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NAVAL POSTGRADUATE SCHOOL Monterey, California



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**LOST OPPORTUNITY: THE HIGH QUALITY,
REDUCED MILITARY FORCE OF THE 1990s:
IS THERE A ROLE FOR THE
NATION'S DISADVANTAGED YOUTH?**

by

Valerie Ann Moulé

December 1990

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The High Quality, Reduced Military Force of the 1990s:
Is There a Role for the Nation's Disadvantaged Youth?**

by

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ABSTRACT

The trend toward increased quality of military recruits over the past decade is projected to continue into the 1990s. The effect of this trend, combined with the planned force drawdown, may limit opportunities for the nation's disadvantaged youth to serve in the military. A policy analysis was conducted using five previous studies of Project 100,000 to determine the feasibility of recruiting disadvantaged youth for military service. Project 100,000 (1966-1971) relaxed the military's entrance standards so that a large number of individuals who would have otherwise been disqualified could serve. The five previous studies were beset by numerous methodological weaknesses and produced conflicting results. Consequently, no definitive conclusion could be drawn regarding the merits of recruiting disadvantaged youth in the years ahead. Alternative approaches for further research are presented.



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TABLE OF CONTENTS

I. INTRODUCTION.....	1
A. STATEMENT OF THE PROBLEM	1
B. PURPOSE	1
C. TIMELINESS AND RELEVANCE OF THIS STUDY	1
D. APPROACH.....	5
E. PRIMARY RESEARCH QUESTIONS	5
F. SECONDARY RESEARCH ISSUES.....	5
G. INFORMATION SOURCES	6
II. BACKGROUND AND LITERATURE REVIEW	7
A. INTRODUCTION	7
B. MILITARY MANPOWER ISSUES: MILITARY (NATIONAL SECURITY) CONCERNS	8
1. Department of Defense (DoD) Mission	8
2. Manning the Force	8
3. The Military Force and Quality.....	9
a. Defining and Measuring Quality.....	9
b. The Importance of Aptitude and Education.....	10
c. Measuring Aptitude: The Armed Forces Qualification Test (AFQT).....	11
d. Setting Minimum Aptitude (AFQT) Standards	12

4.	Historical Trends	14
a.	Male Examinees	16
b.	Male Recruits	17
c.	Brief History of CAT IVs in the Military	17
5.	The Debate About the Need for High-Quality Enlistees	22
6.	Are There Methods to Improve the Performance of Low-Aptitude Individuals?	29
a.	Limited Assignment	29
b.	Extra Help and Time	30
c.	Revision of Training Courses	30
d.	Special Training Units	31
e.	Leadership and Motivation	33
f.	Transition to Civilian-Life Assistance	35
C.	MILITARY MANPOWER ISSUES: NONMILITARY CONCERNS	36
1.	Economics	36
2.	Cost	37
3.	Equity	38
4.	Social/Political	38
a.	Representativeness of the Military	38
b.	Civil-Military Relations: Public Relations and Politics	40
c.	Responsibilities of Citizenship	42
d.	The Military as an Agent of Social Change	42
e.	Military Service and Social Upward Mobility	45

III. PROJECT 100,000: THE PROGRAM	51
A. INTRODUCTION	51
B. BACKGROUND	51
C. PROFILE OF PARTICIPANTS	54
1. Introduction.....	54
2. Aptitude Subcategory.....	54
3. Age	54
4. Race.....	54
5. Education.....	54
6. Geographic Region	55
7. Income Level (where data was available)	55
IV. RESULTS.....	56
A. INTRODUCTION	56
B. PRIMARY RESEARCH QUESTIONS: BENEFITS	56
1. Did the Military Benefit from the Employment of Disadvantaged Youth?	56
a. Department of Defense (1969).....	56
b. Sticht, Armstrong, Hickey, and Caylor (1987).....	59
c. Ramsberger and Means (1987)	61
2. Did the Individual, and Thus Society, Benefit from the Employment of Disadvantaged Youth?.....	63
a. William Beusse (1974)	63
b. Sticht, Armstrong, Hickey, and Caylor (1987).....	65
c. Laurence, Ramsberger, and Gribben (1989)	65

C.	SECONDARY RESEARCH ISSUE QUESTION ONE: WERE THE PROJECT 100,000 EVALUATIONS RELIABLE?.....	72
1.	Statistical Methods Employed	72
2.	Notes on the Individual Research Methods	72
a.	DoD (1969)	72
b.	Sticht, Armstrong, Hickey, and Caylor (1987).....	76
c.	Ramsberger and Means (1987).....	76
d.	Beusse (1974)	77
e.	Laurence, Ramsberger, and Gribben (1989).....	78
D.	SECONDARY RESEARCH ISSUE QUESTION TWO: CONFOUNDING FACTORS	81
1.	Timing of the Program	82
2.	Participant Profile and Aptitude Level.....	83
3.	Military Leaders' Attitudes Toward Project 100,000....	84
4.	Leadership and Motivation.....	85
5.	Accommodation	86
6.	Reenlistments and Test Requirements	88
7.	Definition of Attrition	88
8.	Formal Skills Training vs. OJT and Promotion Rates....	89
9.	Transition to Civilian Life Assistance.....	90
V.	CONCLUSION AND RECOMMENDATIONS	92
A.	CONCLUSION.....	92
1.	Primary Research Questions One and Two: Does the Military, the Individual, or Society Benefit by the Recruitment of Disadvantaged Youth?	92

2.	Secondary Research Issues— Question One: Has Research, Which Measures the Benefits and Detriments of Disadvantaged Youth in the Military, Been Adequate to Draw a Definitive Conclusion Regarding an Accession Policy? Were the Methods Under Sufficient Control to Utilize Any Data as Conclusive Evidence? Were the Methods Flawed in Any Critical Way that Might Provide Misleading Conclusions?	92
3.	Secondary Research Issues— Question Two: Causality: If Research Finds that Recruiting Disadvantaged Youth for Military Service Benefits Neither the Armed Forces Nor the Individual, Can One Conclude that this Negative Result is Due to the Failure of Disadvantaged Youth, or Could it be Due to Other Factors, Such as Insufficient Training? Negative Result is Due to the Failure of Disadvantaged Youth, or Could it be Due to Other Factors, Such as Insufficient Training?	93
B.	RECOMMENDATIONS.....	94
1.	Alternative One	95
a.	Attitude.....	95
b.	Recruitment of Youth Who Are Low-Income as Well as Low-Aptitude	95
c.	Peacetime Program	96
d.	Management Support	97
e.	Leadership/Motivation.....	97
f.	Accommodation Strategies	98
g.	Transition to Civilian Life Assistance	99
h.	Experimental Methods	99

2. Alternative Two.....	100
C. SUMMARY.....	101
LIST OF REFERENCES	103
INITIAL DISTRIBUTION LIST.....	107

I. INTRODUCTION

A. STATEMENT OF THE PROBLEM

The anticipated military force reduction, with increased emphasis on recruiting higher-quality personnel in the 1990s, may severely reduce the opportunity for disadvantaged youth¹ to serve in the military.

B. PURPOSE

The purpose of this study is to evaluate whether manpower procurement policy should stress recruitment of disadvantaged youth for military service, given that the force will be smaller and the demand for quality personnel higher. To aid in the decision-making process, this study reviews and analyzes information regarding the advantages and disadvantages of such a policy and provides a recommendation for action based on the needs of the military services, the individual, and society.

C. TIMELINESS AND RELEVANCE OF THIS STUDY

A broad spectrum of factors is considered when planning any military manpower policy including both military and nonmilitary concerns. So, too, must a decision to enlist disadvantaged youth consider a full spectrum of factors. The greatest pressure to accept low-aptitude recruits comes in times when the supply of higher-aptitude,

¹"Youth," for the purpose of this study, refers to males aged 16-24; "disadvantaged" refers to low achievers, as measured by military aptitude testing, from low-income, "poverty-level" families.

higher-education-level recruits is insufficient to fill manpower requirements (especially in times of war) and when the general recruiting environment is poor (Eitelberg, et al., 1984, pp. 39-41). During a recruiting "boom," as in the mid- and late-1980s environment, the military is able to rely on high-aptitude high-school graduates to fill manpower needs, resulting in a lost opportunity for disadvantaged youth who are under-represented in this category (Laurence, et al., 1985, p. 1). Why should this be of concern to anyone?

A policy of recruiting disadvantaged youth is appealing because it is believed that the nation receives the benefit of "triple duty dollars: the individual finds upward mobility, the military gets needed manpower, and the nation accomplishes a valuable social welfare activity!" (Sticht, 1990, p. 4) Many believe that the military offers a "second chance" for disadvantaged youth who have not had access to adequate schools. (Yarmolinsky, 1971, p. 324) Although difficult to measure, it appears that the military may assist disadvantaged youth, not only through specialized training but more importantly through the influence of the military as a social organization (Yarmolinsky, 1971, p. 325). Therefore, the military is often thought of as one "way out" of poverty for these individuals. Shutting the door on disadvantaged youth may affect not only these individuals but society as a whole.

In the current, highly competitive global marketplace, high productivity of the nation's citizens is essential to its ability to survive economically. Now, with the quality of schools in decline, and with cuts in federal education and training programs, it may be that the military is a key

organization that can provide work experience, discipline, and training to a whole segment of society whose only other alternatives may be welfare, crime, unemployment, or a lifetime of labor in menial jobs. Still, any military manpower policy must have as its primary concern that it enables the armed services to meet their mission of national defense.

Recent worldwide changes affecting U.S. security have led military planners to begin a reassessment of national defense strategy (Cheney, 1990, p. 1). Included in this reassessment will be a new determination of manpower requirements and composition; specific decisions about quality will necessitate a study of the benefits and costs associated with the enlistment of disadvantaged youth. This information will aid the Department of Defense (DoD) in justifying its policies to government officials and the general public, since the threat of "lost opportunity" for disadvantaged youth has already gained media and political attention. This is evidenced by front-page exposure in newspapers such as *The New York Times* (Applebome, 1990), the *Boston Globe* ("Thinning Military Ranks," 1990), the *Chicago Tribune* (Garza, 1990), and *USA Today* (Stone, 1990) as well as television news features such as on the Cable News Network (CNN, 29 April 1990). To illustrate this point, two excerpts are provided below. The first excerpt is from *The New York Times*:

Mr. Powell, a high school graduate who has twice failed the test to qualify for enlistment in the Army, is among the thousands of young people caught in the middle as the military services cut back on personnel and raise standards for admission...

The Army's increasing selectivity is bringing with it a vexing social question: What does the nation lose if the military no longer serves as a channel for upward mobility for those at the bottom of the social ladder, especially members of minority groups?...

"What's happening is not an Army problem but a national one," says Lawrence Korb, former Assistant Secretary of Defense for Manpower, Installations and Logistics... "Throughout our history, the military has furnished upward mobility. Since the early 1970s, blacks have really found a home there. If that diminishes, then the Army doesn't have a problem, but society does."...

The rising standards apply across the board, but they seem to be having the greatest effect in poorer areas...

"I think it's going to become a big issue in the future, because it's tough now, and I'm looking for the scores to go even higher," (says Sgt Jones, station commander in largely black Atlanta). "You already hear parents say, 'I remember during Vietnam you could go in if you scored a 16 on the test and now you have to score a 50?'" [Applebome in *New York Times*, 1990, pp. A1, D12]

The second excerpt is from *USA Today*:

...for thousands (of potential recruits)...the thawing of East-West relations may leave them out in the cold. Defense Secretary Dick Cheney plans to whittle down the 2.1 million-person armed forces in the next four years.

"Appalachia and inner cities in the South that do not have educational opportunities are going to be left out," says Gene LaRocque of the Center for Defense Information...

...As of Jan. 1, no service will accept high school dropouts or those with equivalency diplomas... That could be a mighty blow to many across the southeast...

"It's going to be a hardship," says...an Army recruiter on Knoxville's mostly black east side. For many in that poor area, the military is a crucial escape route from the violent streets...

"The military is one of the best career options here," says Anderson County vocational counselor Wilma Curtis. Without it, many young people "would have to go to odd jobs like trimming trees, hauling wood, selling corn along the roadside."...

"I really worry about the students without enough skills" to make the military grade, she says. (Stone in *USA Today*, 1990)

D. APPROACH

This study is a policy analysis that uses a case study of Project 100,000 (Chapters III and IV) to answer three research questions, stated below in sections E and F. Project 100,000 was a program that supported a policy of recruiting disadvantaged youth. Under Project 100,000, a portion of men who would not qualify for military service under previous aptitude or medical standards were drafted or accepted as volunteers (Helsey, Means, and Laurence, 1985, p. 6). A more detailed description of Project 100,000 is provided in Chapter IV. Five studies of Project 100,000 will be used as the basis for examining the program. These studies include: (1) DoD (1969); (2) Beusse (1974); (3) Sticht, Armstrong, Hickey and Caylor (1987); (4) Ramsberger and Means (1987); and (5) Laurence, Ramsberger, and Gribben (1989). The research questions and issues are described next.

E. PRIMARY RESEARCH QUESTIONS

1. Does the military benefit by the inclusion of disadvantaged youth, based on the measurement of accession goals ("numbers"), military performance, retention, and mobilization practice/experience?
2. Does the individual, and thus society, benefit, based on measures such as reenlistment, or civilian "success" measures (such as employment, educational attainment, income, etc.)?

F. SECONDARY RESEARCH ISSUES

1. Has research that measured the benefits and detriments of disadvantaged youth in the military been adequate to draw a definitive conclusion regarding an accession policy? Were experimental controls sufficient so that the data can be considered conclusive? Were the methods flawed in any critical way that might provide misleading conclusions?

2. If prior research finds that disadvantaged youth do not benefit the military or the individual, can one conclude that this negative result is due to inherent characteristics of disadvantaged youth or the military organization, or to interaction of the two? Could there be other confounding factors that invalidate the results?

G. INFORMATION SOURCES

This study uses current news, government-funded research, professional journals, books written by active and former government officials, and textbooks for historical background. The case analysis focuses on five major studies on Project 100,000 (outlined above). Data from the Defense Manpower Data Center (DMDC) were also used to provide trends in aptitude test scores of recruits and examinees.

II. BACKGROUND AND LITERATURE REVIEW

A. INTRODUCTION

This chapter reviews some of the many issues that must be considered when making military manpower policy decisions. Because this analysis is targeted specifically toward a policy of recruiting disadvantaged youth, relevant background information helps set the stage for the examination of Project 100,000 in Chapters III and IV. This information includes: how the military defines and measures personnel quality, historical trends in recruit quality, and a brief history of disadvantaged youth in the military. In addition, a literature review on the subject of force quality is presented to provide a brief look at "both sides" of the quality issue and to explain the current trend toward a higher-quality force.

Manpower policy is complex and controversial, mainly due to the many factors that need to be taken into account—military effectiveness is one factor, but a number of economic, social, political, and equity considerations also must be evaluated (Cooper, in Scowcroft, 1982, p. 155). It is helpful to group these factors into two basic categories: military (or national security) and nonmilitary concerns (such as cost, equity, and social/political considerations) (Cooper, in Scowcroft, 1982, p. 155).

B. MILITARY MANPOWER ISSUES: MILITARY (NATIONAL SECURITY) CONCERNS

1. Department of Defense (DoD) Mission

According to the DoD mission statement, "The Department of Defense (DoD) exists to secure the nation's survival and independence against hostile powers that threaten our way of life." (Laurence, et al., 1989, p. 1) To prepare for this mission, strategy is developed that encompasses threat and policy.

2. Manning the Force

Force objectives are developed to provide ships, aircraft, weapon systems, manpower, and support over a period of time with due consideration of the total cost to the nation. Funds are budgeted to obtain the forces and weapon systems within the limits provided by Congress. This is accomplished through the Planning, Programming, and Budgeting System (PPBS) (Navy Education and Training Command, 1981, pp. 4-5) Every year, DoD issues a statement of manpower requirements that result from the assessment of the roles and missions of the services under a variety of wartime scenarios, at one extreme, as well as an assessment of the workload associated with specific tasks (e.g., firing a tank) at the other (White and Hosek, in Scowcroft, 1982, p. 51). The planning process mixes the top-down and bottom-up approaches (White and Hosek, in Scowcroft, 1982, p. 51). The "top-down" approach is essentially captured in PPBS. The "bottom-up" approach comes from each of the four services; they conduct detailed analyses on the best way to man and equip a tank unit, an infantry battalion, a ship, or an air squadron (White and Hosek, in Scowcroft, 1982, p. 52). As a result, the

manpower requirements are a mix of considerations, some based on subjective evaluations of how to deal with uncertain situations and others based on detailed, quantitative "manpower engineering" techniques (White and Hosek, in Scowcroft, 1982, p. 51).

3. The Military Force and Quality

a. Defining and Measuring Quality

Manpower planners face a difficult task when dealing with the issue of quality. A former Assistant Secretary of Defense for Manpower Reserve Affairs and Logistics states, "It is no easy proposition to articulate what [quality] we truly want, what we can make do with, and what differences between the two mean in operational terms." (Pirie, in American Enterprise Institute, 1980, p. 11) The bottom line in the quality issue is individual performance, yet how can one quantify the relationship between quality and performance, especially when there are so many non-measurable factors involved? Even more basic, how can one measure or define quality? Hunter, a former director of Manpower Program Analysis in the Office of the Secretary of Defense, and Nelson, a former Deputy Assistant Secretary of Defense for Requirements, Resources and Analysis, describe this dilemma as follows:

Quality is difficult to define and measure when dealing with any group of people, and it is no easier with military personnel. Honesty, integrity, morality, commitment, and loyalty are all terms that would be associated with quality. Moreover, training and leadership, which are supplied by the service and not the individual, are usually thought to be critical determinants of the efficiency and dedication with which individuals perform. The ultimate test of quality for military personnel is their success in combat. In times of peace, measurements of readiness substitutes for this "ultimate test", but readiness is difficult to measure. Current manpower readiness

reporting is not very useful as a test of quality. (Hunter and Nelson, in Scowcroft, 1982, p. 111)

Since readiness measurement is "not very useful," the following discussion of recruit quality is focused on attributes that are measurable.

As with any employer, the military has a set of entrance standards for potential recruits. The daily briefing at each Military Entrance Processing Station (MEPS) explains to military applicants the purpose of their visit to the MEPS; in order to enlist they must be screened to make sure they are mentally, physically, and morally qualified.

b. The Importance of Aptitude and Education

Although these entrance standards are described in three broad categories—mental, physical, and moral—"recruit quality" is generally indexed on the basis of the first criterion. "Mental" is really a measure of aptitude and education, not a measure of intelligence, as the term might suggest (Laurence, et al., 1989, p. 2; also see Eitelberg, et al., 1984, pp. 19-20). Extensive research has shown that recruit aptitude levels are strongly correlated with success in military training and job performance (Laurence, et al., 1989, p. 2). Education, specifically evidenced in the high-school diploma, has been shown by numerous studies to be the single best predictor of a person's potential for adapting to military life. Specifically, people who fail to complete high school are twice as likely as high-school graduates to leave the military before finishing a first term of enlistment (Eitelberg, et al., 1984, p. 21). Non-high-school graduates are not automatically disqualified, but they do have to meet higher aptitude standards and there is a ceiling placed on their

enlistment by Congress (Laurence, et al., 1989, p. 2). These two measures—education and aptitude—serve to describe an individual's potential, rather than actual capability or readiness (Hunter, et al., in Scowcroft, 1982, p. 111).

c. *Measuring Aptitude: The Armed Forces Qualification Test (AFQT)*

The American military is a pioneer in the field of aptitude testing, developing the first large-scale testing program during World War I (Eitelberg, 1988, p. 20). The Army Alpha (a verbal test) and Army Beta (a non-verbal test for non-English-speaking, illiterate, or unschooled draftees) were used to gauge the ability of new entrants and assign them to jobs (Eitelberg, 1988, p. 20). In World War II, the Army General Classification Test (AGCT), which is described as a test of "general learning ability," largely replaced the tests of World War I (Eitelberg, 1988, p. 22). Since 1950, potential recruits have been screened on the basis of the Armed Forces Qualification Test (AFQT) (Eitelberg, 1988, p. 23). Each service had its own conversion tables from its own test battery to determine AFQT until DoD required that all services use a single test battery both for screening enlistees and for assigning them to occupations (Eitelberg, et al., 1984, p. 17). The Armed Services Vocational Aptitude Battery (ASVAB) was chosen for this purpose and was put in use on January 1, 1976 (Eitelberg, et al., 1984, p. 17).

The AFQT consists of verbal and mathematical subtests from the ASVAB (Laurence, et al., 1989, p. 3). AFQT scores are converted into percentiles and are statistically related to the aptitude score

distribution of the general population of youth tested under the "Profile of American Youth" in 1980 (Eitelberg, 1988, pp. 100-101). The percentile scores are divided into five categories, two of which (III and IV) are further subdivided, as follows:

AFQT Category	Percentile Range
I	93-99
II	65-92
III A	50-64
III B	31-49
IV A	21-30
IV B	16-20
IV C	10-15
V	1-9

Source: Heisey, et al., *Military Performance of Low Aptitude Recruits: Project 100,000 and the ASVAB Misnorming*, Human Resources Research Organization, 1985.

d. Setting Minimum Aptitude (AFQT) Standards

Individuals scoring in AFQT Categories I through IIIA, representing the upper 50th percentile (or "above average" range), are the most highly demanded by the services (Laurence, et al., 1989, p. 3; also see Hunter and Nelson, in Scowcroft, 1982, pp. 113-114). Category IV individuals are enlisted when needed, but there is a Congressionally mandated ceiling on the total number allowed during any given year (Yarmolinsky, 1983, p. 77; also see Eitelberg, 1984, p. 22). For example, in Fiscal Year (FY) 1981, Congress, in the year's Defense Appropriation Authorization, limited total DoD CAT IV accessions to 25 percent of the total enlisted accessions (and the Army could recruit no less than 65 percent high-school diploma graduates) (Hunter and Nelson, in

Scowcroft, 1982, p. 116). For FY 1982, no service could recruit more than 25 percent CAT IVs, and by FY 1983 no more than 20 percent (Hunter and Nelson, in Scowcroft, 1982, p. 116). Category V individuals are ineligible to enlist by law (Laurence, et al., 1989, p. 3).

What the services want is one thing, and what they are able to get from the civilian population is another. Although the services prefer the manpower pool of Categories I-III A, the ability to meet recruiting goals depends on several external factors, such as the available labor market, the political climate (especially as it relates to attitudes toward defense), current economic conditions (especially unemployment figures), and internal factors, such as required endstrength, military compensation packages, recruiting budgets, and other means to attract high-quality personnel (Eitelberg, et al., 1984, p. 22). The point is, the changing total environment (external and internal) leads to changes in the demand for certain types of recruits and, therefore, changing entrance requirements for military manpower.

As stated by Eitelberg, "The history of the American military demonstrates that standards for acceptance are flexible gates that open and close in reaction to the shifting needs of national defense and manpower recruitment." (Eitelberg, 1990, p. 2) Each year, the services set their minimum education and aptitude standards (within the range allowed by Congress) for determining applicant eligibility, and these limits can be adjusted at any time to respond to changes in the retention and the recruiting market (Eitelberg, et al., 1984, pp. 21-22). For example, in the 1980s, the recruiting market was very favorable; in fiscal

1988 only five percent of accessions were in the Category IV range and only seven percent were non-high-school graduates (Laurence, et al., 1989, pp. 3-4). However, times are not always favorable to recruiting, and there have been periods when "CAT IVs," as they are now called, were needed to meet the military's manpower requirements (Eitelberg, et al., 1984, pp. 24-28; also see Eitelberg, 1990, p. 5).

4. Historical Trends

Because the AFQT has been used to screen military recruits since the early 1950s, it is possible to compare and evaluate the test scores of individuals over time and to establish trends (Eitelberg, et al., 1984, p. 31). Military psychologists use the AFQT to study qualitative trends in military recruiting, despite the fact that the tests used to measure AFQT have changed several times over the years (Eitelberg, et al., 1984, p. 31). Nevertheless, the most recent norming of the AFQT created a score distribution that is not too dissimilar from the score distribution used during the 30-year period since the introduction of the test, and all scores are approximately representative of their relative position within the population distribution of the time. It is thus possible to discuss aptitude trends over the past 40 years during which the AFQT was used (Eitelberg, 1988, pp. 101-105).

AFQT scores have changed over the years. In Table 1, the percentage of male examinees who achieved an AFQT percentile score of 50 or better is displayed for each year from 1964 to 1990 by service. An "examinee" is a person who has been tested for military service:

TABLE 1

**PERCENT OF MALE EXAMINEES WHO ACHIEVED AFQT
PERCENTILE SCORES OF 50 OR HIGHER (CATEGORIES I-III A)
FOR ALL SERVICES COMBINED, FY 1964-JUNE 1990**

Percent who Scored AFQT 50 or Higher¹

Fiscal Year Total DoD

1964	41.9
1965	43.7
1966	48.2
1967	49.6
1968	47.8
1969	44.6
1970	51.0
1971	50.0
1972	49.7

All-Volunteer Force Transition²

1973	51.8
1974	45.1
1975	41.7
1976	36.4
1977	34.8
1978	37.4
1979	34.7
1980	37.2
1981	38.1
1982	43.3
1983	50.1
1984	45.8
1985	48.5
1986	52.4
1987	54.8
1988	53.8
1989	50.9
1990 ³	55.7

Sources: Data for Years 1964-1983 are from Eitelberg, et al., *Screening for Service*, p. 33. Data for years 1984-1990 were provided by the Defense Manpower Data Center.

¹Percentages are according to the Armed Service that tested the examinee. Examinees include only males without prior military service who were tested for the purpose of enlistment or induction.

²The official end of the draft occurred on 30 June 1973. The drawdown began in July 1972, with the last draft call issued in December 1972.

³1990 includes 1 October 1989 through 30 June 1990.

physically, morally, and "mentally" (aptitude and education level) (Eitelberg, et al., 1984, p. 31). An examinee may or may not be found qualified for service, and even if qualified, does not necessarily enlist; therefore, examinees are not necessarily accessions (Eitelberg, et al., 1984, p. 31). The AFQT percentile score of 50 (the median of the reference population) is often used as the dividing line of aptitude quality by the services (Eitelberg, et al., 1984, p. 32). For administrative and reporting purposes, the military services also divide AFQT Category III into two parts: AFQT Category IIIA (percentile scores from 50 to 64) and AFQT Category IIIB (percentile scores from 31 to 49) (Eitelberg, et al., 1984, p. 32). In this way, those who score in AFQT Categories I-IIIA (especially high-school graduates) can be viewed as the "top half" of the population which is considered to be the "high quality" group (Eitelberg, et al., 1984, p. 32).

a. Male Examinees

Table 1 shows that the annual percentage of male examinees scoring in the upper half of the distribution is generally increasing, with the highest percentage in the first six months of 1990. Comparing the Vietnam-era draft years to the All-Volunteer Force (AVF) years, it can be seen from Table 1 that during the Vietnam draft era, the percentiles ranged from 41.9 to 51.0. After the Vietnam-era draft, the percentage who had an AFQT score of 50 or higher gradually declined to under 40 percent (years 1973-1981), but as the AVF policy matured in the 1980s, the percentage increased to over 50 percent.

b. Male Recruits

Table 2 displays the percent distribution of male recruits (all services combined) by AFQT Category for each year from 1952 to 30 June 1990 by all services combined. The recent trend toward higher-quality recruits is evident by the dramatic decline in the category IV column. Also worth noting is the "dip" in quality during 1984-1985, which may mirror the declining civilian unemployment at the time (Warner, 1990, p. 52). At the same time, the decline in high-quality enlistments in 1988 may reflect a tightening civilian labor market (Warner, 1990, p. 52).

Figure 1 is a graphic depiction of the percent of male recruits in AFQT Categories I-IV from 1964 to 1990. Relevant world events, specifically the Korean conflict in the early 1950s and the Vietnam conflict and Project 100,000 in the late 1960s, are responsible for the increased Category IV recruitment shown during those periods. The ASVAB misnorming (described below) creates the increased Category IV recruitment during the late 1970s.

c. Brief History of CAT IVs in the Military

Although not the first choice of the military, CAT IVs are accepted into service when manpower requirements make it necessary. As expected, in times of war or "conflict," the demand for CAT IVs is the highest (Eitelberg, 1990, p. 7). "The enlistment practices regarding individuals in Category IV suggest that unless these men were needed because of a supply shortage, the services have preferred to exclude them." (Ramsberger and Means, 1987, p. 5) In the First World War, the

TABLE 2

**PERCENT DISTRIBUTION OF MALE RECRUITS (ALL SERVICES
COMBINED) BY AFQT CATEGORY, FY 1952-JUNE 1990**

Percent Distribution of Male Recruits¹

Fiscal Year	Category I	Category II	Category III	Category IV	Total²
1952	6.4	22.0	32.3	39.2	100.0
1953	7.2	24.1	31.5	37.2	100.0
1954	8.2	25.3	36.9	29.6	100.0
1955	7.8	25.3	38.1	28.8	100.0
1956	7.1	25.9	40.2	26.8	100.0
1957	7.8	25.2	42.8	24.2	100.0
1958	8.7	26.2	47.1	18.0	100.0
1959	9.1	27.8	47.7	15.4	100.0
1960	8.2	26.9	51.3	13.6	100.0
1961	6.1	31.3	49.7	12.9	100.0
1962	6.2	31.8	45.7	16.3	100.0
1963	6.0	32.5	47.8	13.7	100.0
1964	6.3	32.1	47.1	14.5	100.0
1965	5.5	31.3	48.8	14.4	100.0
1966	6.4	33.5	43.5	16.6	100.0
1967	6.6	33.1	38.7	21.6	100.0
1968	6.0	31.8	37.6	24.6	100.0
1969	6.2	31.7	37.7	24.4	100.0
1970	5.3	30.5	41.0	23.2	100.0
1971	5.1	30.0	43.1	21.8	100.0
1972	4.2	30.2	48.1	17.5	100.0
All-Volunteer Force Transition³					
1973	3.7	30.1	52.1	14.2	100.0
1974	3.0	32.3	54.5	10.2	100.0
1975	3.5	34.0	56.3	6.1	100.0
1976	3.9	33.9	51.7	10.5	100.0
1977	4.3	28.2	39.6	27.9	100.0
1978	3.6	27.3	42.1	27.0	100.0
1979	3.0	23.6	41.8	31.6	100.0
1980	2.8	23.8	41.6	31.8	100.0

(continued on next page)

TABLE 2 (continued)

**PERCENT DISTRIBUTION OF MALE RECRUITS (ALL SERVICES
COMBINED) BY AFQT CATEGORY, FY 1952-JUNE 1990**

Percent Distribution of Male Recruits¹

Fiscal Year	Category I	Category II	Category III	Category IV	Total²
1982	3.1	33.4	49.4	14.1	100.0
1983	3.7	36.7	50.1	9.5	100.0
1984	5.9	30.9	52.7	10.5	100.0
1985	4.9	32.7	54.4	8.0	100.0
1986	3.9	33.9	57.3	4.9	100.0
1987	4.8	36.2	54.6	4.4	100.0
1988	4.7	36.8	54.1	4.4	100.0
1989	4.3	35.4	54.0	6.3	100.0
1990 ⁴	4.5	36.3	56.2	3.0	100.0

Sources: Data for years 1952-1983 are from Eitelberg, et al., *Screening for Service*, p. 40. Data for years 1984-1990 were provided by the Defense Manpower Data Center.

¹Male recruits include individuals without prior military service who were inducted or enlisted and entered active duty (all services combined) during the indicated fiscal year.

²Row totals may not equal 100 due to rounding.

³The official end of the draft occurred on 30 June 1973. The drawdown began in 1972, with the last draft call issued in December 1972.

⁴1990 includes 1 October 1989 through 30 June 1990.

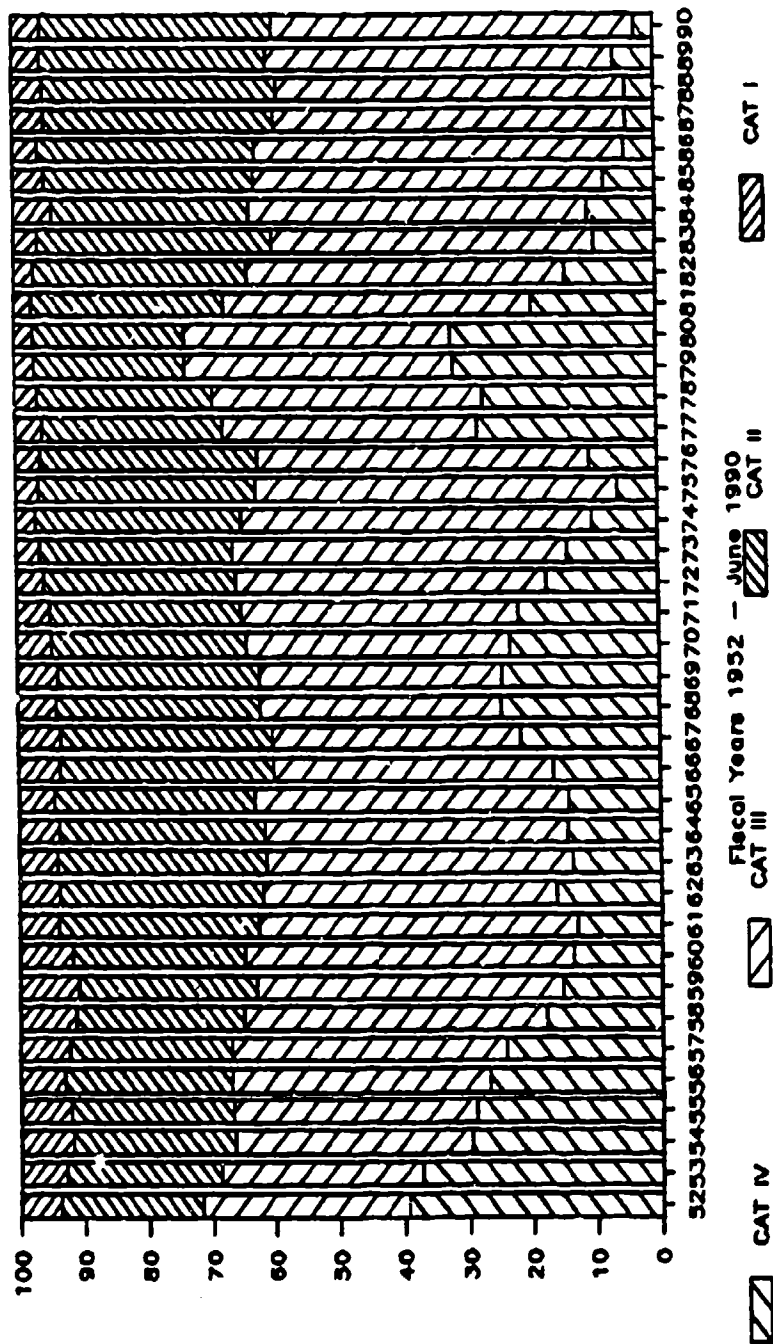


**Figure 1. Percent Distribution Male Recruits
(by AFQT Category, All Services)**

Army established Development Battalions to train and assimilate men who had physical, mental, or moral limitations that were considered to be remediable (Eitelberg, 1990, p. 7). In World War II, aptitude restrictions were lowered, which allowed about 10 percent induction of illiterates (Eitelberg, 1990, p. 7). Of note, the Army enlisted more than 300,000 illiterate or semilliterate men, 85 percent of whom graduated from special training programs for assimilation in Army units (Eitelberg, 1990, p. 7). The AFQT minimum percentile scores were again reduced for the Korean Conflict, providing entrance for Category IV individuals (Eitelberg, 1984, p. 25). The trend for the period between Korea and Vietnam was to gradually raise the caliber of new recruits by reducing the percentage of CAT IVs the services were required to take (Eitelberg, 1984, p. 25). As the Cold War intensified in the early 1960s, expansion of the military was again sought, resulting in a slight lowering of standards (Eitelberg, 1984, p. 26). During the Vietnam conflict, aptitude and education standards were lowered four times, and all services except the Air Force loosened their formal requirements for volunteers (Eitelberg, 1984, p. 26). A significant event during this period was the establishment of Project 100,000, a program to induct substantial numbers of marginally literate men into active military duty (covered in detail in Chapters III and IV). Many low-aptitude recruits were admitted to the military between January 1976 and September 1980 as a result of the "ASVAB Misnorming" (Laurence, et al., 1989, p. 7). The timing of this incident was unusual because it did not occur during war or conflict, as one would expect, but rather during peacetime. However, the ASVAB

misnorming was not planned; it was "an unintended by-product of a miscalibration of the ASVAB," described below (Laurence, et al., 1989, p. 7).

Updated forms of the ASVAB were developed for DoD-wide use in 1976, but there were flaws in the method of determining appropriate percentile scores from the norming population. These flaws went undetected (Laurence, et al., 1989, p. 8). One result of these errors was that scores in the lower ability range were inflated; therefore, many recruits who were thought to be of average aptitude were actually below average or Category IVs (Laurence, et al., 1989, p. 8). If these errors had not been made, many of these individuals would not have qualified for enlistment and therefore were subsequently designated as "Potentially Ineligibles" (Laurence, et al., 1989, p. 8). By the time the errors were found, verified, and corrected, almost 360,000 "Potentially Ineligibles" had enlisted in the military (Eitelberg, 1988, p. 173).

5. The Debate About the Need for High-Quality Enlistees

Manning the force is not just a question of recruiting a required number of people. Military personnel must be capable of succeeding in the tasks the armed forces perform to achieve their missions. Other things being equal, the military should prefer to recruit those who demonstrate the knowledge and propensity for learning essential skills (Horne, 1987, p. 443). The question is, although the AFQT score accurately predicts military performance in theory, is it an accurate predictor in practice (Horne, 1987, p. 443)?

The Assistant Secretary of Defense (Manpower, Reserve Affairs, and Logistics) directed the Military Services to establish a research and

development program to link enlistment standards to job performance (DoD, 1990, p. iii). The Joint-Service Job Performance Measurement (JPM)/Enlistment Standards Project, as of January 1990, concluded that the services have developed reliable measures of job performance and that the AFQT is a valid predictor of first-term job performance. However, this is not the final word, because this research effort is in its infancy. Further linkage-modeling will be completed in 1992 (DoD, 1990, pp. 4-1-4-2). In the modern age of technology, are Category IV personnel able to perform successfully? As already shown, the current trend in recruiting is toward more high-quality personnel. Why is there a recent trend toward higher quality?

As weapons become more sophisticated, the aptitudes of weapon operators become an object of great concern to military planners (Yarmolinsky, 1983, p. 73). It appears that technological advances in the armed forces have produced many military systems that are complex, unreliable, and difficult to maintain (Binkin, 1986, p. 53). If this is true, the the military's need for highly skilled specialists and technicians to operate and maintain these systems is bound to increase (Binkin, 1986, p. 53). However, there is no consensus of opinion on this point. Another view is that emerging technologies will result in more reliable systems that are easier to maintain, thus requiring a reduction in the number and skill levels of personnel. These issues are discussed below.

Prior to 1983, one Army study demonstrated that more than one-fifth of the tank gunners serving in Germany (and more than 25 percent in the United States) in the late 1970s did not understand the

procedure for aiming their battlesights (Yarmolinsky, 1983, p. 73). Soldiers in Categories III and IV often have difficulty understanding instruction manuals and, as the study points out, are therefore unable to operate sophisticated components of the Army's air defense systems or even some basic individual weapons (such as the Redeye or Stinger missile) (Yarmolinsky, 1983, p. 73). Soldiers were often not able to recall the firing sequence for the Redeye, nor were they able to differentiate between friendly and enemy aircraft (Yarmolinsky, 1983, p. 73). These results were found despite the fact that a "high percentage" of Redeye crews were from Category III rather than Category IV (Yarmolinsky, 1983, p. 73).

The Stinger, which replaced the Redeye, has a better infrared guidance system, matching airframe and propulsion improvements, and the addition of an identification-friend-or-foe (IFF) system (Binkin, 1986, pp. 65-66). These improvements, however, added to the weapon's complexity. A senior Army officer explained:

The gunner has to complete an 18-step sequence, some of which is quite complex, and he must make many crucial decisions along the way. First, he has to decide whether or not the aircraft is hostile, then he has to run through a complicated set of inbound and outbound range rings to determine the correct distance, and remember the sequence order. We worried that under the pressures of combat, he would forget some and miss. (Binkin, 1986, p. 66)

An Army study in 1983 found that operators who scored above the 50th percentile on the AFQT met desired performance levels in about 50 percent of the test scenarios; those who scored below the 50th percentile met desired performance levels in none of the scenarios (Binkin, 1986, p. 67).

A more recent study by Scribner, Smith, Baldwin, and Phillips (1986), "Are Smarter Tankers Better?, AFQT and Military Productivity," reported similar findings. Based on M-1 and M-60 tank firing scores linked to characteristics of individual crew members, it was found that tanks with "smarter" (higher AFQT percentile categories) gunners and tank commanders performed substantially better (Scribner, et al., 1986, p. 201). Of note, the newer M-1 tank, which has greatly improved the ability of crews to hit the target, acted as a partial equalizer for low-aptitude crews; however, since the M-1 may be damaged in battle, degrading its fighting capability, this result should be viewed with caution (Scribner, et al., 1986, pp. 201-202).

A study by David K. Horne (1987), entitled "The Impact of Soldier Quality On Army Performance," obtained results consistent with Scribner, Smith, Baldwin, and Phillips. His primary interest was the relationship between AFQT scores and performance measures (Horne, 1987, p. 443). Two performance measures were evaluated: the first source was composed of scores on various tests from the Army's training schools, and the second source was the Skill Qualifications Test (SQT). Horne concluded:

...that AFQT—a measure of trainability—is a significant predictor of performance in the Army. Although the performance and skill measures used in this study are not perfect, the consistency of the relationship across types of performance measures and across MOS's [Military Occupational Specialties] is impressive...

The results also suggest that the Army may be able to use the differential impact of AFQT scores across occupational specialties for allocating manpower. Other factors constant, high-AFQT soldiers are more efficiently allocated to those MOS's where AFQT score has a greater impact on performance. Both the SQT and training data

illustrate variations in the impact of AFQT score across MOS's. Manpower allocation also depends on the critical nature of the specialty. In some MOS's, for example, even small increases in performance may be cost effective. However, in many situations, manpower allocation might be carried out utilizing the contribution of AFQT score to performance. (Horne, 1973, p. 455)

Not everyone would agree with the need for a high-quality force in the face of sophisticated technology. Roger W. Little, for example, notes the following:

One...assumption is that more rigid entry standards are necessary in order to satisfy the higher technological requirements of modern military organization. However, the assumption of the necessity for increased aptitudes for technical skills does not apply to all positions in the armed forces or even to a major fraction of them. It is plausible to assume that the requirements for training wheeled-vehicle mechanics, military police, medical aid men, and clerks, as well as basic infantry men and seamen, have not changed as markedly as for the often mentioned but less frequently trained electronics technicians. More complex technology does not involve a corresponding increase in more highly trained personnel. Trends in industry suggest that job titles are often upgraded while the actual skill levels are reduced. This also occurs in the military organization because the operator skills are increasingly built into the design of complex weaponry. Requirements for operator skills are thus transferred to the repair and maintenance level. Even there, however, the designed complexity of weaponry is such that a defective component is more efficiently replaced than repaired, thus actually permitting a reduced skill. (Little, 1969, pp. 193-194)

Juri Toomepuu provides further insight into the quality issue. He used M-1 vs. M-60 tank performance studies to point out that the technological advances of systems, such as the M-1, have not resulted in a net decrease in the complexity of the total tank system or in the increasingly greater need for highly trainable personnel. In fact, though making the tank easier to operate, the advanced technology has greatly increased the size and cost of its associated logistics and support

requirements. This argument of course is not limited to the M-1 tank but applies to many modern weapons systems. (Toomepuu, 1985, p. 9)

Toomepuu's concern is that advanced technology and higher performance do not necessarily translate into improved combat effectiveness (Toomepuu, 1985, p. 9). The distinction between effectiveness and performance is that the first term refers to the impact of a weapon on the outcome of the battle, whereas the latter term describes the degree of accomplishment of a particular capability of a system, such as rate of fire, speed of movement, etc. (Toomepuu, 1985, p. 9).

"The Army 21 project," which attempts to visualize the Army and its hardware and personnel requirements 20 years from now, concludes that the soldier of the future must be able to make rapid, independent decisions, be more highly educated, have an expert level of technological understanding, and be multi-capable—besides being a fighter (Toomepuu, 1985, p. 11). One obstacle in justifying the high cost of high-quality personnel is that there is an emphasis on hardware spending over programs that provide the needed manpower quality. Toomepuu feels this oversight is due to a lack of integration of human factors into weapons systems research and development as well as into weapons effectiveness measures, combat models, and PPBS (Toomepuu, 1985, p. 9).

The above discussions center on the use of "high-tech" weaponry and equipment. What about low-skill occupations? Can CAT IVs be used effectively in certain jobs? Ramsberger and Means (1987) studied the performance of low-aptitude recruits using data from the ASVAB

Misnorming Period (described above). Some results of this study are relevant here. For example, researchers found that the performance of low-aptitude personnel (Category IV) was not significantly different from that of the lowest fully qualified personnel at the time (Ramsberger and Means, 1987, p. 95). The attrition of CAT IVs was very similar to that of the control group, but there were major differences between high-school and non-high-school graduates: The non-high-school graduates who were admitted under the misnorming had higher attrition rates and lower promotion and eligibility rates (Ramsberger and Means, 1987, p. 95).

Concerning aptitude and job complexity, Ramsberger and Means reported "The hypothesis was that individuals with lower aptitude and educational qualifications would perform just as well as others when their job demands did not exceed their capabilities." Therefore, it was expected that the low-aptitude individuals would perform well in low-complexity occupations but would perform less well in more-complex jobs (Ramsberger and Means, 1987, p. 98). The hypothesis was not supported; performance (as measured by attrition, promotion, and reenlistment eligibility rates) was better in medium-complexity occupations than in low-complexity jobs. Usually, the high-complexity occupations showed lower rates of attrition, and personnel in these jobs were promoted and judged reenlistment-eligible at higher rates than their peers in lower-complexity jobs (Ramsberger and Means, 1987, p. 98). There were indications that low-aptitude individuals were at a disadvantage in more-complex occupations; however, overall, the findings argued for considering job-related motivational factors to be more important than aptitude

level in determining performance (Ramsberger and Means, 1987, p. 100). This point is discussed further in Chapters IV and V.

Ramsberger and Means conclude that a modest reduction in a service's aptitude requirement would not significantly affect performance levels as measured by attrition, promotion, and reenlistment rates. The conditions under which this is done (war vs. peacetime), however, may affect the outcome (Ramsberger and Means, 1987, p. 100).

6. Are There Methods to Improve the Performance of Low-Aptitude Individuals?

In *Cast-Off Youth*, Sticht, et al. describe four strategies that the military has used to cope with the strain on the training system caused by mobilization and enlistment of low-aptitude recruits. These "accommodation strategies" are methods to help "set up" low-aptitude personnel to be able to perform their duties. They follow the "principle of least effort" and are described below, in the order of least to most difficult to implement. (Sticht, et al., 1987, p. 86)

a. Limited Assignment

The point of this strategy is that low-aptitude personnel are assigned a limited set of jobs, thought to match their general or special aptitudes. These jobs may require limited or no technical training, so that recruits can often enter them directly after basic training. (Sticht, et al., 1987, p. 87)

Although it seems logical that placing low-aptitude personnel in low- skill-level jobs is a way to increase their chances of success in performance, this approach does not necessarily work. Another

implication from the study by Ramsberger and Means (1987) on the ASVAB Misnorming episode was that channeling low-aptitude personnel into the low-skilled jobs does not circumvent training and performance problems. This is not because these individuals are not capable of performing these jobs but rather because they are viewed as low status, dead-end jobs. (Ramsberger and Means, 1987, p. 101)

b. *Extra Help and Time*

Individuals, including low-aptitude recruits assigned to a technical training program, often receive extra help from instructors and other students. Low-aptitude trainees may also receive extra time to complete a course, or they may be recycled through part or all of the course after they complete it. (Sticht, et al., 1987, p. 88)

c. *Revision of Training Courses*

Courses can be rewritten to make them more understandable ("learnable"). Some methods include developing a learning system that uses what the individual already knows as a basis for other training, identifying precise requirements of the course and jobs, and concentrating on the portion which is the most difficult for Category IVs. Other techniques include integrating literacy training into the skill training or for off-duty hours, relating learning situations and materials directly to the military, and developing specific course terminal objectives that are job-relevant. (Sticht, et al., 1987, p. 88)

d. Special Training Units

Remedial literacy training is provided in Special Training units; low-aptitude individuals would be removed from the mainstream of military training for literacy training. (Sticht, et al., 1987, p. 88)

Two examples of this type of assistance are Functional Applied Skills Training (FAST) and Job-Oriented Basic Skills (JOBS), two remedial training programs currently provided by the U.S. Navy. One program is designed for general literacy, to help in boot camp completion, while the second program is designed to help low-aptitude recruits qualify for "A" schools and thus have the opportunity to serve in more technical ratings. A description and a report on their effectiveness follow:

(1) FAST. FAST was developed to help those identified with reading deficiencies in completing the academic challenges of boot camp. This goal has been achieved; there has been a 100 percent boot camp graduation rate among FAST-educated recruits over the past five years (Spendley, 1990, p. 5). Furthermore, recent research conducted by Spendley found that FAST-educated Category IIIB and IVA sailors significantly increased their probability of advancing to E-4 within the first three years of enlistment, compared to the rate of advancement of non-FAST-educated Category III and IVs (Spendley, 1990, p. iii).

(2) JOBS. The JOBS program is for those whose ASVAB scores are below the minimum required for entry into selected Navy Class "A" technical schools. These courses were designed to increase the individual's skill and knowledge level needed as a prerequisite for success in "A" Schools (Baker and Hamovitch, 1983, Report Documentation Page). A

study by Baker and Hamovitch compared personnel who were sent to JOBS training, some on the direct track (immediately after recruit training) and some in the delayed track (after apprenticeship training and time spent in the fleet) to the following respective control groups: (1) individuals who were JOBS eligible, but did not attend, (2) "A" school qualified students who attended "A" school at the same time as the JOBS students who were direct track ("A" school after recruit training), and (3) "A" school-qualified students who attended "A" school at the same time as the JOBS students delayed track. Baker and Hamovitch list the following findings:

1. Demographic data collected showed that JOBS included twice as many minority groups as did the "A" school groups.
2. The mean AFQT score of the "A" school-qualified group was approximately 29 points higher than that of the JOBS group, although approximately 20 percent more of the JOBS group received high school diplomas.
3. Of the 1,551 JOBS-qualified students who have attended JOBS school, 1,493 (96%) have graduated and 58 (4%) have attrited. The majority of attrites were for disciplinary reasons.
4. The JOBS delayed-track group had a significantly higher number of attrites from JOBS school than did the JOBS direct-track group.
5. Of the 1,493 JOBS graduates, "A" school data are available for 1,256. Of these, 996 (79%) have graduated and 260 (21%) have attrited. Comparable figures for the "A" school comparison group are 90 and 10 percent.
6. On six of the seven job performance criteria (all but the military bearing and conduct criterion), the "A" school group received slightly higher mean ratings than did the JOBS group.
7. Thirty-three months after the JOBS and "A" school comparison group had graduated from "A" school, the "A" school group had over twice as many fleet discharges as did the JOBS group, thus

reducing the total loss rate between the two groups to only 3 percent. (Baker and Hamovitch, 1983, pp. vii-viii)

This study suggests that Category IV personnel may be able to attend "A" school and succeed in technical ratings if they are given extra training (such as JOBS). This can provide increased flexibility in the assignment of such personnel and in their chances for upward mobility. A cost benefit analysis should be conducted to assess the feasibility of such a program.

e. Leadership and Motivation

Since the performance of low-aptitude men is a key issue in this analysis, it is important to discuss leadership and motivation, which play a major role in performance. It has already been pointed out that the low-aptitude men placed in low-skill occupations during the ASVAB Misnorming probably did not perform to their potential due to a lack of motivation (Ramsberger and Means, 1987, p. 101). This is very important for leaders to understand, because leaders must channel people's motivation in order to achieve the organization's mission (Stoner and Freeman, 1989, p. 452). There are several theories of motivation, two of which are relevant to this analysis and will be briefly described below.

Expectancy theory, with roots in industrial/organizational psychology, has been the prominent motivation theory in that field in recent years (Muchinsky, 1989, p. 463). The expectancy model bases motivation, performance, and satisfaction on what the individual expects from the proposed performance, how much effort the individual expects the proposed performance will require, and the valence, or value, the

anticipated rewards have for the individual (Stoner and Freeman, 1989, p. 452). According to expectancy theory:

Each person is assumed to be a rational decision maker who will expend effort on activities that lead to desired rewards. Individuals are thought to know what they want from work and understand that their performance will determine whether they get the rewards they desire. (Muchinsky, 1989, p. 463)

Equity theory includes the effects of peers on an individual, implying that an individual's motivation, performance, and satisfaction depend on the individual's comparison of his or her contributions and rewards with those of others in similar situations. (Stoner and Freeman, 1989, pp. 452-453)

The military is perceived by many as an expert organization in the role of leadership, so it appears that a criticism of its leadership methods would not apply. However, it may be that the system of rewards in the military is geared toward high-quality personnel. For example, they qualify for more exciting jobs that they can associate with the service's mission, they often receive reenlistment bonuses, and they may be shown a special respect and recognition for their technical expertise so they feel like they are an "important part of the team." Even high-quality personnel who serve in low-skill occupations could be at an advantage because they may view this as a temporary means to an end (such as a short-term enlistment in exchange for a service-sponsored college fund, or for a chance to travel or achieve another personal goal). Low-aptitude personnel, on the other hand, may not be told that their jobs, even though unglamorous, are still important. As described in the equity theory, they see how other personnel (high quality) are treated with better

rewards by the system. It could be that the only time they get attention, or are noticed, is when they are in trouble, whereas the others are noticed and recognized for the positive things they do.

Steers and Porter, realizing how critical motivation is to performance, and thus to success, recommend that leaders take certain actions to get the best performance from personnel. The recommendations that apply to the military environment include: (1) leaders must actively and intentionally motivate their subordinates; (2) leaders must recognize that personnel have different motives and abilities; (3) jobs should be designed to offer challenges and variety—subordinates must clearly understand what is expected of them; (4) leaders should stay close to personnel and remedy problems as they arise; and (5) all personnel should be included in improving operations—they should be asked for ideas and suggestions and, if acceptable, allowed to implement their ideas (Stoner and Freeman, 1989, p. 451). The issue of motivation is further explored in the Project 100,000 Case Study in Chapter IV.

f. Transition to Civilian-Life Assistance

Training, such as counseling, education, or vocational training prior to release from active duty, can aid the veteran in finding productive employment in post-service life. "Tips" on how to properly fill out a job application or résumé and how to interview for a job can make a difference in successfully finding employment. This is especially helpful to veterans whose first "job" was the military because they have no experience in searching for civilian employment.

As put forth in the preceding sections, manpower requirements, from a military perspective, already have a host of concerns in matching up a calculated number of people (based on strategic requirements) of necessary quality levels for each operational and support activity. However, the decision-making process does not stop here. The military establishment does not exist in a vacuum and does not draw from an unlimited supply of available personnel. Manning the force becomes a much more complicated issue; the military exists within a complex society, inextricably interwoven with the nation's economics, politics and social forces. These issues are covered next.

C. MILITARY MANPOWER ISSUES: NONMILITARY CONCERNS

1. Economics

The military competes with private industry for its labor supply. When the economy is strong and unemployment is low, the recruiting environment is usually poor and the military needs to find incentives to try to lure potential recruits away from other opportunities. When the economy is weak, there is an opposite effect: many young people go to the local recruiting office when other jobs are not available. Factors that affect military manpower supply are: population growth, economic status, educational advancement, military benefits and compensation, cultural background, and recruiting efficiency. Demand, on the other hand, is affected by military status, reenlistment and attrition, and technological advances. As discussed in Chapter IV, the supply of potential recruits and demand for manpower affects the military's acceptance standards. (Eitelberg, 1988, p. 32)

2. Cost

Cost (or efficiency) is an important criterion for judging military manpower procurement policy options. The most preferable policy, of course, is the one with the lower cost (all other things being equal) (Cooper, in Scowcroft, 1982, p. 156). In reality, the determination of resource requirements (including manpower) not only includes what the services think they need in order to meet mission requirements but is also based on the reality of what they think they can get and on how much it costs (White and Hosek, in Scowcroft, 1982, p. 52). Attracting and retaining high-quality personnel is a high-cost operation, so strong justification and available funding are required to man the force with high quality (Hunter and Nelson, in Scowcroft, 1982, p. 116).

Of interest to this policy analysis is the cost of a high-quality force. The more high-school graduates (high quality) that are recruited, the higher the first-term retention; therefore, the lower the number of recruits needed in subsequent years. Fewer recruits means lower recruiting and training costs, but higher retention rates lead to higher salaries and retirement costs (Hunter and Nelson, in Scowcroft, 1982, p. 116). In a limited budget situation, such as will be faced in the 1990s, manpower policy makers will have to find a least-cost solution for a force of a given size, and they must seek to strike a balance between recruit quality, retention, and readiness requirement issues (Hunter and Nelson, in Scowcroft, pp. 116-117).

3. Equity

The equity of various policy alternatives is always an important criterion. Defining what is precisely fair and what is not is, of course, impossible (Cooper, in Scowcroft, 1982, p. 156). Nevertheless, society must regularly make judgments about fairness with respect to a variety of different issues. The issue is not about whether or not society should impose "burdens" on its citizens, because such an imposition is necessary for the needs of the nation (one obvious burden, as Cooper notes, usually takes place in the form of taxes) (Cooper, in Scowcroft, 1982, p. 156). Instead, the issue is in trying to distribute these burdens equitably (Cooper, in Scowcroft, 1982, p. 156). Equity is a central concern in whether or not to include disadvantaged youth in the military.

4. Social/Political

a. Representativeness of the Military

As stated by Eitelberg and Binkin:

At the heart of the issue of military representation in this country is the concept of "citizen-soldier" and the democratic notion of full citizen participation. Proponents of this view claim that the armed forces can only be considered a truly "legitimate" extension of citizenry if the military is a citizen's institution, rather than the preserve of career-oriented "regulars." An army that employs mercenaries, professional killers, and "hired guns" to do its bidding commits the "suicidalness of militarism." An army that pulls from the nation's populace the poor and socioeconomically disadvantaged, while excusing the wellborn and the privileged, the rich and the educated, defies the fundamental principles of democratic government and obligatory service by each and every member of the body politic. (Eitelberg and Binkin in Goodpaster, et al., 1982, pp. 244-245)

Charles Moskos contends that representativeness in the military of all parts of society is important, especially in a democracy

(Hunter and Nelson, in Scowcroft, 1982, p. 120). During each period of the draft, issues of social class and educational representativeness were raised (Hunter and Nelson, in Scowcroft, 1982, p. 119). The upper class (particularly college graduates) was often underrepresented due to the Selective Service exemption and deferment process. Representativeness continues to be an issue with the AVF, but one that results from free decisions made in the open marketplace (Hunter and Nelson, in Scowcroft, 1982, pp. 119-120). There is a concern about using economic incentives to induce participation and accepting the resulting lack of representativeness that will erode the sense of public obligation that all citizens ought to share (Danzig and Szanton, 1986, p. 78).

Although these arguments concern unfair overrepresentation of minorities and the disadvantaged in times of war, similar arguments can be raised about unfair underrepresentation if the manpower policy is restricted to "high quality only" in times of peace. This is because disadvantaged youth would not be able to share in the *benefits* of military service in peacetime, yet would be expected to share the *responsibility* of military service in times of war.

The force drawdown has indeed affected the recruitment of minorities and has caused concern. An article in the *Washington Post* illustrates this concern:

Tougher military recruiting standards have forced a decrease in the percentage of black enlistees in the nation's armed forces in the last decade, but minorities continue to be a disproportionate number of the young men and women joining the service today, according to a congressional report released yesterday.

The Congressional Budget Office report attributed some of the decline in black recruits—as much as 6 percent among new Army enlistees—to the military's tougher educational and testing standards for all recruits. The new standards would disqualify about 70 percent of all black males from joining the Army, according to the study. In contrast, the standards would render about 30 percent of non-black males ineligible for Army service.

"The focus on recruit quality had a predictable effect on the racial mix among recruits: It reduced the percentage of blacks and other minorities," the report found. "Army policies disqualified a large majority of blacks and other minorities, while leaving most non-blacks eligible..." the report found.

But the report also found, "Although greater selectivity in recruiting and blacks' relatively low test scores reduced total participation of blacks in the military, better qualified blacks continue to be attracted to the services." (Moore, 1989)

b. *Civil-Military Relations: Public Relations and Politics*

The military system in the U.S. often functions in ways that change the lives of thousands of Americans. However, policies that produce these changes are rarely due to the will and judgment of the uniformed leadership alone (Karsten, 1978, p. 7). Civilian leaders, whether in the executive or legislative branch, are generally responsible for the key decisions that determine military policy. These leaders are politicians and are therefore accountable and responsive to public opinion (Karsten, 1978, p. 7).

Policies that are congruent with national interests help provide popular and political support for the military. This means they will probably support military programs (and associated funding) when attitudes toward the military are positive, and will oppose such support when attitudes toward the military are negative. The public always

reserves the right and power to elect a candidate who supports popular views concerning what the military should be. (Karsten, 1978, p. 7)

There is evidence that politicians and the military are sensitive to this issue. For example, in a Report to the Committee on Armed Services, House of Representatives in 1967 by a Civilian Advisory Panel, there is an entire section devoted to "Public Image of Military Manpower Procurement." In this section is a discussion about public criticism toward the draft in the areas of efficiency, effectiveness, and equity. Concerned about this criticism, the panel recommended that the Deputy Director of Selective Service for Public Affairs conduct a campaign to better inform the public about the draft (Civilian Advisory Panel, 1967, pp. 14-15). Another example of concern about attitudes of the public came in the late 1980s, when severe military manpower cuts were proposed. In order to gain popular and political support to help curb cuts, proposals were made to use the military for popular programs, such as in "The War Against Drugs," and to clean and protect the environment (Shabecoff, 1990, p. 1). If unemployment, crime, and other issues that relate, at least in part, to disadvantaged youth are a social and political priority, then a military manpower policy that may help combat these problems (without compromising national security) will most likely gain popular and political support.

Recruiting also depends on popular and political support because it draws from the civilian sector and will not attract recruits if it has policies that are contrary to the goals and interests of the people. As a former Assistant Secretary of Defense observes, "We are always

dependent on how America feels about itself and about its military..." (Pirie, in American Enterprise Institute Studies in Defense Policy, 1980, p. 5)

c. *Responsibilities of Citizenship*

Citizenship has many privileges and benefits, especially in the form of individual freedom. However, these privileges do not come without a cost, a responsibility to defend the desired way of life. As observed below:

No obligation is more fundamental to citizenship than that of preserving our free institutions. While all wage-earning citizens contribute to the common defense by paying taxes, only a fraction assume the personal risk and sacrifice of military service. (Democratic Leadership Council, 1988, p. 24)

Supporters of military service believe that society is served by fostering in young people a commitment to citizenship duties (Moskos, 1988, p. 10). Since aptitude and income are not prerequisites for citizenship, these ideas should apply to all persons, including both advantaged and disadvantaged youth. One may well ask, then, should anyone be denied enlistment if it can be shown that his or her service would be beneficial to the individual, the military, and the nation as a whole?

d. *The Military as an Agent of Social Change*

(1) Introduction. Adam Yarmolinsky, a former Deputy Assistant Secretary of Defense for International Security Affairs, expands on the DoD mission and lists its five major functions as follows: (1) preventing the ultimate catastrophe of nuclear war; (2) protecting our friends and allies against attack and giving them confidence to maintain independent policies, even in the face of threats by another superpower;

(3) deterring and defending against low-level violence and international terrorism (internal and external "police" actions); (4) acting as an institution of social reform; and (5) protecting the U.S. from unforeseen dangers and defending American interests in places and fashions not yet imagined (Yarmolinsky, 1983, pp. 10-11). The fourth function, "acting as an institution of social reform," appears out of place for an organization that seems "warlike" (anti-social) and competes with social programs in the national budget. It is not included in DoD's mission statement and is not popular among many military leaders. Because the primary mission of the military is *defense*, caution is urged by some in placing too much emphasis on the military as an agent of social change.

This is illustrated in the following statement by Cooper:

To the extent possible, military manpower procurement should be consistent with the nation's other economic, social and political goals. In fact, one can go one step further and argue that, to the extent possible and reasonable, military manpower procurement policy ought to further the nation's economic and social goals. For example, the military helped pave the way for racial integration in the 1950's.

At the same time we must be careful to avoid having "the tail wag the dog." For example, adopting a policy of universal service solely to encourage a "socialization" of American youth would seem to be a great waste of the nation's resources. Alternatively, if such a policy was useful for military purposes, then this socialization might be a useful and positive by-product. (Cooper, in Scowcroft, 1982, p. 157)

However, as pointed out by Eitelberg in "War Or Welfare: The Military As An Agent Of Social Change," the military establish-

ment, by its mere size, cannot help but influence society (Eitelberg, 1989, p. 3). Yarmolinsky points out that,

As an educational and a social institution the military establishment has profound effects upon those whom it controls, and less direct but possibly more potent effects on those civilian institutions with which it, in many respects, competes...." (Yarmolinsky, 1973, p. 324)

Eitelberg reports numerous, major social impacts by the military, including racial integration and major educational programs and opportunities, such as the G.I. bill, which have helped shape American society (Eitelberg, 1989, pp. 1-24). Included in his paper is a historical overview of the military and employment of "Social Outsiders."

(2) History. The military has, throughout our history, been perceived as an organization which could bring people from the "fringes" into the mainstream of society. In the 19th century, Indians were employed by the military to serve as scouts, guides and soldiers (Eitelberg, 1989, p. 3). Although in separate units, it was hoped that through training and exposure to the white American culture, the Indians would become "civilized" (Eitelberg, 1989, pp. 3-4). Similarly, blacks were recruited into the Union Army during the Civil War, where they also received training and education to help lay the foundation for cultural assimilation (Eitelberg, 1989, p. 4). Immigrants, since the American Revolution, also have had the opportunity to use military service as a stepping stone for entering the social mainstream (Eitelberg, 1989, pp. 4-5). Even today, military service is perceived as a chance for success. Recruitment advertisements touting slogans such as "...a great place to start...", "Be all that you can be," and "Get an edge on life" are

particularly attractive to disadvantaged youth, who historically have had few opportunities outside the military, such as vocational school, college, or employment, because of a lack of family or personal resources. Regarding the military as an agent for social change, the question remains: does service in the military benefit disadvantaged youth and then, indirectly, society as a whole? This is addressed in the next section.

e. Military Service and Social Upward Mobility

Are claims such as "the more depressed the socio-economic background of the recruit, the more he seems likely to benefit from the experience in the armed services" (Yarmolinsky, 1973, p. 325) mere perception or reality? What concepts have led to this popular perception?

"Benefit" can have a range of meaning from the intangible (such as self-esteem) to the more common measure of success (such as raised income or earnings) in civilian life after military service. William Beusse lists six theoretical benefits from military service: educational upgrading, skill upgrading, geographic mobility, credential effect, social adjustment, and the bridging environment effect (Beusse, 1974, p. 13). A more detailed discussion of each of these six effects follows.

(1) Educational Upgrading. DoD offers servicemen a wide range of educational opportunities, both during and after their service careers (DoD, 1990, p. 11). For low-aptitude men, the high-school completion programs are probably the most important. For high-school graduates (or equivalent), there are several college programs available that allow continuation of education. Programs come in the form of financial assistance or college credit programs, such as the College Level Exami-

nation Program (CLEP) that allows college credit for non-traditional learning (Beusse, 1974, p. 9). The military also offers college-level in-service educational opportunities as well as tuition assistance for qualified members (DoD, 1990, p. 3).

The strong positive relationship between education and income is well documented (Beusse, 1974, p. 9; also see Ehrenberg, 1988, pp. 312-322, and Mincer, 1974). Completion of the General Educational Development (GED) equivalency program has also been shown to result in higher civilian earnings (Beusse, 1974, p. 10).

Educational attainment is a "signal" of success in the marketplace; that is, it shows the individual is capable of responsibly completing a program, which can viewed as raising the quality of one's life (Beusse, 1974, p. 10; also see Ehrenberg, 1988, p. 346).

(2) Skill Upgrading. At the Fifteenth Annual Conference of the International Institute for Strategic Studies, Sommer, the editor of *Die Zeit*, Hamburg, Germany, stated:

There is no better way of strengthening our military establishment than by making military service more attractive by teaching the soldier skills which can be used once he returns to civilian life—ideally skills which would not have been acquired if he had never donned a uniform. (Sommer, in *The International Institute for Strategic Studies*, 1973, p. 34)

The American military is the largest vocational training institution in the nation and probably the world (Yarmolinsky, 1973, p. 325). All servicemen receive some sort of entry-level skill training, either formal or informal (Beusse, 1974, p. 10). There are also many advanced skill level and complex technical training programs available. The value

of this training in civilian life depends on how transferable the training is to civilian jobs (Beusse, 1974, p. 10). There are several studies which compare the earnings of veterans and non-veterans, but their findings do not agree. For example, although some studies have found that minority veterans from all wars fared better than minority nonveterans, others have found that this does not hold for Vietnam veterans (Mehay, 1990, p. 4). Much of the conflicting evidence can be attributed to differing time periods, data sources, or analytical methods.

(3) Geographic Mobility. The potential for geographic mobility is important in many respects. "Migration provides a social mechanism for adjusting the geographical distribution of occupational opportunities." (Beusse, 1974, p. 11) Also, studies have shown that the place where one is born affects his or her future employment chances in a variety of ways by subjecting the individual to the background and educational limitations or advantages associated with that particular place (Beusse, 1974, p. 12). In addition, other studies have shown that migrants earn more than nonmigrants (Beusse, 1974, p. 12; also see Ehrenberg, 1988, p. 364). Military service, because it almost always involves geographic mobility, is a vehicle to make the service member more comfortable and more likely to move, even after discharge (Beusse, 1974, p. 12). So, it appears that by getting used to moving and by being exposed to several different regions of the country, the military veteran has increased mobility that can consequently act to improve his or her post-service economic well-being.

(4) **Credential Effect.** For non-high-school graduates, an honorable discharge from the military may similarly serve as a credential or proof that a program was completed successfully (Beusse, 1974, p. 12). Much more than program completion is the awareness that the military teaches obedience, respect for authority, and discipline. Thus, as Ambrose and Barber observe, "The prospective employee who has an honorable discharge can present to employers what amounts to a guarantee that he will not be a trouble-maker." (Ambrose and Barber, 1972, p. 15) In the absence of other requirements, the veteran with an honorable discharge is probably more likely to receive preference over nonveterans (Beusse, 1974, pp. 12-13) So, the non-high-school graduate is the one who stands the most to gain from this credential effect (Beusse, 1974, p. 12).

(5) **Social Adjustment.** Teamwork and working with others are a major part of military life. The servicemember is also placed in positions of higher responsibility than his or her civilian counterparts. (Beusse, 1974, p. 13)

(6) **Bridging Environment Effect.** In 1973, Browning, Lopreato, and Poston provided the theoretical construct of the military experience as an application of the "bridging occupation," defined as "one which provides, through work experience, the conditions and opportunities for movement from one occupation or cluster of occupations to another." (Browning, et al., 1973, p. 76) As applied to the military, the word "occupation" can be replaced by "environment" with the sense that the military experience is one in which the individual may acquire new

skills and abilities that, after military service, could help him or her in a civilian career (Browning, et al., 1973, p. 76). Browning, Lopreato, and Poston contend that military experience helps assimilation of racial and ethnic minorities into the civilian occupational structure (Browning, et al., 1973, p. 76). They explain that minorities tend to live in enclaves, some-what isolated from the mainstream of society. Military service reduces many primary ties to kin and community and aids in breaking down the dependence upon racial and ethnic enclaves. The service also provides minorities with experience in dealing with large-scale, complex organizations which may be encountered later in civilian life. Browning, Lopreato, and Poston also considered the benefits of education and training. To summarize, Browning, Lopreato, and Poston state:

...for many, if not all minority men, military service can positively affect their subsequent chances in the opportunity structure of civilian society. Geographic mobility and personal independence, education, occupational training of various kinds, and experience in bureaucratic structures, all make it easier for the veteran to obtain those civilian jobs that provide better pay...Anglo veterans will be at an economic disadvantage vis-à-vis Anglo non-veterans; that is, veterans will earn less than nonveterans. Conversely, among blacks, and Mexican Americans...on the average, veterans will earn more than nonveterans of the same group. (Browning et al., 1973, p. 77)

Of note, this hypothesis is not universally accepted. A quote from the *New York Times*, for example, points out:

The myth that Army service can help by training deprived blacks for civilian jobs is little borne out by the facts. Usable civilian skills are least likely to be acquired in the ground combat forces, where most blacks are, while they are under-represented in the technical and support services, a vastly better training ground. (Binkin and Eitelberg, 1982, p. 73)

Binkin and Eitelberg, noting both points of view, sum it up as follows:
"All in all, while the military clearly provides employment opportunities for black youths, whites tend to acquire training and skills that put them in a position to compete for better jobs in the civilian sector." (Binkin and Eitelberg, 1982, p. 73)

III. PROJECT 100,000: THE PROGRAM

A. INTRODUCTION

Chapters III and IV comprise the case study of Project 100,000. This chapter describes Project 100,000. Chapter IV analyzes five major studies that evaluated Project 100,000 using the research questions outlined in Chapter I.

B. BACKGROUND

Project 100,000 was established in 1966 by the Secretary of Defense, Robert S. McNamara, and was related to the War on Poverty program. In a speech before the Veterans of Foreign Wars, on August 23, 1966 he declared:

The poor of America have not had the opportunity to earn their fair share of this nation's abundance, but they can be given an opportunity to serve in their Country's defense, and they can be given the opportunity to return to civilian life with skills and aptitudes which for them and their families will reverse the downward spiral of human decay. (Halsey, Means, and Laurence, 1985, p.5)

Under this program, the physical and mental standards applied to potential military recruits were revised. Men who scored as low as the 10th percentile on the AFQT qualified for military service (Beusse, 1974, p. 3). Non-high-school graduates with an AFQT percentile score between 10 and 30 were additionally required to pass certain supplementary aptitude tests (Beusse, 1974, p. 3). The primary purpose of Project 100,000 was that both the military and the individual would benefit by opening up recruitment to individuals of lower ability (Beusse, 1974, p. 3). The

military would benefit by increasing the current available supply of manpower and, by dealing with large numbers of low-aptitude men, could benefit from this experience (in selection, training, assignment and utilization techniques) so that in the future when CAT IVs would need to be called on again (during times of high manpower requirements, for example), the military would be ready (Beusse, 1974, p. 3). The other benefit to the military would be the service that these individuals performed, that is, their productivity. The individual would benefit from an increased opportunity for education, skill development, and work experience, and society would benefit directly from the contribution they would make as productive citizens and indirectly from the "ripple effect." The positive effects of their education, training, and improved socioeconomic conditions would pass to their next generation, helping to break the cycle of poverty (Sticht, et al., 1987, p. 183).

To test whether the goals of Project 100,000 would be achieved, Secretary McNamara intended that Project 100,000 be a "controlled" experiment, subject to continued monitoring, to include military performance and post-service follow-up studies (Sticht, et al., 1987, p. 40). This program was not intended to help low-aptitude men but to help the focus group of this study, the "disadvantaged" (low-aptitude young men from low-income families) (Eitelberg, 1990, p. 18).

Support for Project 100,000 came out of a report entitled *One-Third of a Nation*, by the President's Task Force on Manpower Conservation in 1964 (Eitelberg, 1990, p. 18). This report found that about one-third of all the nation's 18-year-old men would fail to meet military entrance

standards (Eitelberg, 1990, p. 18). Furthermore, the report concluded that "...a major proportion of these young men are the products of poverty...They have inherited their situation from their parents...and unless the cycle is broken, they will almost surely transmit it to their children." (Eitelberg, 1990, p. 18) Because low aptitude correlated with poverty and unemployment, it was assumed that a program of lowered enlistment standards would attract those from low-income families and therefore aid in the fight against poverty (Eitelberg, 1990, p. 18). But the military never applied low-income criteria, so the original objective of fighting poverty was redirected toward helping those with low aptitude, regardless of their economic situation (Eitelberg, 1990, p. 18).

Project 100,000 allowed the annual induction of 100,000 men who would otherwise be screened out due to their limited educational background and low aptitude test scores. Approximately 311,000 recruits were inducted due to the lower aptitude standards under Project 100,000 between 1966 and 1971 (Eitelberg, 1988, pp. 172-173). The armed services took an additional 30,127 recruits who were "medical remedials" and would have previously been disqualified for "correctable" physical defects rather than for low scores on the aptitude test. Participants in Project 100,000 were called "New Standards Men" (Beusse, 1974, p. 3).

DoD established that program participants were to meet the same in-service performance standards as other personnel (Heisey, et. al., 1985, p. 7). Each service was to provide help, if needed, during training to allow New Standards Men to meet criteria for retention and advancement in service (Heisey, et. al., 1985, p. 7). Several remedial literacy

programs were developed and modified training methods were employed (Heisey, et. al., 1985, pp. 7 and 9). There were inconsistencies in the treatment and training of the men, however, which is discussed in Chapter IV.

C. PROFILE OF PARTICIPANTS

1. Introduction

This section describes the demographic characteristics of low-aptitude men in Project 100,000. Characteristics include: aptitude subcategory, age, race, education, geographic region, and pre-service income level (where information was available).

2. Aptitude Subcategory

The aptitude level of most of the New Standards Men was IV-C, the lowest acceptable AFQT subcategory for enlistment, including scores between the 10th and 15th percentiles. (Laurence, et al., 1985, p. 4)

3. Age

The majority (76 percent) of the low-aptitude personnel were born between 1947 and 1951, and most were between the ages of 17 and 23 at the time of enlistment. (Laurence, et al., 1985, p. 6)

4. Race

The Project 100,000 data base was limited to two racial categories, "Black" and "Nonblack." The overall percentage of black New Standards Men was 34 percent. (Laurence, et al., 1985, p. 9)

5. Education

The percentages of high-school graduates and nongraduates were approximately equal among New Standards Men (51 percent and 49

percent, respectively) (Laurence, et al., 1985, p. 9). For the most part, black New Standards Men tended to be high-school graduates, whereas whites in this group tended to be nongraduates (Laurence, et al., 1985, p. 9).

6. Geographic Region

The geographic variables were limited to "South" and "Non-South" because previous analyses have shown that these two categories are important for predicting income. Participants were divided roughly equally between the southern and non-southern regions. (Laurence, et al., 1985, p. 12)

7. Income Level (where data was available)

Pre-service weekly income serves as the indicator of socioeconomic status. For this limited sample of New Standards Men, pre-service weekly income was reported as zero (46 percent), from \$1 to \$100 (41 percent), from \$101 to \$200 (12 percent), and greater than or equal to \$201 (one percent). (Laurence, et al., 1985, p. 12)

IV. RESULTS

A. INTRODUCTION

In this chapter, five major studies on Project 100,000 are evaluated to answer this study's research questions. The five studies include DoD (1969); Beusse (1974); Sticht, Armstrong, Hickey and Caylor (1987); Ramsberger and Means (1987); and Laurence, Ramsberger and Gribben (1989).

B. PRIMARY RESEARCH QUESTIONS: BENEFITS

Evaluations aid decision makers in determining whether a program or policy is "worth" the resources and effort required to support it. One central focus in assessing the program's or policy's worth is whether its goals were achieved. (Quade, 1989, pp. 272-279)

1. Did the Military Benefit from the Employment of Disadvantaged Youth?

This question was addressed in three of the five studies examined here. "Benefit to the military" is a subjective term, but researchers generally used measures of training/education completion and performance measures such as evaluations of job performance, attrition, discipline, and reenlistment to make it more objective. The three studies are detailed below.

a. Department of Defense (1969)

(1) Introduction. As pointed out in Chapter III, Project 100,000 was intended to be a controlled experiment. DoD collected data

for the Project 100,000 studies. Documents and reports were housed at the Defense Manpower Data Center (DMDC) and were later transferred to the Human Resources Research Organization (HumRRO).

During Project 100,000, each of the services was asked to draw a control group so that the performance of the New Standards Men could be compared to that of a group of men who qualified for service under existing standards (Ramsberger and Means, 1987, p. 6). After a review of the data, DoD (1969) reported the following:

(2) Results.

• **Training/Education.**

- ◊ **Basic training**—New Standards Men completed basic training at a rate of 95 percent, as compared to 98 percent of the control group. (DoD, 1969, p. xv)
- ◊ **Formal skills training**—The attrition rate for New Standards Men was 10 percent in formal skills training, whereas the rate for the control group was about 4 percent. (DoD, 1969, p. xvi)
- ◊ **Educational Achievement**—Of the New Standards Men who received remedial reading instruction, 80 percent successfully completed their program. The average trainee began the program at the bottom of the fourth-grade reading level and advanced through this training to the sixth-grade level. (DoD, 1969, p. xxi)

- **Performance.** In general, the performance of these Category IVs was lower than that of higher aptitude men, but their performance was still "acceptable" (DoD, 1969, p. xxviii). The Project 100,000 database does not have a direct measure of performance, so this conclusion was based on the following indirect measures:

- ◊ **Grade level achieved**—The services reported that the promotion rates of Project 100,000 participants were satisfactory; in general, they were promoted on schedule. (DoD, 1969, p. xviii)
- ◊ **Supervisory evaluations**—The ratings for New Standards Men were as follows: In the Army, 98 percent "good" to "excellent" compared with 99 percent of the control group; Navy, 92 percent "effective" to "extremely effective" compared with 97 percent of the

control group; Air Force, 93 percent in the highest five levels compared with 98 percent of the control group; Marine Corps, 92 percent rated "good" to "outstanding" as compared with 96 percent of the control group. (DoD, 1969, p. xix)

- ◊ Offenses—Non-Judicial Punishment (NJP) is awarded for offenses such as traffic violations, missing bed checks, violating curfew, or lateness (DoD, 1969, p. xx). New Standards Men had a rate of 13 percent of NJP as opposed to eight percent for the control group.

Court-martial convictions are for more serious violations such as unauthorized absence, desertion, striking a superior, or robbery. New Standards Men had a three percent conviction rate compared with 1.4 percent of the control group. (DoD, 1969, p. xxd)

- ◊ Attrition from active service—The New Standards Men had a higher attrition rate (12 percent) than did the control group (seven percent) (DoD, 1969, p. xxdii). The attrition rate for blacks was less than that for whites: nine percent compared with 14 percent. (DoD, 1969, p. xxdiv)

- ◊ Reenlistment—Reenlistment actually is a benefit to both the military and the individual, so this area overlaps between the Primary Research Questions 1 and 2.

Either way you view it, the results showed a reenlistment rate of only six percent for New Standards Men. The reenlistment rate for the control group was not reported.

(3) Conclusions. DoD (1969) found that the performance of Project 100,000 participants was lower than that of individuals with higher aptitude. Nonetheless, the performance of New Standards men was considered "acceptable" (DoD, 1969, p. xxviii). As for an overall conclusion regarding the "success" of Project 100,000, researchers who reviewed the data collected, analyzed, and reported by DoD reported conflicting conclusions (Sticht, et al., 1987, p. 38). For example, Baskir and Strauss (1978) concluded:

In the opinion of many military leaders, social planners, and liberal critics, Project 100,000 proved a failure. While it expanded the wartime manpower pool, it also required additional resources which the services could ill afford. But above all, it was a failure for the

recruits themselves. They never got the training that military service seemed to promise. They were the last to be promoted and the first to be sent to Vietnam. They saw more than their share of combat and got more than their share of bad discharges. Many ended with greater difficulties in civilian society than when they started. For them, it was an ironic and tragic conclusion to a program that promised special treatment and a brighter future, and denied both. (from Eitelberg, 1988, p. 180)

A conflicting conclusion was found by Sullivan (1970) in a study for the President's Commission on an All-Volunteer Force:

The magnitude of the differentials between NS (New Standards) men and control groups is...an important finding from the Project 100,000 experience. The higher attrition rate in training NS men was found, for example, to add only 3 to 5 percent to the full training costs. When performance is measured by supervisory ratings, the difference between NS men and control groups is negligible. One cannot help but conclude that the Project 100,000 experiment has been a success and should be continued...

The evidence assembled in the study leads us to the conclusion that the relaxed mental standards applicable to Project 100,000 can provide the requisite quality to effectively man the enlisted billets in an all-volunteer force. This is not to imply that the Services will consist entirely of mental group IV recruits, but that the acceptable percentage of mental group IV inputs can be as high as 25 to 30 percent in the Army and Marine Corps, and 20 to 25 percent in the Navy and Air Force. (from Eitelberg, 1988, pp. 181-182)

b. Sticht, Armstrong, Hickey, and Caylor (1987)

(1) Performance. Sticht, et al. performed two studies. The first study evaluated the performance of New Standards Men as measured by attrition, advancement, disciplinary problems, and supervisor's efficiency ratings. The second study examined "careerists"—that is, those Project 100,000 men who stayed in the military after their initial enlistment and were still on active duty in 1983 (Sticht, et al., 1987, pp. 39 and 49) The results for both studies were reported in *Cast-Off Youth* and are summarized below.

- **Attrition.** Most New Standards Men entered the military for a two-year initial tour of duty (Sticht, et al., 1987, p. 50). Some men joined for a three- or four-year tour; the Air Force, for example, had a four-year requirement, while almost all of the New Standards Men in the Army had a two-year obligation. For total DoD, the attrition rates for New Standards Men were about twice that of the control sample of men with a comparable length of service (Sticht, et al., 1987, p. 52). To look at it from a positive perspective—that is, “completion” instead of “attrition”—New Standards Men finished service at a rate of from 65 percent in the Marine Corps to 88 percent for the Army and Navy, for an overall DoD success rate of 84 percent. (Sticht, et al., 1987 p. 52)
- **Advancement.** The pay-grade distribution of New Standards Men and a control group after 19-24 months of service showed that New Standards Men advanced more slowly than did the comparison group. (Sticht, et al., 1987, p. 52)
- **Supervisor's Efficiency Ratings.** After 22-24 months of service, about 85 percent of the New Standards Men received a rating of performance as good, highly effective, or better. The efficiency ratings of the control group were not provided. (Sticht, et al., 1987, p. 52)

(2) Impacts after the initial enlistment; Careerists. Again, this can be considered a part of both Primary Research Questions 1 and 2 because both the military and the individual benefit from reenlistment. As of 1983, more than 8,200 New Standards Men were still in the military (some with a tenure of 12-17 years) (Sticht, et al., 1987, p. 60). During that time, “they had increased their aptitude scores and educational levels, attained higher occupational status, and received increased rank, pay, and benefits” (Sticht, et al., 1987, p. 60). So, for this group, Project 100,000 provided not only employment but a lifetime career in service to their country (Sticht, et al., 1987, p. 60).

(3) Conclusion. Based on their research, reported in *Cast-Off Youth* and summarized above, Sticht, et al. concluded that Project 100,000 was successful in achieving its goals:

The findings presented in this chapter for Project 100,000 personnel indicate that far and away the majority of these men did perform satisfactorily, they did not cause excessive disciplinary problems, and they did benefit from the training and educational offerings of the military. Over 8,000 benefitted directly in the form of a lifetime career.... (Sticht, et al., 1987, p. 64)

c. Ramsberger and Means (1987)

(1) Introduction. In their study, entitled *Military Performance of Low-Aptitude Recruits: A Reexamination of Data From Project 100,000 and the ASVAB Misnorming Period*, Ramsberger and Means researched two central questions: (1) Was there a negative impact on the services (in terms of increased training time, greater attrition, etc.) as a result of admitting larger numbers of low-aptitude (CAT IV) individuals? and (2) How did the low-aptitude (CAT IV) recruits perform in jobs of varying complexity, that is, did aptitude interact with job complexity in a way that lower-aptitude individuals performed better on lower-skill-requirement jobs? The answers to these questions would aid the services in predicting the impact to be expected if the standards had to be lowered in the future and to help them adjust classification procedures to maximize the performance of individuals in lower aptitude categories.

Ramsberger and Means performed their analysis twice, each time using a different control group. The first time they used the entire control group (individuals from AFQT Categories I-IV) and the second time they used a control group drawn from the lowest AFQT category accepted under the AFQT standards that preceded Project 100,000. These were: Category IVA for the Army, Air Force, and Marine Corps and Category IIIB for the Navy, which will be referred to as the

"Marginally Eligible" control group. (Ramsberger and Means, 1987, pp. 6-7 and 14)

Only the overall Project 100,000 control group analyses were performed because there was not a large enough sample for the "marginally eligible" control group (not enough occupational data available). (Ramsberger and Means, 1987, p. 21)

(2) Results.

- The New Standards Men did not perform as well as the overall control group in a number of significant ways. For example, New Standards Men were more likely than control group members to be recycled through basic training (Navy, Marine Corps, Air Force) and to need remedial training (Army, Navy, Air Force). They were also less likely to complete skill training (Marine Corps, Air Force) and to be eligible for reenlistment (Air Force). (Ramsberger and Means, 1987, pp. v-vi)**
- In general, these differences remained even when the comparison group was limited to those in the lowest-aptitude-qualified category. (Ramsberger and Means, 1987, p. vi)**
- Within-job comparisons were made for two Navy, one Marine Corps, four Army, and four Air Force occupations. All of the Navy and Marine Corps and half of the Army and Air Force occupations were low in terms of cognitive skill requirements as defined by Sticht and Caylor (1982); the other Army and Air Force jobs were classified as having medium skill requirements. Fewer differences were found between the New Standards Men and the controls when performance was examined within occupations, and no pattern was uncovered indicating that the performance of the New Standards Men was better in low-skill jobs compared to those of medium skill. (Ramsberger and Means, 1987, p. vi)**

(3) Conclusions. Ramsberger and Means framed their overall conclusion in a comparison between the Project 100,000 experiment and the ASVAB Misnorming episode (described in Chapter II). They concluded that New Standards Men generally were not successful in the military. However, they found more positive results for low-

aptitude men who served under the ASVAB Misnorming. The authors cautioned against drawing conclusions regarding the usefulness of low-aptitude recruits based on Project 100,000 because of confounding factors in the program that could bias results. Confounding factors are discussed in the answer to research question three of the analysis.

2. Did the Individual, and Thus Society, Benefit from the Employment of Disadvantaged Youth?

The last two of the five studies examined looked at the post-service lives of Project 100,000 participants. Variables used to measure outcomes included items such as employment and income level, occupational category, educational attainment, and so on. These two studies are examined below.

a. William Beusse (1974)

(1) Introduction. Beusse conducted a follow-up study of Project 100,000 veterans with a matched comparison group of low-aptitude nonveterans in 1974. The purpose of the study was to "examine the impact of military experience upon the post-service lives of low aptitude men" (Beusse, 1974, p. 1). He reported his results in the areas of education, occupation, and geographic mobility. Of note, his findings were also reported in *Cast-Off Youth* by Sticht, et al., so both sources are referenced in this section.

(2) Results.

- **Education.** DoD operates a wide variety of educational programs, so it is expected that veterans will have increased their education levels in a higher proportion than nonveterans (Beusse, 1974, p. 23). Programs include the General Educational Development (GED) and College Level Examination Program (CLEP) (Sticht, et al., 1987, p. 62). Ten percent of the veteran group, as opposed to three percent

of the nonveteran group, obtained a GED (Beusse, 1974, p. 23). Although both groups increased their proportion of high-school graduates, a higher percentage of veterans gained high-school credentials. (Beusse, 1974, p. 24)

- **Employment.** Approximately 82 percent of both groups were employed full time and eight percent of both groups were employed part time, so there was no distinction in these two categories of employment. However, in the unemployment statistics, only six percent of the veterans were unemployed, compared to nine percent of nonveterans (comparison group). (Sticht, et al., 1987, p. 63)
- **Occupation.** Project 100,000 veterans were found to be employed in the higher-skilled, higher-paying occupations and industries as compared with the control group (Beusse, 1974, p. 42). Union membership, a prominent factor in occupational life, was also higher among the veteran group (Beusse, 1974, p. 28). The higher wages for veterans existed for both high-school and non-high-school graduates and within each racial category (Sticht, et al., 1987, pp. 63-64).
- **Geographic Mobility.** Geographic mobility is significant in examining economic success because "migration provides a social mechanism for adjusting the geographical distribution of manpower to the geographical distribution of occupational opportunities" (Beusse, 1974, p. 11). Geographic mobility makes it easier for the veteran to obtain those civilian jobs that have higher pay (Browning, et al., 1973, p. 77). Veterans were found to be more geographically mobile than nonveterans; a higher proportion of them subsequently moved away from the geographic region in which they were living at the time they registered with the Selective Service (Beusse, 1974, p. 42).

(3) Conclusions. As stated by Beusse:

The results of the data analysis indicate that military service has a positive impact upon the post-service lives of low aptitude men. Compared to their nonveteran twins, it was found that veterans were more likely to (1) complete their high school education or obtain a GED, (2) be employed in the higher skilled, higher paying occupations and industries, (3) have joined a union, and (4) to have migrated from the geographic region in which they lived at age 18.

It was also found that veterans earn significantly higher wages than nonveterans. Veterans fared better than nonveterans within each racial-educational subgroup. These income differences were found to be independent of unmatched background characteristics. (Beusse, 1974, p. 1-a)

b. Sticht, Armstrong, Hickey, and Caylor (1987)

This study was covered in detail above because most of the research focused on the benefits of allowing disadvantaged youth to serve in the military (the topic of research question 1). However, these researchers add another educational impact of military service for the individual - namely, the G.I. Bill. This educational benefit allowed many veterans to upgrade their education after leaving the service. In fact, 68 percent of New Standards Men were reported to be using their G.I. Bill as of 1974. (Sticht, et al., 1987, p. 62)

c. Laurence, Ramsberger, and Gribben (1989)

(1) Introduction. Laurence, Ramsberger, and Gribben conducted a follow-up study to determine the current (1986-1987) status of New Standards Men in comparison with a control group (Laurence, et al., 1989, p. iii). Three sets of analyses were performed: comparisons of the New Standards Men and the entire control groups selected by the services, comparisons of the New Standards Men and only that portion of the control group consisting of those minimally (but fully) qualified for service under standards in effect over the course of Project 100,000, and comparisons within selected military jobs (as defined under the Defense Duty Occupation Classification, or DDOC codes).

(2) Results.

• Employment and Occupation.

- ◊ Full- and part-time employment—The results show no significant differences between the employment status of veteran (Project 100,000) and nonveteran men (Laurence, et al., 1989, p. 71). This holds true whether the part-time employees were grouped with full-time employees or with the unemployed (Laurence, et al.,

1989, p. 71). Comparisons between all three groupings could not be carried out due to the small number of part-time employees. About 88 percent of the prior New Standards Men were employed either full- or part-time, compared with 91 percent of the National Longitudinal Survey (NLS) sample used as the control group. When the New Standards Men who were still on active duty were included, the difference was even smaller, raising the percentage from 88 to 89 for the Project 100,000 group. Controlling for length of service showed no significant differences (Laurence, et al., 1989, p. 71). There was an age difference between the two samples: the New Standards Men were in the 40-45 age range while the control group was younger, 30-35. When the researchers controlled for age, significant differences were found: Project 100,000 participants in the 30-35 age group were more likely to be unemployed than were comparably aged members of the control group (Laurence, et al., 1989, p. 73).

- ◇ Type of establishment in which employed— Significant differences were found when the researchers looked at the type of establishment in which the men were employed. A higher number of men in the control group worked in a private company or in their own business (91 percent), compared with 77.3 percent of New Standards Men (Laurence, et al., 1989, p. 75). Conversely, 22.7 of the New Standards Men held government jobs, whereas nine percent of the control group were government employees (Laurence, et al., 1989, p. 75). This significant difference holds true whether all or only full-time workers are compared.
- ◇ Civilian Occupational Category differences— The civilian occupational categories used in the comparisons were: (1) Professional, Technical, and Managerial; (2) Sales, Clerical, and Administrative Support; (3) Service, Private Household, and Other, (4) Farmers and Farm Managers, Farm Laborers and Foremen, and Laborers; and (4) Craftsmen, Operatives, Repair, and Precision Production. There were no statistically significant differences between the Project 100,000 men and those in the control group.
- ◇ Work tenure— The question concerning work tenure was: "Of all jobs held in the past five years, which one was held for the longest time?" (Laurence, et al., 1989, p. 77) The New Standards Men responded with a mean of 9.6 years compared with 7.9 years for the control group (Laurence, et al., 1989, p. 77). Since job stability may be correlated with age, the data were examined with a control for age (Laurence, et al., 1989, p. 77). When age was controlled (including only individuals who were 35-40 at the time of the survey), there was no significant difference between the two groups regarding job stability. (Laurence et al., 1989, p. 80)

- **Income.** The control sample reported income for 1980, while the Project 100,000 veterans reported income for either 1986 or 1987 (Laurence, et al., 1989, p. 827). Researchers adjusted for inflation to compare these figures from different years (Laurence, et al., 1989, p. 82). The adjustment factors were derived to equate income information to a common 1985 metric while accounting for differences in age and education (Laurence, et al., 1989, p.82).
- ◊ **Hourly pay—**The results show that when age ranges were not matched, the control group had an hourly wage of approximately four dollars more than the Project 100,000 veterans (Laurence, et al., 1989, p. 83). This difference was statistically significant. When age was controlled, however, by using the data from only those 35–40 years of age, the difference between the two groups was even greater, with the control group earning more than five dollars per hour more than the men who participated in Project 100,000 (Laurence, et al., 1989, p. 83).
- ◊ **Total household income—**Total household income (all family members and all sources, with adjustments where necessary) for the year prior to the survey was reviewed, first without controlling for age and then just comparing the 35–40 year olds (Laurence, et al., 1989, p. 86). Approximately 35 percent of both samples (full-time workers) had household income below \$20,000. With workers of all ages, there was a seven-percent difference, but this difference was not statistically significant. When age was controlled, there was a significant difference (as with hourly income with the matched age evaluation) (Laurence, et al., 1989, p. 86). In this case, 80 percent of the control group had a total household income of over \$20,000, whereas the New Standards Men had only 63 percent at this level.
- ◊ **Farm or business ventures—**One alteration was made to these data: Individuals who reported \$0 in earnings were not included (treated as missing data). The assumption here was that individuals who have a job earn some form of income from their employment (Laurence, et al., 1989, p. 86). The fact that no income was reported was interpreted to mean that the individual either did not know or did not care, or that the interviewer miscoded the response (Laurence, et al., 1989, p. 89). When the focus was on both wages and farm/business income and these individuals gave an answer to the latter, they were included in the analyses (Laurence, et al., 1989, p. 89).

Results showed that, overall, the persons in the control group earned significantly more than the New Standards Men. (Laurence, et al., 1989, p. 89)

- **Other Economic Factors.** These factors include employer fringe benefits, receipt of public assistance (any form) one year prior to the survey, and receipt of assistance from relatives in the previous year. (Laurence et al., 1989, pp. 92-95)
 - ◊ Fringe benefits (commonly offered by employers)—The results show that both groups had a high percentage of benefits, with the control group reporting a significantly higher proportion of medical and retirement benefits.
 - ◊ Public assistance (welfare or unemployment compensation)—Comparisons showed no significant differences between the two groups in the receipt of public assistance. This same result was obtained when controlling for age (ages 35-40 only) and when unemployment compensation was compared in the number of weeks received. (Laurence, et al., 1989, p. 96)
 - ◊ Assistance from relatives—When compared without controlling for age, the control group had a higher rate (9.5 percent) of assistance from relatives than did the Project 100,000 participants (3.7 percent). However, since this is a measure which can be correlated with age, the information was evaluated again, and this time there was no significant difference between the two groups. (Laurence, et al., 1989, p. 97)
- **Education and Training.**
 - ◊ Education—When age was not controlled, a significant difference was found in the mean years of the highest grade completed, with the higher percentage belonging to the control group (12.3 percent vs. 11.7 years) (Laurence, et al., 1989, p. 100). But when the age range was matched, there was no significant difference (Laurence, et al., 1989, p. 100).
 Another way to view educational achievement is to look at the highest level completed. From this perspective, the results show that there was only one comparison which was significant: the comparison between those who had a high-school diploma or less and the percentage who had at least some college (Laurence, et al., p. 100). However, when age was controlled, even this difference became insignificant (Laurence, et al., p. 100).
 - ◊ Training—Questions were asked to determine three aspects of training participation: whether there was participation, whether training was completed, and, finally, what kind of training was received. (Laurence, et al., p. 104)

A significantly higher percentage (68 percent) of the control group than the Project 100,000 group (42 percent) responded that they had participated in training programs. There was no difference in this result after controlling for age (Laurence, et al., p. 104). The Project 100,000 participants, however, were told not to include their military training. If they had been able to report it, these results might have been different. Also, their military training might have eliminated their need to receive any additional training outside of the service (Laurence, et al., p.104).

Of the respondents who did receive training, a follow-on question asked whether they completed their training. Approximately one-third of the respondents in both the control group and Project 100,000 group failed to complete their training; there was no significant difference between these two groups. (Laurence, et al., p. 104)

Finally, those who said they participated in training were asked what type of training they had received. There was a great deal of similarity between the types of courses taken by the Control group and Project 100,000 group; there was only a slight tendency toward more managerial training among the control group and more "other types of training" for the Project 100,000. (Laurence, et al., p. 107)

- **Marital and Family Status.** Marital and family status was evaluated because the "ability to enter in and maintain a life-long relationship and contribute to society by raising the next generation of Americans is often viewed as a sign of a stable and mature individual." (Laurence, et al., p. 108)

There were no significant differences between the two groups in current marital status when controls were not placed on age (Laurence, et al., p. 108). When age was taken into account, however, significant differences did result (Laurence, et al., p. 108). The researchers reported that 16 percent more of the control group respondents were married (compared to the New Standards Men), while the divorce rate for the New Standards Men was almost two times greater than that of the control group (Laurence, et al., p. 110). Also, while all of the control group responded that they had been married at least once, nearly seven percent of the New Standards Men responded that they had never been married.

The comparison of average number of marriages was made once without controlling for age and once controlling for age. Without the age controls, the average for the Project 100,000 respondents was 1.4 marriages. The control group had a significantly lower result at 1.1. When age was controlled, this difference was smaller (but still

statistically significant), 1.3 for the Project 100,000 group compared to 1.2 for the control group.

The number of children fathered by both groups was also determined. Resulting figures reveal that 19 percent of the New Standards Men were childless compared to no childless men in the control group (Laurence, et al., p. 110). The number of children fathered was again compared with and without age controls. When there was no control for age, the average number of children for the control group was significantly higher; when the age ranges were matched, there was a slightly larger difference.

- **Veteran's Subjective Opinions.** Project 100,000 participants who separated from the service were asked if they felt their military experience helped, hurt, or had no impact on their careers. Those who responded that it had helped or hurt their career were asked to give specific reasons for this reported effect. In addition, all respondents were asked to assess the impact of being in the military on their lives (Laurence, et al., 1989, p. 113). Approximately 50 percent of the New Standards Men felt that the military had a positive effect on their life, as opposed to only 14 percent who felt it had a negative effect; the rest (36 percent) reported that they felt there was no impact (Laurence, et al., 1989, p. 114). Blacks had a higher probability than did whites of feeling that their military experience was positive (Laurence, et al., 1989, p. 114).

When respondents were asked to name specific ways in which the military helped their careers, maturity was the attribute mentioned most often. Of interest, it was found that the percentage of non-blacks citing educational assistance was higher than for blacks, but the reverse was true for military training (Laurence, et al., 1989, p. 115). Military training was listed more frequently by high-school graduates than by nongraduates (Laurence, et al., 1989, p. 115).

When asked about what benefit military service had on their lives in general, maturity again was the attribute named the greatest number of times. About one-third of the sample said that their military experience had no effect on their life. (Laurence, et al., 1989, p. 116)

Overall, though the objective data in this study provide little or no support that military service benefits the individual, "a substantial proportion of the respondents themselves felt that it was a positive experience." (Laurence, et al., 1989, p. 118) Laurence, Ramsberger, and Gribben attribute this inconsistency to a phenomenon first described by Aronson and Mills (1959): "If one gives up a great deal or works very hard to achieve a particular goal (in this case to serve successfully in the military), then there must be positive aspects to, or outcomes from, that experience." (Laurence, et al., 1989, p. 118)

(3) **Conclusions.** This more recent research suggests that Project 100,000 did not meet its goal of benefitting the individual through military service. Laurence, Ramsberger, and Gribben conclude that:

Comparisons between Project 100,000 participants and their non-veteran peers did not show veterans to have an advantage. In fact, in terms of employment status, educational achievement, and income those who never served appeared better off than those who had been in the military. Veterans were found to be more likely to be unemployed, and to have an average level of education significantly lower than nonveterans. Income differences between the two groups ranged from \$5,000 to \$7,000, depending on the sources included, in favor of the nonveterans. Finally, veterans were less likely than nonveterans to be married, and more likely to be divorced. (Laurence et al., 1989, p. iv)

This study by Laurence, Ramsberger, and Gribben (1989) received nation-wide attention. The results were reported in several diverse publications, such as the *Washington Post*, the American Psychological Association's *Monitor*, and *Science Agenda* (see McAllister, 1990; Adler, 1990; and Sellman, 1990). This study could have a dramatic effect, not only on military manpower policy issues but also on other government-sponsored programs for the nation's youth. For example, Representative Lane Evans (D-Ill.), a Vietnam-era veteran and chairman on the House subcommittee on veterans oversight, believed the findings to be "very significant" and predicted that they might influence proposed legislation on some form of military-like national service program (McAllister, 1990). As Evans stated, "This indicates the poorest of Americans might not be able to benefit from such a program." (McAllister, 1990)

C. SECONDARY RESEARCH ISSUE QUESTION ONE: WERE THE PROJECT 100,000 EVALUATIONS RELIABLE?

1. Statistical Methods Employed

The strength of any experiment's credibility lies partly in the power of particular statistical tools chosen to analyze the data. For the five studies currently under evaluation, the statistical methods ranged from simple calculations of percentages and averages to the more complex multivariate analysis of variance. Notes, including both strengths and weaknesses, on the statistical methods employed for each of the five studies are listed below. The failure to control for confounding factors, which is discussed in the research question two results (see below), is also a weakness in statistical methods employed. So in this way, there is overlap between the results for the two questions under Secondary Research Issues. Rather than repeat the discussion in both research questions, confounding factors will be covered for research question two only, with the understanding that the failure to control for them also indicates a problem with the methods employed by the researchers.

2. Notes on the Individual Research Methods

a. DoD (1969)

DoD (1969) did not use multivariate statistical procedures. Instead, DoD analysts merely calculated mean values and percentages for a number of variables for Project 100,000 participants vs. the control group. They did not perform statistical tests of significance but merely stated raw numerical differences. The DoD analysts then went on to draw conclusions about the success of Project 100,000, based solely on these basic statistics. It is not known whether these differences in percentages

were significant. Thus, the DoD findings should be used very cautiously when interpreting the data. There are a number of serious problems with these data, which makes it difficult to draw meaningful conclusions (Ramsberger and Means, 1987, p. 6).

One major problem was in the way the control groups were chosen. When comparisons are performed between two groups, in order to be able to draw meaningful conclusions, it is important that both groups are matched as "equally" as possible. It is also important that treatment within each group is the same (as possible). The criteria used in the DoD study were not specific enough; the services were told that the control groups should be selected so that the accessions could be summed to represent a picture of the total accessions each quarter (Heisey, et al., 1985, p. 11). As a result, the services' control groups vary drastically in their make-up (Heisey, et al., 1985, p. 11). For example, the Navy control group was selected by choosing the first 700 accessions at Naval Training Command (NTC) San Diego and NTC Great Lakes, regardless of AFQT, at the beginning month of the second quarter. The non-Category IV individuals from this group served as a control group. The Army control group was comprised of a 10-percent random sample of all non-Project 100,000 accessions during each quarter. The Marine Corps and Air Force also had a control group unique from each of the other services. The DoD control group was a combination of these service control groups, designed to represent non-Category IVs, and was not matched to New Standards Men for education level, race, or geographic region (Heisey, et al., 1985, p. 12).

The problem with comparing New Standards Men to the DoD control group, then, is that the DoD (combined services) control group was very different from the group of New Standards Men on a number of dimensions that could confound the final results (Ramsberger and Means, 1987, p. 7). For example, 76 percent of the DoD control group were high-school graduates, whereas only 45 percent of the New Standards Men graduated from high school (Ramsberger and Means, 1987, p. 7). It has already been established that non-high-school graduates have higher attrition rates. Therefore, it is possible that the higher attrition rates for New Standards Men are a result of the higher number of non-high-school graduates in this group (Ramsberger and Means, 1987, p. 7).

Another noted difficulty in comparing the target and control groups is that the control group contains individuals from all AFQT categories. The median AFQT score for the control group was 56.8, compared with a median of 13.6 for the New Standards Men. This is to be expected because the control group supposedly represents all other accessions during that period; however, one might question the comparison of all Category IVs to a group with a large number of those in the highest AFQT categories. (Ramsberger and Means, 1987, p. 7)

Occupational specialty also was not controlled in the DoD study. Attrition rates varied greatly across jobs, and New Standards Men and the control group tended to be assigned to different occupations, so controlling for these differences might show larger New Standards Men

control group differences in difficult jobs while showing smaller (or perhaps no) differences in easy jobs. (Ramsberger and Means, 1987, p. 7)

Other differences across the services generate concerns about the data. For example, the comparison of the New Standards Men and the control group in formal skills training is weakened by the fact that the accession group and type of training differed among the services. In the Army and Marine Corps, for example, all Project 100,000 participants received formal training, whereas in the Air Force only 70 percent did, and in the Navy none did (all received on-the-job training) (Heisey, Means, and Laurence, 1985, p. 13). This skill-training attrition also varied across the services because each service has a different type of program. So, DoD-wide figures may mask substantial differences between services and aptitude groups. This inconsistency in measurement leads to problems not only in training completion but also in the performance measures. Despite the problems with performance measures, though, it appears that the New Standards Men performed acceptably (Heisey, Means, and Laurence, 1985, p. 13).

The DoD study (1969) was conducted while Project 100,000 was still in progress; therefore, it included only data from 1966 through 1969 (Sticht, et al., 1987, p. 38). So, since Project 100,000 occurred from 1966 through September 1971, the analysts did not view the complete data set, which could result in misleading conclusions (Sticht, et al., 1987, p. 38).

b. *Sticht, Armstrong, Hickey, and Caylor (1987)*

This study improved upon the DoD (1969) study described above because researchers used the DoD final report of 1971, which covers more than 340,000 personnel files (about 100,000 files more than used in the earlier research). Nevertheless, the Sticht, et al. study still retained some of the same problems as observed in the DoD (1969) analysis. For example, there were control group inconsistencies, failure to use powerful statistical procedures (such as multivariate analysis), failure to use tests of statistical significance, and no focus on differences in training procedures between the services. Consequently, some of the overall combined services rates may be somewhat misleading. However, Sticht, et al. help overcome these inconsistencies by pointing out the differences across the services and providing possible reasons why these differences exist. In addition, since the authors are obviously strongly in favor of a policy of recruiting disadvantaged youth, one may speculate whether personal bias has intruded in their study.

c. *Ramsberger and Means (1987)*

Ramsberger and Means overcame many of the weaknesses of the DoD (1969) study. These researchers attempted to reduce some possible confounding variables by matching the New Standards Men more closely with different subsets of the control group. Also, the two groups were compared by occupations (using DDOCs) to again get a more equal match between the target and control groups (Ramsberger and Means, 1987, pp. 8 and 19). A major improvement in their method was the application of multivariate analysis of variance (MANOVA), even

though their analyses used univariate methods. MANOVA is a superior method because it allows the ability to control for potentially confounding variables, such as age, race, etc. (Ramsberger and Means, 1987, p. 10). Ramsberger and Means probably had the most reliable results of the five studies critiqued. However, they still urged the reader to use caution in interpreting their results due to confounding factors that are difficult to analyze, even with MANOVA techniques. (This is further addressed in the discussion of Research Question Three.)

d. Beusse (1974)

Beusse did not explicitly disclose the statistical tests he used. He did explain how he weighted the data, and it appears that he used a t-test to compare means. (Since his hypothesis was that veterans usually do something better than nonveterans, he should have used one-tailed t-tests.)

One criticism of this study was that, although Beusse did control for race, education at the time of enlistment, age, and geographic location, the nonveteran sample was of slightly lower aptitude than the veteran sample (Laurence, et al., 1989, p. 20). This criticism was countered in a letter by Thomas Sticht, who points out that, in order to show income for groups of comparable aptitude, Beusse employed data for veterans and nonveterans having AFQT percentile scores of 10, 11, 12, and 13 (all which are very low) (Sticht, 1990, pp. 1-2). In three of these four comparisons matched directly on AFQT scores, New Standards Men were found to earn more than the nonveteran control group (Sticht, 1990, pp. 1-2).

Two other criticisms deal with sources of possible bias. First of all, Beusse restricted veterans to those with honorable discharges; but "quitters," or those who were fired from jobs in the comparison group, were not omitted. Second, his survey completion rate for whites was higher in the veteran group (Laurence, et al., 1989, pp. 20-21).

e. Laurence, Ramsberger, and Gribben (1989)

Laurence, et al. reported in great detail the complex weighting method used on the data. T-tests and chi-square tests were performed to compare averages between Project 100,000 participants and the control group for a myriad of variables. There are mixed views as to the accuracy of this 1989 study. As already mentioned, the study received national attention. Regarding statistical methods, the *Washington Post* reports:

The results were subjected to various statistical tests and weighted to ensure that the sample groups accurately reflected the populations they represented....

Before the results were published, an official of the National Center for Education Statistics, a federal agency, reviewed the methodology and endorsed it....

W. S. Sellman, director of accession policy for the Defense department and the official who requested the study, said that although he expected the results to come out otherwise, he is confident they are accurate. "I'm satisfied that they did a fine job," Sellman said. (McAllister, 1990)

Additional comments were supplied in an American Psychological Association publication, the *Monitor*.

Sellman endorses the HumRRO finding and had an outside statistician okay the results. However, the HumRRO findings are limited in

that they are based on such a small sample of the Project 100,000 men. The researchers had a great deal of difficulty tracking the men down, said Wayne Camara, who headed the project from 1986 to 1987 and is now with the American Psychological Association's Science Directorate.

"The study probably would have come to similar conclusions with a larger sample, but we don't really know what's different about the people we couldn't find," he said.

Laurence described other limitations of the study design in her testimony. "Though the military and civilian samples were selected from the same birth cohort and aptitude range, further demographic and equivalence was neither assumed nor expected," she wrote. "To equate the Project 100,000 and NLS samples, a weighting scheme was used to make the groups comparable on key demographic dimensions—that is, education, race, geographic region and year of birth." (Adler, 1990)

Thomas Sticht questioned the validity of the study in a letter to the authors. One particular criticism related to the comparability of the Project 100,000 sample and the National Longitudinal Survey (NLS) control group. As Sticht observes:

...in your study you criticized Beusse's earlier study because his comparison group was slightly lower in aptitude (less than 3 percentile points) than the Project 100,000 group. Yet, in your own study, *there are no data presented on the comparability of the vet and non-vet groups in aptitude.* Further, your study says that because the comparison group had not taken the AFQT, the comparison group was constructed from "various tests" that happened to be in the data base from the school files of the National Longitudinal Survey study of 1966. The "various tests" were pooled and the results reported in deciles and "individuals scoring from the 10th through the 29th percentiles were considered the aptitude-equivalents of participants in Project 100,000." [p. 29] But you do not present means, medians, distributions etc. of aptitude scores, nor do you indicate what the "various tests" were. To my knowledge, most high schools do not routinely administer "aptitude tests," except perhaps the SAT or PSAT. But if the latter were used, then someone at the 20th percentile on the AFQT, which is designed to be particularly useful for identifying lower aptitude youth. It seems to me to be a critical factor to reveal the tests used to make your non-vet comparison group comparable in terms of aptitude. This seems particularly important

given your criticisms of Beusse's vet and non-vet comparisons. We know from Ford Foundation-sponsored work that AFQT is correlated with earnings in the NLS sample. Therefore, if the Project 100,000 vets and non-vets were not truly comparable in aptitude, then the entire study is called into question... (Sticht, 1990, p. 3)

Sticht further noted that the comparison group's socioeconomic status in 1966 was also not detailed, so it is not known whether these two groups matched in this very critical area (Sticht, 1990, p. 3). Sticht found other problems with the Laurence, et al. study, such as the authors' conclusion regarding the credibility of answers given by Project 100,000 to the researchers' questions. Laurence, et al. concluded that since "objective data" did not support responses from nearly 50 percent of the Project 100,000 veterans who felt that their military experience had a positive effect on their subsequent careers, these veterans could not possibly be correct in their "subjective" responses. The authors concluded:

...that it must be something of a phenomenon first described by Aronson and Mills (1959). If one gives up a great deal or works very hard to achieve a particular goal (in this case to serve successfully in the military), then there must be positive aspects to, or outcomes from, that experience. (Laurence, et al., 1989, p. 118)

It seems odd that the other data collected (on income, marital status, etc.), which were similarly obtained by a verbal report, were never doubted or questioned. The justification was that some data are "objective" and other data are "subjective." However, since all data are self-reported, in a sense all data are then equally objective or subjective. (Sticht, 1990, p. 4)

It appears that there are several potential problems with the Laurence, Ramsberger, and Gribben (1989) study. A positive aspect

was that the researchers were extremely thorough; they examined the data from "several angles." They tried to account for any confounding factors one might question, and they controlled for several factors (such as age) to see if there were any differences in the results. However, they employed *univariate* methods, which examine only one characteristic of the population or sample at a time. More powerful multivariate methods, which examine several characteristics of the population, or variables, and the interactions or *confounding effects* of these variables, were not used. Instead of using MANOVA, for example, they controlled for factors (such as age) by omitting from the sample the observations they believed might confound the results. Also, although they thoroughly compared the Project 100,000 sample with the control group, their choice of a control group is suspect for the reasons noted in the preceding quotes. This particular problem would place doubt on all of their results, even if their methods were flawless.

D. SECONDARY RESEARCH ISSUE QUESTION TWO: CONFOUNDING FACTORS

Problems with the experimental methods used in the five studies on Project 100,000 are described in the section above. However, another possible problem with these studies exists: even if one could scientifically and accurately measure the performance and post-service experience of the New Standards Men, and even if Project 100,000 were deemed to be a "failure" by this measurement, can it be said that aptitude level determines the ability of individuals to succeed in the military or in a post-service civilian environment? Or could there be other reasons or

causes for the results and conclusions found in the five studies examined above? If so, then causality suggested in the five studies (i.e., aptitude as the major driver for successful military service) must be carefully questioned. Next is a discussion of possible confounding factors other than aptitude level that *may have* contributed to the results reported in the five Project 100,000 studies.

1. Timing of the Program

Project 100,000 took place during the Vietnam war. The results of Project 100,000 were probably influenced by this factor, because the war had a profound effect on morale (which contributes to performance) and the attitudes of employers toward veterans (thus affecting post-service earnings). Furthermore, although there is no consensus, some studies have found that Vietnam veterans, regardless of aptitude level, had problems in their post-service life. For example, in a *New York Times* article, Weinraub reports:

Studies have shown that Vietnam veterans had difficulty in adjusting to their post-service life. For example, one government-sponsored study by the Center for Policy Research reported that more than 40 percent of Vietnam veterans had suffered from major emotional difficulties, such as alcoholism and narcotics abuse, and that more than 75 percent complained of nightmares, marital discord, and job problems....At a 26 September 1979 news conference, Senator John Heinz (R-Penn) stated, "These problems are a major reason that over half of the returning from Vietnam did not resume their schooling, and have no doubt resulted in the unemployment of thousands of Vietnam veterans." (Weinraub, 1979, p. 16)

Along similar lines, the *Los Angeles Times* Service reports:

A later study, by the American Legion, found that of their members, Vietnam veterans who were in heavy combat earned \$3,000 less per year than Vietnam-era veterans who served elsewhere. Since the researchers believed that veterans who joined the American Legion

were more "resocialized," it could be that Vietnam combat veterans, not included in this study, had an even larger earnings gap. (*Los Angeles Times Service*, 1985, p. 1)

Because of the Vietnam war, it was difficult to give the New Standards Men the assistance they needed to succeed. The strain of the war on the military shifted attention and resources away from Project 100,000 (Laurence, et al., 1989, pp. 18-19).

As stated by Ramsberger and Means:

The urgency of the Services' mission during Project 100,000 may have brought about an environment less conducive to the success of low-aptitude individuals. The opportunities for training time, allowable time between enlistment and full preparedness, and so forth are different in a combat context than in times of peace. Such differences may have had a negative effect on individuals who needed more time and/or attention to achieve their occupational goals. (Ramsberger and Means, 1987, p. 97)

Another important element was the draft, which may have affected the motivation of Project 100,000 participants. In fact, as of 1969, 47 percent of the New Standards Men were conscripted. (DoD, 1969, p. x)

2. Participant Profile and Aptitude Level

Ramsberger and Means found that the individuals (CAT IVs) admitted during the ASVAB misnorming were not significantly different from those of the lowest fully qualified service members at that time (Ramsberger and Means, 1987, p. 95). The ASVAB misnorming CAT IVs were also similar in attrition rates, promotion, and reenlistment eligibility rates to the ASVAB misnorming control group (Ramsberger and Means, 1987, p. 95). As expected, non-high-school graduates had a higher attrition rate and lower eligibility for promotion than did graduates. The difference between the Project 100,000 results and the ASVAB misnorming

results was probably because the median AFQT percentile score for Project 100,000 participants was 13.6 (more than half were in CAT IVC), compared to the ASVAB misnorming population, which consisted mainly of CATs IVA and IVB, with IVCs only admitted by the Army (Ramsberger and Means, 1987, p. 96). The fact that the Project 100,000 population was so "bottom heavy" could have contributed to all of the results found in evaluations of the program.

3. Military Leaders' Attitudes Toward Project 100,000

Project 100,000 was not well received by top military officials. Although the program actually helped the country meet the manpower demands of the Vietnam war and forestalled activation of reserves, it was (and is still) not popular among many commanders. As Eitelberg observes: "Today, military commanders recall Project 100,000 with about as much affection as the bubonic plague." (Eitelberg, 1988, p. 182) It was feared that low-aptitude men would make disciplinary problems worse and blur the image of the military as an "honorable service filled by men of good character, of reasonable mentality and so on..." (Sticht, et al., 1987, p. 37). Among cynics in the Pentagon, Project 100,000 was referred to as "McNamara's Moron Corps" (Sticht, et al., 1987, p. 38). For whatever reason, the program has always had a poor reputation among many insiders who feel that social experimentation and the military are incompatible (Eitelberg, 1990, p. 16). Could this attitude have influenced any experimental outcomes?

Were participants "tagged" for identification? There is a possibility that participants were identified by commanders, posing the question

of whether there was prejudice applied in treatment of New Standards Men which could bias results (Eitelberg, 1988, p. 180). Baskir and Strauss claim that "commanding officers had little difficulty identifying Project 100,000 men, if only by their poor performance." They state that at least one Army post "had a policy of not promoting them beyond the rank of buck sergeant, no matter how good they were." (Eitelberg, 1988, p. 180) As already mentioned, New Standards Men were supposed to receive no special treatment. They also were not to be specially identified (Eitelberg, 1988, p. 180). Although official records claim that participants were not tagged for identification in any systematic manner, commanders had access to all personnel records which contain identifying information such as aptitude test scores, conditions of induction or enlistment, and personal history. In addition, in the early years of Project 100,000, participants had a two-digit identifier attached to their service number—the equivalent of a "scarlet letter." It is unknown whether this "tagging" actually led to discrimination toward the New Standards Men. However, it is in conflict with the original plan, which sought to avoid a situation for self-fulfilling failure (Eitelberg, 1988, p. 180).

A former Secretary of Defense, Robert S. McNamara stated, "If people are motivated properly and trained properly, they can succeed." (Sticht, et al., 1987, p. 188) The next two sections address whether Project 100,000 provided these "tools" for success.

4. Leadership and Motivation

Motivational theory was discussed in Chapter II, where it was shown that performance is directly related to motivation. Military

leadership is a great challenge, especially when those who are being led are at a disadvantage (aptitude, educational, and/or social). Sometimes, although the goal is clear to those in higher ranks, it is not communicated to the middle, supervisory ranks who will be the ones to most often interact with these personnel. The stresses in time of war or conflict compound the problem, so again, the problem of timing (Vietnam era) arises. It is thus possible that a failure of leadership, or a lack of understanding of the special motivational needs of these low-aptitude personnel, could have contributed significantly to their military performance and other measured outcomes.

5. Accommodation

Accommodation strategies are described. Did Project 100,000 apply any or all of these strategies? Were they applied in a consistent manner, ensuring that the New Standards Men would have the tools they needed to succeed in military service? Would the application (or failure to apply) of any or all of these strategies have affected the outcomes of the five studies?

One of the goals of Project 100,000 was to help the participants when they returned to the civilian job market (through training and experience). Most military enlisted jobs have civilian counterparts, except combat specialties (Heisey, et al., 1985, p. 15). Nevertheless, it appears that the strategy of limited assignment (the easiest of the four strategies to execute) was used; it is shown by the fact that about 86 percent of New Standards Men were assigned to just four of the nine DoD occupational areas (Sticht, et al., 1987, p. 89). Since Project 100,000 occurred

during the Vietnam war, there was a great need for men in the combat occupational areas. This need, combined with the aptitude determination in job placement, resulted in a large concentration (about one-third) of New Standards Men in the infantry and combat specialties (Sticht, et al., 1987, p. 49). More specifically, 63 percent of the New Standards Men were assigned to skills with civilian counterparts, compared with 70 percent of the control group (Heisey, et al., 1985, p. 15). This may have affected results regarding attrition and performance, and it most likely contributed to the results on post-service earnings as well, because persons in combat-related jobs are less able to transfer skills to the civilian job market.

The training course revision strategy for Project 100,000 is difficult to measure. Although identification of the difficult parts of training courses was attempted, there is little information on the number of courses involved, how they were revised, and how they affected the men who took the revised courses (Sticht, et al., 1987, p. 89). However, even if significant course revisions were made, since there was such a low percentage of New Standards Men who received any remedial training at all, the number who would be significantly affected by these revisions would be minor (Sticht, et al., 1987, p. 89).

Literacy training was not originally proposed as part of Project 100,000 because of the resistance on the part of Congress to include the military as part of President Johnson's Great Society programs (Sticht, et al., 1987, p. 89). Despite this resistance, all of the services implemented such training early in the program. However, contrary to recommenda-

tions, this training was not integrated into job-skills courses, and it was not offered in off-duty time. Furthermore, only about 12 percent of Project 100,000 participants received remedial literacy training (Sticht, et al., 1987, p. 89). Therefore, one might wonder if the experimental outcomes would have been different if there had been an organized and consistent accommodation strategy applied to address the special needs of low-aptitude recruits.

6. Reenlistments and Test Requirements

It is interesting to note that, although only a small percentage of Project 100,000 participants actually reenlisted, fully 25 percent of the Project 100,000 men indicated they would have reenlisted had they qualified (DoD, 1969, p. xxiv). In order to qualify, they would have had to pass additional aptitude tests. One may well ask, then: If training and guidance were available which might have enabled them to pass these tests, would the outcome for the reenlistment rates have been different?

7. Definition of Attrition

The statistics shown in Stage One on attrition should be interpreted carefully, because the definition is not confined to cases of unsuitability, unfitness, and misconduct. For example, about one-third of these separations were due to preexisting medical problems, battlefield death, dependency and hardship charges, and similar causes (Heisey, Means, and Laurence, 1985, p. 19; also see Sticht, et al., 1987, p. 52). The remaining one-third were early separations for poor performance or unsatisfactory behavior (Sticht, et al., 1987, p. 52). Since more New Standards Men were assigned to combat, it follows that more would die

in battle. Less than half of the attrition cases DoD- wide were for reasons of unsuitability, unfitness, and misconduct (Helsey, Means, and Laurence, 1985, p. 19). Furthermore, attrition rates varied widely between the services. For example, the Army had the highest number of New Standards Men (65 percent of them), but it also had the lowest attrition rate (12 percent) (Helsey, Means, and Laurence, 1985, p. 19; also see Sticht, et al., 1987, pp. 50-51). While the exact cause is not known, it is probably due to differing policies and conditions. For example, the Army and Marine Corps had a large number of ground troops in Vietnam. Attrition for New Standards Men was three times higher in the Marines than in the Army, suggesting the policy and practices of the Marine Corps toward New Standards Men was different than in the other services. (Sticht, et al., 1987, pp. 50-51).

8. Formal Skills Training vs. OJT and Promotion Rates

Each of the services differed in the type of skills training the New Standards Men received. Could these differences have affected any experimental outcomes, especially in promotion rates? In the DoD (1969) studies which compared promotion rates, it was noted that, in the Navy, there was a larger gap between New Standards Men and the control group. This larger gap was attributed to the Navy's participants receiving on-the-job training instead of formal school training, thus lengthening the time to qualify for promotion. Nevertheless, the DoD study found that, overall, the New Standards Men were being promoted on schedule (Helsey, et al., 1985, p. 16). However, in the study by Sticht, et al., it was found that the New Standards Men were promoted at a slower rate, with

great differences between the services. The Air Force and Navy had the slowest rate of advancement. The researchers noted that this was probably because these two services rely heavily on written testing as a means for advancement (Sticht, et al., 1987, p. 52). The differences between the services could also be misleading because each service had a different control group composition, as previously described.

9. Transition to Civilian Life Assistance

Project Transition was a program intended to provide counseling, education, or vocational training to aid Project 100,000 men and other Vietnam-era personnel in their return to civilian life (Helsey, Means, and Laurence, 1985, p. 16). This program was limited, however; it was voluntary and not available at all military installations (Helsey, Means, and Laurence, 1985, p. 16). It was not conducted overseas, which is important, because Vietnam returnees were often already separated from active duty when they arrived in the U.S.; thus, Project Transition would not be available to them (Helsey, Means, and Laurence, 1985, p. 16). Project Transition also failed because many of the draftees received "early outs," which did not give them time to take advantage of the program. The principal users of the program turned out to be retiring careerists. Only six percent of Army Project 100,000 participants actually received assistance through Project Transition.

A psychologist and director for accession policy in the Office of the Assistant Secretary of Defense for Force Management and Personnel has noted that the military provided counseling, vocational training

courses, or additional education as the men were preparing to leave, but added:

"Unfortunately, this program was rather limited in its availability, and it was only voluntary." Furthermore, he noted that the project set up to help the New Standards Men prepare for civilian life "never quite got off the ground to the extent that it should have...The military did let these guys down." (Adler, 1990)

V. CONCLUSION AND RECOMMENDATIONS

A. CONCLUSION

1. Primary Research Questions One and Two: Does the Military, the Individual, or Society Benefit by the Recruitment of Disadvantaged Youth?

Based on the case study of Project 100,000 (Chapters III and IV), it can be concluded that the military definitely benefited from Project 100,000 from the standpoint of quantity requirements (DoD, 1969, p. xxvii). As far as benefiting from the performance of the New Standards Men, however, it appears that the debate has not been resolved. There seems to be a consensus that the low-aptitude youth did not perform as well as those with higher aptitude test scores. Yet, the question remains: was their performance level acceptable to the services? As Eitelberg notes: "It is probably safe to say that, from the standpoint of 'military effectiveness' or 'readiness,' the jury is still out on...Project 100,000." (Eitelberg, 1988, p. 182) Whether the individual and society benefited also cannot be answered definitely, since research has thus far exhibited conflicting results. For example, Beusse concluded that Project 100,000 was a success, whereas the study by Laurence, Ramsberger, and Gribben found just the opposite.

2. Secondary Research Issues—Question One: Has Research, Which Measures the Benefits and Detriments of Disadvantaged Youth in the Military, Been Adequate to Draw a Definitive Conclusion Regarding an Accession Policy? Were the Methods Under Sufficient Control to Utilize Any Data as

Conclusive Evidence? Were the Methods Flawed in Any Critical Way that Might Provide Misleading Conclusions?

As illustrated in Chapter IV, it can be seen that there were several weaknesses in the experimental methods of the five major studies of Project 100,000. This suggests that caution be used in interpreting the results and conclusions of previous research on the effects or value of Project 100,000—and that these results not be used in formulating future policy regarding the enlistment of disadvantaged youth.

3. Secondary Research Issues—Question Two: Causality: If Research Finds that Recruiting Disadvantaged Youth for Military Service Benefits Neither the Armed Forces Nor the Individual, Can One Conclude that this Negative Result is Due to the Failure of Disadvantaged Youth, or Could it be Due to Other Factors, Such as Insufficient Training?

Measurement of qualitative data is a very difficult task, indeed. The researchers used widely accepted measures, such as supervisory ratings, as one measure of performance and income and educational attainment as two measures of individual benefits. The research, however, was based on the assumption that the military system offers an adequate environment, able to give disadvantaged or low-aptitude recruits a fair chance for success. The discussion in Chapters II and IV points out that this assumption may not have been completely correct; that is, there may have been some weaknesses in the system that hindered success, as measured by the standard variables. This raises some serious questions concerning causality. It also brings to mind Peter Drucker's distinction between effectiveness, or doing the right things, and efficiency, or doing things right (Stoner and Freeman, 1989, p. 139).

Could it be that Project 100,000 was "the right thing to do" but that it wasn't "done right"? There is enough evidence to suggest that this is the case.

B. RECOMMENDATIONS

In light of the conclusions above, the force drawdown in the 1990s, and the demand for a high-quality military force, should the military have a manpower policy of recruiting a certain proportion of its force from disadvantaged youth?

Based on the conflicting opinions and studies of Project 100,000 and all of the problems associated with previous research, an unqualified "yes" or "no" recommendation cannot be made. However, since history has shown that disadvantaged youth are usually recruited when the demand for military manpower heightens, and because the plight of disadvantaged youth is of important concern to society in the coming decade and beyond, the subject, to borrow a phrase from Sticht, et al., should not be "cast off." If the military needs to recruit disadvantaged youth in the future, it would be in its best interest to be practiced in training, assigning, leading, and motivating these personnel so that they can perform up to the required standards. As discussed in Chapter II, military manpower policy decisions are very complex, and although the trend has been toward a higher-quality force, based on military concerns, perhaps nonmilitary concerns such as social equity should be considered more carefully.

1. Alternative One

It is suggested that another "experiment," on a much smaller scale, be conducted that would allow a specified number of disadvantaged youth to serve in the military. This new experiment, however, should be managed with the "lessons learned" from Project 100,000 in mind, that is, avoiding the weaknesses of the past and adding new wisdom learned through manpower policies since Project 100,000. In addition, specific guidelines should be set up to enhance the research process (again, learning from the errors of Project 100,000) to minimize bias and other experimental weaknesses. A new program could be instituted on an experimental basis to assess the merits of incorporating larger numbers of disadvantaged youth within the military. Some specific actions concerning the design of this experiment are presented below.

a. Attitude

Since there was a negative attitude toward Project 100,000 among many military commanders (see Chapter III), the new program could be promoted from a positive standpoint from the beginning, starting with its name. For example, the program could be called "Upward Bound."

b. Recruitment of Youth Who Are Low-Income as Well as Low-Aptitude

A sample of disadvantaged youth could be initially recruited for the experimental program. These recruits would have to meet both criteria of the definition of "disadvantaged youth"—that is, they would not only be of low aptitude, Category IV, but would also come from low-income families. This is in contrast to Project 100,000 which, as

described in Chapter III, used only aptitude criteria. Based on the ASVAB misnorming study by Ramsberger and Means, it is also suggested that the participants be chosen so that most are in the "higher" Category IV range, with the majority drawn from Category IVA rather than the "bottom heavy" Project 100,000 population of CAT IVCs. (According to Ramsberger and Means, the performance of "higher" Category-IV range personnel was not significantly different from the performance of those in Category IIIB.) Participants would need to be identified in the sense that they must get the extra help they require (remedial training, etc.), but they should not be "tagged" in a negative way so that their commands would be opposed to their assignment and treat them less well than they treat other personnel.

c. *Peacetime Program*

This program should not be implemented during a period of war or large-scale deployment (such as Project 100,000 during the Vietnam conflict). There are several reasons for having the program during a time of relative peace. One reason is the equity issue. Since it is expected that disadvantaged youth will be heavily recruited anyway in times of war, it would seem insincere and highly suspicious to claim that this is a program of great opportunity for them, especially when it can be shown that the doors to military service are usually shut after the fighting is over. Having a program in peacetime indicates a more honest commitment to disadvantaged youth. Another reason is that, during war, DoD is faced with the added strain of a major mobilization and is not prepared to "try out" special programs for the disadvantaged. In addition, the

training pipeline would be overloaded and would not need added pressure. Furthermore, one of the purposes of this suggestion is that, since it is probably inevitable that disadvantaged youth will be called in a major mobilization, "learning to do this right" in peacetime should pay dividends when the nation is faced with war.

d. Management Support

The program would require positive support from top management, which would then be communicated to lower levels, so that positive support (not resistance) would be assured down through local command levels.

e. Leadership/Motivation

Chapter II included a discussion about the importance of leadership and motivation as well as a list of some recommendations for leaders by Steers and Porter. One of those recommendations is that leaders should recognize that their subordinates have different levels of skills and abilities, therefore requiring different motivational techniques. It is suggested that leadership training be provided to supervisors who might be responsible for the performance of "Upward Bound" participants to increase the supervisors' awareness of the special needs of low-aptitude personnel. This training would pay off in other areas, too, making leaders more adept at job motivation techniques for personnel of any AFQT category who are assigned to low-skill jobs. It is a challenge to supervise persons in low-skilled, "dead end" jobs, no matter what the quality of the individual. Training leaders to instill a sincere feeling of job- and self-importance in those workers can make a major difference in

performance and retention, so there are positive "spillover effects" from this training.

Outside of job performance, supervisors should be reminded of personal and "life skills" needs such as nutrition, check-book-balancing, family budgeting, and family responsibilities. Although service members are generally aware that these counselling services are already in place (such as through The Navy Relief Society or Family Services), supervisors often assume that people get this training at home, not realizing that some people, from poor, uneducated parents, do not have this benefit. Sensitizing supervisors to special needs of subordinates improves the leaders as well as the service members they help.

f. Accommodation Strategies

(1) **Job Assignments.** The Ramsberger and Means study on the ASVAB misnorming (see Chapters II and IV) illustrates the important link between job assignment, motivation, and performance level. Further research is suggested to find productive ways to assign jobs to disadvantaged youth. For example, if disadvantaged youth are sent to low-skilled occupations, could job rotation make their work less repetitive and boring? Are there job upgrades that can be given to those who perform well, to serve as an incentive for performance? In other words, are there "job tracks" where low-aptitude individuals can advance through low- or medium-skilled jobs to motivate them to perform well and to help them grow? Programs such as JOBS, which allow admittance to technical schools, should be evaluated as an integral part of occupational assignment; if some participants qualify, and JOBS is determined to be a

successful means for placing low-aptitude personnel in technical ratings, then it can be part of the program.

(2) **Training.** There has been extensive research in the area of military training. Experts in the field should analyze and recommend the best remedial training programs, including types of courses, course length, and when in the program to conduct training. A cost-benefit analysis should be conducted on the trade-off between the added costs of training and the "pay-off" in performance when using low-aptitude accessions.

g. Transition to Civilian Life Assistance

As described earlier, Project Transition was intended to help New Standards Men and others in their transition to civilian life, but it was only available to a minority of these men. It is suggested that veterans' agencies be included in the planning and execution of any new experiment to recruit disadvantaged youth so that assistance can be available when the participants are ready to return to civilian life.

h. Experimental Methods

This experiment would strive to use replicable and clearly defined methodology. For example, all services should follow the same specific guidelines for obtaining closely matched control groups. It is also strongly suggested that multiple regression techniques be applied in analysis of program results because these techniques are powerful in simultaneously explaining the effects of many variables while controlling confounding factors.

2. Alternative Two

Since the ASVAB misnorming was somewhat of an improvement in certain areas over Project 100,000 (during peacetime, participants were not identified in a negative way), the data already available could be studied further, using improved experimental techniques. This alternative would be a lot less costly than the new experiment proposed as Alternative One. Some research has already been done on the ASVAB misnorming and the performance of the individuals involved. For example, Ramsberger and Means (1987) compared the "potentially ineligible" group performance with the lowest fully qualified service members at that time. "In terms of attrition, promotion, reenlistment eligibility, the [ASVAB misnorming personnel] were very similar to the control groups." (Ramsberger and Means, 1987, p. 95) The more recent study by Laurence, Ramsberger and Gribben (1989) examined the post-service lives of those admitted to military service as a result of the ASVAB misnorming.

Some of the Project 100,000 shortcomings were corrected in the ASVAB misnorming studies, but some remained. For example, ASVAB misnorming participants were not provided with remedial training because they were not identified as needing it, but this remedial training could have affected their performance. Following this scenario to a conclusion, if ASVAB misnorming participants were inadequately prepared for a job, they may have lost self-confidence and the motivation to better themselves and achieve upward mobility. Ironically, the lack of identification is a cruel, double-edged sword. A properly planned program should avoid tagging disadvantaged youth in a negative way that could

encourage prejudicial treatment. For low-aptitude recruits, remedial training could be provided at boot camp. Additional help at this point in their career provides three benefits: (1) it increases low-aptitude recruits' ability to complete boot camp, (2) it relieves field commanders from the burden of providing remedial training, and (3) it serves as an equalizer, enabling low-aptitude recruits to drop the low-aptitude stigma upon completion of boot camp.

If Alternative 2 were chosen, it would be an improvement over the Project 100,000 case study, but there would still be doubt and many unanswered questions.

C. SUMMARY

As shown in Chapters I and II, there is evidence (assuming peacetime status) that the military force will be smaller in size and staffed, for the most part, with high-aptitude personnel. This situation could create entry barriers to disadvantaged youth who have historically turned to the military for social mobility. As discussed in Chapter II, military manpower policy decision makers must carefully consider not only the role the military plays in national security but also its role as one of the nation's largest employers.

The military establishment pushes to recruit disadvantaged youth during wartime, and historically the disadvantaged have been called upon to shoulder a disproportionate share of the defense burden. The social issues discussed here focus on the peacetime benefits of military service for these same disadvantaged youth, best summed up by the quote used in Chapter I by Sticht: "It should not be forgotten that when

military resources are used to help the disadvantaged overcome" their social plight, "we get triple-duty dollars: the individual finds upward mobility, the military gets needed manpower, and the nation accomplishes a valuable social welfare activity!" (Sticht, 1990, p. 4) The national security debate about recruiting disadvantaged youth for military service generally centers around technology and the quality of personnel required to effectively operate and maintain weapon systems. A military manpower policy of recruiting disadvantaged youth must evaluate the costs and benefits for the military, the individual, and society.

This analysis has attempted to provide objective evidence regarding these costs and benefits based on the Project 100,000 experiment. Although five major studies on Project 100,000 were analyzed, no conclusions could be reached because there were contradictory findings, weaknesses in research methods, and problems with the program that could have adversely affected research outcomes. Nevertheless, military manpower policies for recruiting disadvantaged youth in times of peace as well as war truly reveal how the nation's leaders care for society's less fortunate members. And because these policies exercise a lasting effect on the lives of the individuals involved and the nation as a whole, they should be assessed with no less than the most definitive and objective methodology that science can offer.

LIST OF REFERENCES

Adler, Tina, "Military Fails to Help Low-Aptitude Recruits," *Monitor*, May 1990.

American Enterprise Institute Studies in Defense Policy, *A Conversation with Robert Pirlie: The Manpower Problems of the 1980s*, Washington, DC, 1980.

Applebome, Peter, "As Armed Forces Cut Back, Some Lose a Way Up in Life," *New York Times*, 7 May 1990.

Beusse, W. *The Impact of Military Service on Low-Aptitude Men*, AFHRL-TR-74-74, Air Force Human Resources Laboratory, Brooks AFB, TX, 1974.

Binkin, Martin, and Eitelberg, Mark J., *Blacks and the Military*, The Brookings Institution, 1982.

Binkin, Martin, *Military Technology and Defense Manpower*, The Brookings Institution, 1986.

Browning, H.; Lopreato, S.; and Dudley, P. L., Jr., "Income and Veteran Status: Variations Among Mexican Americans, Blacks and Anglos," *American Sociological Review*, v. 38, February 1973.

Cheney, Dick, "The Statement of the Secretary of Defense Before the House Budget Committee in Connection with the FY 1991 Budget for the Department of Defense," 7 February 1990.

Civilian Advisory Panel on Manpower Procurement, *Report to the Committee on Armed Services House of Representatives, Ninetieth Congress, First Session*, U.S. Government Printing Office (GPO), Washington, DC, 1967.

Democratic Leadership Council, *Citizenship and National Service*, Washington, DC, May 1988.

Department of Defense, *Project One Hundred Thousand: Characteristics and Performance of "New Standards" Men*, Office of the Assistant Secretary of Defense (Manpower and Reserve Affairs), December 1969.

Department of Defense, *Joint-Service Efforts to Link Enlistment Standards to Job Performance: Report to the House Committee Appropria-*

tions, Office of the Assistant Secretary of Defense (Force Management and Personnel), January 1990.

Ehrenberg, Ronald, and Smith, Robert S., *Modern Labor Economics: Theory and Policy*, 3rd ed., Scott, Foresman and Company, 1988.

Eitelberg, Mark J.; Laurence, J.; Waters, B.; and Perelman, L., *Screening for Service: Aptitude and Education Criteria for Military Entry*, Human Resources Research Organization, Alexandria, VA, 1984.

Eitelberg, Mark J., *Manpower for Military Occupations*, Department of Defense (Force Management and Personnel), 1988.

Eitelberg, Mark J., "War or Welfare: The Military as an Agent of Social Change," paper presented at the Biennial Conference of Inter-University Seminar on Armed Forces and Society, Baltimore, MD, October 1989.

Eitelberg, Mark J., "Marginal Man and the Military: Past, Present, and Prospects," paper presented at the Annual Meeting of the American Psychological Association, Boston, MA, August 1990.

Garza, Melita, "Minority Opportunities Shrinking in Military," *Chicago Tribune*, 28 May 1990.

Goodpaster, and others, *Toward a Consensus on Military Service*, Pergamon Press, 1982.

Heisey, J.; Means, B.; and Laurence, J., *Military Performance of Low Aptitude Recruits: Project 100,000 and the ASVAB Misnorming*, Final Report FR-PRD-85-2, Human Resources Research Organization, 1985.

Horne, David K., "The Impact of Soldier Quality on Army Performance," *Armed Forces & Society*, v. 13, no. 3, Spring 1987.

Karsten, P., *Soldiers and Society*, Greenwood Press, 1978.

Laurence, J., and others, *Demographic Comparison of Low-Aptitude Military and Nonmilitary Youth*, Final Report FR-PRD-85-1, Human Resources Research Organization, 1985.

Laurence, J.; Ramsberger, P.; and Gribben, M., *Effects of Military Experience on the Post-Service Lives of Low Aptitude Recruits: Project 100,000 and the ASVAB Misnorming*, Final Report FR-PRD-89-29, Human Resources Research Organization, 1989.

Los Angeles Times Service, "Study Says Vietnam Combat Vets Earn Less," *Monterey Peninsula Herald*, 24 July 1985.

McAllister, Bill, "Disadvantaged Veterans Gain Little in Military, Study Finds," *Washington Post*, 24 February 1990.

Mehay, Stephen, "The Effect of Veteran Status and Migration on Post-Service Earnings," unpublished, 1990.

Mincer, Jacob, *Schooling, Experience, and Earnings*, National Bureau of Economic Research and Columbia University Press, 1974.

Moore, Molly, "Fewer Military Recruits are Black, Study Finds," *Washington Post*, 31 October 1989.

Moskos, Charles C., *A Call to Civic Service*, The Free Press, 1988.

Muchinsky, Paul, *Psychology Applied to Work*, Brooks/Cole Publishing, 1989.

Navy Education and Training Command, *Financial Management in the Navy*, NAVEDTRA 10792-3, GPO, Washington, DC, 1981.

Quade, E. S., *Analysis for Public Decision*, North-Holland, 1989.

Ramsberger, P., and Means, B., *Military Performance of Low-Aptitude Recruits: A Reexamination of Data From Project 100,000 and the ASVAB Misnorming Period*, Final Report FR-PRD-87-31, Human Resources Research Organization, 1987.

Scowcroft, General Brent, *Military Service in the United States*, Prentice-Hall, Inc., 1982.

Scribner, Barry; Smith, Alton; Baldwin, Robert; and Phillips, Robert, "Are Smarter Tankers Better? AFQT and Military Productivity," *Armed Forces & Society*, v. 12, no. 2, Winter 1986.

Sellman, W. S., "Military Service for Low-Aptitude Recruits: Leg Up or Let Down?" *Science Agenda*, June/July 1990.

Shabecoff, Phillip, "Senator Urges Military Resources Be Turned to Environmental Battle," *New York Times*, 29 June 1990.

Spendley, John, *Effectiveness of the U.S. Navy's Basic Skills Enhancement Program Entitled Functional Applied Skills Training (FAST)*, Master's Thesis, Naval Postgraduate School, Monterey, CA, October 1990.

Sticht, T. G., and others, *Cast-Off Youth: Policy and Training Methods from the Military Experience*, Praeger, 1987.

Sticht, Thomas G., Applied behavioral & Cognitive Sciences, Inc., letter to Laurence, Human Resources Research Organization, Subject: Response to HumRRO Final Report 89-29 (U), 10 March 1990.

Stone, Andrea, "Chance to 'Get Ahead' Threatened," *USA Today*, 1 November 1990.

Stoner, A. F., and Freeman, *Management*, 4th ed., Prentice-Hall, 1989.

The International Institute for Strategic Studies, *Force in Modern Societies: The Military Profession*, London, 1973.

"Thinning Military Ranks," *Boston Globe*, 15 May 1990.

Toomepuu, Juri, "Military Manpower Quality Issues," paper presented at the International Conference of the Inter-University Seminar on Armed Forces and Society, Chicago, IL, 19 October 1985.

Warner, John, "Military Recruiting Programs During the 1980s: Their Success and Policy Issues," *Contemporary Policy Issues*, v. VIII, no. 4, October 1990.

Weinraub, Bernard, "Vietnam Veterans Found to Have Major Problems," *New York Times*, 26 September 1979.

Yarmolinsky, Adam, *The Military Establishment: Its Impacts on American Society*, Perennial Library, Harper and Row, Publishers, 1973.

Yarmolinsky, *Paradoxes of Power*, Indiana University Press, 1983.

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