much brighter outlook for higher career aspirations than did their predecessors. Female and minority students for some time had been encouraged by the media, parents, schools and interested community organizations to take more science and math classes and to strive for more technical-related career opportunities. There was evidence that aspirations of females are increasingly mirroring the changing attitudes of society (Leach, 1993; Matheny, Dolan, & Krantz, 1980). This was partly due to the many changes in females' and minorities' rights over this 10-year span (1986 until 1996).

The Impact of Gender Equity

The U. S. Congress mandated gender equity in vocational education through the passage of the Vocational Education Amendments of 1976. In 1978, the Virginia Department of Education used the state's share of federal funds to establish an office to administer the "sex equity" provisions of the law. This office set aside funds for program management and grants to reduce gender bias. The Carl D. Perkins Vocational Education Act of 1984 increased funds for program administration and created two set-asides: (1) programs to provide vocational education leading to marketable skills and related support services; and (2) programs to eliminate gender bias and stereotyping in vocational education. Funds were also provided in the Carl Perkins Vocational and Applied

Technology Education Act of 1990. The Vocational Gender Equity Office at the Virginia Department of Education provided technical assistance for gender equity projects, school divisions, community colleges, four year higher education institutions, and other education patrons ("Vocational Gender," 1995).

To support this surge of government investment in women's programs, new services offered financial advice, mentors, and technical assistance. Training programs also expanded exponentially, and universities started special programs for female business owners. For example, Seton Hill College in Greensburg, PA., opened its government-funded National Center for the Education of Women in Business with a mandate to do much-needed research into this burgeoning field. The Small Business Administration funded a series of demonstration projects across the country offering training for women starting or expanding a business. The nonprofit American Woman's Economic Development Corporation ran training programs in New York, Washington, and Los Angeles targeting minority women (Leach, 1993). A Minnesota 100 Mentoring group linked middle-management professional women with executives from other companies. These mentors offered advice and helped women define their professional goals (Spaid, 1996). Women were starting to be quoted in high finance. Wall Street bragged about their "star" global investment financier, Peggy Farley. "She is the very symbol of modern global finance. She successfully oversees hundreds of millions of dollars in investment funds" (Halverson, 1996, p. 12).

Many surveys have been administered to follow the progress of women in the classroom, campus and the workplace. The American Association of University Women (AAUW) completed a 1996 survey called *Girls in the Middle*. The President of the AAUW said that progress had been made, but that much more progress was still needed in gender equity (P. Little, personal communication, February 14, 1997).

In addition, women's magazines that traditionally catered to executives began to tailor themselves to entrepreneurs. *Working Woman Magazine* now devotes half of its pages to women launching enterprises. The National Association for Female Executives has a loan fund for women starting up businesses. Banks are gradually waking up to meet the

new demands, and some are actively seeking out businesswomen through advertising. President Clinton proposed an initiative to have the regulatory agencies allow banks to make more "character" loans. These loans were based, at least in part, on a creditor's history and reliability rather than solely on financial statements. These loans may also help ease the credit restrictions for women (Leach, 1993).

In the past, young females, because of the traditional view of their "limited" capability, frequently exhibited a "fear of success" (Lobban, 1978) which evidenced itself in a lower aspiration level. Even career-minded American women once viewed work as primarily an alternative to child-rearing. According to Myra and David Sadker (1985), "some women feel that men disapprove of their using their intelligence" (p. 57) and, as a result, selected marriage or "pink collar" occupations. The Sadkers also found that by high school, many girls became "less committed to careers" (p. 57). Best (1983) found a "second curriculum" at work in the schools. This curriculum suggested that women were inferior to men and "fit only for jobs that supported men" (p. 63). In short, women were expected to become domestic wives and mothers, or become secretaries and nurses so that they could help the men in their professions. Traditional culture believed that there were "natural differences" between the genders and that, consequently, there were different destinies for males and females. This belief may have perpetuated this attitude of inequality in the work world and in the occupational aspirations of males and females (Grebow, 1973; Hartnett, 1978; Lengermann & Wallace, 1985).

With the passage of legislation enhancing women's rights, these stereotypes are slowly changing. Women are growing up in the 1990s where running a business is practical, profitable, and within their reach. The Washington-based National Foundation of Women Business Owners (NFWBO) reported that women have had businesses for years, but often they were part-time and classified as a hobby. Now more women are turning these "hobbies" into full-time, profitable business ventures (Leach, 1993).

In addition, many women who go on to start a family keep working whether they want to or not, because the added expense of modern urban life leaves them no choice. Women now feel entitled, not apologetic, to be in the workplace. The editor of *Working*

Mother Magazine reported that three out of four working mothers would choose to be there even if they did not need the money (Tyson, 1996).

The "glass ceiling" has been pushed higher over the last 10 years. Korn/Ferry surveys showed that the number of women holding the title of executive vice president had more than doubled from 4% in 1982 to 9% in 1992. The Bureau of Labor Statistics reported that the number of women in managerial positions jumped 76% from 1983 to 1992 (Spaid, 1996). However, at the CEO level, there were fewer than 10 women who headed up Fortune 500 companies ("Women CEOs", 1996). In a survey of 785 mid- to large-sized U.S. companies, the Society for Human Resources Management in Alexandria, Virginia, found that almost 70% of respondents hired more women in 1996 than they had in any year in the past (MacLachlan, 1996).

Affirmative Action

Affirmative action legislation continues to be a major issue in America and may have had an impact on the minority students' career choices in their senior year. A 1995 Gallup survey examined how Americans feel about the affirmative action issue. Even among survey respondents who said they supported "affirmative action programs," 56% opposed setting aside scholarships for minorities and 40% opposed favoring a minority over an equally qualified Caucasian applicant. However, among respondents who said that they were opposed to "affirmative action," 73% of Americans approved of companies making special efforts to find and recruit qualified minorities - including 69% of Caucasian males and 69% of Conservatives. Further, 82% of the public approved of job training programs to help make minorities and females better qualified. There were high levels of support for these initiatives across racial, gender and political lines (Norman, 1995).

Without the last 25 years of affirmative action, "we doubt that so many women and racial minorities would be serving their country as doctors, lawyers, astronauts, Supreme Court justices and members of Congress," reported a survey from University of California

("Affirmative success," 1997, p. 12.A). The results of this survey of 600 students, admitted into the University of California at Davis Medical School under "affirmative action" between 1968 and 1987 were revealing. They found that the students aided by affirmative action had turned out to be "every bit as good doctors as classmates with higher test scores" (p.12.A). This study published in the *Journal of the American Medical Association* reported the academic and professional achievements among these two groups of students. Of the affirmative action admissions, 94% completed medical school: 82% completed their residencies; and 16% earned special honors during their residencies. The statistics for the other non-affirmative action admitted students were 98%, 82% and 21%, respectively ("Affirmative success", 1997).

Research revealed that progress for minorities enrolling in college has slowed in recent years. In 1992 the enrollment gain was up 7.2%, in 1994 the gain was up 4.6%, but the gain in 1996 was only up 2.9% (Marklein, 1997). This slow down may be due in part to the recent affirmative action cases in our court system today. The long and heroic effort to counter the effects of racial and other forms of discrimination, of which affirmative action is just one tool, is under furious assault. In 1995, California's regents voted to eliminate ethnicity as a factor in admissions. On November 3, 1997, the Supreme Court removed the last significant legal hurdle to California's statewide ban on affirmative action. They rejected a challenge by civil rights groups that argued that the law was unconstitutional. Campaigns to eliminate preferences, based on ethnicity and gender, were underway in several states, and people on both sides of the issue predicted that the court's action would reinvigorate those efforts. When the initiative passed in 1996, California became the first state in the country to abolish affirmative action in a variety of state programs, from hiring and college admissions to government contracting. By deciding not to accept the case, the Supreme Court left in place a lower court ruling that found Proposition 209 constitutional. The 9th U.S. Circuit Court of Appeals stressed that when the government gives an advantage to individuals based on their ethnicity, it penalizes people who belong to other ethnic groups (Biskupic, 1997).

A case was also won in federal court that stopped the University of Texas from using ethnicity in admissions. This action opened the door for Caucasian college applicants to bring lawsuits against universities for rejecting them in order to make room for minority students with the same or lesser grades. A Caucasian female high school graduate said that she had stark evidence from the University of Michigan's own admissions documents that proved her claim that she was not admitted because of her ethnicity. Her case emerged as another pivotal battle to overturn the 1978 Supreme Court ruling, University of California's *Regents v. Bakke*, that allowed universities to count ethnicity as one of many considerations when choosing students to admit (Sanchez, 1997).

The media may also be giving out powerful messages to our minority children. When viewing the media, it was found that there were few female Hispanic, Latino, or Asian characters or role models on television. This points out the fact that minorities are frequently ignored or disparaged by the media. An analysis of the daily newspaper also revealed the domination of the Caucasian culture. Many depictions of African-Americans were negative (e.g., arrests, convictions, descriptions of victimization) with few positive figures. Even the Anita Hill-Clarence Thomas hearings and O. J. Simson court case pointed out that the once-positive role models in our society were negatively labeled and portrayed (Crowley-Long, 1995). High school "students often failed to realize that their own goals, dreams, and assumptions had been powerfully influenced by both the presence and the absence of role models, and that the absence of positive minority role models in the media was a powerful source of discrimination and oppression" (p. 134). A "single negative representation of a minority member is far more damaging and hurtful than negative representations of whites, given the lack of balanced media depictions of minorities" (Crowley-Long, 1995, p. 135).

Affirmative action will continue to be a major issue. In a recent survey by *The Washington Post*, it was found that the United States is experiencing its second great wave of immigration. Nearly one in 10 Americans are born outside the United States. This movement of people has "profound implications for a society that by tradition pays homage to its immigrant roots at the same time it confronts complex and deeply ingrained ethnic and

racial divisions," (Booth, 1998, p. A-1). This survey also echoes earlier predications that enrollments of international students in post-secondary education are expected to continue to rise over the next 10 years (U.S. Department of Labor, 1994-95).

Recent Trends in America

The emergence of many new trends, including the rise in technology, the shift in the industrial profile, the changes in the labor profile, the growing need for health care, and the benefits for working women, are presently converging in the workplace and affecting the future careers of workers in America. These trends may have had a major impact on the environment of the 1996 high school seniors as they made decisions about their careers (Brown, 1991; Krannieh & Krannich, 1993).

<u>Rise in Technology</u>

Today's young people are able to choose from a multitude of occupations that, a generation ago, would have been considered science fiction. The technological revolution has changed the job market, just as it has changed all of our lives. The robots are here, along with other high-tech equipment. As many as half a million robotics engineers were needed in the 1990s to introduce a new generation of robots into manufacturing plants (McGregor, 1990). Commercialization of space is also a growing occupational area. Once this country has deployed a space station, we will rapidly move from research and development in this new frontier, to manufacturing and industrial production. It is predicted that the production in space of high-purity pharmaceuticals, semi-conductors and other high-tech materials will be over a $50 billion industry by the turn of the century. It is also predicted that there will be a 50% increase in jobs that require computer skills (U.S. Department of Labor, 1994-95). Therefore, with incredible speed new technology is being discovered that will create jobs that never before existed (Ellis, 1987).

Shift in Industrial Profile

The change in our industrial profile from goods-producing to service-producing employment is expected to continue into the 2000s. This shift will create its own opportunities, such as rapid growth in the telecommunications industry and in the health services (Brown, 1991; U.S. Department of Labor, 1994-95). Almost every field related to science, engineering and math is scrambling to find qualified, well-trained, entry-level college graduates. *Omni* magazine predicts that five of the 10 fastest growing careers by the year 2001 will be computer related ("Careers in," 1992).

Changes in the Labor Profile

Employers are facing an increasingly diverse work force (Hedden, 1995). Substantial increases in the number of Hispanics, Asians, and African-Americans are anticipated to continue, reflecting immigration and higher birth rates. Caucasian men will make up a smaller proportion of the labor force, and women and minority group members will comprise a larger share than in the past (U.S. Department of Labor, 1994-95). According to the 1994 Census Bureau, 8.7% of Americans were born in other countries, the highest percentage since before World War II. At least 31.8 million people in the United States speak a language other than English at home. In the Dade County, Florida school system, 5,190 new students spoke 56 different languages. The state of Massachusetts offers driver's tests in 24 foreign languages ("One nation," 1995).

Growing Need for Health Care

Another growing career area is the medical and health care fields. Seven of the 10 fastest growing jobs in the next decade will be in health care. Altogether, nearly 12 million people will work in the health care industry by the year 2000. This is primarily due to increased financing, new medical breakthroughs and the increase in the aging population (Krannich & Krannich, 1993).

With all of these options before them, many high school students in the 1990s have been taking more math, science and technology courses so that they can maintain some

control over their career direction and to feel certain that there will be a place for them in the world of the future (Kelly, 1996).

Benefits for Working Women

      Because of the increasing prevalence of women and minorities in the workplace during the past 10 years, many large corporations and companies have responded to this significant economic development. Non-traditional workers are requiring non-traditional services to assist them in entering and remaining in the labor market. There are increasing demands for child care, elder care, wellness programs and health insurance. Many companies, recognizing changing employment trends, are initiating programs to make it easier to work and raise a family. Pharmaceutical corporation Johnson & Johnson established itself as a leader in this effort. In 1987, the company found that only 14% of families in the United States fit the traditional model. Sixty percent of mothers with children under six were working, while 40 years earlier only 12% had worked. In 1989, Johnson & Johnson Chairman Robert Johnson, Jr. added to the credo, "We shall be mindful of ways to help our employees fulfill their family responsibilities" (Tyson, 1996, p. 52). Johnson and Johnson set up a Dependent Care Reimbursement Account that allowed employees to pay for child and elder care with pretax dollars. Employees can take up to a year of unpaid leave to care for family members and then return to their job. The company even pays up to $3,000 towards the cost of adoption (Tyson, 1996).

      Apple Computer's work force in 1996 was over 44% female. Of those, a third were managers, and 6% were vice presidents.   The company recognized the need for special considerations and offered their employees flexible hours. They also established an Apple Computer day-care center a few blocks away from Apple's headquarters where the employees' pre-school children were taught computer lab skills and a curriculum including mathematics (Tyson, 1996).

Summary

There are many variables that contribute to the education and career choices made by a high school senior. Trends, legislation, ethnicity, affirmative action and the traditional stereotypes of gender are all variables that enter into the decision-making process.   While academic success may encourage the student to aim higher in his or her career aspirations, many of the factors interact to cause the student to select a career that has a higher or lower level of societal value or respect.

Rationale/Need for the Study

The selection of a career made during the senior year is among the most critical decisions in a person's lifetime. This decision has a far-reaching impact on the senior's future in terms of lifestyle, status, income, security and job satisfaction. Although personal philosophy, achievement, and self-image are important factors in this decision, the external environment is very influential in characterizing careers and shaping aspirations. Over the 10 years, 1986-1996, external, sociological and public policy factors (in terms of gender equity, equal opportunity and the business market) have changed significantly. Many would argue that more females and minorities are now in the work place, that they are gaining increasing access to top management and professional positions, and that the old barriers to equal opportunity are coming down. Even if these statements are true, the question remains, however, as to the effect these changes have on the seniors' high school career aspirations.

The study of the relationship of career aspiration level in terms of gender, ethnicity, grade-point average, and parents' education has immediacy in that it will aid educators and guidance counselors to understand more fully the background variables and problems faced by students as they choose their careers. This study may challenge educators to continue to create better curriculum and career opportunity programs in order for students to overcome the inequalities brought about by stereotypes. It will also contribute to the understanding of female and minority high school seniors in an upper middle-class secondary school and how

their aspiration levels have changed over this 10-year period. With the volume of gender equity and affirmative action legislation over the decade between 1986 to 1996, it is anticipated that minorities and females would choose careers with a higher societal rank. It is also anticipated that more females and minorities would achieve the highest high school diploma and pursue a college education. One of the outcomes of the study was to confirm or deny this expectation.

This study will also be of assistance to the subject school in assessing progress toward gender equity and minority achievement for their School Plan. The AAUW and other research groups will also benefit by the findings and research of this study.

Statement of the Problem

Research revealed that little is known about the differences in high school seniors' aspirations from 1986 to 1996. Given the many legislation and litigation changes in American society over the 10-year period, this problem should be investigated and analyzed focusing on gender and ethnicity.

Therefore, the problems investigated by this study were to determine: a) the degree to which the variables of gender, ethnicity, grade-point average, and parents' education were related to high school seniors' career aspiration, b) the relationship between the female high school seniors' career aspiration level and graduation years, 1986 - 1996, c) the relationship between the minority high school seniors' career aspiration level and graduation years, 1986 - 1996, d) the difference in the percentage of 1996 female and minority high school seniors receiving the Advanced Studies Diploma with the Governor's seal as compared to the 1986 female and minority seniors, and, e) the difference in the percentage of 1996 female and minority high school seniors' two- and four-year post-secondary college plans as compared to the 1986 female and minority seniors.

Purposes of the Study

The purposes of this analysis were to ascertain whether the variables of gender, ethnic background, grade-point average, and parents' educational level were related to high school seniors' career aspiration level and to determine if there was a significant difference in the seniors' choices over a 10-year period. Student data from 1996 were compared with similar data collected in 1986 to study the career aspiration trends (Hudgins, 1997). The 1996 data were analyzed by gender and ethnicity. For comparison purposes, a 10-year (1986-96) statistical analysis was conducted of the percentage of female and minority graduates aspiring for two- or four-year post-secondary educational plans. Statistical analyses from 1986 until 1996 were also conducted on the female and minority seniors that received the Advanced Diploma with the Governor's seal (Fairfax County Public Schools, 1989, 1997).

Ethnicity was not a significant factor in predicting student aspirations in the 1986 study of Robinson High School seniors. However, over 34% of the 1986 minority seniors aspired for careers in the highest group level (i.e., math-science) (Hudgins, 1997).

Gender was a significant factor in predicting high school seniors' aspiration levels in the 1986 study. The females chose careers that were in the traditional middle groups (i.e., social services, education, music). Few females chose careers in the highest prestige groups (i.e., math/science) or lower groups (i.e., manual work) (Hudgins, 1987).

With the passage of federal and state legislation over the last 10 years, there have been many changes in societal trends, which may have affected student aspirations. This study will examine whether aspirations are different over this time frame, and, if so, what background factors have changed since the original study.

Research Questions

1. Are the variables of gender, ethnicity, grade-point average, and parents' education related to the 1996 high school seniors' career aspiration level?

2. Is there a significant relationship between the female high school seniors' career aspiration level and graduation years, 1986 and 1996?

3. Is there a significant relationship between the minority high school seniors' career aspiration level and graduation years, 1986 to 1996?

4. Is there a significant difference in the percentage of 1996 female and minority high school seniors receiving the Advanced Studies Diploma with the Governor's seal as compared to 1986 female and minority high school seniors receiving the Advanced Studies Diploma with the Governor's seal?

5. Is there a significant difference in the percentage of 1996 female and minority high school seniors' two- and four-year post-secondary college plans as compared to 1986 female and minority high school seniors' two- and four-year post-secondary college plans?

Definition of Terms

Rating

The students in both the 1986 and 1996 preliminary attitude survey rated each of the 18 occupations on the career cluster form on a scale from 10 to 1 in terms of societal prestige or value. The mean for each occupation's rating was the basis for the ranking.

Societal Value

The worth or respect that the students placed on each of the 18 occupations in the preliminary attitude survey.

Career Clusters

The collections of occupations from the *Harrington-O'Shea Interest Inventory* form used for the preliminary survey societal ratings and for collecting the seniors' first choice of career aspiration (Appendix A).

Ranking

The ordering of the 18 occupation means in an ordinal sequence. This sequence was based upon a preliminary attitude survey of 178 high school seniors taken on May 5, 1996, in which they rated the occupations from 10 (highest) to 1 (lowest) by their societal value or respect.

Levels/Groups

The organization of the occupational mean rankings into six groupings. The clusters were then ranked into three groupings (High, Medium and Low) for statistical purposes.

Career Aspiration Level

The first choice of occupational intention that the 1986 and 1996 high school seniors placed on the *Harrington-O'Shea Career Decision-Making* career cluster form. These intentions were analyzed for research in questions 1, 2, and 3.

Advanced Studies Diploma with the Governor's Seal

The highest diploma at the Fairfax County, Virginia, subject school in 1986 and 1996. Students who earned this diploma completed:

1. A mathematics sequence that included a minimum of Algebra 1, Geometry, and Algebra 2
2. A science sequence that included a minimum of three units from three of the four science disciplines: biological sciences, chemical sciences, physical sciences and earth sciences
3. A minimum of three years of one language or two years each of two languages

4. A minimum of 23 units of credit

5. An average grade of at least a "B" grade-point average or 3.0 and successfully completed at least one advanced placement (AP) course or one college level course for credit.

Black, White, Hispanic Students

The terms used in the American Association of University Women studies of adolescents in 1991, Fairfax County Public Schools publications in 1990, and J. U. Ogbu's books written in 1978 and 1985 to identify African-American, white Caucasian, and Latino students.

Factors to Study

The factors under investigation with the high school seniors' career aspirations were independent variables: gender, ethnicity, grade-point average, and parents' education.

Gender

Gender is often linked to certain stereotyped career roles (Crowley-Long, 1995; Lengermann & Wallace, 1985). Since the gender equity legislation and public awareness of the problem, much has been done to attempt to eradicate these inequalities ("Take your," 1995; "Vocational gender," 1995).

Ethnicity

Some research indicated that ethnicity was a major variable in the selection of a career and in the self-concept that produces success in school and in the work world (Sowell, 1984). Ethnicity was linked with social position and class in the past, but gradually over the years, with civil rights and support from affirmation action programs, changes may

16

have been made (Norman, 1995). Therefore, ethnicity should be studied to see if this was a major factor in career choice over the 1986 to 1996 time span.

Grade-Point Average

Another factor that influenced the choice of a career was prior success in school. If a student was successful in academics, the informational component presented to the parent and student was one that clearly suggested a higher career aspiration with regard to further education and occupation (Finlyson, 1971; Picou & Carter, 1974; Picou, Carter & Curry, 1974; Welsh, 1997). Success in academics, as measured by grade-point average, is a product of positive attitudes toward learning and study (Watkins, 1984). Research indicated that success or failure in the academic realm may have caused students to re-evaluate their educational and, consequently, their occupational aspirations (Turner, 1964; Welsh, 1997).

Parents' Educational Level

Research indicated that the parents' educational level was a significant factor in their own socio-economic standing in the community and on the aspirations for their children. Parents who were more ambitious and upwardly mobile had higher aspirations for their children than parents who were not so ambitious or upwardly mobile (Davies & Kandel, 1981). There appeared to be a direct correlation between the socio-economic standing of the parent, the school achievement of the student, and the career aspiration of the student (Turner, 1964).

Organization

Chapter one introduces the issues of gender equity, affirmative action and high school seniors' career aspirations. It includes the rationale for the study, statement of the problem, study purpose, research questions, a definition of terms, and a list of the factors to be studied. Chapter two provides a review of the relevant literature on these issues. Chapter

three outlines the research design, instruments, and procedures used. Chapter four explains the findings of the analysis and chapter five summarizes the findings, conclusions and recommendations.

Summary

There seems to be widespread support across gender and racial lines for programs that give women and minorities a boost without explicitly harming white males (Leach, 1993). Over the past 25 years, there have been a multitude of government and corporate programs initiated to increase career opportunities for females and minorities. The last 10 years have witnessed numerous examples of females and minorities entering occupations that have traditionally been white-male dominated (Krannich & Krannich, 1993). The trends indicated that this movement was widespread and continuing (U.S. Department of Labor, 1994-95). What is not known is the degree to which this increased opportunity is having an effect on high school seniors' career aspiration levels, especially those of female and minorities.

CHAPTER 2

REVIEW OF RELEVANT LITERATURE

The two basic purposes of this study were to examine the factors affecting career aspiration level and to ascertain whether there was a change in the college and career aspiration level for female and minority high school senior students from 1986 to 1996. This literature review provided a framework for the study. The literature can be divided into eight sections: (a) Theories on Career Choice; (b) Current Disparities Affecting Career Aspiration; (c) American Association of University Women's (AAUW) Research Results; (d) Public Policy Issues; (e) Selected Sociological Factors Related to Career Aspiration; (f) Achievement Differences in 1996; (g) Trends in the 1990s; and, (h) 1986 High School Senior Research.

Theories of Career Choice

According to the wide variety of research available, most theorists agreed that there were many factors that enter into the selection of a career. The choices a person makes, the values a person holds, the successes and failures a person experiences, the social class in which a person has developed, and the interests, strengths, and capacities of the person all enter into this decision. In other words, career aspiration is a product of heredity and environment, and the person's self-concept was vitally important in that decision (Herr, 1970; Hewer, 1963; Super, 1957). The choice of a career is, therefore, not merely a decision of a moment: it is a complex and difficult process that spans a number of years (Ginzberg, Ginsburg, Axelrad, & Herma, 1951), if not a lifetime.

There are many theoretical perspectives on career aspiration counseling. The five-category system presented by Herr & Cramer (1984) that seems to link directly to this study on career aspiration was chosen to review. The five-category approaches are Trait-and-Factor; Personality; Developmental; Decision; and, Sociological. Each of these approaches show the organized and systematic provision of information needed to help an individual evaluate their personal experiences and aspirations in order for that person to make an intelligent career choice.

Trait-and-Factor Approach

Attributed initially to Williamson (1939), the basic purpose of the trait-and-factor approach to career counseling was to "match" the characteristics of a client to jobs which required those characteristics, and in so doing identify the jobs which were, theoretically, the most appropriate for that client. Herr and Cramer (1984) identified 10 major types of "matching" information usually sought by professional counselors. The matching types were abilities, needs and interests, stereotypes and expectations, significant others, values, residence, family, adjustment, risk-taking, and aspirations.

The "trait" portion of the trait-and-factor approach referred to client characteristics. Counselors must have extensive and valid information about their clients. Therefore, vocational counselors are encouraged, by proponents of this theory, to give assessment tests and aptitude batteries such as the *Harrington-O'Shea Career Decision-Making System*, the *Kuder Occupational Interest Survey*, and the *Kuder Preference Record-Vocational* (Vacc & Loesch, 1987).

The "factor" portion referred to characteristics of various jobs. In order to use this approach effectively, counselors must also have extensive knowledge of the world of work and the requirements for specific jobs. Accordingly, trait-and-factor career counseling has been referred to colloquially as the "know the client, know the job" approach (Vacc & Loesch, 1987).

Personality Approaches

Personality approaches are related to the trait-and-factor approach in that they focused on individual characteristics. They acknowledge that sociological and situational factors are strong influences in the development of an individual's characteristics, but give very little attention to them. These theories attempt to relate personality to occupational behavior.

Freud's psychoanalytic theory (1911) served as the basis for some of these approaches. Osipow (1983) stated that, "The most ambitious scheme for defining the process of career development within the psychoanalytic framework and with the appropriate language was proposed by Bordin, Nachmann, and Segal in 1963" (p. 42). They constructed a theoretical framework for career development based on a set of eight propositions. These propositions stated that:

1. Human development is continuous.
2. Sources of gratification are the same for children and adults.
3. The individual's pattern of needs develops early in life.
4. The occupation sought is related to the individual's needs.
5. The theory applies to all types of people and work.
6. Work may be conceived of as the sublimation of infantile impulses into socially acceptable form.
7. Emotional blocking or severe lack of information can inhibit fulfillment of occupational expectations.
8. Psychoanalytic dimensions such as oral aggressive, manipulative, sensual, anal, genital, and exploration can be gratified in any job (Osipow, 1983).

Roe (1956) developed a personality approach that involved a synthesis of several perspectives on personality. One of the primary approaches was Maslow's (1954) theory that human needs could be described as a hierarchy of low-order to high-order. According to Maslow, people must fulfill lower-order needs before they can strive to fulfill higher-order needs. Roe used Maslow's conceptualizations to suggest that vocational behavior is

the individual's attempt to fulfill certain needs. That particular level of need, for which gratification is sought, in part determines the nature of the behaviors used. Roe emphasized the importance of using the child-rearing practices to which the individual had been exposed, to help explain the individual's vocational behaviors. She described three general types of practices:

1. Emotional concentration on the child which might include overprotection and over-demand on the child. Children raised under these conditions tended to have their lower-order needs met such as safety, but not their higher-order needs such as belonging and self-esteem. Therefore, the prediction would be that they would seek this fulfillment through their occupation.

2. Avoidance of the child where neither the physiological nor emotional needs were fulfilled. Therefore, individuals seek "things" and limit contact with other people in their occupation.

3. Acceptance of the child in a democratic family unit where most needs are met. The prediction would be that the individual would seek fulfillment of the highest needs in an occupation.

Another component in Roe's approach was that specific vocational behaviors exhibited by an individual were influenced by the individual's genetic endowments such as intelligence or physical ability (Herr, 1984).

Roe (1956) also developed a "fields and levels" occupational classification scheme to facilitate understanding of her approach. The "fields" are classified by interest and are the primary focus of the occupations, while the "levels" are classified by degrees of responsibility, capacity, and skills. Osipow (1983), in reviewing Roe's approach, commented that "the theory attends to every important aspect of vocational selection" (p. 19).

Holland's (1966) approach to career development and counseling has become so popular that all other personality approaches to career counseling have been overshadowed. His basic premise was that an individual's early genetic endowments determine methods for coping and dealing with social and environmental tasks. The most typical way a person

responds to his or her environment is known as the person's modal personal orientation. Holland's personality/environment types are usually referred to by the first letter of each word; or the "RIASEC" model. This model is usually configured as a hexagon. Adjacent types are presumed to have more in common than opposite types. The Realistic type is more similar to either the Investigative or Conventional types than it is to the Social, Enterprising, or Artistic types. Because people rarely fit within a single type, they are usually assigned a three-letter code. For example, a person assigned the code SEC would be presumed to be most like the Social type, next most like the Enterprising type and next most like the Conventional type. Holland further proposed that these same six classifications are appropriate for characterizing work environments that allow the individual to use their skills and abilities. The classifications also express the individual's attitudes and values, which contained agreeable tasks and problems. He also stated that vocational behavior is a result of the interaction between the personality and environmental characteristics. Therefore, "effective" career development is the result of an effective matching of personality and environmental characteristics.

Because Holland described personality characteristics and work environments in the same terms, he emphasized a perspective that has a long history in society in general and in the counseling profession in particular; specifically, that "work is a way of life" (Holland, 1973, p. 131).

Holland's approach has found great favor among counseling researchers, and hundreds of studies have been completed on various aspects of Holland's theory. Numerous assessment instruments and approaches have been developed in the context of Holland's theoretical propositions and more recently, other existing instruments have been modified so that their results can be interpreted within the context of those propositions. One reason for the extent of these efforts is that, in the context of Holland's theory, a vocational interest inventory is also a personality inventory that expanded the potential interpretations of any research effort (Herr & Cramer, 1984).

Holland developed the *Vocational Preference Inventory* and the *Self-Directed Search*, two vocational interest inventories, based on his theory. He and his associates also

developed a set of three-letter codes for over four hundred occupations. This effort in particular has made his approach popular because of the ease with which the system can be used by both counselors and clients (Holland, Gottfredson & Baker, 1990).

Developmental Approaches

These approaches maintain that career choice is a function of the total personality within a developmental framework and are viewed as a process instead of an act. Occupational choice is not restricted to a certain period in life, but as a set of reoccurring events throughout the life cycle. Therefore, career development may be viewed as an evolutionary process which is flexible and in which individuals could adapt their occupational choices to the changing conditions in their lives. Among the developmental factors are hereditary (such as physical structure), intellectual ability and external factors (such as economic and social situations) (Beilin, 1955).

Ginzberg, Ginsburg, Axelrad, and Herma (1951) stated that the developmental process of occupational decision-making "was not a single decision but a series of decisions made over a period of years" (p. 185). This process has three periods: Fantasy, Tentative, and Realistic.

In the Fantasy period, choices are made without any concept of limits. The child in this period, generally up to age eleven, feels as if anything and everything is possible and wishing will make it happen. Impulses and momentary needs are arbitrarily translated into career choices without any realization of facts regarding the occupation or the self. During this period, the child observes and hears about various types of occupations and begins to role-play the behavior that is relevant to the occupations. As the child begins to role-play these occupations, the family responds with attitudes toward both the behaviors and the occupations (Hadley & Levy, 1962). In addition, the child hears his behavior and performance compared to other children. The family thus plays an important role in influencing the child during the fantasy period (Super, 1969).

In the second period, Tentative choice (ages eleven to seventeen), the person makes choices basically on personal criteria: interests; abilities; and, values. During this period,

24

although the family generally continues to act as an important reference and sounding board, other groups (such as classmates, church group friends, sports team members, club associates, gang members and other associates) move into prominence (Hadley & Levy, 1962). Also, more information about the various occupations is acquired during these years (Super, 1957) as the young person moves into part-time employment and begins to explore the variety of occupations available with different types of training. As more information and interaction becomes available, the adolescent begins to evaluate not only the kinds of occupational activities available, but also the traits of the people in those occupations and the attitudes of others towards those people and occupations (Hadley & Levy, 1962).

This Tentative period may be broken into three stages: interact stage; capacity stage; and value stage (Ginzberg, 1972). During the interact stage, people base their thoughts regarding career choice on the things they enjoy or are interested in doing. In the capacity stage, people began to consider their choices in terms of the specific abilities and talents that they possess. They began to evaluate their own strengths and weaknesses and to discover their areas of talent. During the value stage, consideration turns to salary compensation, the satisfaction specific occupations offer, the importance of job location, travel requirements, work schedule, and other value-related facets.

The third period, Realistic, (between the ages of seventeen and the early years of adulthood) is a time of compromise in which the individual tries to consider all of the factors (Tiedeman & O'Hara, 1963). The individual begins to balance the personal criteria with the opportunities, requirements, and limitations of the occupations presented in society (Ginzberg, Ginsburg, Axelrad, & Herma, 1951). It is during this period that the individual explores the alternatives and then determines the specific career choice or area. Ginzberg (1952) stated that the individual's choice must be a compromise of interests and abilities, as well as satisfying values and goals as much as possible.

Super's work began shortly after Ginzberg's. He believed that Ginzberg failed to provide an effective definition of occupational "choice" and that the distinction between choice and "adjustment" was not as sharp as Ginzberg had proposed (Herr & Cramer, 1984). Super's theory was multifaceted and borrowed from a number of areas of psychology. He

described it as a differential-developmental-social-phenomenological psychology (Super, 1969). Three components of Super's work have received the most attention: Life Stages and their associate developmental tasks; Self-concept as related to occupational choice; and, Career Maturity.

The first stage in Life Stages is Growth that lasts from birth to age 14. This stage includes the sub-stages of fantasy, interest and capacity and the important developmental tasks of creating a self-concept and establishing an orientation toward the world of work. Exploration, the second stage, covers approximately ages 14 to 24, with the sub-stage, tentative, existing approximately from ages 15 to 17. The primary developmental tasks in the Exploration stage crystallizes a vocational preference, specifies the preference, and implements the preference. The third stage, Establishment, lasts from approximately ages 24 to 44 and includes the sub-stages of stabilization and advancement. The major developmental tasks in this stage are stabilizing the vocational preference and advancing in occupations. Maintenance, the fourth stage, lasts from approximately ages 44 to 64. The major developmental task in this stage is preserving achieved status and gains. In the final stage, Decline, from approximately age 64 on, there are two sub-stages: deceleration (64-70) and retirement (70-on). The major developmental tasks in this stage are slowing down occupational activities, and disengaging, and retiring from the world of work.

The second major component in Super's approach is the development and implementation of the "vocational self-concept." This vocational self-concept is presumed to be a substantial and integral part of the individual's total self-concept. The theory assumes that individuals chose occupations that will allow expression of their vocational self-concepts.

The concept of career maturity plays an important role in Super's approach. This concept implies that specific behaviors are indicative of an individual's mastery of various developmental tasks. The basic assumption in Super's developmental stage approach is that the individual must master the tasks at one life stage before moving into the next life stage. Therefore, measurement of career maturity is important because it allows inference about an individual's vocational development stage (Super, 1969).

Decision Approaches

Decision approaches to career development focus on the process of how work-related decisions are made. The major supposition in these approaches is that people would have effective career development if they were able to make decisions effectively.

Two fundamental assumptions underlined this supposition. The first is that people strive to maximize gains and minimize losses through the work-related decisions they make. "Gains and losses" are not necessarily monetary; they could be in terms of life-style, success, prestige, happiness, security, or any of a variety of other psychosocial and environmental factors or conditions. For example, Crosby's doctoral research (1985) identified money and good health as the two top goals/values in a sample of Northern Virginia residents.

The second assumption was that at any choice-point, people have several alternatives available to them. Therefore, this approach helps people identify choice-points and options and enhances people's decision-making skills and abilities. This theory is comprehensive because it encompasses wide-spread information gathering and extensive analysis of information obtained (Vacc & Loesch, 1987).

Sociological Approaches

Sociological or situational approaches to career development are significant because they identify many factors not usually considered in other approaches. Culture and social class boundaries have been identified as major factors in career development (Fredrickson, 1982). Although career progression is generally viewed as a primary means to "rise above one's station in life," such progression is not easily achieved, particularly for those in the lower socioeconomic strata (Osipow, 1983). The conditions in these strata often inhibit and obstruct career upward mobility because of limited economic and other resources, the lack of education and training, conflicting values, and a paucity of role models.

Bandura (1982) described two major classifications of chance encounters as significant factors in career development. The first included an individual's chance

encounters with people who directly or indirectly exert strong influence on the individual's career-related decision. The second was chance encounters with events; those happenings to which an individual was "accidentally" exposed which also subsequently influences the individual's career-related decisions. Chance encounters were viewed as significant components of career development because of the roles they may play in changing, either positively or negatively, an individual's career motivations and aspirations (Bandura, 1982).

Herr (1986) noted that three major personal factors were relative to an individual's decision-making behaviors. The first is risk-taking style, the second is investment, and the third is personal values. Each of these factors need to be considered individually and collectively in order for individuals to make work-related decisions effectively (Herr & Cramer, 1984).

Krumboltz, Mitchell, and Jones (1978) presented an approach to career counseling based on social learning theory. They suggested that four sets of factors were the most influential in work-related decision-making:

1. Genetic endowment and special abilities, including gender, ethnicity, physical limitations, intelligence, and specific aptitudes
2. Environmental conditions and events, including job and training opportunities, social policies, labor market conditions, and technological events
3. Learning experiences
4. Task approach skills, including work habits, mental sets, perceptual and cognitive processes.

Summary

The review of the literature, on the five-category career counseling approaches presented by Herr and Cramer in 1984, was relevant to this study because it gave a varied framework of how and why people made choices in careers. Knowledge of these approaches enable school and career counselors, in collaboration with their counselees, to develop appropriate goals, use effective strategies, and achieve desirable and measurable

outcomes for the highest career aspirations (Vacc & Loesch, 1987). Each career counseling approach has merit and limitations.

The career cluster form used in this study was developed from Harrington and O'Shea's research and was based on a combination of the Personality and the Trait-Fact theories. In depth review of Holland's belief of the six classifications explained the backbone of the 18 career clusters in the Harrington-O'Shea instrument (1993).

Current Disparities Affecting Career Aspirations

Wage Disparities by Gender

There was still a large discrepancy in wages in 1996 between males and females. For example, female lawyers in Colorado earned almost 40% less than their male counterparts. According to the U.S. Bureau of Labor Statistics, women earned 76% of what men earned in all areas (Abbott, 1995). A 1996 study in *The Washington Post* confirmed the U.S. Bureau's statistics that, "women working full time and year-round earned 74 cents for every dollar earned by men," (Vobejda & Chandler, 1997, p. A1).

While 90% of all women in 1996 worked at some point in their lives, 75% of all full-time working women made less than $20,000 annually, and women represented two-thirds of all poor adults. A woman with a college degree, on average, continued to earn less than a man with a high school diploma (Behrendt, 1995). There were no quota laws for most hiring situations, and women, and minorities were still very under-represented in most high-status professions (Crowley-Long, 1995).

Despite a half-century-old worldwide agreement that a woman and a man must earn equal wages for equal work, the International Labor Organization stated that women still earned between 50% and 80% of men's wages worldwide. It was reported that some advances had been made since 124 governments signed the equal-wages agreement in 1951 (although the U.S. Senate never ratified it), but "progress has been neither universal nor sustained, even in countries which have made explicit efforts" ("Update on," 1996, p. H3).

Disparities in Executive Opportunities

Women held only a few of the top positions in companies, claimed the Catalyst research organization, a nonprofit New York group that works for women's advances in business. "This will debunk the myth that women have made it . . . in Corporate America," said Sheila Wellington, president of Catalyst (Ciabottari, 1996, p.20). Ms. Wellington said that this myth helps keep women back by reducing the urgency for change. The 1996 Catalyst survey also found that although women made up 46% of the work force, only 10.1% of corporate officers at the 500 largest U.S. companies in 1996 were women - or 1,303 out of 12,885. Two years earlier, in 1994, the numbers of female corporate officers stood at only 8.7%. Out of the Fortune 500, about 100 had no female corporate officers at all. This survey found that just 2% of the companies' top five wage earners in 1995 were women, up from 1.2% in 1994. Fifty-two percent of the female executives said the biggest factor holding them back was male stereotyping, while 49% said it was the preconceptions of women and exclusion from informal networks of communication (Ciabattari, 1996).

The Independent Women's Forum contended that company executives were largely male because there was a "dearth of educated and experienced women." Some women take time off to have a child, and others depart their corporate career for child raising. In both cases many women did not accumulate the experience that men may have, they reported ("Few Women," 1996, p. H4).

The researchers at the American Enterprise Institute and Emory University challenged a 1995 report by the Federal Glass Ceiling Commission. The Federal Commission found that 97% of the senior managers of Fortune 1000 and Fortune 500 companies were white, and nearly all were men. The Emory University's report concluded that women's earnings approached 98% of the men's earnings among workers aged 27 to 33 who had never had a child. They reported that most comparisons fail to take into account underlying factors such as educational attainment, field of employment, work experience and women's personal choices ("Group Disputes," 1996).

Educational Disparities

While millions of women have had a tough time cracking the glass ceiling, a much larger number were trying to step off the "sticky floor" (Spaid, 1996). It would benefit society if this enormous gap in educational opportunity that exists only because of gender were closed. Young girls should be able to fully realize their intellectual, economic, and political potential. Gender equity in education could also promise to yield enormous dividends for both our population and development objectives. The United States' gender rights activists continue to press for respect of the basic human rights of women and necessary economic rights. Women, who perform an estimated 60% of the world's work, own only 1% of the world's land and earn just 10% of the world's income (Wirth, 1995).

Most Americans agree that more education for women is needed. Education could boost a woman's earning power, reduce population growth, and increase the likelihood that children of both sexes would survive, be better cared for and educated ("Update on Women," 1996).

Summary

Despite dramatic gains in many occupational fields, there are still many disparities among men and women in terms of wages, executive opportunities and education. Much has been written about these disparities in order to raise awareness on these issues. In a recent book on women, *The Cost of Being Female*, the authors explained that being a woman was still expensive, both in terms of salary denied and the cost of poor education and health care (Headlee & Elfin, 1997).

American Association of University Women's Research Results

The American Association of University Women (AAUW) launched a major initiative in 1990 to understand the critical changes in attitudes and identity among girls and boys and to apply that understanding to adolescent experience and its effects on life's

choices (Greenberg-Lake, 1991). A nationwide poll of 3,000 boys and girls in grades four through 10, in twelve different locations nationwide examined their perceptions of themselves and their futures. The study measured attitude changes as the students grew older and looked at the development of their aspirations - their career choices and expectations, and their perceptions of gender roles. The survey also examined how the educational setting influenced attitudes about math and science and the career aspirations of these students (Hawa, 1992).

Self-esteem Divergence

The poll revealed that although girls were confident and assertive at ages eight and nine, their self-esteem declined significantly in the next eight years, with a marked difference among girls by the middle-school level (Greenberg-Lake, 1991). This decline in self-esteem correlated with a decline in academic achievement, especially in mathematics and science. There was also a correlation with high career aspirations and girls who liked math and science (Hawa, 1992).

These findings represented the beginning of an understanding of the complex relationship between adolescent self-image and careers, the differences in that relationship due to gender, and the impact of math and science on self-esteem and career aspirations. The higher self-esteem of young men translated into bigger career dreams. Girls started out with lower hopes for their careers and were much more likely than boys to say they were "not smart enough" or "not good enough" for their dream careers. Declining self-esteem, a "governor of dreams and future actions, more strongly affected girls than it did boys" (Greenberg-Lake, 1991, p.6).

Ethnicity and Self-esteem

There were also important interactions between ethnicity and trends in self-esteem. African-American girls in elementary school expressed very high levels of personal self-esteem, and they retained this self-esteem declining only seven points throughout high school. The African-American girls' self-esteem was 28 points higher than Hispanic girls

and 36 points higher than Caucasian girls in elementary grades. Family and community reinforcement helped to sustain these high levels of personal importance for African-American girls, however, the girls felt strong pressure from the school system and dropped significantly in positive feelings about their teachers and their school work. Caucasian girls were much less confident and positive than African-American or Hispanic girls in all levels of school (K - 12). Caucasian girls started out over 10 points lower in self-esteem in elementary school than Hispanic and African-American girls, and by high school the Caucasian girls had declined 33 more points. However, Hispanic girls went through a crisis in some ways even more dramatic than the profound shift in Caucasian girls' self-perceptions. Although Hispanic girls started out with significantly higher levels of self-esteem and ended up with higher levels, they dropped 38 points in personal self-esteem by high school. In other words, the Hispanic girls self-esteem, from kindergarten to 12th grade, dropped more points than any other group of girls (Greenberg-Lake, 1991).

Math Aspirations by Gender

As girls "learned" that they were not good in math or science, their sense of aspiration deteriorated. Eighty-one percent of elementary school girls said they liked math, but by high school, only 61% said they liked it. Pluralities of elementary school girls (24%) and boys (32%) named math as their favorite subject. By high school, these pluralities declined to 12% and 23% respectively. Adolescents' confidence in their ability declined as they got older and helped erode their enjoyment of math. Fifty percent of all elementary boys, but only 33% of elementary girls, said they were good at math. By high school, one in four males, but only one in seven females, still said they were good at math. Girls tended to interpret their problems with math as personal failures, whereas, boys projected it more as a problem with the subject matter itself (Greenberg-Lake, 1991).

Science Aspirations by Gender

The 1990 AAUW study also showed that science had a similar reaction. The number of girls who liked science dropped from 75% in elementary to 63% in high school.

Eighty-two percent of boys liked science in elementary, and 75% still liked it in high school. Adolescents who liked math and science were more likely to prefer careers in occupations they believed made use of these subjects. By small margins, students who liked math and science expressed stronger desires for careers as teachers, doctors, and scientists. They were more likely to aspire to careers as professionals in those fields. On open-ended questions ("What do you really want to be when you grow up?"), students who liked math and science were more likely to name professional occupations as their first career choice. The impact was stronger for young women than for young men (Greenberg-Lake, 1991).

Enjoyment of math and science was also related to career choice in a more indirect way. There was a circular relationship between enjoyment of these subjects and self-esteem. Students who liked math possessed significantly greater self-esteem; students with higher self-esteem liked math and science more. Both genders who enjoyed math and science liked themselves more, felt better about their school work and grades, considered themselves more important, and felt better about their family relationships (Greenberg-Lake, 1991).

Gender Differences

The differences by gender were important. Young women who liked math were more confident about their appearance than were all adolescent men. Young women who liked math and science worried less about others liking them. This greater sense of self-confidence had a measurable effect on career aspirations. Members of both genders who liked math were more determined to hold onto their high career aspirations.

Gender stereotyping continued to play a major force in shaping the career expectations of young people. The 1990 AAUW study reported that young women still favored the traditional career aspirations. Young women were much more likely than young men to want to be homemakers (+32%), teachers (+33%), and nurses (+35%) (Greenberg-Lake, 1991).

The workforce in the year 2000 will require many more scientists, engineers and mathematicians. By high school, 52% of boys thought they would enjoy being a scientist, but only 29% of girls thought this way (Greenberg-Lake, 1991).

Other Findings of the AAUW Survey

Besides a detailed analysis on adolescent's self-esteem and how it impacted on high school courses and career aspirations, there were other major findings that were insightful. Five of the major findings were:

1. Reports of sexual harassment of girls by boys were increasing.
2. African-American girls initiated teacher contact more often than white girls, but were more likely to be rebuffed by teachers.
3. Curricula commonly ignored or stereotyped females.
4. Many standardized tests contained elements of sex bias.
5. Childhood poverty was almost inescapable in single-parent families headed by women without a high school diploma (Horwitz, 1992).

Studies Echo AAUW's Findings

A Harvard University investigation quickly echoed results of surveys made at AAUW. Harvard researchers reported that the reason for the reversal in self-esteem for girls was a complex mixture of personal and societal forces. Physical changes weighed heavily on the girls. As their bodies changed, girls became more self-conscious and less confident. Boys, on the other hand, tended to see themselves as getting stronger and better as they grew (Rubinkowski, 1991).

Media images and the Barbie doll syndrome often reinforced girls' doubts about self image, causing lower self-esteem. Parents and teachers may have also unconsciously reinforced passive behavior in girls. Since boys were sometimes more boisterous at home and in the classroom than girls, the teachers and parents often gave the boys more attention (Rubinkowski, 1991). However, students in a Washington D.C. school felt the opposite.

They said that they had not been discriminated against by teachers or peers because of gender (Proctor, 1992).

M. Sadker's (1984) studies found that some girls may be missing subtle discrimination by their teachers, peers, and parents. Other studies showed that girls also received subtle messages that math, science and technology were male domains (Smith, 1992). Reported messages were very loud at a high school in Fairfax County, Virginia. A female student reported that when she answered a question incorrectly in her chemistry class, sometimes her male classmates yelled that "she's just a girl" and "she wouldn't know that" (Proctor, 1992, p.2).

Young women's career aspirations carried over into college. The Dean of Admissions and Financial Aid at Cornell University found that women do not enroll to the extent that men do into college science and math courses that have tougher grading standards. However, they also found that women tended to get better grades in college than their ACT or SAT scores predicted, a fact that has raised concerns about the possibility of test bias. Therefore, to help close the gender gap, some educators have been trying to find and use all forms of measurement so that women's accomplishments and competencies are adequately assessed. Educators do not want the pre-college assessments to inappropriately steer females away from certain fields of study ("Careers in," 1992).

Summary

The 1990 AAUW survey pointed out that eight and nine-year-old elementary school girls' self-esteem significantly declined by middle school. This decline correlated with their decline in academic achievement, especially in math and science. The study also pointed out the fact that Hispanic and African-American girls self-esteem started out higher than Caucasian girls in elementary school, and continued to stay higher than Caucasian girls in high school. Another important finding was that even in the early 1990s, girls continued to have traditional career aspirations. It was not surprising then that the percentage of boys, that aspired to be scientists, was still much higher than it was for girls that aspired to be scientists. Some of these findings could be attributed to the fact that there was more sexual

harassment of girls by boys, and that standardized tests and curricula may have contained elements of sex bias. Other studies found many of the same predications.

Public Policy Issues

<u>Information and Data on Federal Education Assistance</u>

Although considerable progress has been made in the equitable distribution of federal student aid funds, it can still be very difficult, even impossible, to complete a college degree. An analysis survey conducted by the National Center on Education Statistics provided Congress with information in 1992. Title IV programs comprised of five main federal student aid offerings: (a) Pell Grants; (b) Supplemental Educational Opportunity Grants awarded by the U.S. Department of Education on the basis of need; (c) College Work-Study, that provided part-time employment to students; (d) Perkin's Loans, that provided low-interest payments; and, (e) Stafford Loans, that are government-insured loans made to students by private lenders, with interest subsidies for the neediest students (Vandall, 1992).

In 1985, when AAUW first testified before Congress on the gender equity issue, the news on access to these grants for women was hardly encouraging. It was noted that women had less access to these financial aid programs at every level. As a result of AAUW's lobbying on the 1986 reauthorization of the Higher Education Act, several changes were instituted making it easier for women to qualify for financial aid. By 1990, the gap in financial aid awarded to men and women had disappeared or had reversed, but very different patterns emerged when the data were analyzed for both gender and ethnicity (Horwitz, 1992).

Results of the 1990 data included:
1. The average award in most federal programs was approximately 2% higher for women students than for men.

2. Men still received 5% higher awards in Stafford Loans and 50% higher awards in non-Title IV federal programs.

3. Women received especially high Work-Study awards. This money was earned in part-time jobs on campus. Grants and loans, however, required no labor in return.

4. Ethnic breakdowns revealed patterns that differed from the overall statistics. Asian-American men received 8% more Title IV aid than Asian-American women. Native-American men received 18% more Title IV aid than Native-American women. Asian-American, African-American, and Hispanic women received significantly more work-study aid than did men of the same ethnic groups.

5. Average costs of attendance were generally lower for women, partly because women were over-represented in programs that terminated with less than a bachelor's degree. Women were also under-represented at high-tuition research-oriented universities.

6. Largely because of these attendance patterns, women were over-represented at colleges that charged the lowest tuition (below $1,000 per semester) and under-represented at the highest-tuition level colleges (above $5,000).

7. Native-American and Hispanic women were especially likely to attend the lowest-cost institutions. This pattern was reversed for African-American women, who were over-represented in the $4,000-$5,000 tuition-level colleges (Vandell, 1992).

The average allowances for child care that were shown in the 1990 National Center on Educational Statistics study were $800 in the Pell Grant program and $1,300 in the other Title IV programs. Based on currant estimates of the average cost of child care, this allowance barely covered 15 hours of child care a week for 30 weeks, the length of the typical academic year. Class time and minimal study time for a credit load of 12 hours would require more than double that amount (Vandell, 1992).

Affirmative Action Litigation

Even after 100 years of legislation and litigation, affirmative action and civil rights continues to play a large role in American society. In 1896, the Supreme Court decision,

Plessy v. Ferguson, sanctioned "separate but equal" treatment of African-Americans. The ultimate goal for the NAACP, including Thurgood Marshall, was to overturn this decision. At the Center for Individual Rights (CIR) and elsewhere, there was concern over a 1978 Supreme Court decision, the University of California, *Regents v. Bakke*, that allowed college admissions offices to consider an applicant's ethnicity in determining the make-up of the student body. In 1996, judges concluded in *Hopwood v. State of Texas* that the University of Texas' Law School could not use ethnicity as a factor in deciding which applicants to admit. Since that conclusion, the enrollment of underrepresented minorities in medical schools across the country dropped more than 10%. Civil rights leaders largely attribute this decline to the Hopwood case (Segal, 1998).

In California, there was a two-year drop of minority students in college admissions of minorities. However, as of early 1998, William Honan stated in *The New York Times* that there has been "a significant increase in applications from blacks, Mexican Americans, Indians and Filipino Americans, largely reversing a two-year decline," (Hentoff, 1998, p. A-19).

The Center for Individual's Rights chief strategist said, "We don't have a problem with any admissions system, provided it doesn't use race as a factor, period" (Segal, 1998, p. A16). They were acting on behalf of a Caucasian honor-roll student who alleged that she was denied admission to the University of Michigan because of her ethnicity (Segal, 1998).

Summary

Even with the progress in equitable distribution of federal student aid funds by gender, women were overall still attending the lower tuition-level colleges. There also seemed to be a different pattern emerging when data was analyzed by ethnicity. Asian-American and Native-American men received more Title IV aid than Asian and Native-American women. However, African-American women were over-represented at the higher tuition-level colleges. Another important finding was that there was greater attendance by all minority groups in college institutions. This rise could be partly as the result of

affirmative action legislation and could drastically change since court litigation has forced some states to eliminate ethnicity as a factor in deciding which applicants to admit.

Selected Sociological Factors Related to Career Aspiration

Grade Point Average

"Our school system is harsh to those who fall behind; it sorts these children out, labels them, and finally pushes them aside" (McDermott, 1977, p. 209). As a result, grade-point average is strongly related to occupational aspiration (Picou & Carter, 1974). In fact, if one looked at both educational and occupational achievement and attainment, one could measure the success, or lack of success, by the child's early school experiences (Scott-Jones & Clark, 1986).

Unfortunately, some students seem to enter the schools already handicapped because they did not have the schemata framework of the majority (Reynolds, Taylor, Steffensen, Shirey, & Anderson, 1982). "The lower the social status, the poorer the cultural background--hence, the lower the school achievement" (Boudon, 1974, p. 29).

Minorities, females, and disadvantaged students did not achieve as well as "white, middle-class males" in the disciplines of science and mathematics. Unfortunately, high achievement in these two areas was a prerequisite for the careers that offered the most prestige and monetary success. Thus, women and minorities in 1986 tended to be precluded from these careers (Scott-Jones & Clark, 1986).

Lack of success or ability in one area tended to cause an individual to have lower self-evaluation and self-concept. Underachieving students tended to see themselves as "less capable, less worthy, and less adequate than their more successful peers" (Purkey, 1970, p. 26). Conversely, students who achieved envisioned themselves as successful and chose occupations that were of higher prestige (Picou & Carter, 1974; Purkey, 1970).

Many of the difficulties people experience in life are closely tied with their self-concept and their world view (Purkey, 1970; Super, 1957; Super & Bohn, 1970). Success or

failure in the academic arena clearly influences the way the students view their own potential. "If schools are to prepare the students adequately, they need to make every effort to insure that each student has a chance at success" (Purkey, 1970, p. 26). Schools, after all, cut across class lines and, therefore, could have an important influence on a student's vocational choice. Students who are successful in the academic arena are more likely to be interested in pursuing a higher education and, therefore, move into a more prestigious occupation (Lipsett, 1962).

Parents' Educational Level

The level of education one attains is closely related to earning power and job status (Boudon, 1974; Crocker, 1983). Generally, the income bracket correlates with the level of education. These socio-economic factors, educational levels and occupational status, have a major impact on the family status and goals and, therefore, on the child (Fields, 1981).

The family's socio-economic status, in terms of education and occupation, for example, is closely related to the academic performance of the student (Scott-Jones & Clark, 1986). This, in part, is explained by the fact that the lower the social status, the weaker the intellectual stimuli and the less supportive the cultural background (Boudon, 1974). This lack of strong stimuli and background causes children to enter school at a disadvantage because they lacked the schemata of the middle- and upper-class students. The child, that started at a disadvantage, generally fell behind in academic work almost immediately and continued to achieve lower grades throughout the experience of formal education (Boudon, 1974).

For the most part, the higher the economic resources of the family, the higher the child's educational and occupational aspirations (Horner, Buterbaugh & Carefoot, 1967). The status of the family has a direct impact on the educational and career aspirations of the students (Sewell, Haller & Straus, 1957) and of parents for their children (Davies & Kandel, 1981). In the case of parents' aspirations for their children, the socio-economic status of the family has the strongest impact, even higher than the academic success of the child (Davies & Kandel, 1981).

Ginzberg, Ginsburg, Axelrad and Herma (1951) found that a major limitation for the lower income class was their low or modest aspiration level. The converse was also true: students from higher social and income status were more likely to have a higher aspiration level (Sewell, Haller & Straus, 1957).

The response of the students' teachers also seemed to relate to the education and social level of the parents of the students. Teachers tended to expect higher grades from students with a higher status than from students with a lower status (Scott-Jones & Clark, 1986). Teachers also formed expectations based on ethnicity and on the combination of socio-economic and ethnic background (Fairfax County Public Schools, 1984).

In effect, the social class into which one was born influenced the amount of education to which one aspired, the success in the academic realm, and the range of occupations for which one qualified (Ginzberg, Ginsburg, Axelrad & Herma, 1951). This can be partially explained by the stimuli and the cultural schemata one received from the family and partially from the realization that important and lucrative careers required a great deal of formal education, something which the lower class student may not have been able to afford (Hyman, 1966).

Generally, students from upper income families enrolled in a high school academic program, aspired to attend college, and aspired for careers with greater prestige. The opposite was also true: students from lower income families tended to enroll in vocational programs and move directly from high school into the labor market. Children from lower income families often had little contact with college graduates or with people that were in the more prestigious jobs or professions; therefore, they were less likely to have role-models to emulate or to encourage them towards higher aspirations (Ginzberg, Ginsburg, Axelrad & Herma, 1951).

In a Northern Virginia High School with a 72% minority enrollment, the compositions of honors classes were primarily Caucasian students. "The reason is not less ability nor motivation. The reason has mainly to do with parents' interest. Many white students are in honors classes because their parents insist on it. Some parents see this as a refuge from lower-class students," said Patrick Welsh (1997, p. C1).

Some research indicated that the education level of the mother had a direct influence on the education aspiration of the student (Russell, Warrack, & Bremner, 1978). Howell and Frese (1979) found that the aspiration level of Causasian females was significantly related to the mother's education. However, Westbrook (1981) concluded that both parents were equally as influential in motivating their daughters for a non-traditional career in law. This was despite the fathers' markedly higher educational levels. For the lower socio-economic males, no matter what ethnic background, the mother's educational level had more influence than the father's (Howell & Frese, 1979).

The father's education level was related to the daughter's acceptance of the stereotypical role of females (Grebow, 1973). Also of significance, in the girl's rejection of the stereotypical role of females, was the total family level of education, wage, and work experience of the mother (Lengermann & Wallace, 1985). This was true for girls no matter what ethnic group they belonged.

In addition, a related study found, "irrespective of the sex of the child, parents with less education spent less time with their children" (Bronfenbrenner, 1961, p. 249). Uneducated parents, it seemed, did not provide as much encouragement, familial interaction, and intellectual stimuli. Bronfenbrenner further stated that "better-educated fathers have more responsible children" (p. 252). Since self-concept was so strongly tied to familial status and relationships, the social class identification was probably the strongest social factor influencing human behavior, decision-making, achievement, and aspiration level (Lipsett, 1962).

Ethnicity

In his studies of ethnicity, John Ogbu (1978, 1985) divided minority groups into three types: autonomous, immigrant, and caste-like. He defined autonomous minority groups as those who had a strong group identity based on religious, racial, or cultural background. Among those he classified as autonomous were the Amish, Jews, and Mormons. These minorities, Ogbu stated, are not subordinated and/or exploited

economically or politically by the dominant cultural group. Members of these groups, therefore, were not marked by consistent failure in school or by lower-income jobs. They were, for the most part, free from discrimination and could pursue academic and occupational status as they wished (Ogbu, 1978, 1985).

The immigrant minority, according to Ogbu, consisted of those groups who had moved voluntarily, for the most part, into the new society. While such new groups lacked political power and prestige and were forced to work, often in the most menial jobs, they tended not to see themselves as exploited. Indeed, they generally tended to feel that the conditions they were experiencing were better than those they experienced in the country of their origin. For these minorities, there was a promise of opportunity, freedom, and wealth in their new homeland. Thus, they tended to overcome discrimination by achieving success in the academic realms and the job market. By the second or third generation they were well adapted and incorporated into the dominant group (Ogbu, 1978, 1985). The Asian minority groups, for example, tended to experience high academic success. Some attribute this to their strong belief in hard work, individual initiative and responsibility. The Asian immigrants had the attitude that books were sacred and that learning was the way in which one improved one's life (Fairfax County Public Schools, 1984).

The third group that Ogbu described, however, remained in a subordinate position in society. These minorities which Ogbu termed "caste-like," were taken into the dominant society more or less involuntarily through conquest, slavery, or colonization. As a result, members of these minorities were forced into menial occupations, denied an equal position in the society, and, historically, denied access to a good education (Ogbu, 1985). Further, in describing African-Americans, Sowell (1984) stated that "blacks were black for life. They did not have the option simply to change their names and life-styles and blend into the general population - or to reserve their ethnicity for special occasions like St. Patrick's Day or Columbus Day" (p. 73) as could the autonomous minorities in Ogbu's model.

A number of theories, other than Ogbu's three types of minority groups, have been presented to explain the fact that some minority groups tended to repeatedly fall below the norm academically and occupationally. Among these theories were the heredity, the

educational equality, the institutional deficiency, the cultural deprivation, and the cultural conflict theories.

The heredity theory related intelligence quotient with socio-economic status and scholastic performance. This theory stated that people inherited 80% of their intelligence and could only attribute about 20% to environment; therefore, according to this theory, the difference between the groups was an innate difference, making African-Americans, in effect, basically inferior. This theory reasoned that, since IQ was, for the most part, inherited, the gap between the performance of African-Americans and Caucasian could never be closed by any intervention methods (Clift, 1966).

While the heredity theory attributed the differences to innate differences, others felt that educational inequality and/or cultural deprivation caused the problem. Historically, in this culture, the African-Americans have not had access to the same academic resources as Caucasians, and this lack of educational opportunity and equality has caused a significant gap. The cultural deprivation many African-American children have experienced has also been used to explain this gap (Ausubel & Ausubel, 1963).

Closely related to the educational equality theory is the institutional deficiency theory that suggested that the nature of the present system of education was, in itself, to blame for the gap between the groups. Proponents of this theory maintain that the United States' educational system makes little effort to help the lower class an/or caste-like minority child, and may have in fact, hampered him or her (Ogbu, 1985; Scott-Jones & Clark, 1986).

Another theory, that has been used to explain ethnicity differences, is the cultural conflict theory. This theory basically stated that African-American children failed to succeed in school because they were socialized within a culture that was in conflict with the culture of the majority dominant group (Brady, 1984; Ogbu, 1978, 1985; Sowell, 1984). According to Ogbu (1978), some inner-city African-American students may actually define success in school as something that "white" students were expected to achieve and, therefore, apply pressure on minority students who do succeed academically to change their behavior and become more "black." Thus, a subtle form of psychic pressure was put on the

more successful minority student. African-American students who did not conform to the group attitude were labeled as "Uncle Toms" (Ogbu, 1978; Poussaint, 1974).

This problem was compounded by the idea that there was a job ceiling or restriction on the caste-like minorities that forced them into low economic, social, and political situations and roles. This ceiling caused minority children to realize that there was little chance for them to move into higher paying, more socially prestigious jobs. These children were aware of the roles they were expected to play as adults in the dominant society, and the realization and acceptance forced them to aim to that level and no higher. In fact, "a large portion of the middle class in the white caste ranked above the entire upper class in the black caste, while a good portion of the middle class in the black caste ranked at the same level as the lower class in the white caste" (Ogbu, 1978, p. 103). These caste barriers tended to promote the acquisition of different academic- and occupation-related skills for the minority child as opposed to those skills typically related to children of the dominant group. While this difference in future occupational opportunities may have been unconscious, it played an important part in attitude and effort toward school (Ogbu, 1978).

This same attitude may have carried over into the 1990s. At T. C. Williams High School in Alexandria, Virginia, 46% of the students were African-American and 28% were Caucasian. Yet there were only three African-American males and 18 African-American females out of 147 students in the 1997 Advanced Placement English courses (Welsh, 1997). An Advanced Placement class is one of the requirements for the Advanced Studies Diploma with the Governor's Seal.

While education and school generally act as a door to the occupational and social role of the adult, members of a caste-like minority group may have found that their education may be a conscious or unconscious attempt by the dominant group to limit them. "The school tends to reflect the neighborhood in which it is located" (Clift, 1966, p. 394). Thus, schools in upper-class communities generally have better facilities and programs and a more qualified staff. The lower-class neighborhood, on the other hand, were frequently inferior in materials, facilities, programs, and teaching staff. In addition, society as a whole regarded those that attended the schools in the lower-class community as inferior and did not

expect that these students would achieve much above low-level work. Thus, the programs in such schools were often "accommodating and geared to a low level of ability and to shoddy academic performance" (Clift, 1966, p. 394).

Further, educators themselves often formed expectations with regard to student achievement and behavior based on the student's ethnicity and socio-economic status (Ogbu, 1978; Scott-Jones & Clark, 1986). As a result, members of the lower class and/or caste-like minorities might have found that these early academic and social expectations limited them in terms of career and education (Sadker & Sadker, 1982). It could have even encouraged the student to fail academically and/or drop out of school and enter the job market with few skills beyond those needed for menial tasks and unskilled labor (Ogbu, 1978). Conversely, the more affluent non-minority students, especially males, found that they were expected to perform at a higher level of achievement. Low achievement for these students was seen as failure (Sadker & Sadker, 1982; Scott-Jones & Clark, 1986).

Interestingly enough, even within the caste-like minority African-American culture, skin color acted as a variable in establishing status so that within the minority group, identity and self-esteem may have been linked with skin color. Lighter skin color was found to be more acceptable, even to the point of being a major factor in the selection of a marriage partner within the African-American community (Freeman, Ross, Armor, & Pettigrew, 1972).

Unfortunately, "blackness" has been associated with evil and "whiteness" with purity in the myths of many cultures. Children were generally taught to identify negative ideas with black, and this concept had a personal impact on the self-concept of the young child (Brady, 1984). No matter what the nature of the dominant culture, "whenever a group has been designated as being different in culture, color, and behavior, particularly when low or undesirable features are attributed to that group, then that unfortunate group becomes associated with lowly or evil things which are also defined by the dominant group such as violent, black and ugly" (Brady, 1984, p. 25). If career aspiration is linked, as has been suggested earlier in this review of related literature, with self-concept, these factors could play an important role in the aspiration level of students of the various minority groups.

Gender

Although no difference in intelligence has been found between males and females with regard to reasoning, learning, perception, memory and motor skills (Guttentag & Bray, 1976; Maccoby & Jaklin, 1974), there was a distinct difference between the two when it came to occupations (Maccoby & Jacklin, 1974), school performance (Shaffer, 1986), self-concept (deNys & Wolfe, 1985), and interests (Sadker & Sadker, 1985). Further, girls generally had a poorer self-concept by the time they reached high school, rating themselves below boys in terms of intellectual and scholastic ability and leadership (deNys & Wolfe, 1985). Even when their achievement-test scores and grades were comparable to those of boys, some girls became "less committed to careers" (Matthews & Tiedeman, 1964; Sadker & Sadker, 1985) by the high school years.

Even the gifted girls tended to experience a similar pattern, giving up their special abilities or hiding them as they neared completion of high school (Shaffer, 1986). These same gifted females, according to a 40-year study, "were found to be less successful in occupational status, income and intellectual contribution to society than average males" (Shaffer, 1986).

There were a number of factors contributing to the discrepancies in aspiration, success, and expectations between males and females. According to Best (1983), for example, there was a "second curriculum" in the elementary schools which taught children as they read their textbooks that boys were "aggressive, heroic, imaginative, adventurous, clever, independent, and excellent problem-solvers." Girls were described as "inferior, passive, dependent, fearful, bored, lonely, and domestic" (p. 62). This "second curriculum" encouraged girls to be helpful and boys to look down on girls and "to accept as their due the help that girls offered" (Best, 1983, p. 4). This bias in textbooks continued throughout the books of the post-secondary level, stereotyping the roles of males and females and excluding females, in narrative and content (Sadker, 1984).

In the elementary texts of 25 years ago, mothers were presented as "colorless, mindless creatures, never having any interests of their own." Fathers, on the other hand,

were pictured as "well-rounded, vibrant adults" (Jacobs & Eaton, 1972, p. 20). Adult males were seen as job-holders that were also fathers, while adult females were seen as either job-holders or mothers, but not both. Even in terms of numerical representation, the ratio of adult males to females presented in the stories was three to one (Jacobs & Eaton, 1972). Further, "when good things happened to a male character in a story, they were presented as resulting from his own actions; good things happening to a female character (of which there were considerably fewer) were at the initiative of others, or simply grew out of the situation in which the girl character found herself" (Maccoby & Jacklin, 1974, p. 157). Thus, "while learning the cognitive information conveyed, (the child was) also learning, assimilating stereotypical values and roles" (Sadker & Sadker, 1982, p. 15) through the language, content, and illustrations.

The world of fairy tales also depicted and reinforced sex stereotypes by indicating that males took part in active adventures and that females, if they were forced to become adventurers, must become less feminine and, generally, "dressed like a man" (e.g., Joan of Arc) (Gilligan, 1982, p. 13). Bettelheim (1977) pointed out that the male role in such stories was generally one of rescuing females, or, by climbing symbolic phallic symbols such as the beanstalk, or stealing great wealth and slaying giants. The females' role, on the other hand, was to be subservient (Cinderella) or sleep in a passive state (after she first pricks her finger, which Bettelheim equates with her first menstruation, or eats half of an apple, which Bettelheim relates to the Garden of Eden and the fall from grace) until ready for marriage with a handsome prince who would sweep her away from her slavery and/or released her from the evil spell. "The Cinderella myth keeps girls from seriously planning educational and occupational goals," said Sadker & Sadker (1982, p. 25).

As a result of the stereotypes presented to young girls, in their reading and through the advertisements and commercials they see (Gough, 1976), it hardly seems strange that girls often had marriage and children as their central concern (Ginzberg, Ginsburg, Axelrad, & Herma, 1951; Herzog, 1982; Sadker & Sadker, 1982). For the man, success was measured by his achievement within the field of occupations; for the women, however,

success was generally linked to marriage and family (Bardwick, 1971). In effect, girls were conditioned to find their achievement in terms of service to a male and to children.

There was a significant decline in academic achievement of girls when they reached puberty (Gough, 1976; Greenberg-Lake, 1991), and the decline continued throughout the school years (Greenberg-Lake, 1991; Maccoby & Jacklin, 1974; Sadker & Sadker, 1982). This decline in academic achievement related to a similar decline in career commitment (Sadker & Sadker, 1982). Part of this decline was explained by the societal view that a girl should have skills to fall back on if, for any unforeseen reason, she was forced to enter the job market after her marriage (Sadker & Sadker, 1982) but that, basically, a woman's role was prescribed in terms of a home, marriage, and family (Bardwick, 1971; Best, 1983; Ginzberg, Ginsburg, Axelrad, & Herma, 1951; Sadker & Sadker, 1982).

Evidence found that women, even gifted women, had a low self-concept, self-esteem, and motivation and were often intellectually underdeveloped, overeducated for the jobs they held, and were in the lowest jobs in pay, opportunity for advancement, and status (Sadker & Sadker, 1982; Shaffer, 1986). The male was seen as having greater power to control his destiny and to succeed (Maccoby & Jacklin, 1974). This concept was inherent in the stereotyped images of males and females presented in television and print. Certain traits were seen as masculine while others were seen as feminine, and those which were thought to be masculine were seen as more valuable (Bardwick, 1971; Gough, 1976; Maccoby & Jacklin, 1974; Sadker & Sadker, 1982).

Girls who excelled in the traits and talents which were seen as more masculine, such as mathematical skills and computer work, or independence, may be seen as "deviant" rather than talented or gifted (Sadker & Sadker, 1982; Shaffer, 1986). In fact, achievement in academics, or in any area traditionally seen as masculine, often caused a fear and avoidance of success in girls (Gough, 1976; Maccoby, 1966; Maccoby & Jacklin, 1974). "Both men and women, describing people who succeed in academic settings, depict painful and embarrassing things happening to successful women, good things happening to successful men" (Maccoby & Jacklin, 1974, p. 348). Females, therefore, tended to fear success and intellectual achievement since they felt that it would lead to "negative consequences, such as

unpopularity and loss of femininity" (Horner, 1969, p. 38). Consequently, a gifted female was often caught in a fear of success as well as a fear of failure (Bardwick, 1971; Gilligan, 1982; Hawley, 1971; Horner, 1969; Lobban, 1978).

When a girl failed, she was more likely to attribute it to her own lack of ability or to other internal factors; a boy, on the other hand, was more likely to attribute failure to external factors such as poor luck (Shade, 1978). The converse was also true: males generally attributed their success to internal factors while females saw success as a product of externals (Shaffer, 1986). Even when girls had higher achievement than boys did, they tended to believe that they were not capable of continued academic success because they were not as qualified as the boys (Maccoby & Jacklin, 1974; Sadker & Sadker, 1982).

Other findings echoed the 1990 AAUW survey in terms of the attitudes of the school and teachers toward the students. Boys generally received more criticism and punishment than girls did, but also more praise, instruction, and encouragement. In fact, adults tended to "respond as if they found boys more interesting, and more attention-provoking, than girls" (Maccoby & Jacklin, 1974, p. 348). Girls were more likely to conform and comply than were boys, while boys were more aggressive (Maccoby & Jacklin, 1974).

Studies also indicated that active students received more precise instructions and feedback than passive students and therefore, were more likely to achieve higher academic scores (Sadker & Sadker, 1985). When a male student was having difficulty with a problem, the teacher generally gave him more detailed instruction and encouragement. When a female student was having the difficulty, the teacher often did the problem for her or had one of her male peers complete it (deNys & Wolfe, 1985; Sadker and Sadker, 1985).

Girls were encouraged by this kind of interaction to feel that they were helpless and the difficulties were insurmountable when it came to mathematics and science (Sadker & Sadker, 1982). As a result, girls tended to drop out of courses which were oriented towards mathematics, science, technology and computer science. Often, in fact, girls received the message that these courses were masculine in nature and that to excel in them was to lose one's femininity (Lipkin & Sadker, 1985). Many of the occupations in today's market require these very areas (Schuster, 1992; Schwartz & Neikirk, 1983).

While girls were generally seen as being more garrulous, dominating the classroom in discussions, the opposite was, in fact, the case: boys clearly dominated the discussions (Sadker & Sadker, 1985). Because of the extra attention boys received as a result of being more aggressive, active, and talkative, they received more than their share of teacher attention and interaction (Harvey, 1986; Sadker & Sadker, 1985). "If a boy calls out in class, he gets teacher attention, especially intellectual attention. If a girl calls out in class, she is told to raise her hand before speaking" (Sadker & Sadker, 1985, p. 54). The messages received were clear: boys have more worth, as evidenced by the fact that the teachers challenged, reprimanded, instructed, and responded to them. The girls were not worth as much as could be seen by the fact that teachers asked them memory response questions, intervened when they were having problems with an assignment, gave cursory instructions, and expected them to be passive (deNys & Wolfe, 1985). In effect, "the boy was being prepared to mold his work, the girls to be molded by it" (Bronfenbrenner, 1961, p. 260).

Summary

The sociological factors that related to the high school seniors' career aspiration included grade-point average, parents' education, ethnicity and gender. Success or failure in academics clearly influenced the way students viewed their own potential. The families' socio-economical status was also closely related to the student's academic performance. In regard to ethnicity and gender, students were acting out roles and expectations that society had formed for them. These roles, although not impossible, were hard to break. Many studies and surveys pointed out the importance of society's treatment and attitude, and how that affected future career opportunities for our young people.

Achievement Differences in 1996

SAT Disparities in Gender

In 1996 the College Board published scale scores for the Scholastic Aptitude Test (SAT) in Verbal and Math performance from 1972-1996. Over this 24-year time period, the verbal total scores dropped by 25 points (24 for males and 26 for females). In contrast, the females had a 3-point gain in total math scores, while the males' score stayed at the same level (Kelly, 1996).

From 1986 to 1996 the SAT verbal score for males dropped eight points while females dropped only one point. In the math scores, males gained four points while females gained 13 points! But a significant gender gap continued. Despite this dramatic gain, females remained behind males in both verbal (four points) and math (35 points). A one-year comparison, 1995 to 1996, shows modest gains for both sexes in verbal and math categories. The combined scores in 1996 were the highest since 1974 (Kelly, 1996).

College Board's Gretchen Rigol said, "This year [1996], girls who took the (SAT) test had spent just as many years in math courses (3.6) as boys, and had an overall grade-point average better than boys (3.27 vs. 3.11), but they still scored lower in both the verbal and math tests." Rigol said that girls still aren't taking enough of the most demanding math courses like calculus (Kelly, 1996, p. 2D).

SAT Disparities in Minority Students

1996 SAT "scores for ethnic minorities have improved but still lag behind those of whites," said College Board's Gretchen Rigol (Kelly, 1996, p. 2D). College Board President David M. Stewart, who is African-American and who was once president of Spelman College in Atlanta, said, "Our (minority) kids too often miss opportunities for demanding academic courses, whether because they're in poor, inner-city schools or tracked out of courses that prepare kids for college. When minorities take equal amounts of rigorous courses, their (SAT) scores are approximately equal with others" (Kelly, 1996, p. 2D).

Summary

Over a 24 year time period there has been a considerable drop in SAT verbal scores for both males and females. The SAT math scores, however, revealed that females gained 3-points while males scores stayed the same.

From 1986 to 1996 the females' math score gained 13 points and males gained four points. Ethnic minorities' SAT scores also improved but still lagged behind the Caucasian students.

Trends in the 1990s

Projects to Increase Minorities College Enrollment

The pilot project called EQUITY 2000 tries to destroy the myth that only certain students can succeed. In 1996, the College Board received a $3.1 million grant from the DeWitt Wallace-Reader's Digest Fund to expand a national program to increase the number of low-income and minority students who enter college. This project established the high expectation that every student would complete algebra and geometry by the tenth grade, and that training will be given for teachers and guidance counselors to instruct the students on how to meet these goals. Students receive extra support, ranging from counseling to special classes on Saturday. The goal is to steer students into college preparatory courses and support them as they pursue these more challenging subjects ("Board wins," 1996).

Myth of the Melting Pot

The Washington Post study reported that "in 25 years, non-Hispanic whites will not be a majority in four states, including the two most populous ones, and in 50 years, they will make up barely half of the U.S. population" (Booth, 1998, p. A-18). Some 12% of the immigrants have graduate degrees, compared to 8% of native Americans. But more than

one-third of the immigrants have no high school diploma, double the rate for those born in the United States (Booth, 1998).

About 6% of the new arrivals receive some form of welfare, double the rate for U.S.-born citizens. There was also evidence of lingering language problems. In Miami, 75% of residents spoke a language other than English at home and 67% of those said that they were not fluent in English. In New York City, four out of every 10 residents spoke a language other than English at home (Booth, 1998).

There seems to be a persistence of ethnic enclaves and identification does not appear to be going away. Moreover, it is possible that what "mixing of groups that does occur was only a temporary phenomenon as one ethnic group supplants another in the neighborhood" (p. A19). Most minority groups identified themselves as hyphenated Americans (i.e. African-American). Few chose "American" as their identity (Booth, 1998).

Change in Attitudes Toward Women and Minorities

There seems to be a change in attitude in some people's minds. In 1994, American Heritage Magazine asked a wide range of public figures the following question: "What do you think is the most important way in which America has changed since 1954, and why?" Many people spoke about the change in female and minority status.

Carol Moseley-Braun, United States Senator from Illinois, said that when she was born, women and minorities were considered the exceptions to the American dream. Because of the movements for civil rights, gender equity, and freedom of choice for abortion, females were no longer as consigned to limitations on the basis of birth ("How

Garry Wills, adjunct professor of American culture and public policy at Northwestern University, said that the status of women had undergone more changes in the last four decades than in the last four centuries. This status had tapped the resources of half the human race ("How Have," 1994).

Patty Murray, United States Senator from Washington, was one of the first women to serve in the U.S. Senate. She believes that one of the most important changes in the last

forty years was the increased number of women who are running for and getting elected to public office. She said that the struggle to get women into elected positions was by no means over. She feels that women bring a unique perspective to the kinds of challenges that our country faces right now, from welfare reform to health care to youth violence. Ms. Murray said that women are making their voices heard ("How Have," 1994).

Tom Brokaw, anchorman of NBC Nightly News, said that his friends' daughters have ambitions well beyond marriage and childbearing ("How Have," 1994).

"I am glad to see women attain power in American life. I have a woman editor, a woman lawyer, a woman business counselor, three brilliant women assistants, and women in all other aspects of my life," said James A. Michener, author of *Hawaii* ("How Have," 1994, p. 26).

Changes in Education, Government and Businesses for Females

In the Washington, D.C., area, several school systems have taken steps to decrease classroom sex bias since Congress passed Title IX legislation that prohibited discrimination in education institutions receiving Federal money. Fairfax County, Virginia, officials said they began to scrutinize textbooks for gender bias and that their teacher training programs were used to raise expectations for girls (Proctor, 1992). Many recent articles and books gave tips to help young children develop their own interests, regardless of gender. Girls can be just as interested in studying bugs in the garden as in measuring water for the cake mix ("Tips help," 1995). Dartmouth's Women in Science Project gave first year women the chance to participate in research projects with faculty in seven scientific disciplines ("Careers in," 1992).

Under the Gender Equity Act, incorporated in the 1994 Elementary and Secondary Education Act, millions of dollars were allocated for "gender equity" programs in the schools ("Take your," 1995). Sharon Schuster, President of American Association of University Women (AAUW) said,

> Working as individuals we can also support and interest others in supporting
> a broad spectrum of programs girls need, such as mentoring, math-science
> conferences and camps, teen pregnancy education, and on and on. These

support programs can be enormously effective in helping young students overcome the negative messages they sometimes receive about their potential and their role in society - messages that can be devastating to their future. American businesses and industries have a stake in assuring that young women become successful employees of the future. Corporations need to show their support by investing now in programs that will equip girls and young women for useful roles in society and in the work force (Schuster, 1992, p. 4).

Gains are being made slowly as many businesses and corporations invest in the future by instituting the "Take Your DAUGHTER To Work Day" ("Take your," 1995). Even in politics more awareness is being made on gender rights. In 1995, Hilary Clinton attended the World Conference on Women in Beijing. Her stand on women's rights pointed the way toward sustainable development in Washington politics (Wirth, 1995).

Hispanic females owning small businesses are recently becoming the fastest growing segment in computer hardware and software reported NFWBO (National Foundation for Women Business Owners). From 1987 to 1996, the number of businesses owned by minority females increased by 153% - three times higher than the rate of increase for businesses overall. The number of firms owned by Hispanic females rose 206% during that period, compared with 138% for companies owned by Asian-American, American-Indian, or Native-Alaska females. Ownership for African-American females rose 135% (Nelton, 1998).

The U.S. Census Bureau information found that minority females owned nearly 1.1 million companies in 1996, or about 13% of the 8 million firms owned by females. Companies owned by minority females employed 1.7 million people and generated more than $184 billion in sales. African-American females owned 405,200 firms; Hispanic females owned 382,400 firms; and females of Asian, American-Indian or Native-Alaska heritage owned 305,700 firms (Nelton, 1998).

New Solutions To New Problems

Schools mirror society, and teenage pregnancy has become a large societal issue emerging out of the drop in girls' self-esteem. More than half of California's welfare

benefits goes to mothers who had their first babies as teenagers. The fact that girls failed or never had the opportunity to make the grade in math and science skills could eliminate them from the more technical, higher-paying jobs of the future ("Careers in," 1992).

Many reports indicated that getting elementary age girls involved in some girls-only organizations, such as Girls Scouts, might raise their self-esteem that would benefit them in their future years. Another beneficial example of trying to give girls non-traditional opportunities was "Tech Time for Girls," a 2-year-old monthly science club run by Girl Scouts of Santa Clara County, California (Eickmann, 1995).

Texas Woman's University has a federally supported program to train unwed mothers as nurses. While the women are in school, they live on campus with their children ("Careers in," 1992).

Survey Revealed Gender Revolution

The Washington Post/Henry J. Kaiser Family Foundation/Harvard University's 1997 survey results revealed that a revolution has taken place in gender roles. They found that the percentage of women lawyers and judges doubled to 29% between 1983 and 1996, while the percentage of female physicians increased from 16% to 26%. In 1998, nearly a third of all professional athletes were women - almost double the proportion in 1983 (Morin & Rosenfeld, 1998).

Women in 1998 made up nearly half of all entry- and mid-level managers in American corporations, up from 17% in 1972. But the executive level continues to remain disproportionately male (Morin & Rosenfeld, 1998).

In higher education, gender equity is a reality. Slightly more than half of all bachelors' degrees was awarded to women in 1997, and the percentage of doctoral degrees granted to Caucasian women had increased from 25% in 1977 to 44% in 1993. Among African-Americans, women received more of the doctoral degrees (Morin & Rosenfeld, 1998).

There were mixed feelings for the gender revolution-taking place in America. Four out of ten of those surveyed said it would be better to return to the gender roles of the 1950s.

Eighty percent of men and 80% of women said that this change in gender roles had made it harder for parents to raise their children. Seventy percent of men and 72% of women also said that the change in gender roles made it harder for marriages to be successful. The majority of the women, however, still believed that they were entitled to be full participants in the areas of life that their mothers had to fight to enter, and they assumed their personal identity included a job or a career. Similarly, young men generally had already accepted that their lives at work and in the home had changed, and with these transformations came new duties, responsibilities and rewards (Morin & Rosenfeld, 1998).

The Washington Post survey said that a typical comment about equal rights for women was one made by a 22 year old Des Moines man who said, "We value equality, we value everybody wanting to have self-esteem, to get everything they want, and I don't see where imposing a limit on more than half of our population accomplishes that" (Morin & Rosenfeld, 1998, p. 54).

Summary

Legislation in congress and litigation in the court system may have contributed to the students' expectations for opportunities in the college admission process and in the workplace. American's attitudes have been changing about equality for both gender and minorities. Educational groups funded equity projects and there continues to be a growing awareness for taking your daughter's career seriously. As opportunities increase for our young females, other trends emerge. Teenage pregnancy is on the rise and there are more welfare mothers. Educators, business people and government officials are continuing to deal with these and other problems as we enter the 21st century.

1986 High School Research

In 1986, a George Washington University doctoral research study analyzed the senior students' career aspiration levels at Robinson Secondary School, Fairfax, Virginia.

The question for research was "Are the variables of race, gender, grade point average and parents' education level factors related to career aspiration level?" (p. 89). In order to assign a ranking for the aspiration level of a given career choice, a preliminary survey of 169 seniors was given. This group of seniors were asked to rate 18 occupations on a scale from 10 to one in terms of how they felt that society valued or respected each occupation. The means were tabulated and the scores grouped into six levels by ordinal number for statistical purposes. This survey established the baseline of the societal value of occupations. Students in this survey ranked medical/dental and math/science as the top two careers. Legal work and entertainment were ranked 3 and 4 respectively. Manual work and customer service were ranked as the lowest occupational groups. There was a broad group of seven occupations that were ranked in the middle: data analysis; music; education; literary; social; technical; and, management.

Two weeks later, 611 seniors completed three surveys: the *Harrington-O'Shea Career Decision-Making* career cluster form, the Class of 1986 Senior Student survey and the Robinson Secondary School Guidance Department: Statistics for Graduating Class of 1996. This data established each individual senior's career aspiration, gender, ethnicity, and parents' educational level. Their grade-point average was obtained from the seniors' transcripts.

To examine the variable of ethnicity and career aspiration level, the six groups were collapsed into three to obtain a greater cell density. For this combination the probability computed by the Chi-square test of association analysis was .7924. There was "no significant difference in career aspiration level by race" (p. 75). These differences were despite the researcher's efforts at regrouping.

To examine the variable of gender, the researcher conducted a Chi-square test of association analysis with career aspiration level. The probability was .0001. This analysis concluded "gender was a significant factor in career aspiration level for students at the subject school. Females tended to avoid the highest and lowest levels of career. The aspiration level with the largest number of senior females fell into the middle groups. The

aspiration level with the largest number of senior males fell into the highest group (e.g., Math-Science)" (p. 76).

The 1986 study also analyzed relationships between grade-point average and career aspiration level. The results were virtually identical to the gender variable with a probability of .0001. The analysis also showed a probability of .0001 for the consolidated levels. The study concluded, "There does seem to be a relationship between GPA and career aspiration

The relationship of "father's education level with student's career aspirations was not found to be significant with a probability of .03" (p. 90). Mothers' educational level "was also not a significant factor in student's career aspiration" (p. 79).

Based upon the statistical analysis of the data in this study, the following conclusions were made for females and minorities. For the subject school and, presumably, other schools with as high of a socio-economic level, certain characteristics alleged to be true for the normal population with regard to the various ethnicities are not necessarily true. The problem with gender in terms of career aspiration was easily related to the research. "Women do not aim for the most prestigious careers. This may partially be explained by the poor self-esteem that women have been socialized to accept. In addition, since the highest level of career, as assigned by seniors in the subject class, included only careers that required extensive mathematics, science and technology, the females may have avoided these careers because of their math-phobia" (p. 93).

The recommendations included:
1. A strong program should be developed to ease the girls through the perceived barrier that they feel exists so that they can enter the areas of mathematics, science and technology.
2. A counseling program should be developed which would encourage the females to continue in these higher academic areas.
3. A counseling program should be set up to help young women change poor self-concepts and break the traditional stereotypical patterns.

4. More counseling programs with regard to career options and possibilities for girls should be established (Hudgins, 1987).

Summary

The following findings were based on the Hudgins' survey and statistical analysis:

1. Career aspiration level was directly correlated with grade-point average.

2. Career aspiration level was correlated with gender; males tended to have higher career goals.

3. Female seniors tended to choose careers that were not in the highest levels of value or respect as judged by their peers.

4. Parents' education did not statistically show a strong relationship to aspiration level.

5. Ethnicity was not a significant factor in career aspiration level (Hudgins, 1987).

CHAPTER 3

METHODOLOGY

This chapter presents the method of the study. The population and community, research design, instruments, access procedures, data collection procedures, analytical procedures and limitations will be described. The instruments provided the tools to analyze whether the variables of gender, ethnicity, grade-point average and parents' education were related to senior high school students' career aspiration level. The analyses determined if there was a significant difference in the seniors' choices over a 10-year time span. The method focused on an examination of career aspiration levels by gender and ethnicity in a comparison of l996 statistics with similar data collected in 1986. Additionally a separate analysis examined the percentage of female and minority seniors that graduated with the Advanced Studies diploma with the Governor's seal from 1986 to 1996. A similar analysis was conducted to ascertain the percentage of female and minority seniors with two- and four-year post-secondary college education plans from 1986 to 1996.

Research Questions

1. Are the variables of gender, ethnicity, grade-point average, and parents' education related to the 1996 high school seniors' career aspiration level?

2. Is there a significant relationship between the female high school seniors' career aspiration level and graduation years, 1986 and 1996?

3. Is there a significant relationship between the minority high school seniors' career aspiration level and graduation years, 1986 and 1996?

4. Is there a significant difference in the percentage of 1996 female and minority high school seniors receiving the Advanced Studies Diploma with the Governor's seal as compared to

1986 female and minority high school seniors receiving the Advanced Studies Diploma with the Governor's seal?

5. Is there a significant difference in the percentage of 1996 female and minority high school seniors' two- and four-year post-secondary college plans as compared to 1986 female and minority high school seniors' two- and four-year college plans?

Population and Community

The population for this study was the 1996 senior class at Robinson Secondary School, Fairfax County, Virginia, Public School Division. This convenience sample consisted of 269 males (46.62%) and 308 females (53.38%). Ethnicity of the seniors consisted of 468 Caucasians (81.10%), 27 African-Americans (4.68%), 23 Hispanics (3.99%), 2 American Indians or Native-Alaskan (.35%), and 55 Asians (9.53%).

Robinson Secondary School was a six-year comprehensive school that was divided into two units, middle school (Grades 7 and 8) and high school (Grades 9-12). The school served an upper-middle class community located about twenty miles west of Washington, D.C. The school building itself covered 11.4 acres under roof and was situated on a plot of 56.8 acres. The population of the school in 1996 was 3689 students: 2460 in grades 9 through 12, and 1229 in grades 7 and 8. The State Board of Education and the Southern Association of Colleges and Schools accredited Robinson. The 1996 Robinson senior class had a mean SAT of 1114 (verbal 555 and math 559). This SAT score was 101 points higher than the national average for 1996 of 1013 (verbal 505 and math 508) (Fairfax County Public Schools, 1997). The seniors of 1996 had a range of grade-point averages from a high of 4.081 to a low of .900. There were 28 valedictorians in the 1996 graduating class (students with grade-point averages of at least 4.0). Robinson Secondary School does not rank its students (Appendix B, Robinson Profile).

Special Curriculum Features of Subject School

Seventeen advanced placement classes were offered and weighted on the senior transcript by applying an additional 0.5 quality-point to the grade-point average. Gifted and talented courses were offered for students who qualified and demonstrated superior intellectual and academic ability. Differentiated curricula and teaching strategies that stressed critical thinking skills, creativity, and problem-solving ability were integrated into the content of each gifted and talented course offering. These modified courses were designated "GT" on student transcripts. Computer science and senior science investigations were college preparatory courses.

English as a second language (ESL) classes were taught to non-English speaking students. The special education classes offered were learning disability self-contained; learning disability resource; and, autism. The special education services were offered for the hearing impaired, and for students needing speech and language. A resource teacher came into the high school to give support to students that were identified as emotionally disturbed (ED) once or twice a week depending on the student's individual educational plan (IEP).

A minimum of 21 credits was required through grades 9-12 for graduation with a regular diploma. These credits included four years of English, two years of physical education, one year of a fine or practical art, two years of math and three years of science or three years of math and two years of science and three years of social studies (world studies, United States/Virginia history and government). Electives were filled in to equal the 21 required credits for graduation.

Students received credit toward graduation for high school classes in algebra, geometry and foreign language taken in grades 7 and 8. A minimum of 23 credits was required for graduation for the Advanced Studies diploma. Students that received this diploma took a minimum of three math classes that included algebra I, geometry and algebra II; a minimum of three science classes that could include earth science, biology, chemistry, and physics; and a minimum of three years of one foreign language or two years of one foreign language and two years of a different foreign language. Electives were filled

in to equal the 23 credits required for graduation. Students that graduated with an average grade of "B" (3.00) or better and successfully completed at least one Advanced Placement (AP) course or one college level course for credit received the Governor's seal on the diploma. (Fairfax County Public Schools, 1995-1996).

School Community

The school zoning area serviced by Robinson was large, incorporating a variety of suburban communities and housing developments. Students attending Robinson Secondary primarily came from upper middle class families living in the surrounding towns of Fairfax, Burke, Fairfax Station and Clifton, Virginia. For the most part, these were townhouses and subdivision communities; however, Clifton was a growing, wealthy community that contained many homes with five-acre land plots.

Research Design

In order to address the research questions stated above, a causal- comparative (ex post facto) statistical analysis (Fraenkel & Wallen, 1993; Gay, 1995) was used with a convenience sample of 1996 high school seniors (N = 577). The level of significance was set at .01 due to the large size of the sample. Questions one, two and three used a preliminary survey as a baseline for the career aspiration level.

Question one analyzed the 1996 high school seniors' career aspiration levels to discover if there was a significant relationship with gender, ethnicity, grade-point average and parents' educational level. This investigation was a replication of a doctoral dissertation completed 10 years ago with the 1986 seniors at the same high school and discussed in Chapter 2 (Hudgins, 1987).

To expand the study and to analyze any differences over the 10-year time-span, four more questions were added in the 1996 study. Question two and question three pertained to an analysis of the relationship between the female and minority seniors' career

aspiration level and their graduation years, 1986 and 1996. The 1996 data on gender and ethnicity from question one were compared to the 1986 data. The data for the 1986 students' gender and ethnicity and their relationship to career aspirations were obtained from an educational dissertation from George Washington University (Hudgins, 1987).

Question four analyzed the difference in the percentage of 1996 female and minority seniors receiving the Advanced Studies Diploma with the Governor's seal as compared to the 1986 female and minority seniors receiving the Advanced Studies Diploma with the Governor's seal. The 1996 collected data from the subject school transcripts were compared with the 1986 data obtained from the Fairfax County Administrative offices.

Question five analyzed the difference in the percentage of the 1996 female and minority seniors' aspirations to pursue a two-or four-year college degree as compared to the 1986 female and minority seniors' aspirations to pursue a two-or four-year college degree. The 1996 data collected from a survey were compared with 1986 data obtained from the Fairfax County Administrative offices.

1996 Preliminary Attitude Survey

As in the 1986 study, the researcher administered a preliminary attitude survey of occupations with 178 seniors at the subject school. This survey, conducted on May 6, 1996, assigned a rating for each of the 18 occupations on the *Harrington-O'Shea* career cluster form. The American Guidance Service, Inc. gave permission to use the career cluster form for this purpose (Appendix C). The seniors were given the form listing the 18 career clusters (occupations) with examples of typical jobs in each cluster. The seniors were asked to rate each individual occupation on a scale from 10 (highest) to 1 (lowest) by their societal prestige or respect. For example, a senior might give a 10 for the medical-dental occupation, a 5 for social work occupation, and a 1 for manual work occupation. Another senior might give a 5 for medical-dental, a 1 for social work and a 10 for manual work. The means for each of the occupations were tabulated, and the scores of the means were ranked. The ranking of the occupations established the baseline for the study. This

baseline revealed the ranking means for the 18 occupations used in questions one, two and three. Six cells were established and named Groups 1 through 6. They were subsequently consolidated into three groups (High, Medium, Low) to increase the numbers in each cell and to maintain parallelism with the 1986 study.

1996 Senior Class Survey

The data for the 577 seniors were collected using the 1996 high school transcripts and three instruments: the *Harrington-O'Shea Career Decision-Making System* career cluster form, the Class of 1996 Senior Student Survey (Appendix D) and the Robinson Secondary School Guidance Department: Statistics for Graduating Class of 1996 survey (Appendix E).

The seniors placed their first choice (aspiration) of occupation on *the Harrington-O'Shea Career Decision-Making* career cluster form. The researcher operationally defined the aspiration level by assigning the mean occupational rank from the preliminary survey to each senior's choice of career. For example, the highest level of careers, Group 1, was medical-dental and math-science. Therefore, if a student's first choice of career aspiration listed on the career cluster form was medical-dental, that student was reported to have the highest career aspiration, Group 1. If a student's career aspiration was manual work, that student was reported to have the lowest career aspiration, Group 6. The career aspirations for the 577 seniors were matched to the appropriate group. The 1996 seniors' career aspiration levels were tabulated, and the frequency summary listed (See Table 4).

Instruments

Three instruments were used in the 1996 study on aspirations for high school seniors: the *Harrington-O'Shea Career Decision-Making System* career cluster form published by American Guidance Service, Inc.; the Class of 1996 Senior Student Survey; and the Robinson Secondary School Guidance Department: Statistics for Graduating Class

of 1996 survey. These surveys were chosen to replicate and extend a study done in 1986 at the same high school with senior students.

To obtain the high school seniors' career aspiration level, the 1996 senior class (N = 577) entered their first career choice on the *Harrington-O'Shea Career Decision-Making* career cluster form. This data was analyzed by comparison with the data gathered in 1986 from the same instrument.

The Class of 1996 Senior Student Survey was an exact copy of the survey form used in the 1986 study. Data obtained from this survey contained each senior's gender, ethnicity, father's education level and mother's education level.

The Robinson Secondary School Guidance Department: Statistics for Graduating Class of 1996 survey was also administered to all of the seniors. The data obtained from this survey were the seniors' two- and four-year post-secondary college plans.

Harrington-O'Shea Career Decision-Making System (CDM) Instrument

Description. *The Career Decision-Making System* (1993) is an interest inventory with a "sound theoretical basis that provides valid and reliable assessment of career Conoley & Impara, 1995, p. 14). In developing the CDM, the authors provided counselors with a tool to assist persons with their career decision making. The CDM, with Holland-based scales, offers a highly compatible research instrument. The authors' own research convinced them that Holland's theory explained most of the interest variance being measured by other interest inventories.

The CDM has been used with many diverse cultures. In general, the studies cited provide cross-cultural support for the CDM and the Holland-based theoretical system and codes (Conoley & Impara, 1995).

Reliability. Alpha coefficients were used as measures of internal consistency for the interest scales in the CDM. The coefficients gave the reliability "good to high stability

over a short time period, especially with older students" (Harrington & O'Shea, 1993, p. 60).

Efforts were made to eliminate sex bias. Males and females used the same survey form and raw scores were used to explore interest areas. The male-female differences reported are in the same direction as those found by corresponding scales of the *Self-Directed Search* (Holland, 1973) and the *Strong Interest Inventory* (Hansen & Campbell, 1985).

Participants' handscore the interest inventory to identify their highest career areas of interest. The directions are easy to follow and are written at a fourth grade reading level (Conoley & Impara, 1995).

Harrington and O'Shea calculated the distribution of career clusters for 1981 data drawn from junior high, high school, and college standardization samples. Their research reflects many of the expected cultural influences on vocational interests: females tended to prefer social, musical, educational, and clerical activities, while males tended to prefer manual, technical, math-science, and skilled craft activities (Harrington & O'Shea, 1993).

Validity. Construct validity of the Harrington-O'Shea CDM was based on the correlation patterns of Holland's RIASEC hexagonal modes. The size of the correlations between the six major occupational categories is inversely proportioned to the distances separating them in the hexagon.

Concurrent validity was established by administering the RIASEC inventory to 53 occupational and curricular groups. These codes were compared with the codes assigned in the *Dictionary of Holland Occupational Codes* (DHOC) (Gottfredson & Holland, 1989). Of the 53 occupational groups, 85% had either very close or reasonably close matches to the CDM's three highest mean scores (Harrington & O'Shea, 1993).

Other concurrent validity tests showed that educational and occupational groups obtained CDM codes that were very consistent with their DHOC codes and College Majors Finder. Taken together, these results offer impressive evidence of the concurrent validity

of the *Harrington-O'Shea Career Decision-Making System Inventory* (Conoley & Impara, 1995).

Procedures

The focus of this study was high school seniors' career aspiration level as measured by the *Harrington-O'Shea Career Decision-Making* career cluster form, type of diploma awarded, and post-secondary college plans survey. The related variables included gender, ethnicity, grade-point average, fathers' educational level, mothers' educational level and the seniors' aspiration change from graduation year 1986 to graduation year 1996.

Access Procedures

1. Permission for the study and the authorization for the collection of the data was obtained from the school Principal (Appendix F) and the Director of Guidance at Robinson Secondary School. Since the survey was limited to one school, permission for the study was not needed from the Fairfax County offices, still the research divisions of Fairfax County were consulted, and the research design and purposes were discussed with them. Diploma and college aspiration data for the 1986 Robinson seniors were obtained from the Fairfax County Administrative offices.

2. Written permission was obtained from the American Guidance Services, Inc. to use the *Harrington-O'Shea Career Decision-Making* career cluster form in the study.

3. A clearance waiver for a Human Subjects study was obtained from Virginia Polytechnic Institute and State University.

Data Collection Procedures

Preliminary Survey.

1. The researcher administered a preliminary attitude survey of occupations to 178 seniors at the subject school. The students from seven senior English classes were chosen because they jointly encompassed all ability levels including Advanced Placement English, gifted/talented English, "regular" classes, and "teamed English" (regular and

learning disability students). This survey was conducted on May 6, 1996, to assign a rating for each of the 18 occupations on the career cluster form.

2. The students rated each individual occupation cluster on a scale from 10 (highest) to 1 (lowest) by societal prestige or respect. For example, one senior could rate medical-dental as a 10 and another student might rate medical-dental as a 1. The means for each occupational cluster were tabulated and the scores were ranked by ordinal number for statistical purposes. For example, the medical-dental occupation obtained the highest mean of 9.39 and was assigned to Group 1, (the highest group) of occupations. Manual work obtained a mean of 3.24 and therefore was assigned to Group 6 (the lowest group) of occupations). The six levels were subsequently consolidated into three levels (High, Medium, Low) to increase the numbers in each cell and to maintain parallelism with the 1986 study.

Survey.

1. The date for the 1996 senior class survey collection was set by the researcher and approved by the Guidance Director.

2. The researcher gave the counselors instructions for the administration of the surveys.

3. To determine the career aspirations, gender, ethnicity, and parents' education, a survey of 577 Robinson 1996 seniors was administered on May 17, 1996.   The students were given a folder containing the *Harrington-O'Shea Career Decision-Making* career cluster form, the Class of 1996 Senior Student Survey, and the Robinson Secondary School Guidance Department: Statistics for Graduating Class of 1996 survey.

4. The surveys were administered by the researcher with the help of the 1996 senior guidance counselors so that the students would feel more at ease and would consider the surveys part of the guidance program and senior survey information taken in the Spring of each year.

5. The students were instructed to check their first choice of occupation field that they aspired for onto the *Harrington-O'Shea Career Decision* career cluster form.

6. The students completed the Class of 1996 Senior Student Survey. This survey asked for data on gender, ethnic group, and fathers' and mothers' highest educational level.

7. The students completed the Robinson Secondary School Guidance Department: Statistics for Graduating Class of 1996 survey. This survey asked for the post-secondary school plans (i.e. two-and four-year college plans or working). The administration of these surveys took one class period.

8. The researcher collected the surveys and the career cluster form.

9. The Robinson School guidance department furnished the researcher with the 1996 senior transcripts for grade-point averages and diploma type.

10. The Fairfax County Public School administration office furnished the researcher with the 1986 Advanced Studies Diploma with Governor's seal data and the 1986 seniors' two- and four-year college plans data.

11. The researcher operationally defined student aspiration levels by assigning mean occupational rank from the pre-survey to each student's choice of career.

12. Over 4000 data points, representing career aspirations, diploma type, grade-point average, gender, ethnicity, mothers' education level and fathers' education level, were entered on a spread sheet.

13. The statistics for the study were analyzed for review.

14. Every attempt was made to comply with established protocols for human subject research. Anonymity of the students' identities was maintained by a coding system. After the data was collected, all of the students were given a number ranging from 1 to 577. This code number was used as a blind reference in the researcher's data file. Anyone reviewing the data would only see the reference number and the student's identity would remain confidential. To further insure student anonymity, codes were also assigned to represent gender, diploma type, parents' education level and the ethnic group of which the student was a member. The anonymity codes are presented in Table 1.

Table 1

Code Table for Robinson Seniors: 1996

Data	Anonymity Code
Gender	
female	1
male	2
Diploma type	
Advanced diploma	23
Regular diploma	21
Advanced diploma w/seal	24
Regular diploma w/seal	25
Parents' Education	
some high school	1
high school diploma	2
some college	3
college graduate	4
graduate study	5
Ethnic Groups	
Caucasian	1
African-American	2
Hispanic	3
Asian	4
American Indian	5
Other	6
Student's Names	1- 577

<u>Analytical Procedures</u>

The methodology comparisons for this study were in two directions: horizontally within the 1996 cohort; and in a parallel analysis with the historical 1986 data with a level of significance of .01. The Microsoft software programs, SPSS for Windows 95 and Office 97 Excel, were used to analyze these data (Excel, 1995, 1997).

1. The first research question determined if there was a significant relationship between the 1996 high school seniors' related variables (gender, ethnicity, parents' education, and grade-point average) and their career aspiration. The data were investigated by a chi-square test of association, one-way analysis of variance and Scheffe comparison.

2. The second research question revealed the relationship between the female high school seniors' career aspirations and their graduation year, 1986 and 1996. The 1986 females' career aspirations were analyzed using the 1986 norms, and the 1996 female's career aspirations were analyzed using the 1996 norms. The two norms were then analyzed by a chi-square test of association to reveal any differences over this 10-year time span.

3. The third research question addressed the relationship between the high school minority seniors' career aspirations and their graduation year. Again, the 1986 minorities' career aspirations were analyzed using the 1986 norms, and the 1996 minorities' career aspirations were analyzed using the 1996 norms. The two norms were then analyzed by a chi-square test of association.

4. The fourth research question examined the differences in the percentages of the 1996 female and minority seniors receiving the Advanced Studies Diploma with the Governor's seal, compared to the 1986 female and minority seniors receiving the Advanced Studies Diploma with the Governor's seal, using a chi-square test of association.

5. The final question, differences in the percentages between 1996 female and minority seniors' two-and four-year post-secondary plans as compared to the female and minority 1986 seniors, was measured by a chi-square test of association.

A descriptive summary of the analyses are presented in Table 2.

Table 2   Descriptive Statistics Based on Data from Robinson Seniors: 1986-1996

Q	Table	Analysis Type	Data
	1)	Descriptive Table	Anonymity Codes for Data
	2)	Descriptive Table	Statistical Analysis
	3)	Descriptive Table	Preliminary Attitude Survey Results

1. Are the variables of gender, ethnicity, GPA, and parents' education related to the 1996 high school seniors' career aspiration level?

4)	Frequency Summary	First Choice of Career Aspiration of 1996 Seniors
Fig. 1	Visual Inspection	Distribution of Career Aspirations
5)	Contingency Table	Career Aspirations by Gender
6)	Frequency Summary	Male and Female Career Aspirations
7)	Chi-square Test of Association	Gender and Career Aspirations
8)	One-Way Analysis of Variance	Career Aspirations by Gender
9)	Contingency Table	Career Aspirations by Ethnicity
10)	Descriptive Table	Career Aspirations by Ethnicity
11)	One-Way Analysis of Variance	Career Aspirations by Ethnicity
12)	Descriptive Table	Grade-Point Average 1996 Seniors
13)	One-Way Analysis of Variance	Grade-Point Average by Career
14)	Scheffe Comparison	Grade-Point Average by Career
15)	Frequency Table	Father's Educational Level
16)	Frequency Table	Mother's Educational Level

2. Is there a significant relationship between the female high school seniors' career aspiration level and graduation years, 1986 and 1996?

17)	Frequency Table	1986 Female Seniors
18)	Frequency Table	1996 Female Seniors
19)	Chi-square Test of Association	Career Aspiration by Females

3. Is there a significant relationship between the minority high school seniors' career aspiration level and graduation years, 1986 and 1996?

20)	Frequency Table	1986 Minority Seniors
21)	Frequency Table	1996 Minority Seniors
22)	Chi-square Test of Association	Career Aspirations by Ethnicity

4. Is there a significant difference in the percentage of 1996 female and minority high school seniors receiving the Advanced Studies Diploma with the Governor's Seal as compared to 1986 female and minority high school seniors receiving the Advanced Studies Diploma with the Governor's Seal?

23)	Chi-square Test of Association	Diploma w/Seal by Female
24)	Chi-square Test of Association	Diploma w/Seal by Ethnicity
25)	Chi-square Test of Association	Minority Population Changes

5. Is there a significant difference in the percentage of 1996 female and minority high school seniors' two- and four-year post-secondary college plans as compared to 1986 female and minority high school seniors' two- and four-year post-secondary college plans?

26)	Chi-square Test of Association	College Plans by Female
27)	Chi-square Test of Association	College Plans by Ethnicity
28)	Summary of Significant Findings	1996 Seniors

Limitations of 1996 Study

1. Since the subject school was in an upper middle-class suburban area, the findings may not be generalized to the entire population of high school seniors.

2. There was no attempt to control or evaluate the seniors' outside influences. It may be assumed that parental pressure and socio-economic background could have had an effect on the seniors' career choices.

3. Since the seniors' career was chosen from the *Harrington-O'Shea Career Decision-Making* career cluster form, there was no option for "unemployed." This may, therefore, skew the results since studies of elementary students indicate that in open-ended questions a response of "unemployed" was often given by African-American males when asked what they plan to be doing in 20 years (Hudgins, 1987; Poussaint, 1974).

4. Since the information regarding parents' education level was secured from the students, it is possible that some of the data may be incorrect because the student may not have complete or accurate information. Six students left fathers' educational level off the survey. This could mean that the father was deceased, no father lived in the home or they did not know the educational level. All of the seniors responded to the mothers' educational level, however.

5. The 1986 and 1996 study was limited to members of the senior class that were present and responded to the surveys on May 19, 1986, and May 17, 1996. Other graduating seniors who did not participate in the surveys were attending alternative educational centers (e.g., Juvenile Detention; Emotionally Disturbed, etc.)

6. There were a large number of intervening variables between the 1986 and 1996 samples. Care should be taken in attributing motives of causal factors in observed changes in responses or data.

Summary

This chapter reviewed the methodology for this study, which included the research questions, population and community, research design, instruments, data collection procedures, analytical procedures, and limitations. The overall method can be summarized as a causal-comparative (ex post facto) analysis of high school seniors' diploma type, college plans and career aspirations from graduation year 1986 to graduation year 1996.

The anticipated outcomes of this study were that:

1. There would be a significant relationship between the 1996 high school seniors' career aspiration, and their ethnicity, gender, grade-point-average and parents' education level.

2. There would be a significant relationship between the female high school seniors' career aspiration level and their graduation years, 1986 to 1996.

3. There would be a significant relationship between the minority high school seniors' career aspiration level and their graduation years, 1986 to 1996.

4. There would be a significant difference in the percentage of Advanced Studies Diplomas with the Governor's seal for female and minority seniors from 1986 to 1996.

5. There would be a significant difference in the percentage of two-and four-year college aspirations for female and minority seniors from 1986 to 1996.

CHAPTER 4

RESULTS

This chapter presents the statistical tables and the analyses of the findings. The purpose of this study was to determine if the variables of gender, ethnicity, grade-point average, and parents' education were related to senior high school students' career aspiration level and to determine if there was a significant difference in the students' aspirations over a 10-year time span. Data was collected from research, a preliminary survey of student attitudes, and a full survey of 577 high school seniors' career aspirations. The method focused on a comparison of 1996 statistics with similar data collected in 1986 to study the trends in career aspirations level by gender and ethnicity. For an additional comparison, the percentage of female and minority seniors that graduated with the Advanced Studies Diploma with the Governor's seal and aspiration for two- and four-year post-secondary college plans from school year 1986 to 1996 was also investigated.

Description of the Preliminary Attitude Survey Data

A preliminary attitude survey was conducted with 178 high school seniors on May 6, 1996. This survey produced a ranking of careers (occupations) in the attitudes of the class of 1996. The students rated each of the eighteen occupations on the Harrington-O'Shea career cluster form on a scale from 10 (highest) to 1 (lowest) in terms of how they felt society valued or respected each occupation. The 1996 Robinson seniors felt that medical-dental had the highest value or respect in society, followed by math-science and legal. These same seniors felt that manual work held the lowest value or respect in society followed by customer service. Each occupation was tabulated. The means of the 178 attitudes were then calculated for each of the 18 occupations. For example, the highly rated medical-dental occupation obtained a mean of 9.39. A medium rated

occupation, technical, obtained a mean of 6.49. The lowest rated occupation, manual work, received a mean of 3.24. Therefore, the range of means for this career ranking of 18 occupations was from 9.39 to 3.24. The results of the preliminary survey are shown in Table 3.

Table 3

Preliminary Student Attitude Survey by Societal Career Groupings: 1996

Cluster	Group	Rank	Occupation	Mean
	1	1	Medical-Dental	9.39
		2	Math-Science	8.58
High		3	Legal Work	8.20
	2	4	Entertainment	7.48
		5	Data Analysis	7.33
	3	6	Management	6.76
		7	Education Work	6.75
		8	Social Services	6.63
Medium		9	Technical	6.49
		10	Personal Services	6.28
		11	Literary Work	6.21
	4	12	Music Work	5.31
		13	Sales Work	5.06
	5	14	Skilled Crafts	4.81
		14	Clerical	4.81
Low		16	Art Work	4.77
	6	17	Customer Services	3.57
		18	Manual Work	3.24

The importance of the preliminary attitude survey cannot be overestimated. It established a current ranking scale of six groups of occupations for students in the 1996 cohort. The ranking scale formed a baseline of High, Medium, and Low respect (or value) upon which the actual career choices of the 1996 senior class would be measured. Thus, when each student selected the occupation of choice, the data would record not only that fact, but also the Group and Cluster where that occupation was scored.

Source of the 1996 Seniors' Aspiration Survey Data

To obtain 1996 data on career aspirations, gender, ethnicity, grade-point average and parents' educational level, three surveys were administered to 577 Robinson seniors on May 17, 1996. The surveys were the *Harrington-O'Shea Career Decision-Making* career cluster form; the Class of 1996 Senior Student Survey; and the Robinson Secondary School Guidance Department: Statistics for Graduating Class of 1996 Survey. To insure confidentiality, the researcher removed the students' names and a code number was given for each independent variable. The researcher also obtained statistics for the 1986 Robinson senior class from the Fairfax County Public Schools administrative offices and from a 1987 study completed on Robinson seniors' career aspiration (Hudgins, 1987).

Statistical Results for Research Questions

Research Question One

Are the variables of gender, ethnicity, grade-point average, and parents' education related to the 1996 high school seniors' career aspiration level?

The career aspiration levels were obtained by comparing each student's selected occupation to the career ranking of the preliminary attitude survey table. Table 4 lists the occupations as they were rated on the preliminary survey. The frequency column shows the number of times that a 1996 Robinson senior chose that career. For example, the career in math-science was the most frequently chosen career with 95 students or 16.5% of the senior class aspiring for that occupation. Management was the next most frequent career, with 63 or 10.9% of the seniors choosing that career. Medical-dental was the third most popular career aspiration with 59 or 10.2% of the senior class aspiring for that

career. Social services was fourth with 53 students and legal work was next with 52 students. The least frequent occupations were customer services with 6 students or 1%, manual work, the choice of three seniors, and clerical, which did not even have one student interested in pursuing that career. The dependent variables, gender, ethnicity, grade-point average and parents' educational level for the 577 seniors were tabulated for statistical purposes. An analysis was administered with each student's dependent variables and their career aspiration to find if there was a relationship. The frequency summary of the 1996 seniors' career aspiration choice is presented in Table 4.

Table 4
Frequency Summary of First Choice Career Aspiration: 1996 Robinson Seniors

Occupation	N = 577 Frequency	%	Cumulative %
Medical-Dental	59	10.2	10.2
Math-Science	95	16.5	26.7
Legal Work	52	9.0	35.7
Entertainment	29	5.0	40.7
Data Analysis	28	4.9	45.6
Management	63	10.9	56.5
Education Work	39	6.8	63.3
Social Services	53	9.2	72.4
Technical	15	2.6	75.0
Personal Services	14	2.4	77.5
Literary Work	31	5.4	82.8
Music Work	25	4.3	87.2
Sales Work	11	1.9	89.1
Skilled Crafts	18	3.1	92.2
Clerical	0	0	92.2
Art Work	36	6.2	98.4
Customer Services	6	1.0	99.5
Manual Work	3	0.5	100.0
	577	100.0	-
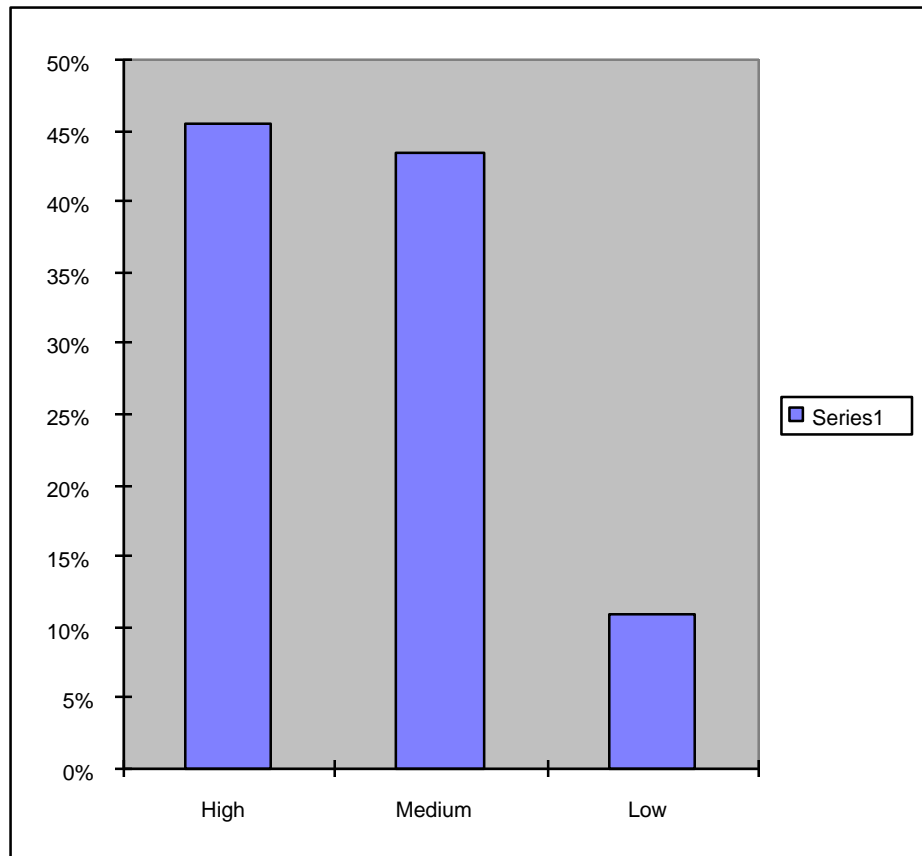
Figure 1. **Distribution of Robinson Seniors' Career Aspirations by Level: 1996**

The bar graph shows the skewed nature of the career aspiration distribution. This graph shows that the majority of the 1996 Robinson High School seniors had career aspirations that fell into the High and Medium Group clusters. (N = 577)

Gender. Out of the 308 female seniors at Robinson High School, social services was the occupation most frequently chosen (43 female seniors), followed closely by math/science (41 female seniors) and medical/dental (40 female seniors). Educational work was the fourth most frequently chosen female occupation with 33 Robinson females choosing that career. A career in management came next with 25 female seniors, followed by art work that was chosen by 24 Robinson female seniors. As stated previously, not one female chose clerical as an occupation. Manual work (2 female seniors' choice) and skilled crafts (1 female senior's choice) were the two least frequently chosen occupations by female seniors.

Out of the 269 senior males, 54 chose math/science as their favored career aspiration with management receiving the second spot (38 senior males). Not far behind in third place was legal work (32 senior males). The Robinson males' career aspiration frequency then fell dramatically into the teens with medical-dental (19 senior males), skilled crafts (17 senior males) and literary work (15 senior males) in fourth, fifth, and sixth place. Only one senior male chose manual work, and three males chose customer services as their career aspiration.

The 1996 Robinson seniors' career aspiration data were tabulated to reveal male and female frequency preferences and presented in Table 5.

Table 5

Contingency Table for Career Aspirations by Gender: Robinson Seniors 1996

		Female		Male		Total
Occupation		N	%	N	%	N
Medical-Dental		40	67.8	19	32.2	59
Math-Science		41	43.2	54	56.8	95
Legal Work		20	38.5	32	61.5	52
Entertainment		15	51.7	14	48.3	29
Data Analysis		14	50.0	14	50.0	28
Management		25	39.7	38	60.3	63
Education Work		33	84.6	6	15.4	39
Social Services		43	81.1	10	18.9	53
Technical		3	20.0	12	80.0	15
Personal Services		10	71.4	4	28.6	14
Literary Work		16	51.6	15	48.4	31
Music Work		13	52.0	12	48.0	25
Sales Work		5	45.5	6	54.5	11
Skilled Crafts		1	5.6	17	94.4	18
Clerical		0	0	0	0	0
Art Work		24	66.7	12	33.3	36
Customer Services		3	50.0	3	50.0	6
Manual Work		2	66.7	1	33.3	3
	Total	308		269		577

Table 6 contains the data summarized into the career occupational group clusters for the 1996 Robinson High School's 308 females and 269 males. The High career cluster contained Group 1 (medical-dental, math-science and legal work) and Group 2 (entertainment and data analysis). The Middle career cluster contained Group 3 (management, education work, social services, technical, personal services, and literary work) and Group 4 (music work and sales work). The lowest career cluster contained Group 5 (skilled crafts, clerical, and art work) and Group 6 (customer services and manual work). For example, if a senior's highest career aspiration was medical-dental, their career would be ranked in the High level, Group 1. If the senior's career aspiration was manual work, their career would be ranked in the Low level, Group 6. All of the students' career aspirations were tabulated with the preliminary attitude survey. Table 6 reveals the frequency of the seniors' career aspirations by gender.

Table 6
Frequency Table of Robinson Seniors: Female and Male Career Aspiration Data - 1996

Cluster of Aspiration Level	Female		Male		Total	
	N	%	N	%	N	%
High	130	42.21	133	49.44	263	45.58
Group 1	101	32.79	105	39.03	206	35.70
Group 2	29	9.42	28	10.41	57	9.88
Medium	148	48.05	103	38.29	251	43.50
Group 3	130	42.21	85	31.60	215	37.26
Group 4	18	5.84	18	6.69	36	6.24
Low	30	9.74	33	12.27	63	10.92
Group 5	25	8.12	29	10.78	54	9.36
Group 6	5	1.62	4	1.49	9	1.56
Totals	308	100	269	100	577	

The data indicated that the 1996 Robinson seniors had very high career aspirations; nearly 36% intended to enter the top three occupations in Group 1 and over 45% indicated aspirations for the highest five (the first two plus legal, entertainment and data analysis). Together these five careers formed Groups 1 and 2, the High Cluster. Conversely, less than 11% indicated a desire to enter the bottom five occupations (skilled crafts, clerical, art, customer services, and manual work) which constituted Group 5 and Group 6.

A chi-square test of association was calculated to determine the relationship between career aspiration and gender. Inspection of Table 7 revealed that the females' and males' Medium-level career aspirations had the largest percentage difference, but their aspirations were much closer in both the High and Low career groups. Males chose the high level of occupations 7.2% more times than females. Females chose Middle level

occupations 9.8% over males. Males chose Low level occupations 2.6% more than females. The results of the chi-square test of association of gender and career aspiration were not significant (chi-square = 5.634 and p = .060). The females' career aspirations had increased to the level where they were very close to the males' career aspirations. These results are presented in Table 7.

Table 7

Summary of Chi-Square Analysis for Gender Choices of Career Aspiration: Robinson Seniors 1996

Aspiration Level	Females		Males		Totals	
	N	%	N	%	N	%
High	130	42.2	133	49.4	263	45.6
Medium	148	48.1	103	38.3	251	43.5
Low	30	9.7	33	12.3	63	10.9
Totals	308	100	269	100	577	100

$Ch^2 = 5.634$, df = 2, p = 0.060

To further analyze the data, a one-way analysis of variance for gender by career aspiration was completed in Table 8. These results also revealed no significant difference between Robinson High School male and female seniors' career aspirations in 1996.

Table 8
One-Way Analysis of Variance for Difference in Mean Career Aspirations by Gender: Robinson Seniors 1996

Source of Variance	SS	df	MS	F	p(F)
Gender	.001	1	.001	.001	0.979
Error	1184.066	575	2.059		
Total	1184.067	576			

Gender	Career Rating	
	N	Means
Females	308	7.1282
Males	269	7.1314
Total	577	

At a greater level of detail, there was only a 0.0032 difference between the means of female and male choices of careers (7.1314 - 7.1282). This tight correlation could have been anticipated by a close inspection of the raw data.

Ethnicity. Robinson High School's largest ethnic group in 1996 was Caucasian with 468 students. The next largest ethnic group was Asian with 55 students. The majority of these Asian students were Korean. There were 27 African-American and 23 Hispanic students in the 1996 senior class. Two students were classified as American Indian/Alaskan and two students classified themselves as Other. (Fairfax County Public Schools have added "Other" to their ethnic listing for students that may be a mixture of ethnicity and/or do not wish to classify themselves into a pure race category.) Because the cell sizes were so small for the American Indians (2) and Other (2), they were combined into one category called Other.

The 1996 Robinson seniors' career aspiration data were tabulated to reveal their frequency preferences by ethnicity. Four of the ethnic groups chose math-science as their favorite career aspiration: 70 Caucasian seniors; eight African-Americans seniors; five Hispanic seniors; and, three "Others" seniors. The Asian seniors chose medical-dental as their top career aspiration (10 seniors).

The Caucasians' second most frequently chosen career aspiration was management with 52 seniors. Legal work (45 seniors) and medical-dental (44 seniors) both came in third and fourth place for the Caucasian ethnic group.

Math-science was the Asian seniors' second most frequent career aspiration (9 seniors). Management was third (six seniors) and data analysis, social services tied for fourth place for the Asian seniors (five seniors each).

Hispanic seniors' second career choice was social services with three seniors choosing that career. Medical-dental, data analysis, management and personal services all came in third for the Hispanic seniors with two seniors for each career.

The seniors' career aspiration frequency data by ethnicity is presented in Table 9.

Table 9

Contingency Table for Career Aspirations by Ethnicity: Robinson Seniors 1996

	Caucasian		African-American		Asian		Hispanic		Other		Total
Occupation	N	%	N	%	N	%	N	%	N	%	N
Medical-Dental	44	74.6	3	5.1	10	16.9	2	3.4	0	0	59
Math-Science	70	73.7	8	8.4	9	9.5	5	5.3	3	3.2	95
Legal Work	45	86.5	2	3.8	4	7.7	1	1.9	0	0	52
Entertainment	22	75.9	3	10.3	3	10.3	1	3.4	0	0	29
Data Analysis	20	71.4	1	3.6	5	17.9	2	7.1	0	0	28
Management	52	82.5	2	3.2	6	9.5	2	3.2	1	1.6	63
Education Work	34	87.2	1	2.6	2	5.1	2	5.1	0	0	39
Social Services	42	79.2	3	5.7	5	9.4	3	5.7	0	0	53
Technical	12	80.0	1	6.7	2	13.3	0	0	0	0	15
Personal Services	11	78.6	1	7.1	0	0	2	14.3	0	0	14
Literary Work	27	87.1	1	3.2	3	9.7	0	0	0	0	31
Music Work	22	88.0	0	0	3	12.0	0	0	0	0	25
Sales Work	8	72.7	0	0	2	18.2	1	9.1	0	0	11
Skilled Crafts	17	94.4	0	0	0	0	1	5.6	0	0	18
Clerical	0	0	0	0	0	0	0	0	0	0	0
Art Work	33	91.7	1	2.8	1	2.8	1	2.8	0	0	36
Customer Serv.	6	100	0	0	0	0	0	0	0	0	6
Manual Work	3	100	0	0	0	0	0	0	0	0	3
Total	468		27		55		23		4		577

The means by ethnicity and career aspiration ranged from 7.0420 for Caucasian to 8.1250 for Other. Note that all the minority seniors had higher career aspiration means than the Caucasian senior group. The mean for the African-American seniors was the highest at 7.6626. The Asian seniors' mean was second and the Hispanic seniors came in third. The "Other" ethnic group had cell sizes too small to count. Table 10 reveals the means data of career aspiration by ethnicity.

Table 10

Career Aspirations by Ethnicity Descriptives: Robinson Seniors 1996

Ethnic Group	N	Mean
Caucasian	468	7.0420
African-American	27	7.6626
Hispanic	23	7.2230
Asian	55	7.5027
Other	4	8.1250
Total	577	7.1297

Note: Even though individual seniors chose careers in all of the occupational groups, the means for each of the ethnic groups all ranked high. In fact, the entire range of the ethnic groups means was above 7.00, which was the threshold of the "High" career cluster. (See Table 3, Group 1 and 2).

A one-way analysis of variance was performed on the Robinson seniors' career aspiration by ethnicity. The results, in Table 11, revealed that there was no significant difference between ethnicity and career aspiration. The 1996 seniors, by ethnicity, did not reveal a significant proportion of variance in career aspiration level ($p = 0.024$).

Table 11

One-Way Analysis of Variance for Career Aspirations by Ethnicity: Robinson Seniors 1996

Source of Variance	SS	df	MS	F	p
Between Groups	23.084	4	5.771	2.843	.024
Error	1160.983	572	2.030		
Total	1184.067	576			

Grade-Point Average (GPA). The grade-point average for the 1996 Robinson seniors ranged from 4.08 through .900.   This GPA range includes the students that returned to their base school from alternative schools to graduate.   The 1996 seniors grades were high with the mean over a "B" or 3.1143.

The grade-point average descriptions in Table 12 reveals that there was a wide range of career aspirations for all of the seniors.   The High level of careers, which included math-science and medical-dental, correlated with the highest grade-point averages with a mean of 3.2471.   The GPA range for the High group was 4.08 to 1.35. The Medium level of careers had a mean of 3.0745 with a GPA range of 4.07 to 1.50. The Low level of careers, which included skilled crafts, manual work and customer services, had a mean of 2.7190 with a GPA range of 3.79 to 1.60.

Table 12

Career Aspirations by Grade-Point Average Descriptive: Robinson Seniors 1996

Career Aspiration Levels	N	Mean	Minimum	Maximum
High	263	3.2471	1.35	4.08
Medium	251	3.0745	1.50	4.07
Low	63	2.7190	1.60	3.79
Totals	577	3.1143	1.35	4.08

A one-way analysis of variance was performed on the Robinson seniors' career aspiration by grade-point average.   The results revealed that grade-point average had a positive and significant correlation with career aspiration: $r = .265$ and $p = .000$.   The higher the seniors' GPA, the higher their career aspiration.   The results of the one-way analysis of variance are shown in Table 13.

Table 13

One-Way Analysis of Variance for Career Aspirations by Grade-point Average: Robinson Seniors 1996

Source of Variance	SS	df	MS	F	(p)
GPA Between Grps	14.881	2	7.441	21.003	0.000
Within Groups	203.347	574	0.354		
Total	218.228	576			

	Career Rating	
Group Status	N	Means
High	263	3.2471
Medium	251	3.0745
Low	63	2.7190
Total	577	

To further analyze the data, a post-hoc pair-wise comparison on grade-point average and career aspiration was performed using a Scheffe analysis to find their mean difference and probability of error. The pairs that were compared were: High careers to Medium and Low; Medium careers to High and Low; and, Low careers to High and Medium. Each pair was positively significant with a probability of .005 or smaller. The results are presented in Table 14.

Table 14

Scheffe Post Hoc Pair-Wise Comparison for Career Aspirations and Grade-Point Average: Robinson Seniors 1996

Career Status	Career Aspiration of Students	Mean Difference	Std. Error	p
High	Medium	.1726	.053	.005
	Low	.5281	.083	.000
Medium	High	-.1726	.053	.005
	Low	.3555	.084	.000
Low	High	-.5281	.083	.000
	Medium	-.3555	.084	.000

Fathers' Educational Level. The fathers of Robinson seniors tended to be very well educated. Over 90% had attended college, 80% had a college degree, and 47% had some graduate studies. The frequency data for fathers' educational level are presented in Table 15.

Table 15

Frequency Table for Fathers' Educational Level: Robinson Seniors 1996

Education Level	N	%
Some High School	16	2.8
High School Diploma	34	5.9
Some College	59	10.2
College Graduate	193	33.4
Graduate Study	269	46.6
Missing	6	1.0
Totals	577	100.0

Results of the Pearson Correlation test revealed that there was a significant relationship between the father's education and the student's choice of a career (r = .224, p = .003).

Mothers' Educational Level. The mothers of Robinson seniors were also highly educated, but not quite to the degree of the fathers. Nearly 83% had at least some college education, 63% had a college degree, and 22% had some graduate studies. The frequency of mothers' education level is revealed in Table 16.

Table 16

Frequency Table for Mothers' Educational Level: Robinson Seniors 1996

Education Level	N	%
Some High School	22	3.8
High School Diploma	77	13.3
Some College	116	20.1
College Graduate	233	40.4
Graduate Study	129	22.4
Totals	577	100.0

Results of the Pearson Correlation test showed that there was no significant relationship between the mother's education and the student's choice of a career. The results were r = 0.075 and p = 0.072 which was not significant.

However, the Pearson Correlation test between mothers' education level and fathers' education level showed that there was a significant relationship. The results were r = 0.465 and p = 0.000.

Research Question Two

Is there a significant relationship between the female high school seniors' career aspiration level and graduation years, 1986 and 1996?

This question was constructed so that both the 1986 and 1996 female seniors could be studied. The purpose was to determine the direction and magnitude of any changes over the 10-year period.

Table 17 shows the distribution of female aspiration levels for the 1986 cohort. The 1986 female seniors' career aspiration and gender were found to be significant on a Chi-square test of association. Most of the females' career aspirations fell into the traditional Medium level (e.g. social work, music, education).

Table 17

Frequency Table for Career Aspiration Levels for 1986 Female High School Seniors

Career Group	High		Medium		Low		
	1	2	3	4	5	6	Total
N	49	49	151	54	1	6	310
Percent	15.81	15.81	48.7	17.42	.32	1.94	100

The distribution of career aspirations for the 1996 cohort of females is shown in Table 18. Most of the 1996 female seniors were no longer choosing traditional occupations. The High level of career aspiration means had increased, the Medium level had decreased and the Low level of careers had increased. The career aspirations of the 1996 females were so close to the 1996 males that their means had only a .0032 difference.

Table 18

Frequency Table for Career Aspiration Levels for 1996 Female High School Seniors

Career Group	High		Medium		Low		
	1	2	3	4	5	6	Total
N	101	29	130	18	25	5	308
Percent	32.79	9.42	42.2	5.84	8.12	1.63	100

Table 17 and 18 revealed that the percentage of 1996 female seniors who chose Group 1 careers was more than twice the percentage of the 1986 female seniors.

In order to complete this analysis, the 1986 female senior data were grouped by their results and their 1986 preliminary attitude survey. The 1996 female senior data were grouped by their results and their 1996 preliminary attitude survey. Each preliminary attitude survey was classified by the value their peers place on the occupations. A chi-square test of association was conducted to determine the relationship between school year and career aspiration category.

As revealed in Table 19, over 42% of the 1996 female seniors chose the High level of career aspirations (e.g. math-science and medical-dental). In 1986, 31.61% of the female seniors chose careers in the High level. That was a percentage gain of 10.59% from school year 1986 to school year 1996.

The 1996 female seniors chose the Medium level of career aspirations 48.10%. That was 18% lower than the 1986 female seniors had chosen 10 years earlier. It appears that this Medium group underwent the biggest change, dropping 18.03%. The High career group gained 10.59%.

The 1986 female seniors chose the Low level career aspirations 2.26% while the 1996 female seniors chose Low level careers 9.7%. That was a gain of 7.44% for the 1996 female seniors in Low level careers.

The results of the Chi-square showed that there was a significant relationship between the level of career aspiration and graduation year (1986 to 1996). The results were significant with a Chi-square = 27.9863 and p = .000. These results are presented in Table 19.

Table 19

Results of Chi-square Test of Association and Contingency Proportions of Female High School Seniors' Career Aspirations: 1986 and 1996

		1986 Females		1996 Females		Totals	
Aspiration Level		N	%	N	%	N	%
Highest		98	31.61	130	42.20	228	36.89
Medium		205	66.13	148	48.10	353	57.12
Lowest		7	2.26	30	9.70	37	5.99
	Totals	310	100	308	100	618	100

$Ch^2 = 27.9863$, df $= 2$, p $= 0.000$

Research Question Three

Is there a significant relationship between the minority high school seniors' career aspiration level and graduation years, 1986 and 1996?

The question of change in ethnic aspirations continues to be a social science inquiry and was a principal question of this current study. The first step in the analysis was to describe the distribution of minority career aspirations for the two cohorts under investigation.

The frequencies for the 1986 minority seniors are shown in Table 20. This Table reveals that the largest number of 1986 minority high school seniors career aspiration levels were in the top three groups: Group 1 (34.48%); Group 2 (13.79%); and Group 3 (37.93%). Only 13.8% of the 1986 minority seniors had career aspirations in the lower three groups compared to over 86% for the top three groups. Furthermore, the range extended throughout the groups, similar to the non-minority data.

Table 20

Frequency Table for Career Aspiration Levels for 1986 Senior High School Minorities

	High		Medium		Low		
	1	2	3	4	5	6	Total
N	20	8	22	4	3	1	58
Percent	34.48	13.79	37.93	6.90	5.17	1.73	100

A similar review of the data for the 1996 minority seniors is shown in Table 21. This Table clearly shows the skewed nature of the 1996 minority seniors' career aspirations. Over 90% of the 1996 minority seniors had aspirations for the three top career levels. Only 9.18% of the 1996 minority seniors had aspirations for Group 4 and 5. Not one 1996 minority senior chose a career in the lowest group.

Table 21

Frequency Table for Career Aspiration Levels for 1996 Minorities

	High		Medium		Low		
	1	2	3	4	5	6	Total
N	47	15	37	6	4	0	109
Percent	43.12	13.76	33.94	5.50	3.68	0	100

On inspection of Table 22, the aspirations of the 1996 minority high school senior appear to be somewhat higher than the career aspirations of the 1986 minority senior. In 1986, a total of 48.27% of the minority seniors aspired for careers in Groups 1 and 2 (Table 21). In 1996, a total of 56.88% minority seniors aspired for careers in Group 1 and 2 (Table 22). That was an 8.61% increase in minority career aspirations over this 10-year time span. Since none of the 1996 minorities chose occupations in Group 6, the lowest career grouping, this caused the range to be less and the data skewed to the high end. To check whether this apparent difference was significant, a Chi-square test of association analysis was conducted. Because the cell size was small, the groups were

collapsed from six into three before the Chi-square was conducted. The results are presented in Table 22.

Table 22

Results of Chi-Square Test of Association and Contingency Tables for Proportions of Minority Students and Career Aspirations: 1986 and 1996

	1986 Minorities		1996 Minorities		Totals	
Aspiration Level	N	%	N	%	N	%
High	28	48.28	62	56.88	90	53.89
Medium	26	44.82	43	39.45	69	41.32
Low	4	6.90	4	3.67	8	4.79
Totals	58	100.00	109	100.00	167	100

$Ch^2 = 1.46$, df $= 2$, p $= .48$

Even though the 1996 percentage of high school minority seniors with High career aspiration level rose 8.61% from the 1986 survey, the relationship was not significant. No analysis was conducted of individual minority groups because the cell size was too small.

Research Question Four

Is there a significant difference in the percentage of 1996 female and minority high school seniors receiving the Advanced Studies Diploma with the Governor's seal as compared to 1986 female and minority high school seniors receiving the Advanced Studies Diploma with the Governor's seal?

In 1996, Robinson High School offered four graduating diplomas: advanced studies diploma with Governor's seal; advanced studies diploma without seal; regular diploma with Governor's seal; and regular diploma without seal. In 1986, Robinson

100

High School offered the same four diplomas as well as a lower 18 credit diploma for the students that returned to Robinson High School from alternative schools (e.g. centers for emotionally disturbed students) to graduate with their class. The accomplishment of the Advanced Studies Diploma with Governor's Seal meant that the student had a grade-point average of 3.0 or higher, completed high level math, science, and foreign language and at least one Advanced placement or college level class.

Female Seniors. The percentage of the 1986 female seniors at Robinson High School receiving the Advanced Studies Diplomas with the Governor's seal was 32.52%. The percentage of the 1996 female seniors at Robinson High School receiving the Advanced Studies Diplomas with the Governor's seal was 54.75%. The percentage gain of female high school graduates receiving the Advanced Studies Diploma with the Governor's seal from school year 1985-86 to school year 1995-96 was 22.23%.

A Chi-square test of association was completed with the Robinson senior females. The results showed a significant relationship between the percentage of females receiving Advanced Studies Diploma with the Governor's seal and their graduation year (1986 to 1996). These results were significant with a Chi-square = 13940.19 and probability = .000. The results are presented in Table 23.

Table 23

Results of Chi-Square Test of Association and Contingency Tables for Proportions of Female Graduates Completing the Advanced Studies Diploma with Governor's Seal in 1986 and 1996.

Female Graduate	School Year 1986		School Year 1996		Totals	
	N	%	N	%	N	%
Adv Diploma w/Gov seal	120	32.52	173	54.75	293	42.77
Lower Diploma	249	67.48	143	45.25	392	57.23
Total	369	100.00	316	100.00	685	100.00

$Ch^2 = 13940.19$, df = 1,   p = .000

Minority Seniors. The percentage of the 1986 minority graduates at Robinson High School receiving the Advanced Studies Diploma with the Governor's seal was 30.00%. The percentage of the 1996 minority graduates at Robinson High School receiving the Advanced Studies Diploma with the Governor's seal was 43.36%. The percentage gain of minority graduates receiving the Advanced Diploma with the Governor's seal from school year 1985-86 to school year 1995-96 was 13.36%.

A Chi-square test of association analysis was completed with the Robinson minority seniors. The results showed a significant relationship between the percentage of minority graduates receiving the Advanced Studies Diploma with the Governor's Seal and the graduation year (1986 to 1996). These results were significant with a Chi-square = 747.71 and p = .000 and are presented in Table 24.

Table 24

Results of Chi-square Test of Association and Contingency Tables for Proportions of Minority Graduates Completing the Advanced Studies Diploma with Governor's seal in 1986 and 1996.

Minority Graduate	School Year 1986		School Year 1996		Totals	
	N	%	N	%	N	%
Ad Diploma w/Gov seal	18	30.00	49	43.36	67	38.73
Lower Diploma	42	70.00	64	56.64	106	61.27
Total	60	100.00	113	100.00	173	100.00

$Ch^2 = 747.71$, df = 1, p = .000

In addition to the above analysis, there was another factor to consider. The Robinson graduation data revealed that over the decade, from school year 1985-86 until school year 1995-96, the minority population more than doubled in size. The percentage of minority students in 1986 was 8.5% (60 students), but by 1996 the percentage had grown to 19.1% (113 minority students). As revealed in Table 26, there were three primary factors involved in this change: a) a decrease of the white population by 26.5%; b) a tripling of the Hispanic population, and c) more than doubling of the Asian population. A Chi-square test of association analyzed the ethnic population changes at Robinson and, as suspected, the proportions of the minority students were statistically significantly from 1986 to 1996 (p = .000). The results are presented in Table 25.

Table 25

Results of Chi-square Test of Association and Contingency Table for Changes in Minority Population: 1986-1996

Ethnic Group	1986		1996		
	N	%	N	%	% Change
Caucasian	650	92	478	81	-26.5%
Black	22	3	26	5	+18.2%
Hispanic	10	1	25	4	+150%
Native Amer.	2		2		0%
Asian	26	4	58	10	+123.1%

$Ch^2 = 34.17$, df = 4, p = .000

Research Question Five

Is there a significant difference in the percentage of 1996 female and minority high school seniors' two- and four-year post-secondary college plans as compared to 1986 female and minority high school seniors' two- and four-year post-secondary college plans?

Female Seniors. In 1996, a total of 292 (92.4%) female students indicated an intention to attend a two- or four-year college in pursuit of a degree. This percentage was an increase of 6% over the number of female seniors (86.4%) that had the same intention in 1986.

A Chi-square test of association was completed on the 1986 and 1996 Robinson female seniors. There was a significant relationship between the percentage of female seniors aspiring for a two-or four-year college education and graduation year (1986 to 1996). The results were significant with a Chi-square = 10375.7 and p = .000. These results are presented in Table 26.

Table 26

Results of Chi-Square Test of Association and Contingency Tables for Proportions of Female High School Seniors Choosing to Pursue a Two- or Four-Year College Degree in 1986 and 1996.

Female	School Year 1986		School Year 1996		Totals	
Graduate	N	%	N	%	N	%
Pursue College	319	86.40	292	92.40	611	89.20
Not Pursue	50	13.60	24	7.60	74	10.80
Total	369	100.00	316	100.00	685	100.00

$Ch^2 = 10375.7$, df = 1, p = .000

Minority Seniors. The number of Robinson minority seniors that indicated their intention to attend a two- or four-year college after high school more than doubled, from 52 to 106 from school year 1985-86 to school year 1995-96, while the percentages increased from 86.70% to 93.81%.

A Chi-square test of association was completed on the 1986 and 1996 Robinson minority students. There was a significant relationship between the percentage of minority seniors aspiring for a two-or four-year college education and graduation year (1986 to 1996). The results were significant with a Chi-square = 1953.56 and probability of .000. The results are presented in Table 27.

Table 27

Results of Chi-Square Test of Association and Contingency Tables for Proportions of Minority High School Seniors Choosing to Pursue a Two- or Four-Year College Degree in 1986 and 1996.

Minorities	School Year 1986		School Year 1996		Totals	
Choice	N	%	N	%	N	%
Pursue College	52	86.70	106	93.81	158	91.33
Not Pursue	8	13.30	7	6.19	15	8.67
Total	60	100.00	113	100.00	173	100.00

$Ch^2 = 1953.56$, df = 1, p = .000.

Summary of Analyses

Question One *Are the variables of gender, ethnicity, grade-point average, and parents' education related to the 1996 high school seniors' career aspiration level?*

- There was no significant difference between male and female 1996 seniors and their career aspirations.

- There was no significant relationship between ethnicity and career aspirations.

- There was a significant positive relationship between grade-point average and career aspirations. The higher the student's GPA the higher the student's career aspiration.

- There was a significant positive relationship between the fathers' education level and the seniors' career aspiration. The higher the level of father's education the higher the

- There was no significant relationship between the mothers' education level and the senior's career aspiration.

Question Two   *Is there a significant relationship between female high school seniors' career aspiration level and graduation years, 1986 and 1996?*

- Among the female seniors, there was a significant relationship between the level of career aspiration and graduation year (1986 to 1996). Therefore, proportionally more 1996 female seniors chose careers in a higher career aspiration group as compared to the 1986 female seniors.

Question Three   *Is there a significant relationship between the minority high school seniors' career aspiration level and graduation years, 1986 and 1996?*

- For the minority high school seniors, there was no significant relationship between career aspiration level and graduation year (1986 to 1996). In both school years, the minority seniors continued to have slightly higher career aspiration means than their Caucasian peers.

<u>Question Four</u>   *Is there a significant difference in the percentage of 1996 female and minority high school seniors receiving the Advanced Studies Diploma with the Governor's seal as compared to 1986 female and minority high school seniors receiving the Advanced Studies Diploma with the Governor's seal?*

- Among female graduates, there was a significant relationship between the percentage of Advanced Diplomas with the Governor's seal received and graduation year (1986 to 1996).   A higher number of 1996 female seniors graduated with the Advanced Studies Diploma with the Governor's seal as compared to the 1986 female seniors.

- Among the minority graduates, there was a significant relationship between the percentage of Advanced Studies Diplomas with the Governor's seal received and graduation year (1986 to 1996). A higher number of 1996 minority seniors graduated with the Advanced Studies Diploma the with Governor's seal as compared to the 1986 minority seniors.

- There was also a significant relationship between the percentage of minority seniors attending Robinson High School and graduation year. The number of minority population more than doubled in size from 1986 to 1996.

Question Five: *Is there a significant difference in the percentage of 1996 female and minority high school seniors' two-and four-year post-secondary college plans as compared to 1986 female and minority high school seniors' two- and four-year post-secondary college plans?*

Among the seniors, there was a significant relationship between the percentage of females aspiring for the two-and four-year college education and graduation year (1986 to 1996). More 1996 female seniors indicated their desire to attend a two-and four-year college as compared to the 1986 female seniors.

Among the seniors, there was a significant relationship between the percentage of minority students aspiring for the two-or four-year college education and graduation year (1986 to 1996). More 1996 minority seniors indicated their desire to attend a two-or four-year college as compared to the 1986 minority seniors.

CHAPTER 5

STUDY SUMMARY

The purposes of this chapter are to present a summary of the findings of this study, to state the conclusions derived from those findings, and to make recommendations pertinent to the problem. The goal of the study was to examine a 1996 senior high school class and to ascertain whether the variables of gender, ethnicity, grade-point average, and parents' education were related to their career aspiration levels. The 1996 female and minority seniors were also compared to their 1986 counterparts to determine if there was a significant difference in their aspirations for career, diploma type and the pursuit of a college education over this 10-year time span.

Specific questions used for this study included:

1. Are the variables of gender, ethnicity, grade-point average, and parents' education related to the 1996 high school seniors' career aspiration level?

2. Is there a significant relationship between the high school female seniors' career aspiration level and graduation years, 1986 and 1996?

3. Is there a significant relationship between the high school minority seniors' career aspiration level and graduation years, 1986 and 1996?

4. Is there a significant difference in the percentage of 1996 female and minority high school seniors receiving the Advanced Studies Diploma with the Governor's seal as compared to the 1986 female and minority high school seniors receiving the Advanced Studies Diploma with the Governor's seal?

5. Is there a significant difference in the percentage of 1996 female and minority high school seniors' two-and four-year post-secondary college plans as compared to 1986 female and minority high school seniors' two-and four-year post-secondary college plans?

Findings

<u>Question One</u>

The statistical analysis for question one (*Are the variables of gender, ethnicity, grade-point average and parents' education related to the 1996 high school seniors' career aspiration level?*) revealed some statistically significant findings.

<u>Gender.</u> The 1996 female seniors' response data revealed that their career aspirations were just as high as the 1996 male seniors. In fact, the difference between the means of the female and male choices of careers was only .0032. There was no significant relationship in the 1996 seniors' career aspiration by gender on either the Chi-square test of association or the one-way analysis of variance. The importance of this finding is immense, because previous studies and research have shown that usually female seniors have lower aspirations than their male counterparts (Hudgins, 1987; Sadker & Sadker, 1985; Shaffer, 1986). The statistical comparison with the 1986 study was the basis of Question Two (Hudgins, 1987).

Although there was no significant difference overall, there was a variation between the genders in the Medium level of the career groups. Forty-two percent of the 1996 females chose Medium level careers while only 32% of the 1996 males elected for these careers. However, both genders were very close in the High and Low level career groups.

The three most frequently chosen female careers in 1996 were social services, math-science, and medical-dental. These three careers had almost identical counts of 43, 41, and 40, respectively.

Math-science was by far the most popular career aspiration for the senior males. Over 20% of the senior males aspired for that career. Management was the second most frequently chosen male career aspiration, with legal following close behind.

111

These findings, that both genders' aspiration means in 1996 were very close (mean difference of .0032), were reinforced by 1997 *The Washington Post*/Harvard University research that revealed a revolutionary change in gender roles in the workplace in the last 10 years. The Post/Harvard research survey reported that the majority of females in 1996 assumed that their personal identity included a career (Morin & Rosenfeld, 1998). More females were working, and more females were aspiring for the same careers as their male peers. The National Foundation of Women Business Owners also reported that women were growing up in a generation where running a business was practical, profitable and within their reach (Leach, 1993).

Ethnicity. The findings for the 1996 minority seniors revealed that their career aspirations were very tightly correlated with the non-minority students. There was also no significant difference between ethnicity and the 1996 seniors' career aspiration level. Across the board, all of the ethnic groups' means were very similar.

Every minority group in the 1996 senior class had slightly higher career aspiration levels than their Caucasian peer group. The 1996 African-American seniors had the highest career aspiration mean at 7.6626. The 1996 Asian seniors, the largest minority group at the sample school, had the second highest mean of 7.5027. The Hispanic students' mean was 7.2230. The 1996 Caucasian seniors' career aspiration mean was the lowest with 7.0420.

This finding, that the minority seniors' career aspiration means were higher than their Caucasian peer group, might be explained in part by the 1990 American Association of University Women (AAUW) research. They found that Caucasian females were much less confident and positive than African-American or Hispanic females in all levels of school (K - 12). Minority family and community reinforcement helped to sustain these high levels. AAUW also found that self-esteem correlated with academic achievement and career aspirations (Greenberg-Lake, 1991).

The 1996 Asian seniors' most frequently chosen career was the highest ranked career, medical-dental. This high career aspiration result correlates with research that

Asians value education and tend to experience high academic success and career aspirations (Fairfax County Public Schools, 1984). The most frequently chosen occupation for the other three senior ethnic groups, Caucasian, African-American and Hispanic, was math-science. A career in math-science was ranked as the second most prestigious occupation.

Both the 1996 Caucasian seniors' and the Asian seniors' second most frequently chosen career aspiration was management. The 1996 Hispanic seniors' second most frequently chosen career was social services. The 1996 African-American seniors' second most frequently chosen career was a group of three that all tied: medical-dental, social services and entertainment. Not one of the 1996 minority seniors chose occupations that fell into the low ranked Group 6, (customer service and manual work), whereas, nine 1996 Caucasian seniors chose careers in the lowest group of careers.

Parents' Education. The parents of the 1996 seniors tended to be very well educated. Over 60% of both the mothers and the fathers completed a college degree or graduate study.

Eighty percent of the 1996 seniors' fathers graduated from college. Father's education level had a significant correlation with the student's career aspiration. This finding reinforced Bronfenbrenner (1961) and Lengermann and Wallace's (1985) research that the status of the family, level of the parents' education, and parents' income had a direct impact on the students' education and career aspirations. The research further stated that better-educated fathers may stress more responsibility, show more interest in their child's education, and insist that their children be academically successful (Bronfenbrenner, 1961). Fathers (and mothers) also tended to select homes in neighborhoods with other families of similar economic status. Research stated that the school tended to reflect the neighborhood in which it was located (Clift, 1966). The subject school was in an upper-middle class suburban location.

Sixty-three percent of the 1996 seniors' mothers graduated from college. However, the mothers' education level was not significant with the 1996 seniors' career

aspirations. This finding was different from the Howell and Frese research (1979), that revealed that mothers' education level had the most significant relationship with students' aspirations. Even though the mother's education level did not show a statistical relationship with the student's career aspiration, it was highly correlated with fathers' education.

Grade-point average. The 1996 seniors' grade-point average was significantly related to career aspiration. The higher the seniors' grade-point average, the higher their career aspiration. The Chi-square test of association analysis showed a very strong relationship between grade-point average and the 1996 seniors' career aspiration level. A post hoc pair-wise analysis was also conducted for grade-point average and career aspiration and each pair was found significant. These findings were consistent with research from Picou and Carter (1974), that showed that grade-point average was strongly related to occupational aspiration. If one looked at both educational and occupational achievement and attainment, one could measure the success, or lack of, by the child's early school experiences (Scott-Jones & Clark, 1986).

Question Two

The Chi-square test of association statistical analysis for question two (*Is there a significant relationship between the female high school seniors' career aspiration level and graduation years, 1986 and 1996?*) revealed that there was a significant relationship between the females' level of career aspiration and graduation year.

In the 1986 research, seniors' career aspirations by gender were found significant. In that year, over 66% of the female seniors' career aspirations fell into the traditional Medium career group range (e.g., music, social services, education) (Hudgins, 1987). These traditional occupations were typical choices that had been predicted for females in the *Harrington-O'Shea Inventory* research (1993). A decade ago most females were reluctant to enter the High ranking careers (Hudgins, 1987). According to Sadker and

Sadker (1985), some females felt that men disapproved of them, or found them less feminine, if they used their intelligence. As a result, women selected pink collar occupations. Research also found that by high school, many females became less committed to careers (Sadker & Sadker, 1985). This fear of success (Lobban, 1978) or perception of the norm attitudes of society (Sadker & Sadker, 1985) may have been partly due to the elementary school textbooks that characterized females as inferior, passive, dependent, fearful, bored, lonely and domestic (Best, 1983). The females' perception of their role in life may have also been influenced to some degree by the popular fairy tales that depicted females as subservient, passive or waiting to be rescued (Bettelheim, 1977). The Cinderella myth kept girls from seriously planning educational and occupational goals (Sadker & Sadker, 1982).

Ten years later, the 1996 female seniors' career aspirations had risen dramatically, to match the level of the 1996 senior males. Research revealed that there has been a revolution in gender roles (Morin & Rosenfeld, 1998). The Carl Perkins Vocational and Applied Technology Education Act of 1990 provided funds for technical assistance for gender equity projects for school and college divisions ("Vocational Gender," 1995). The Small Business Administration funded training for women starting or growing a business. The American Woman's Economic Development Corporation ran training programs targeting minority women (Leach, 1993). The Korn/Ferry surveys found that the glass ceiling had been pushed higher over the last 10 years (Spaid, 1996). The University of California's 30 year study of tracking the goals and attitudes of incoming college female freshmen, found that 44% of the 1967 females had the attitude that, activities of married women were best confined to the home and family (Span, 1997). By 1996, the females, with that traditional attitude, had fallen to 19%. Sixty eight percent of those same incoming 1996 University of California's female freshmen, now stated that they not only planned on a college degree, but they also aspired to obtain a graduate degree and work outside the home (Span, 1997). *The Washington Post*/Harvard survey found that the percentage of female lawyers and judges doubled to 29% between 1983 and 1996, while the percentage of female physicians increased from 16% to 26% during

that same time span (Morin & Rosenfeld, 1998). Therefore, the non significant results of the statistical analysis for 1996 seniors' career aspirations by gender, seem to match other recent surveys: 1996 females' career aspiration level means were as high as the 1996 senior males' career aspirations level means.

Grouped data for 1986 and 1996 were analyzed between school year and career aspiration. The percentage of 1996 female seniors' career aspirations had risen and showed a significant relationship with the percentage of 1986 female senior career aspirations. As revealed from the analysis, more high level careers were chosen by the 1996 Robinson female seniors as compared to the 1986 female seniors. As the percentage of the High career aspirations rose in 1996, the traditional Medium level of aspirations fell 18.03% from 1986. The 1996 female seniors' Low career aspiration level also gained. Based upon the U.S. Department of Labor research that more females will be entering the workplace in the future years, it can be expected that there will be more women entering non-traditional occupations. The results of the Chi-square test of association analysis revealed that there was a significant relationship between the level of career aspiration and graduation year (1986 to 1996).

Question Three

The statistical analysis of data for question three (*Is there a significant relationship between the minority seniors' career aspiration level and graduation year, 1986 and 1996?*) revealed that even though the 1996 minority seniors highest career aspiration level rose 8.6% from the 1986 minority percentage, there was no significant relationship between the minority seniors' career aspiration and graduation year. However, some interesting findings were revealed.

In 1986, over 34% of the minority seniors aspired for careers in the highest prestige level (medical-dental and math-science). This percentage was 9.34% higher than their 1986 senior Caucasian peers were. Approximately, 2% of the 1986 minority seniors chose careers in the lowest career group (customer service and manual work).

As in 1986, the 1996 minority seniors continued to reflect higher career aspiration means than their Caucasian peers. As stated in Question one, the 1996 Asian seniors' most frequently chosen career was the highest ranked career, medical-dental. This finding suggests that the Asian students have high academic and career aspirations (Fairfax County Public Schools, 1984).

The Caucasian, African-American, and Hispanic seniors' most frequent choice was the second highest career in prestige, math-science. Not one 1996 minority senior chose a career in the lowest level of career aspirations, as compared to the 2% found in 1986. This suggests that many of the 1996 minority seniors' parents are highly educated and may provide motivation for their children.

By 1996, the minority population had doubled from school year 1986. This reflects the larger trend of the influx of minorities into the U.S. population (Booth, 1998; "One nation," 1995).

Question Four

The analysis of data for Question Four (*Is there a significant difference in the percentage of 1996 female and minority high school seniors receiving the Advanced Studies Diploma with the Governor's seal as compared to 1986 female and minority high school seniors receiving the Advanced Studies Diploma with the Governor's seal?*) revealed that for both the 1986 and 1996 females and minority seniors, there was a significant relationship between the percentage of the Advanced Studies Diploma with the Governor's seal and graduation year. The probability was .000.

Females. A larger percentage of 1996 female seniors (22.23%) graduated with the Advanced Studies Diploma with the Governor's seal as compared to 1986 female seniors. To receive this diploma required the senior to take high level math, science, and foreign language courses; obtain at least a 3.00 grade-point-average; and complete one Advanced placement or college level course. This increase, of the 1996 Advanced

117

Studies Diploma with the Governor's seal, reinforced the report from the College Board that in 1996 girls who took the SAT test had spent just as many years in math courses as boys, and had an overall grade-point average better than boys (Kelly, 1996).

Ethnicity. The Scott-Jones and Clark's 1986 research found that minorities and females did not achieve as well as "white, middle-class males" in the disciplines of science and mathematics. Since high achievement in these two discipline areas is a prerequisite for the careers that offered the most prestige, females and minorities in 1986 tended to be precluded from these careers.

By 1996, the findings revealed that the minority seniors did not reflect the Scott-Jones and Clark research. A larger percentage of 1996 minority seniors (13.36%) were graduating with the Advanced Studies Diploma with the Governor's seal as compared to the 1986 minority seniors. There were many factors and theories that may have contributed to the increase of the number of 1996 minority students receiving the highest diploma. The 1996 minority seniors' and their parents' knowledge of affirmative action quotas in colleges may have contributed to the student's higher degree of academic success. Many civil rights activists were saying that without affirmative action they doubted that so many women and racial minorities would be serving their country as doctors, lawyers, astronauts, Supreme Court justices or members of Congress today ("Affirmative success," 1997). In reviewing the career counseling research, Ginzberg, Ginsburg, Axelrad, and Herma (1951) stated, in their Developmental Approach theory, that career decision-making is a series of decisions made over a period of years. This theory stated that the child observes and hears about various types of occupations from the family and begins to role-play these occupations. Many minority parents in the subject school area had careers that required high degrees of education.

Therefore, the minority seniors may have been academically successful with high career aspirations because of five factors found during this investigation: a) there have been many more minority role models in high prestige jobs to emulate over the last 10 years ("How have," 1994); b) the parents of the 1996 seniors were highly educated; c) the seniors lived in an upper-middle class suburban location which reflected the high

aspirations of their parents (Clift, 1966); d) civil rights and affirmative action legislation may have given the minority students a brighter vision for higher aspirations ("Affirmative Success," 1997); and, e) parental pressure may have influenced the minority students to aspire (Fairfax County Public Schools, 1984). Thus, minority seniors are apparently seeking academic success in order to obtain their high career aspirations.

Question Five

The analysis of data for question five (*Is there a significant difference in the percentage of 1996 female and minority high school seniors' two-and four-year post-secondary college plans as compared to 1986 female and minority high school seniors' two- and four-year post-secondary college plans?*) revealed that there was a significant relationship between the percentage of female and minority seniors aspiring for a two-and four-year college education and graduation year.

Females. Over 92% of the 1996 female seniors indicated a desire to attend college as compared to 86% of the 1986 female seniors. This finding extends the finding from Question Two, that 1996 female seniors' career aspirations had risen dramatically to equal that of the senior males. These combined findings indicate that the 1996 female seniors: a) had high career aspirations; b) recognized that to achieve those aspirations they would have to complete college; and c) intended to pursue the college path. This finding of increased aspirations was consistent with research from College Board that indicated females' achievements are increasing. In this study females gained 13 points on the math SAT scores from 1986 to 1996 while males gained only 4 points (Kelly, 1996). The current findings also reinforced the research from the National Center on Educational Statistics that showed that the gap in financial aid awarded to males and females had disappeared or had been reversed by 1990. The average award in 1996 for most federal programs was approximately 2% higher for female students than for male students (Vandall, 1992). One explanation for the rise in female college aspirations was a wider appreciation that higher education was the key to the more prestigious occupations.

Boudon (1974) and Crocker (1983) reported that the level of education one attains was closely related to earning power, job status and college attendance.

       <u>Ethnicity</u>.   An even higher percentage of 1996 minority seniors (93.81%) indicated their intention to pursue a college degree as compared to the 1986 percentage of minority seniors (86.7%). The Chi-square test of association results were significant. This finding was consistent with the high career aspirations of the minority students at the subject school for both school years (1986 and 1996). This increase in college aspiration for the 1996 minority senior reflects all of the factors previously discussed, as well as the fact that the 1996 SAT scores for ethnic minorities have improved (Kelly, 1996). Attitudes were apparently beginning to change about minorities. Over 70% of people surveyed approved of companies making special efforts to recruit qualified minorities, and over 80% approved of job training programs to help make minorities become better qualified (Norman, 1995).

<u>Summary of Findings</u>

       Table 28 presents an overall summary of the findings for the 1996 research study.

Table 28

Summary of Significant Findings of Robinson Seniors: 1996

Variable	Career Aspiration	Grad Year
Question one:		
1996 gender	o	
1996 ethnicity	o	
1996 GPA	xx	
1996 father's ed	xx	
1996 mother's ed	o	
Question two:		
1986 & 96 females	xx	xx
Question three:		
1986 & 96 minorities	o	o
Question four:		
1986 & 96 Advanced Diploma w/seal - females		xx
1986 & 96 Advanced Diploma w/seal - minorities		xx
Question five:		
1986 & 96 college plans - females		xx
1986 & 96 college plans - minorities		xx

o = no significant relationship;   xx = significant relationship

Conclusions and Comparisons to Past Research

Based upon the statistical analysis of the data in this study, the following conclusions were made relative to the relationship between aspiration level and the various variables for the subject high school.

Gender

The 1996 females' career aspirations showed no significant difference with the 1996 male career aspirations. The females' aspirations had risen to the point that they were very similar to the males' aspirations with an extremely tight mean correlation.

When the 1996 female seniors were compared to the 1986 female seniors, a significant relationship was discovered between school year and career aspiration. Consistent with the findings on career aspirations was a significant relationship between the percentage of Advanced Studies Diploma with the Governor's seal and the graduation year. The increased female pursuit of a two-or four year college degree and graduation year 1986 to 1996 was also significant. More 1996 females were obtaining higher level diplomas and pursing goals that would lead them into careers with high levels of prestige or respect. The results were also consistent with *The Washington Post*/Harvard survey (1998) that found a revolution in gender roles. Slightly more than half of all bachelors' degrees were awarded to women in 1997, and the percentage of doctoral degrees granted to Caucasian women had increased from 25% in 1977 to 44% in 1993. The percentage of female physicians had increased, and the percentage of female lawyers and judges had doubled between 1983 and 1996. The 1996 female seniors were also aspiring for non-traditional careers in the lower career level groups. Based on all of these findings, it appears that more females feel that they are entitled to be full participants in the areas of life that their mothers had to fight to enter (Span, 1997). Similarly, many young men of 1996 generally had accepted the fact that they had family duties, chores and responsibilities (Morin & Rosenfeld, 1998).

As we enter the 21st century, more females seem to be freed from entering into only the traditional occupations (i.e., education, social work, music) chosen by their mothers and grandmothers. Many females have aspirations and opportunities to manage or own their own business in high level professions (i.e., medical, dental, or technology field) (Leach, 1993) or work in other non-traditional occupations (i.e., skilled crafts, manual work).

Ethnicity

Although the minority students' aspirations increased from 1986 to 1996, the analyses still showed the increase was not statistically significant when compared to the majority of the population. Contrary to research from Ogbu (1978), the analyses found that in both school years (1986 and 1996), the groups of minority seniors' career aspiration means were as high or slightly higher than their Caucasian peers. The 1996 minority seniors' career aspirations were 8.6% higher than their 1986 cohorts. The 1996 African-American seniors had the highest career aspiration mean, above all other ethnic groups. The findings for career aspiration and ethnicity were consistent with the findings of the minority seniors' Advanced Studies Diploma with the Governor's seal and the aspiration for a two-or four-year college.

There was a significant relationship, by ethnicity, for both the diploma, college aspirations and graduation year (1986-1996). Conclusions must be kept in mind, however, that for the subject school and, presumably other schools with as high a socio-economic level for ethnic groups, certain characteristics alleged to be true for this population, may not necessarily be true for a middle or lower class school population. If Ginzberg, Ginsburg, Axelrad, and Herma's (1951) research on students was accepted, the above average level of income and parental education in the community might also seem to indicate higher aspirations for the children than those of a different population. This could indicate that the sample might be yielding results of a favored sub-set of the population that are not indicative of the general population. A minority parent at the subject school, by example or discussion, might encourage their child to pursue science,

math and technology courses in order to receive the highest diploma and consequently be admitted into college. Some of the explanations for this finding could be due to the increase in minority grants, legislation, and litigation over this 10-year time span. It is quite possible, however, that the high socio-economic and education level of the minority parents, and the minority seniors view of themselves, had a major impact in this finding (Purkey, 1970). It is also possible that the large Asian population in both school years reflects the parents' high expectations. Some research attributes these high student aspirations to the Asian parents' strong belief in hard work, individual initiative, and responsibility (Fairfax County Public Schools, 1984). Since the minority seniors' aspirations were not found significant for either school year, it could also be concluded that the same highly educated parents were continuing to move into the school community.

Grade-Point Average

As expected from Picou and Carter's research (1974), the grade-point average and career aspirations were significantly related. The higher the student's grade-point average, the higher the student's career aspiration. The 1996 high school seniors' grade-point average mean was 3.114 or a "B" average. The findings for grade-point average also correlated with parents' education.

Parents' Education

Fathers' education level was found significant with the seniors' career aspiration in the 1996 study. This is consistent with other research that found that academic performance was closely correlated to the family's socio-economic status and occupation (Scott-Jones & Clark, 1986).

Mothers' education level, for either school year, was not significant with the students' career aspiration. Even though mothers' education level did not show a statistical relationship with the students' career aspiration, it was highly correlated with

fathers' education level. Evidently, mothers and fathers tended to marry partners with similar educational qualifications.

Overall Conclusions

In 1986, Scott-Jones and Clark reported that minorities and females do not achieve as well as white, middle-class males in the disciplines of science and mathematics. Ten years later, the 1996 seniors at the subject school were not typical of students written about in the Scott-Jones and Clark research. This population of female and minority seniors, under investigation, was high achieving academically, goal oriented for college and had high career aspirations. Several conclusions may be drawn from these findings:

- A large part of these results may be due to the fact that the school community was located in a high middle-class suburban area with a continuing population growth of highly educated parents supporting academics, sports and fine arts.

- The largest minority group at the sample school was Asian. Research revealed that Asian minority students tended to experience high academic success (Fairfax County Public Schools, 1984). Many non-English speaking parents came to the United States for the purpose of achieving a good education and better way of life for their children (Booth, 1998).

- More government legislation and college grants in favor of females and minorities were available in 1996 than in 1986. These grants helped increase educational opportunities for women and minorities. and evened the gap from their white, middle class male peers ("Vocational gender," 1995).

- More female parents and siblings were working in 1996 giving the female seniors more role models ("How have," 1994). There may also have been more successful minority role models to emulate. Consequently, the higher achieving female and minority seniors may have been motivated to seek the

highest diploma type and college education in order to obtain their aspired career with a higher societal prestige. The majority of females assumed that they would be full participants in the 21st century workforce (Morin & Rosenfeld, 1998).

Recommendations for Educational Progress

As revealed in the 1996 study, it is possible for female seniors to have similar levels of aspirations as their male peers, and for minority seniors to have the same and/or slightly higher level of aspirations then their Caucasian peers. These findings are legitimate, socially acceptable and academically attainable.

Based upon these findings in the study, the following recommendations are presented:

<u>Females</u>

1. Now that the initial barrier for females aspiring for high level careers is starting to be overcome, it is important to sustain and consolidate these gains in aspiration levels. Programs could continue to be developed in the schools (K - 12) which would encourage females to continue their course work in the academic areas of math, science and technology. Such programs might include inviting women who are successful in these career areas to visit and speak with the students. These visiting women could be used as role-models or mentors for the female students. The womens' experiences in business and industry could motivate some of the female students toward job opportunities in those careers.

2. School counseling is an important factor in helping to modify attitudes and change concepts. Group counseling could be organized to help young women increase their self-esteem by changing poor self-concepts and breaking the traditional stereotypical

patterns (e.g., eating disorders, food and fitness, math phobia, etc.). Programs that improve self-esteem are important as prerequisites because this factor was directly correlated with aspirations in science and math (Greenberg-Lake, 1991).

3. Research suggested that female-only organizations and activities raised self-esteem (Eickman, 1995). Therefore, efforts could be made to establish peer support systems or specific projects within the academic area in order to encourage females to work in teams. The projects could include the science fair, debate club, math team or technology contests.

4. More counseling programs could be established to provide career information, with special emphasis on career options and possibilities for females.

5. Programs that have demonstrated success in raising academic achievement could be expanded. For example, the Equity 2000 program was started to increase the number of low income and minority students who enter college ("Board wins," 1996). This program has shown that it helps establish higher expectations for students, steering more of them to college-preparatory courses.

6. The "Think Purple" gender equity campaign piloted in two Fairfax County Public Schools could be established in all schools to raise awareness. The theme could be "do not think blue, traditional male occupations, or pink, traditional female occupations. 'Think purple' with the realization that all genders can aspire for all occupations" (Hoover, 1990). This gender equity campaign could include:
   - Kick-off campaign with purple balloons, band, and guest speakers.
   - Purple bulletin boards in the main hall of the school with pictures of males and females in non-traditional occupations.
   - Student designed "Think Purple" pencils to be used to take the career interest inventory.

- Student designed and dissemination of "Think Purple" buttons for the whole school to wear during career/gender equity week.

- Purple ribbons worn to show solidarity for the commitment of gender equity.

- Announcements concerning gender equity read over the public address system every morning.

- Student designed paintings, skits, or songs about gender equity.

- School bulletins about gender equity printed on purple paper posted in the classroom.

Minorities

1. Minority counselors, teachers and parent liaisons could be in the schools to act as role models and to problem solve specific minority concerns.

2. Language translators could be available for all school meetings so that all ethnic parents would feel welcome and comfortable. In this way, all ethnic parents would gain knowledge from college, PSAT, and financial aid parent meetings.

3. More scholarships could be established that would benefit minorities with financial need so that high career aspirations could be realized by facilitating college attendance.

4. More staff development classes could be given to all teachers, counselors and administrators on how to effectively motivate and work with diverse student populations.

General recommendations:

1. The school could take advantage of the highly educated parents in the community and encourage teachers to invite the students' mothers and fathers to speak in the classroom.

2. Middle school parent groups could be established to communicate on topics such as "How to earn the Advanced Diploma with the Governor's seal" or "How to get into a prestigious college." Parent and student awareness needs to be accomplished before the student is in high school and already on a track for success or failure to meet their goals.

3. Parent meetings (e.g., PSAT, SAT, financial aid, college information) could be held during the evening and daytime so that more working parents could attend.

4. Students learn about some of the lower status professions by working during high school (e.g. sales work, fast food cashier, personal care). It is important for the students to also be educated in other professions with a higher level of status (e.g., medical-dental, math-science). Lunch-time chats could be established with a focus on a particular career or an exploration fair with a math/science/medical profession focus could be organized.

5. The "Take your daughter and son to work" program could be encouraged for all students every year.

Recommendations for Further Research

1. Due to the fact that the Affirmative Action programs have been abolished in some states and colleges, this study could be replicated in 10 years in order to discover how legislation and litigation has impacted our future minority seniors' aspirations.

2. This study could also be replicated:
   - In all Fairfax County Public Schools to look at the trend towards grade-point average, college plans and diploma type for female and minority seniors.

- In a school with a larger ethnic minority population.
- In an inner-city school with a lower socio-economic population.

Note: If the findings were not as positive for the lower socio-economic level school, it may even be more important for the school to focus towards success and high career aspirations.

3. Further research could be done on the relationship of career aspiration with gender and ethnicity.

4. Further research could be done on the interaction between ethnicity and gender.

5. A longitudinal study could be done on the participating 1996 seniors to see if they did indeed complete their college degree and attain their chosen career aspiration.

6. Even though these results can not be generalized to other schools, because of the high academic and motivational success of the females and minorities, the subject school could be profitably used as an example for study by other institutions.

REFERENCES

REFERENCES

Abbott, K. (1995, May 15). Oughta be a law: Female lawyers in Colorado earn almost 40% less than their male peers. *Rocky Mountain News,* p. B10.

Affirmative success (1997, October 10). *Louisville Courier-Journal,* p. A12.

Ausubel, D.P., & Ausubel, P. (1963). Ego development among segregated Negro children. In A.H. Passow (Ed.), *Education in depressed areas.* New York: Columbia University.

Bandura, A. (1982). The psychology of chance encounters and life paths. *The American Psychologist, 37(*7), 747-755.

Bardwick, J. M. (1971). *Psychology of women: A study of bio-cultural conflicts.* New York: Harper & Row.

Behrendt, B. (1995, August 16). Teachers urged to treat girls, boys alike. *St. Petersburg Times,* p. B78.

Beilin, H. (1955). The application of general developmental principles to the vocational area. *Journal of Counseling Psychology, 2(*1), 53-57.

Best, R. (1983). *We've all got scars: What boys and girls learn in elementary school* (pp. 4-63). Bloomington: Indiana University.

Bettelheim, B. (1977). *The uses of enchantment: The meaning and importance of fairy tales*. New York: Vintage Books.

Biskupic, J. (1997, November 4). Affirmative action ban is left intact by Supreme Court. *The Washington Post,* pp. A1, A5.

Board wins major grant to expand EQUITY 2000 (1996, May/June). *The College Board News*, *24*, 1.

Booth, W. (1998, February 22). One nation, indivisible: Is it history? *The Washington Post*, pp. A1, A20.

Bordin, E. S., Nachmann, B., & Segal, S. J. (1963). An articulated framework for vocational development. *Journal of Counseling Psychology*, 10*,* 42-116.

Boudon, R. (1974). *Education, opportunity, and social inequality: Changing prospects in western society* (p. 29). New York: John Wiley.

Brady, M. L. (1984). Understanding the minority child in the American educational system. *Education,105*, 21-33.

Bronfenbrenner, U. (1961). Some familial antecedents of responsibility and leadership in adolescents. In L. Petrullo & B. Bass (Eds.), *Leadership and interpersonal behavior* (pp. 239-271). New York: Holt, Rinehart and Winston.

Brown, J. M. (1991, Fall). The work place of early twenty-first century. *The journal for vocational special needs education,14*(1), 24-30.

Careers in the 1990s (1992, February). *Issues & Trends for the College Admissions Advisor* (p. 18). College Bound: Chronicle Guidance Publications.

Ciabattari, J. (1996, October 20). He said, she said: women executives and the gender gap. *The Washington Post Parade Magazine*, p. 20.

Clift, V. A. (1966). Educating the American Negro. In J. P. Davis (Ed.), *The American Negro reference book* (pp. 360-395). Englewood Cliffs: Prentice-Hall.

Conoley, S. & Impara, J. (1995). *The Twelfth Mental Measurements Yearbook*, (p. 14). Lincoln: University of Nebraska.

Crocker, E. V. (1983). The report card on educating Hispanic women: *PEER Report #3.* Washington, DC: Legal Defense and Education Fund.

Crosby, R. D., (1985). *Factors affecting student choices: a higher education marketing study.* Unpublished doctoral dissertation, Virginia Polytechnic Institute and State University, Blacksburg.

Crowley-Long, E. (1995, January/February). Diversity in the classroom: Resources for teaching white students about issues of race. *Clearing House Magazine*, *68* (3), 134, 135.

Davies, M., & Kandel, D. B. (1981). Parental and peer influences on adolescent's educational plans: Some further evidence. *American Journal of Sociology, 87*, 363-387.

deNys, M., & Wolfe, L.R. (1985). Learning her place--sex bias in the elementary school classroom. *PEER Report #5.* Washington, DC: The Project on Equal Education Rights of the NOW Legal Defense and Education Fund.

Eickmann, L. (1995, April 25). Parents have an important role to play in how schools treat girls. *San Jose Mercury News,* p. C15.

Ellis, J. (1987). *Jobs for the 90's*. Pleasantville, NY: Sunburst Communications.

Excel 97, SR-1 (1995-97). *Microsoft* 97 *Software.* Redlands, WA: Microsoft.

Fairfax County Public Schools, Department of Instructional Services (1984). *Report of the advisory committee on the academic performance of minority students in Fairfax County Public Schools.* Fairfax County, VA: Fairfax County Public Schools.

Fairfax County Public Schools, Office of Curriculum and Development (1995-96). *Standard Course Offerings:1995-1996* (pp. 1-6). Fairfax County, VA: Fairfax County Public Schools.

Fairfax County Public Schools Office of Testing and Evaluation, Technical Applications Section (1989, Fall). *Part of the Picture: A summary of selected school-level longitudinal data* (pp. 1-13). Fairfax County, VA: Fairfax County Public Schools.

Fairfax County Public Schools, Office of Testing and Evaluation, Technical Applications Section (1997, Fall). *Part of the Picture: A summary of selected school-level longitudinal data* (pp. 1-25). Fairfax County, VA: Fairfax County Public Schools.

Few women at the top (1996, October 20). Associated Press for *The Washington Post*, p. H4.

Fields, A. B. (1981). Some influences upon the occupational aspirations of three white-collar ethnic groups. *Adolescence*, *63*, 663-684.

Finlayson, D.S. (1971). Parental aspirations and the educational achievement of children. *Educational Research, 14*, 61-64.

Fraenkel J. & N. Wallen (1993). *How to design and evaluate research in education.* New York: McGraw-Hill.

Fredrickson, R. H. (1982). *Career information*. Englewood Cliffs, NJ: Prentice-Hall.

Freeman, H. E., Ross, J.M., Armor, D., & Pettigrew, T. F. (1972).   Color gradation and attitudes among middle-income Negroes. In A. H. Richmond (Ed.), *Readings in race and ethnic relations.* (pp. 86-103). New York: Pergamon.

Freud, S. (1911). Formulation regarding the two principles of mental functioning. In Vacc & Loesch (Ed.), *Counseling as a profession* (p. 12). Muncie, IN: Accelerated Development.

Gay, L. R. (1996). *Educational Research Competencies for analysis and applications*, 5(ed). Englewood Cliffs, NJ: Prentice Hall.

Gilligan, C. (1982*). In a different voice: Psychological theory and women's development (p. 13).* Cambridge, MA: Harvard University.

Ginzberg, E. (1972). Restatement of the theory of occupational choice. *Vocational Guidance Quarterly*, *20* (3), 7-176.

Ginzberg, E. (1952). Toward a theory of occupational choice. *Personnel and Guidance Journal, 30*, 8-494.

Ginzberg, E., Ginsburg, S. W., Axelrad, S., & Herma, J. L. (1951). *Occupational choice: An approach to a general theory* (p. 185*).* New York: Columbia University.

Gottfredson, G. D., & Holland, J. L. (1989). *Dictionary of Holland occupational codes* (2nd ed.). Odessa, FL: Psychological Assessment Resources.

Gough, P. (1976). Sexism: New issue in American education. *The Phi Delta Kappa: Fastback 81*. Bloomington, IN: Educational Foundation.

Grebow, H. (1973). The relationship of some parental variables to achievement and value in college women. *The Journal of Educational Research, 66*, 203-209.

Greenberg-Lake (1991, January). *Shortchanging girls, shortchanging America* (pp. 1-17). Washington DC: Greenburg-Lake: The Analysis Group.

Group Disputes 'Glass Ceiling.' (1996, November 3). Associated Press in *The Washington Post*, p. H4.

Guttentag, M., & Bray, H. (1976). *Undoing sex stereotypes: Research and resources for educators*. New York: McGraw-Hill.

Hadley, R. G., & Levy, W. V. (1962). Vocational development and reference groups. *Journal of Counseling Psychology, 9* (2), 110-114.

Halverson, G (1996). Wall Street highflier sees more executive jobs opening to women. *The Wall Street Journal*, p. B12.

Hansen, J. C., & Campbell, D. P. (1985). *Manual for the Strong Vocational Interest Blank.* (4th Ed.), Stanford, CA: Stanford University Press.

Harrington, T. F., & O'Shea, A. J. (1993). *The Harrington-O'Shea career decision-making system manual* (Eds.). Circle Pines, MN: American Guidance Service.

Hartnett, O. (1978). Sex-role stereotyping at work. In J. Chetwynd & O. Hartnett (Eds.), *The sex role system: Psychological and sociological perspectives* (pp. 76-92). Boston: Routledge & Kegan Paul.

Harvey, G. (1986). Finding reality among the myths: Why what you thought about sex equity in education isn't so. *Phi Delta Kappan, 67*, 509-512.

Hawa, E. (1992, Fall). AAUW report brings gender equity to the forefront. *The Equity Equation*, pp.1-5.

Hawley, P. (1971). What women think men think. *Journal of Counseling Psychology*, *18*, 193-199.

Headlee, S., & Elfin, M. (1997). *The Cost of Being Female*. New York: Praeger.

Hedden, S. (1995, September 25). One nation, one language: nation of strangers. *U.S. News & World Report*, p.38.

Hentoff, N. (1998, February). Some truly affirmative actions. *The Washington Post*, pp. A16, A19.

Herr, E. L. (1970). *Decision-making and vocational development*. Boston: Houghton Mifflin.

Herr, E. L. (1986). Life-style and career development. In M.D. Lewis, R.L. Hayes, & J.A. Lewis (Eds.), *An introduction to the counseling profession* (pp. 167-214). Itasca, IL: F. E. Peacock.

Herr, E.L., & Cramer, S.H. (1984). *Career guidance and counseling through the life span*, (2nd ed.). Boston: Little & Brown.

Herzog, A. R. (1982). High school seniors' occupational plans and values: Trends in sex differences 1976 through 1980. *Sociology of Education*, *55*, 1-13.

Hewer, V. H. (1963). What do theories of vocational choice mean to a counselor? *Journal of Counseling Psychology, 10*, 118-125.

Holland, J. L. (1966). *The psychology of vocational choice*. Waltham, MA: Blaisdell.

Holland J. L. (1973). *Making vocational choices: A theory of careers* (p. 131). Englewood Cliffs, NJ: Prentice-Hall.

Holland, J. L., Gottfredson, G. D., & Baker, H. G. (1990). Validity of vocational aspirations and interest inventories: Extended, replicated, and reinterpreted. *Journal of Counseling Psychology*, *37*, 337-342.

Hoover, C. J. (1990, March 6). Think Purple at Marshall High School: Gender Equity Week - March 5 - 9, 1990. *Daily Bulletin: Marshall High School*, *1*(2), 1.

Horner, J. T., Buterbaugh, J. G., and Carefoot, J. J. (1967). *Factors relating to occupational and educational decision-making of rural youth: Research summary.* College of Agriculture & Home Economics. (ERIC Document Reproduction Service No. ED 012 322) Lincoln: University of Nebraska.

Horner, M.F. (1969). A bright woman is caught in a double bind: In achievement-oriented situations she worries not only about failure but also about success. *Psychology Today, 36,* 36-62.

Horwitz, E. L. (1992, Summer). Taking the lead. *American Association of University Women Outlook, 86*, 2.

How have we changed? (1994, December). *American Heritage, 45*(8), 57-73.

Howell, F.M., & Frese, W. (1979). Race, sex and aspirations: Evidence for the race convergence hypothesis. *Sociology of education*, *52*, 34-46.

Hudgins, E. L. (1987). *A study of the relationship of career aspiration level of high school seniors* (pp.75-93). Unpublished doctoral dissertation, The George Washington University, Washington DC.

Hyman, H. H. (1966). The value systems of different classes: A social psychological contribution to the analysis of stratification. In R. Bendix & S. M. Lipset (Eds.), *Class, status, and power: Social stratification in comparative perspective*. New York: The Free Press.

Jacobs, C., & Easton, C. (1972). Sexism in the elementary school. *Today's education, 61*, 20-22.

Kelly, D. (1996, August 23). An SAT gender gap continues. *USA Today, (Health and Education Section)*, pp. 1D, 2D.

Krannich, R. L., & Krannich C. R. (1993*). The best jobs for the 1990s and into the 21st century*. Manassas Park, VA: Impact.

Krumboltz, J. D., Mitchell, A. M., & Jones, B. G. (1978). A social learning theory of career selection. In J.M. Whitely and A. Resnikoff (Eds.), *Career counseling* (pp.100-127). Monterey, CA: Brooks/Cole.

Leach, S. L. (1993, July 13). Women the new entrepreneurs. *Christian Science Monitor,* pp. A7, A12.

Lengermann, P. M., Wallace, R. A. (1985). *Gender in America: Social control and social change*. Englewood Cliffs, NJ: Prentice-Hall.

Lipkin, J., & Sadker, D. (1985).   Sex bias in mathematics, computer science and technology. *The Report Card #3*. Washington DC: The Mid-Atlantic Center for Sex Equity.

Lipsett, L. (1962). Social factors in vocational development. *Personnel and Guidance Journal*, *40*, 432-437.

Lobban, G. (1978). The influence of the school on sex-role stereotyping. In J. Chetwynd & O. Hartnett (Eds.), *The sex role system: Psychological and sociological perspectives* (pp. 50-61). Boston: Routledge & Kegan Paul.

Maccoby, E. E. (1966). Sex differences in intellectual functioning. In E. E. Maccoby (Ed.), *The development of sex differences* (pp. 25-55). Stanford, CA: Stanford University.

Maccoby, E. E., & Jacklin, C. N. (1974). *The psychology of sex differences* (pp. 150-348*).* Standford, CA: Standford University.

MacLachlan, S. L. (1996, November 8). Promoting, retaining women at the top: more managers are learning how to distinguish between performance and work-force diversity issues. *Boston Globe*, p. A56.

Maslow, A. H. (1954). *Motivation and personality*. New York: Harper & Row.

Matheny, A. P., Dolan, A. B., Krantz, J. Z. (1980). Cognitive aspects of interests, responsibilities and vocational goals in adolescence. *Adolescence, 58*, 301-311.

Matthews, E., & Tiedeman, D. V. (1964). Attitudes toward career and marriage in the development of life styles of young women. *Journal of Counseling Psychology, 11*, 375-384.

Marklein, M.G. (1997, May 19) Minority gains in college lose steam. *USA Today,* p.1D.

McDermott, R.P. (1977). Social relations as contexts for learning in school. *Harvard Educational Review, 47,* 198-213.

McGregor, E. (1990, Fall). Emerging Careers. *Occupational Outlook Quarterly: Bureau of Labor Statistics*. Washington DC: U.S. Department of Labor.

Morin, R., & Rosenfeld, M. (1998, March 22). With More Equity, More Sweat. *The Washington Post*, pp. A1, A17.

Nelton, S. (1998, July). Minority women set the pace. *Nation's Business*, 7, 47-49.

Norman, J. (1995, June/July). Politics of the nineties: America's verdict on affirmative action is decidedly mixed. *Public Perspective The Roper Center for Public Opinion Research, 3,* 49-52.

Ogbu, J. U. (1978). *Minority education and caste: The American system in cross-cultural perspective*. New York: Academic Press.

Ogbu, J. U. (1985). Research currents: Cultural-ecological influences on minority school learning. *Language Arts, 62,* 105-869.

One nation, one language: nation of strangers (1995, September 25). *U.S. News & World Report*, p. 38.

Osipow, S. H. (1983). *Theories of career development* (3rd ed.) Englewood Cliffs, NJ: Prentice-Hall.

Picou, J. S., & Carter, T. M. (1974). *Residence and the dynamics of status attainment as related to aspiration formation*. Paper presented at the Annual Meeting of the Rural Sociological Society. Montreal, Canada. (ERIC Document Reproduction Service No. ED 111 538)

Poussaint, A. F. (1974). The black child's image of the future. In A. Toffler (Ed.), *Learning for tomorrow: The role of the future in education* (pp. 56-71). New York: Random House.

Procter, D. (1992, June). Gender bias in the classroom. *Young D.C.*, pp. 1, 2.

Purkey, W. E. (1970). *Self concept and school achievement*. Englewood Cliffs, NJ: Prentice-Hall.

Reynolds, R. E., Taylor, M. A., Steffensen, M. S., Shirey, L. L., & Anderson, R. C. (1982). Cultural schemata and reading comprehension. *Reading Research Quarterly, 17*(3), 353-366.

Roe, A. (1956). *The psychology of occupations*. New York: Wiley.

Rubinskowski, L. (1991, February 3). Young women vs. self-esteem. *The Pittsburg Press*, p. F1.

Russell, C. N., Warrack, B. J., and Bremner, L. K. (1978). *Post-secondary plans, aspirations and profile characteristics of grade twelve students in Manitoba, 1977-78.* Manitoba, Winnipeg, Canada: Post Secondary Research Reference Committee. (ERIC Document Reproduction Service No. ED 160 026).

Sadker, M. (1984). Sex bias in college and universities. *Report Card #2.* Washington, DC: The Mid-Atlantic Center for Sex Equity and Project EFFECT.

Sadker, M. P., & Sadker, D. M. (1982). *Sex equity handbook for schools (*pp. 15-51). New York: Longman.

Sadker, M., & Sadker, D. M (1985). Sexism in the Schoolroom of the 80s. *Psychology Today*, *19*, 15-57.

Sanchez, R. (1997, December 5). Final exam for campus affirmative action? *The Washington Post,* pp. A1, A36.

Schuster, S. (1992, Summer). To change the world. *American Association of University Women Outlook, 86*, 4.

Schwartz, G. G., & Neikirk, W. (1983). *The work revolution.* New York: Rawson Associates.

Scott-Jones, D., & Clark, M. L. (1986). The school experiences of black girls: The interaction of gender, race, and socioeconomic status. *Phi Delta Kappan*, *67*, 520-526.

Segal, D. (1998, February 20). Putting Affirmative Action on Trial. *The Washington Post,* pp. A1, A17.

Sewell, W. H., Haller, A. O., and Straus, M. A. (1957). Social status and educational and occupational aspiration. *American Sociological Review, 22*, 67-73.

Shade, B. J. (1978). Social-psychological characteristics of achieving black children. *Negro Educational Review, 29*, 80-86.

Shaffer, S. M. (1986). Gifted girls: The disappearing act. *The Report Card #6.* Washington, DC: NETWORK.

Smith, D. (1992, Fall). Census reveals that of 441 jobs. *The Equity Foundation*, p. 45.

Sowell, T. (1984). *Civil Rights:Rhetoric or reality?* New York: William Morrow.

Spaid, E. L. (1996). Glass Ceiling Remains Thick at Companies' Top Levels. *Boston Times.* (1996 SIRS Researcher, Inc. 8, 413-429).

Spaid, E. L. (1996). 'Sticky Floor' keeps many women in low-paying jobs. *Boston Times*. (1996 SIRS Researcher, Inc. 9, 433-484).

Span, P. (1997, June 22) It's a girls' world. *The Washington Post Magazine*, pp. 7-11.

Super, D. E. (1969). Vocational development theory: Persons, positions, and processes. *The Counseling Psychologist, 1*, 2-9.

Super, D. E. (1957). *The Psychology of Careers.* New York: Harper and Row.

Super, D. E. & Bohn, M. J. (1970). O*ccupational psychology*. Belmont, CA: Wadsworth.

Take your daughter to Congress day (1995, May 15). *National Review,* 47(9), 19.

Tiedeman, D.V., & O'Hara, R.P. (1963). *Career development: Choice and adjustment.* New York: College Entrance Examination Board.

Tips to help young girls (1995, April 25). *San Jose Mercury News*, p. B56.

Turner, R. (1964). *The social context of ambition: A study of high-school seniors in Los Angeles*. San Francisco: Chandler Publishing Company.

Tyson, K. (1996, September 2). Companies regear for two-career families. *Austin American-Statesman*, p. C4.

Update on Women's Wages (1996, October 3). *The Washington Post,* p. H3.

US Department of Labor, Bureau of Labor Statistics (1994, April). *Occupational Outlook and book 1994-95: Bulletin 2450.* Indianapolis, IN: The Job Research People.

Vacc, N. A., & Loesch, L. C. (1987*). Counseling as a profession* (pp. 42-131). Muncie, IN: Accelerated Development.

Vandell, K. (1992, Summer). Education on loan. *American Association of University Women Outlook*, *86*, 23-25.

Vobejda, B., & Chandler, C. (1997, September 30). Household incomes rise again. *The Washington Post,* pp. A1, A8.

Vocational Gender Equity (1995). *1995 Virginia VIEW Career Hunt*, p. 58.

Watkins, D. (1984). Learning strategies of threshold variables in the prediction of tertiary grades. *Educational and Psychological Measurement, 44,* 523-525.

Welsh, P. (1997, April 27). They've got what it takes: My black female honors students beat long odds to succeed. *The Washington Post,* pp. C1, C2.

Westbrook, R. C. (1981). *Factors influencing the educational aspirations of women pursuing a non-traditional career in law.* Unpublished masters thesis, Virginia Polytechnic Institute and State University, Blackburg.

Williamson, E. G. (1939). *How to counsel students.* New York: McGraw-Hill.

Wirth, T. E. (1995, Sept/Oct). *The Human factor.* Sierra, *80*(5), 76.

Women CEOs (1996, April). *Washington Counseletter*, *12* (7), 28.

APPENDICES

APPENDIX A

Career Cluster Form

from

Harrington-O'Shea Career Decision-Making System
Interest Inventory

See Code "C"

See Code "B" See Code "A"

Career Clusters

		TYPICAL JOBS			RELATED SCHOOL SUBJECTS	JOB VALUES

Skilled Crafts

Technical

Legal Work

Manual Work

Math-Science

Data Analysis

Art Work

Literary Work

Music Work

Management

Clerical Work

Medical-Dental

Personal Service

Sales Work

Entertainment

Customer Services

Social Services

Education Work

APPENDIX B

1996 Robinson Secondary School Profile

James W. Robinson, Jr. Secondary School

1996 - 1997

FAIRFAX COUNTY
PUBLIC SCHOOL

5035 Sideburn Road
Fairfax, Virginia 22032

SCHOOL AND COMMUNITY

Robinson Secondary is a six-year comprehensive school which is divided into two units, middle school (Grades 7 and 8) and high school (Grades 9-12). The school serves an upper-middle class community located about 20 miles west of Washington, D.C.

Accreditation: Southern Association of Colleges and Schools.

CEEB - ACT CODE: 470789

Enrollment:	Total	3689
	High School	2420
	Senior Class	580

Phone: (703) 426-2100

STAFF

Principal: Ann Monday
Director of Student Services: Richard E. Crowley

Counselors:	Judy Axelrod	Carole Hoover
	Paula Cotman	Carol Mallory
	Shirley Freeman	Tom Tufts
	Tracy Hartley	Anita Wyrick
	Amanda Hemingway	

Registrar: Arlene Giacomo

CLASS OF 1996

Graduates:		589	
Post Secondary Plans:		4 Year College	80.3%
		2 Year College	10.3%
Mean ACT:	23.8		
Mean SAT:	1114		
	Verbal	555	
	Math	559	

SPECIAL CURRICULUM FEATURES

Advanced Placement Courses: English Literature and Composition, U.S. History, U.S. Government, Chemistry, Biology, Physics, Calculus AB, Calculus BC, Computer Science, Music Theory, Spanish Language, Spanish Literature, French Language, German Language, Latin, Art History and Studio Art. Advanced Placement courses are weighted by applying an additional .5 quality point.

Ranking: Robinson Secondary does not rank students. The class of 1996 had a G.P.A. range from a high of 4.081 to a low of .900

Gifted and Talented Programs: These challenging courses in academic disciplines are for students who qualify and demonstrate superior intellectual and academic ability. Differentiated curricula and teaching strategies which stress critical thinking skills, creativity, and problem-solving ability are integrated into the content of each gifted and talented course offering. These modified courses are designated "GT" on student transcripts.

Computer Science and Senior Science Investigations are college preparatory courses.

GRADUATION REQUIREMENTS

A minimum of 21 units is required in grades 9-12 for graduation. Students receive credits toward graduation for algebra, geometry and foreign language taken in Grades 7 and 8.

English	4 units
Mathematics	2 units
Laboratory Science	2 units
Mathematics or Laboratory Science	1 unit
American Studies	2 units
U.S. History	
U.S. Government	
World Studies	1 unit
Social Studies for Foreign Language	1 unit
Fine or Practical Arts	1 unit
Health or Physical Education	2 units
Electives	5 units
Total	21 units

FAIRFAX COUNTY PUBLIC SCHOOLS ARE ACCREDITED BY THE STATE BOARD OF EDUCATION AND THE SOUTHERN ASSOCIATION OF COLLEGES AND SCHOOLS

APPENDIX C

Permission Letter

American Guidance Services

AGS®

American Guidance Service, Inc.

March 27, 1996

Carole J. Hoover
Senior High School Guidance Counselor
James W. Robinson, Jr. Secondary School
5035 Sideburn Road
Fairfax, VA 22032-2637
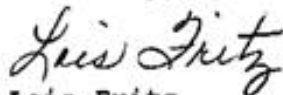
Dear Ms. Hoover:

Your application for a Research Allowance Discount was approved
today. If you need any additional assessment materials your
application is on file and you can contact Connie in Customer
Service at ext. 4625 to place an order.

To receive the AGS test user's qualification number, fill out the
enclosed qualification form and return it to our Customer Service
Department. They will assign a number and notify you.

It is not necessary for you to obtain approval to use any AGS
products in research studies, however; we would appreciate
receiving a copy of your study when it is completed.

Sincerely,

Lois Fritz
Development Assistant
Product Development

Enc:

APPENDIX D

Class of 1996 Senior Student Survey

FC PS

**FAIRFAX COUNTY
PUBLIC SCHOOLS**

James W. Robinson, Jr. Secondary School

5035 Sideburn Road
Fairfax, Virginia 22032-2637

CLASS OF 1996 SENIOR STUDENT SURVEY

The following information is needed for a statistical study of the class of 1996. All of the data will be confidential. The reason that your name is needed on this form is so that your grade point average may be matched with this information for the study. In the actual study, none of the information will be recorded by name.

NAME_____(please print)
      (last)   (first)   (middle)

Date of birth: _____   Age: _____

Sex: _____ male   Ethnic group: _____ White (non-Hispanic)
     _____ female   _____ Black
                               _____ Hispanic
                               _____ Asian/Pacific Islander
                               _____ American Indian/Alaskan

Directions: Please check the line that indicates, to the best of your knowledge, the HIGHEST level of education attained by your parents or the female and male head of the household (step-parents) in which you have spent the predominant amount of your life.

	FATHER	MOTHER
some high school	_____	_____
high school diploma	_____	_____
some college	_____	_____
college graduate	_____	_____
graduate study	_____	_____

Directions: On the next page is a list of occupations grouped by general area. Please look over the list carefully and put ONLY ONE CHECK in the box beside your FIRST CHOICE of occupation field you hope to enter as a career.

APPENDIX E

Robinson Secondary School Guidance Department:

Statistics for Graduating Class of 1996

ROBINSON SECONDARY SCHOOL
GUIDANCE DEPARTMENT

STATISTICS FOR GRADUATING CLASS OF 1996

Counselor Name: _____

Student's Name: _____ Date of Birth: _____

Permanent Address: _____ Phone Number: _____
                   Number and Street

_____
City   State   Zip Code

1. Plans for school year 1996-1997: (Please check one of the following.)

    _____ 4 Year College   _____ Military
    _____ 2 Year College   _____ Technical or Trade School
    _____ Junior or Community College   _____ Preparatory School
    _____ Business School   _____ Employment
    _____ Nursing School   _____ Other

2. GIVE THE NAME AND ADDRESS OF THE COLLEGE, PREP SCHOOL,
    TECHNICAL SCHOOL, NURSING OR BUSINESS SCHOOL TO WHICH YOU
    WANT YOUR **FINAL TRANSCRIPT** SENT:

    School Name: _____
    City/State   _____

    What is your declared major? _____

3. Please list below any academic awards, honors or scholarships, the source and the amount
    received during the senior year.

ACADEMIC AWARDS, HONORS OR SCHOLARSHIPS (SENIOR YEAR ONLY)	AMOUNT	SOURCE
_____		
_____		
_____		
_____		
_____		
_____		

APPENDIX F

Permission Letter for Research

Robinson Secondary School Principal

March 13, 1996

TO WHOM IT MAY CONCERN:

This will confirm that Carole J. Hoover has permission to conduct a study on aspiration levels at Robinson Secondary School with the senior class of 1996.

This study will be of assistance to Ms. Hoover in her doctoral dissertation and also to the school in assessing progress toward gender equity and minority achievement that may be used in our school plan.

Since this study will be completed in one school, Fairfax County approval is not necessary.

Ann Monday
Principal

<div align="center">

VITA

Carole J. Hoover

</div>

EDUCATION

<u>Doctor of Education (Ed.D.), Counseling Education</u>, Virginia Polytechnic Institute & State University, Blacksburg, VA, September, 1998.

<u>Master of Arts (M.A.), School Personnel and Guidance</u>, Virginia Polytechnic Institute & State University, Blacksburg, VA.

<u>Bachelor of Science (B.S.), Education</u>, Ball State University, Muncie, IN.

AWARDS

Dedicated Counseling Service Award, Optimist Club of Vienna: 1992 & 1993
Area III Golden Eagle Award, Outstanding Contributions to Minority Students: 1992, 1993, 1994, 1995, 1996, 1997
Fairfax County School Board Recognition for Unusual Contributions: 1989 & 1991
IMPACT II Grant, 1990, *GENDER EQUITY*
Human Relations Award, Thoreau Middle School, 1989
Virginia Vocational Education Department of Education Grant Recipient 1988/89
IMPACT II Grant Recipient, 1988, *SUMMER SCHOOL MAGIC*
IMPACT II Grant Recipient, 1987, *EASE* (Encourage Attitudes and Self Esteem)
IMPACT II Grant Recipient, 1987, *I HAD A DREAM*
IMPACT II Grant Recipient, 1986, *FUTURE OCCUPATIONS - YEAR 2000*
AREA III Superintendent's Grant, 1986, *MINORITY DISCRIMINATION AWARENESS*
AREA IV Summer Mini Grant Recipient, 1985, Cooperative Learning in Social Studies
AREA IV Summer Mini Grant Recipient, 1985, History for Gifted and Talented

PUBLICATIONS AND MEDIA

Gender Equity (1993). *Experienced Teacher Handbook*. New York: Impact II.
In My Opinion (1992, August). *The Apple*.   Fairfax, VA: Fairfax County Schools.
Profile of a Pioneer Preacher (1990, May). *Access and Equity*, 5(4).
Gifted & Talented Female Loves Vocational Classes (1989, May). *Access and Equity*, 4(4).
Think Purple (1989, May). Produced and Directed, *A GENDER EQUITY Video*. Filmed and Edited by NBC News.
Thinking Purple at Thoreau Middle School (1988, May). *Access and Equity*, 3(3).
I Had a Dream - A Human Relations Experience (1987, Spring). *Impact Star National Issue*, 7(3).

PRESENTATIONS/SEMINARS

IMPACT II National Conference, Washington, DC, November, 1989. *Project Smile: A Pathway to Change Self-Defeating Behavior* and *Awareness Raising Minority Simulation.*

Virginia School Counselor Conference, Mary Washington College, April, 1988. *If All Else Fails, Empower Them.*

Virginia Counselor Association Conference, Arlington, VA, November 1987. *Encourage Attitudes and Self-Esteem - A Mentoring Model for At Risk Students.*

Virginia School Counselor Conference, Annandale High School, Fall Conference, November, 1988. *Strategies for Working with Defensive Adolescents.*

Area III Intermediate Counselor Workshop, Area III Office, February 5, 1988. *Mentoring.*

Area III Mentorship Awards Reception, Area III Office, May 23, 1988. *Mentors Make a Difference.*

Humanities Study/Travel Institute, Fairfax High School, August 10, 1988. *Teacher's Perspectives on Traveling in Japan with Students.*

PROFESSIONAL ORGANIZATIONS

Northern Virginia Counselors' Association, Past President and Board Member

Phi Delta Kappa

Virginia Counseling Association, Board Member

Northern Virginia School Counselor