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A COMPARISON OF COLLEGE BACKGROUND PIPELINE ASSIGNMENT, AND PERFORMANCE IN AVIATION TRAINING FOR BLACK STUDENT NAVAL FLIGHT OFFICERS AND WHITE STUDENT NAVAL FLIGHT OFFICERS

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NAVAL AEROSPACE MEDICAL RESEARCH LABORATORY
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A COMPARISON OF COLLEGE BACKGROUND, PIPELINE ASSIGNMENT, AND PERFORMANCE IN AVIATION TRAINING FOR BLACK STUDENT NAVAL FLIGHT OFFICERS AND WHITE STUDENT NAVAL FLIGHT OFFICERS

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SUMMARY PAGE

THE PROBLEM

This is the fourth and final report in a series of reports analyzing minority officer accessions and attritions in the Naval Air Training Program. Previous reports compared black civilian procured applicants and white civilian procured applicants in terms of aviation selection test performance. In addition, black students in pilot training were compared with a matched sample of white students on training performance variables and college background factors. This report examines for differences in selection test scores, training grades, complete/attrite data, and college background factors between black students and a matched sample of white students in naval flight officer training.

FINDINGS

This report shows that black student naval flight officers performed significantly poorer on most training variables than a matched sample of white student naval flight officers. The overall attrition rate for the total group of black SNFOs was significantly higher than the overall attrition rate for the total group of matched white SNFOs. The category of attrition entitled "Drop on Request" was the predominant category of attrition for both the black student naval flight officers and the white student naval flight officers. Significantly more black students than white students attrited for academic reasons, while significantly more white students than black attrited for reasons of physical disqualifications and not aeronautically adapted.

Statistically significant differences between pipeline assignments of the black SNFOs and pipeline assignments of the white SNFOs were found. However, no statistically significant differences between the black student attrition rates and the white student attrition rates from the various pipelines were found.

An analysis of the black SNFO population in terms of the racial composition of the college attended indicated that the majority of the students attended predominantly white colleges, and that there were no statistically significant differences in attrition rates between black SNFOs from predominantly black colleges and black SNFOs from predominantly white colleges.

INTRODUCTION

This is the fourth and final report in a series of reports analyzing minority officer accessions and attritions in the Naval Air Training Program. Previous reports involved comparisons of black civilian procured applicants with white civilian procured applicants in terms of 1) passing rates for different cutoff scores on the Academic Qualification Test (AQT) and on the Flight Aptitude Rating (FAR), 2) distribution of applicants and performance on the AQT/FAR according to test region and college major, and 3) reasons for nonselection and declination(1). In addition, comparisons were made of black students with a matched sample of white students in pilot training using such performance measures as selection test scores, training grades, college major, grade point average (GPA), pipeline assignments and complete/attrite from the pipeline(2,3). This report examines for differences in selection test scores, training grades, complete/attrite, and college background factors between black students and a matched sample of white students in naval flight officer training.

PROCEDURE

SUBJECTS

The black population consisted of all students entering naval flight officer training during calendar years 1973-1976 who could be identified as black. Since systematic procedures for race identification were not implemented until January 1976, it is possible that all black students were not identified. Ninety-six naval flight officer candidates (NFOCs) and 31 officer-under-instruction (OIs) were identified as black.

A comparison sample of 199 white students was developed by matching each black student with one or two white students on the following control variables: 1) Academic Qualification Test (AQT) and Flight Aptitude Rating (FAR); 2) procurement source; and 3) class contiguity. A perfect match on all three variables was not always possible. Constraints of the data required a small number of black students to be matched with only one white student. Table I describes the black students and the white students in terms of annual input by procurement source.

METHOD

The performance of the black student naval flight officers (SNFOs) was compared with that of the white student naval flight officers on the Aviation Selection Tests, selected training variables, college major, grade point average, pipeline assignments, and complete/attrite data. The statistical significance of performance differences between the two groups was determined by the use of t-tests, chi-square tests, and Fisher's Exact Probability Test(4), as appropriate.

TABLE I

Black/White NFO Student Sample by Procurement Source and Year

Entry Year	AOCS		USNA		NROTC/OCS		USMC/USMCR		OTHER		TOTAL	
	Black	White	Black	White	Black	White	Black	White	Black	White	Black	White
CY73	36	65	0	0	3	3	0	0	3	4	42	72
CY74	31	49	0	0	2	2	4	5	0	1	37	57
CY75	18	22	1	1	3	5	5	9	2	3	29	40
CY76	11	18	2	3	4	7	0	0	2	2	19	30
TOTAL	96	154	3	4	12	17	9	14	7	10	127	199

Specifically, the measures were as follows:

- Academic Qualification Test (AQT) - Paper-and-pencil test measuring quantitative and verbal ability, practical judgment, clerical speed and accuracy, and direction following.

- Flight Aptitude Rating (FAR) - Paper-and-pencil test consisting of the Mechanical Comprehension Test (MCT), Spatial Apperception Test (SAT), and Biographical Inventory (BI).

- Peer Rating - A peer evaluation grade limited to officer candidate students.

- Officer-Like-Qualities (OLQ) - Aviation Officer Candidate grade based upon peer rating, instructor's observation, watches, inspection and drill grades.

- Environmental Indoctrination Final (EI) - A weighted average of Naval Aviation Schools Command grades.

- NFO Practical Work grades - A composite grade of airborne work during NFO Basic Training; also referred to as NFO Basic Flight grade or Flight Indoctrination grade.

- NFO Basic Academic Grade - A composite grade of academic grades during NFO Basic Training; also referred to as Flight Support grade.

- NFO Advanced Practical Work grade - A composite of all Advanced airborne work; also referred to as NFO Advanced Flight grade.

- NFO Advanced Academic Grade - A composite of all Advanced academic grades; also referred to as NFO Advanced Flight Support grade.

- Final Overall Grade (FOAG) - A composite of all Environmental Indoctrination, Basic and Advanced academic and practical work grades.

- College Major - College majors were classified into one of the following twelve categories: 1) engineering (ENGR); 2) technical (TECH), e.g., mathematics, computer sciences, etc.; 3) physical sciences (PHYS SCI); 4) music; 5) natural sciences (NAT SCI); 6) agriculture (AGR); 7) business administration (BUS AD); 8) physical education (P.E.); 9) behavioral sciences (BEHAV SCI);

10) humanities (HUM); 11) social sciences (SOC SCI); and 12) education (ED). Data were not available for all students.

- College Grade Point Average (GPA) - College grade point averages were provided by the Navy Recruiting Command, using a 4.0 grading scale. Data were not available for all students.

The black student input was further analyzed to determine whether the racial composition of the college attended had any relationship to the following variables:

1) Aviation Selection Test Scores

2) Grade Point Average

3) Performance in Training

4) Complete/Attrite

Predominantly black colleges were identified from lists published by the United Negro College fund. Lists of the colleges attended by the black students have been included in Appendix A.

Descriptive analyses (means, standard deviations) were conducted on the groups for the Aviation Selection Test scores, training variables, complete/attrite, and college grade point averages. Differences between the means were tested for statistical significance using t-tests. In addition, chi-squares were calculated when appropriate to test for statistically significant differences between groups.

RESULTS

Table II reflects performance on the Aviation Selection Tests. The mean AQT/FAR scores for the total black sample were 4.1 and 3.2, respectively. The mean AQT/FAR scores for the total white student sample were 4.2 and 3.3, respectively. The differences between the black student means and the white student means were due to procedures used in matching. The differences are not significant and the groups can be considered equal in terms of Aviation Selection Test scores.

Scores on the AQT/FAR range from one to nine with a mean of five. Prior to July 1976, the minimum requirements for acceptance into naval flight officer training were 3 on the AQT and 1 on the FAR. Subsequently, required minimums were 3 on both the AQT and the FAR. The AQT/FAR scores for the black students and the comparison group of white students were below average for every year with the exception of calendar year 1976.

TABLE II

AQT/FAR Descriptive Statistics for CY73-76 Black/White Naval Flight Officer Students

Test	Descriptive Statistic	CY73		CY74		CY75		CY76		TOTAL	
		Black	White	Black	White	Black	White	Black	White	Black	White
AQT	Mean	3.6	3.7	4.1	4.2	4.3	4.4	5.1	5.2	4.1	4.2
	S.D.	0.8	0.8	1.1	1.1	1.2	1.4	1.4	1.3	1.2	1.2
	N	42	72	37	57	29	40	19	30	127	199
FAR	Mean	2.0	2.1	3.0	3.0	3.9	4.5	4.8	5.3	3.2	3.3
	S.D.	1.3	1.4	2.0	2.1	1.8	1.5	2.1	1.6	2.0	2.1
	N	42	72	37	57	29	40	19	30	127	199

Table III compares the performance of the black SNFOs with the white SNFOs during Schools Command, Basic, and Advanced, the three stages of naval flight officer training. The grades received by the black students during Schools Command (peer rating, officer-like-quality, and EI) were significantly lower, statistically, than those grades received by the comparative sample of white students. Practical work grades received during Basic training did not differ for the two groups. The black students' academic grades during the Basic stage of training were significantly lower than those of the comparative white sample. Five of the black students and five of the white students received advanced training with the United States Air Force. Advanced training grade data on these individuals have been excluded from this table and other tables where their inclusion would be inappropriate. The differences between the advanced practical work grades received by the black students and those received by the comparison white sample were not statistically significant. Advanced academic grades for the black students were significantly lower, statistically, than those of the comparison sample of white students. The differences in FOAG (Navy training only) for the black SNFOs and the comparison white SNFOs were not statistically significant.

Annual attrition, overall attrition, and completion rates for the black students and the comparison white students are presented in Table IV. Annual attrition ranged from 47.4 percent to 85.7 percent for the black students and from 36.7 percent to 79.2 percent for the white students. Although the annual attrition rates for the two groups did not differ significantly, the overall attrition rates for the black SNFO were significantly higher than the overall attrition rates for white SNFO ($X^2 = 4.10$, $p < .05$).

Tables V and VI present NFO attrition rates by type of attrition and stage of training for the black students and the white students, respectively. It is readily apparent that the Drop on Request category of attrition accounts for the largest percentage of attrition for both groups.

Figures 1 and 2 graphically depict the data presented in Tables V and VI. Figure 1 shows attrition by type and differs from Tables V and VI in that some of the attrition categories are combined. There were significant differences between the black students and the white students. More black students attrited for academic reasons than did white students, but more white students attrited for physical and not aeronautically adapted reasons ($X^2 = 19.35$, $p < .01$) than did black students. The attrition differences across stages between the black students and the matched white students shown in Figure 2 were not statistically significant ($X^2 = 1.68$).

Table VII presents the number and percentage of attrition by broad categories of procurement source and attrition type. Percentages of attrition by a more detailed breakdown of procurement source and attrition types are presented in Appendix B. No significant differences in overall attrition rates were found when comparing black AOCs with white AOCs ($X^2 = 3.73$), black

TABLE III

Black/White Student Performance During Naval Flight Officer Training
CY73-76 SNFO/SNFOC Input

Grade	BLACK			WHITE			t
	N	Mean	S.D.	N	Mean	S.D.	
Peer Rating	67	44.1	11.5	100	49.0	10.0	2.80**
Officer-like Qualities	68	47.5	8.2	100	50.7	7.0	2.64**
Environmental Indoctrination Final (EI)	96	42.5	7.8	141	48.5	6.2	6.36**
Basic Practical Work	49	3.02	0.13	93	3.02	0.09	0.00
Basic Academic	54	43.0	7.7	98	48.5	6.7	4.47**
Advanced Practical Work	25	3.03	0.08	62	3.02	0.14	0.58
Advanced Academic	23	64.7	20.5	60	76.7	18.9	2.51*
Final Overall Grade (FOAG)	15	45.5	5.7	51	48.6	7.4	1.71

* $p < .05$

** $p < .01$

TABLE IV

Summary of Naval Flight Officer Attrition by Race and Year

Race	Year Entry	Completed		Attrited		Total N
		N	%	N	%	
BLACK	73	6	14.3	36	85.7	42
	74	6	16.2	31	83.8	37
	75	8	27.6	21	72.4	29
	76	10	52.6	9	47.4	19
	TOTAL	30	23.6	97	76.4	127
WHITE	73	15	20.8	57	79.2	72
	74	14	24.6	43	75.4	57
	75	20	50.0	20	50.0	40
	76	19	63.3	11	36.7	30
	TOTAL	68	34.2	131	65.8	199

TABLE V

Percentages of Black Student Attrition by Type and Stage
Calendar Year 73-75 NFO Input (N = 127)

Type of Attrition	Stage of Training			
	Schools Command	Basic	Advanced	Total
Drop on Request (DOR)	21.26	14.17	1.57	37.00
Not Physically Qualified (NPQ)	3.94	0.79	0.00	4.73
Not Aeronautically Adapted (NAA)	0.00	0.79	0.00	0.79
Academic Failure	6.30	13.39	0.79	20.48
Practical Work Failure (PWF)	0.00	6.29	3.15	9.44
Transfer to Pilot	1.57	0.00	0.00	1.57
Other	1.57	0.79	0.00	2.36
TOTAL	34.84	36.22	5.51	76.37

TABLE VI

Percentages of White Student Attrition by Type and Stage
Calendar Year 73-76 NFO Input (N = 199)

Type of Attrition	Stage of Training			
	Schools Command	Basic	Advanced	Total
Drop on Request (DOR)	21.61	15.58	1.51	38.70
Not Physically Qualified (NPQ)	7.54	2.51	0.50	10.55
Not Aeronautically Adapted (NAA)	0.00	1.00	0.50	1.50
Academic Failure	0.50	5.03	0.00	5.53
Practical Work Failure (PWF)	0.00	1.51	3.52	5.03
Transfer to Pilot	4.02	0.00	0.00	4.02
Other	0.50	0.00	0.00	0.50
TOTAL	34.17	25.63	6.03	65.83

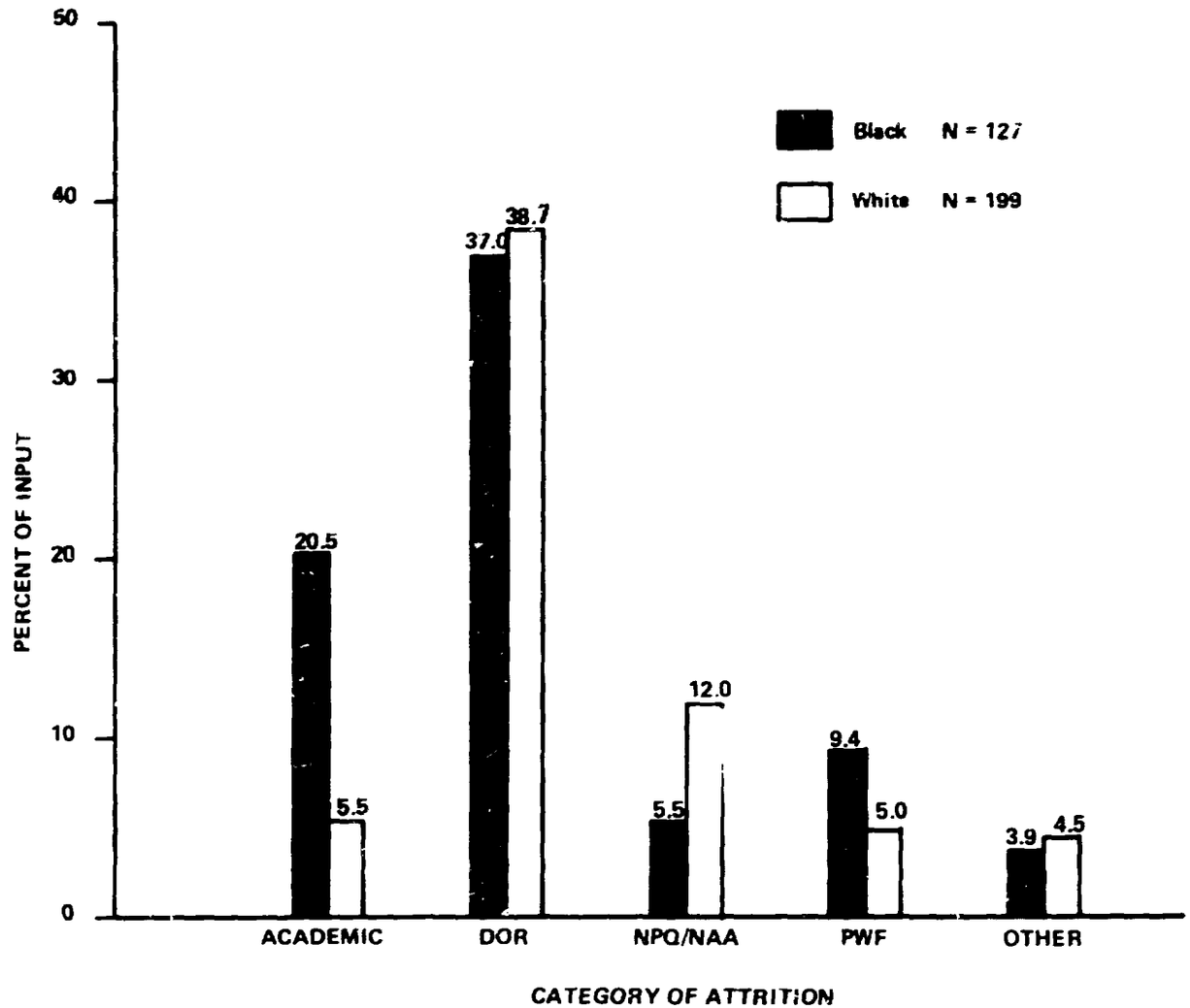

Figure I. Types of Naval Flight Officer Attrition by Race. Percentages of CY73–76 Student Totals.

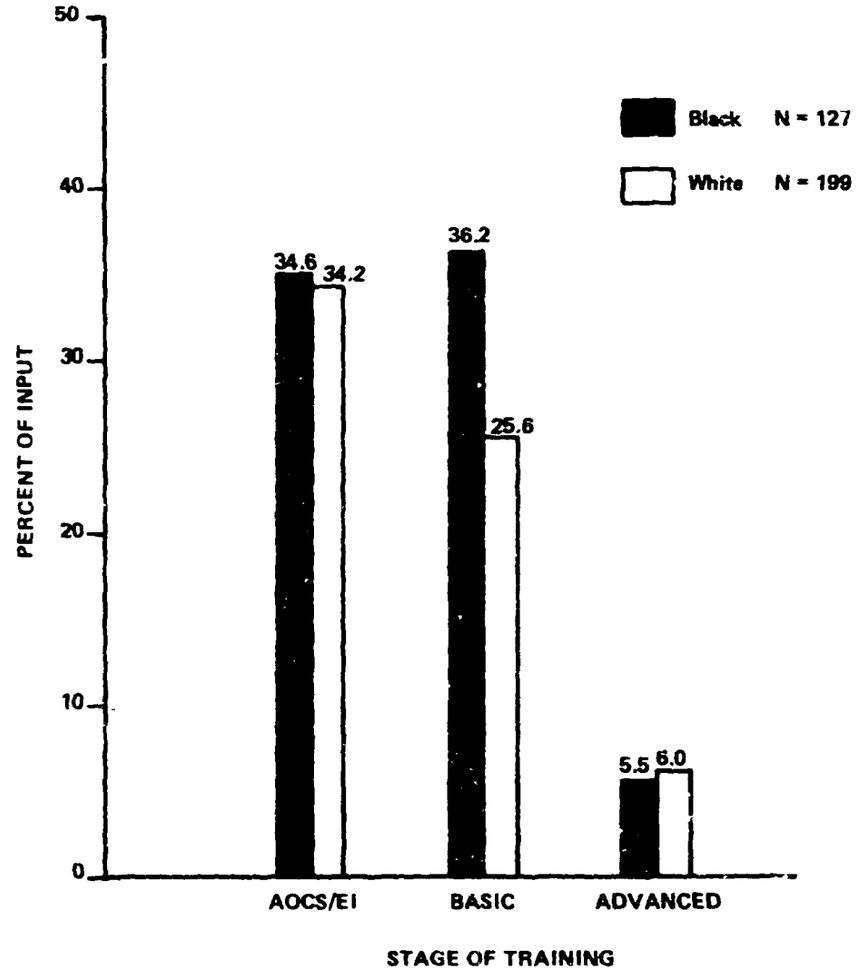

Figure 2. Attrition by Stage of Training. Percentages of CY73–76 NFO Student Totals

TABLE VII

Number and Percentage of Student Naval Flight Officer Attrition by Procurement Source and Attrition Type

Type Attrition	AOC				NAVY OI				MARINE			
	Black N=96		White N=154		Black N=22		White N=31		Black N=9		White N=14	
	N	%	N	%	N	%	N	%	N	%	N	%
Drop on Request	43	44.79	71	46.10	3	13.64	6	19.36	1	11.11	0	00.00
Not Physically Qualified/Not Aeronautically Adapted	5	5.21	21	13.64	1	4.54	0	0.00	1	11.11	3	21.43
Academic Failure	19	19.79	9	5.84	4	18.18	1	3.22	3	33.33	1	7.14
Practical Work Failure	9	9.38	5	3.25	2	9.09	3	9.68	1	11.11	2	14.29
Other	4	4.16	6	3.90	0	0.00	1	3.22	1	11.11	2	14.29
TOTAL	80	83.33	112	72.73	10	45.45	11	35.48	7	77.77	8	57.15

Navy OIs with white Navy OIs ($X^2 = .53$), or black Marines with white Marines ($X^2 = .32$). For both black students and white students the overall Navy OI attrition rates were significantly lower ($X^2 = 14.13$, $p < .01$, and $X^2 = 16.06$, $p < .01$, respectively) than the overall AOC attrition rates. There were no statistically significant differences in attrition rates between other procurement sources.

Table VIII describes the college major distributions for the black group and the matched white sample. The largest percentage of black SNFOs majored in a social science (18.7%) followed by business administration (16.5%), then natural and physical sciences (14.3%). Social science, business administration, natural science, and behavioral science were the top four ranked majors in the matched white group.

Table IX presents completion rates for the black SNFOs and white SNFOs partitioned by college major. Data were not available for all students. The tables show that the greatest percentage of completion occurred among black students who majored in a physical science. Because of the small sample (N = 13), however, this finding must be interpreted cautiously. The same major was also a good preparatory major for white students.

Table X describes the relationships between GPAs and academic grades received during Schools Command and Basic and Advanced academic training. For black students, there were no significant relationships between GPA and academic grades regardless of the racial composition of the college attended. For white students, GPA was significantly correlated to the EI Final and Basic academic grades. Results should be interpreted with caution, since GPAs were compared without controlling for quality of college or college major.

Findings presented in Table XI show no differences in grade point averages between completions and attritions for either the black students or the white comparison group.

Table XII presents the number and percentage of the black students and the comparative white students assigned to the various NFO pipelines. Data are presented separately for Navy and Marine Corps students, since the latter group does not receive Navigation or Airborne Tactical Data System assignments. For analysis, the Airborne Tactical Data System and Radar Intercept Officer pipelines were collapsed into one category since the original contingency table failed to satisfy Cochran's criteria (5). There were statistically significant differences in pipeline assignments of the black SNFOs and the white SNFOs ($X^2 = 8.63$, $p < .02$). These differences are attributable to the assignment of more black students than white students to the Navigation pipeline and more white students than black students to the Tactical Navigator pipeline. Fisher's Exact Probability Test was used to test the difference between pipeline assignments of the black Marine students and the white Marine students. The differences were not statistically significant ($p < .51$).

TABLE VIII

Number and Percentage of Student Naval Flight Officers Partitioned by Race and College Major

College Major	Black Students		White Students	
	N	%	N	%
ENGR	4	4.4	11	8.5
TECH	0	0.0	1	.8
PHYS SCI	13	14.3	11	8.5
MUSIC	5	5.5	1	.8
NAT SCI	13	14.3	15	11.5
AGR	2	2.2	2	1.5
BUS AD	15	16.5	20	15.4
P.E.	4	4.4	8	6.1
BEHAV SCI	10	10.9	12	9.2
HUM	5	5.5	6	4.6
SOC SCI	17	18.7	42	32.3
ED	3	3.3	1	.8
TOTAL	91	100.0	130	100.0

TABLE IX

Number and Percentage of Black Students and White Students Who Completed Naval Flight Officer Training by College Major

College Major	Black Students		White Students	
	N	%	N	%
ENGR	1	25.0	5	45.5
TECH	0	0.0	1	100.0
PHY SCI	5	38.5	6	54.5
MUSIC	0	0.0	0	0.0
NAT SCI	1	7.7	3	20.0
AGR	0	0.0	2	100.0
BUS AD	2	13.3	10	50.0
P.E.	1	25.0	3	37.5
BEHAV SCI	3	30.0	4	33.3
HUM	1	20.0	2	33.3
SOC SCI	4	23.5	16	38.1
ED	0	0.0	1	100.0
TOTAL	18	19.8	53	40.8

TABLE X

Correlations of College Grade Point Average with Academic Grades in Naval Flight Officer Training

Sample	Environmental Indoctrination (EI) Final	Basic Academic	Advanced Academic
Black Students Attending Black College	.10 (24)	-.10 (11)	-.31 (4)
Black Students Attending White College	.02 (32)	-.01 (21)	.14 (9)
Total Black Students	.04 (56)	-.05 (32)	.06 (13)
Total White Students	.28** (88)	.30* (63)	-.03 (42)

( ) Size of sample is within parentheses

* $p < .05$

** $p < .01$

TABLE XI

Means and Standard Deviations of Student Naval Flight Officer Grade Point Averages by Completion and Attrition Categories

Descriptive Statistic	Black SNFOs		White SNFOs	
	Complete	Attrite	Complete	Attrite
Mean	2.32	2.50	2.60	2.66
S.D.	.41	.43	.38	.45
N	17	65	48	65
Significance of Difference	t = 1.60 (NS)		t = .77 (NS)	

TABLE XII

Navy/Marine Pipeline Assignment by Race

Service Group	Pipeline	Black		White	
		N	%	N	%
NAVY	Radar Intercept Officer	4	11.77	12	17.14
	Navigation	19	55.88	19	27.14
	Tactical Navigator	9	26.47	36	51.43
	Airborne Tactical Data System	2	5.88	3	4.29
	TOTAL	34	100.00	70	100.00
MARINE	Radar Intercept Officer	2	66.67	6	66.67
	Tactical Navigator	1	33.33	3	33.33
	TOTAL	3	100.00	9	100.00

Table XIII contrasts complete/attrite rates for the two groups by pipeline. Application of the Fisher Exact Probability Test revealed no significant differences between the black SNFO complete/attrite rates and the white SNFO complete/attrite rates by pipeline.

Tables XIV, XV, and XVI compare black students who attended predominantly black colleges with black students who attended predominantly white colleges on Aviation Selection Test scores, grade point averages, training variables, and complete/attrite. Data on colleges attended were not available for all students.

The findings contained in Table XIV indicate that black students who attended predominantly white colleges had significantly higher AQT scores than black students from black colleges. No differences were found between the black students from white colleges and the black students from black colleges when comparing FAR scores and grade point averages.

The training grades compared in Table XV shows that the black students who attended predominantly white colleges received significantly higher EI Final and Basic academic grades than the black students who attended predominantly black colleges. Other differences were not statistically significant.

Table XVI presents complete/attrite rates from naval flight officer training by college racial composition. Forty-three percent of the black students for whom data were available attended predominantly black colleges. The attrition rate (84%) for black students attending predominantly black colleges was not statistically significantly different from the attrition rate (72%) for black students attending predominantly white colleges ($X^2 = 1.21$).

CONCLUSIONS

This, the final report in a four-part series, shows that black student naval flight officers performed significantly poorer on most training variables than a matched sample of white student naval flight officers. Although the annual black SNFO attrition rate was not significantly higher than the annual white SNFO attrition rate, the overall attrition rate for the total group of black SNFOs was significantly higher than the overall attrition rate for the total group of matched white SNFOs. This finding is not contradictory and can be accounted for by the stability of the larger numbers in the total sample.

It should be noted that the attrition rates decreased steadily for both the black students and the matched white students from calendar year 1973 to calendar year 1976. This decrease in attrition may be accounted for by a change in the quality of input as evidenced by the change in the AQT/FAR scores for the groups under investigation. The mean AQT/FAR scores for the black students were 3.6 and 2.0 in calendar year 1973, and 5.1 and 4.8 in calendar year 1976. A similar increase in quality is evidenced in the matched white sample

TABLE XIII

Student Naval Flight Officer Attrition by Race, Pipeline, and Service Group

Service Group	Pipeline	BLACK					WHITE				
		Complete		Attrite		Total	Complete		Attrite		Total
		N	%	N	%	N	N	%	N	%	N
NAVY	Radar Intercept Officer	4	100.00	0	0.00	4	10	83.33	2	16.67	12
	Navigation	16	84.21	3	15.97	19	17	89.47	2	10.53	19
	Tactical Navigator	6	66.67	3	33.33	9	31	86.11	5	13.89	36
	Airborne Tactical Data Systems	2	100.00	0	0.00	2	3	100.00	0	0.00	3
MARINE	Radar Intercept Operator	1	50.00	1	50.00	2	3	50.00	3	50.00	6
	Tactical Navigator	1	100.00	0	0.00	1	3	100.00	0	0.00	3

TABLE XIV

Means and Standard Deviations of Selection Test Scores and Grade Point Averages Among Black SNFOs Graduating from Black Colleges and Black SNFOs Graduating from White Colleges

Variable	Black College			White College			t
	N	Mean	S.D.	N	Mean	S.D.	
Academic Qualification Test	43	3.93	.86	58	4.40	1.40	2.07*
Flight Aptitude Rating	43	3.19	1.56	58	3.12	2.23	.17
Grade Point Average	33	2.44	.43	48	2.48	.44	.40

* $p < .05$

TABLE XV

Means and Standard Deviations of Training Grades of Black SNFOs Graduating from Black Colleges and Black SNFOs Graduating from White Colleges

CY73-76 STUDENT INPUT

Variable	Black College			White College			
	N	Mean	S.D.	N	Mean	S.D.	t
Peer Rating	26	41.85	11.64	33	44.82	11.65	.97
Officer-like Qualities (OLQ)	26	46.08	8.10	34	47.94	8.30	.87
Environmental Indoctrination Final (EI)	32	41.34	6.51	41	44.68	7.67	2.01*
Basic Flight	11	3.01	0.09	28	3.02	0.16	.26
Basic Academic	15	39.36	6.83	26	44.72	6.84	2.40*
Advanced Flight †	6	3.02	0.08	13	3.04	0.09	.41
Advanced Academic †	6	63.48	26.47	12	65.88	21.17	.19
Final Overall Grade	4	41.45	4.13	7	47.80	6.51	1.98

* $p < .05$

† Air Force Grades excluded

TABLE XVI

CY73-76 Black Student Naval Flight Officer Attrition by College Racial Composition

College Racial Composition	Completed		Attrited		Total
	N	%	N	%	N
Black	7	16.28	36	83.72	43
White	16	27.59	42	72.41	58
TOTAL	23	22.77	78	77.23	101

TABLE XV

Means and Standard Deviations of Training Grades of Black SNFOs Graduating from Black Colleges and Black SNFOs Graduating from White Colleges

CY73-76 STUDENT INPUT

Variable	Black College			White College			
	N	Mean	S.D.	N	Mean	S.D.	t
Peer Rating	26	41.85	11.64	33	44.82	11.65	.97
Officer-like Qualities (OLQ)	26	46.08	8.10	34	47.94	8.30	.87
Environmental Indoctrination Final (EI)	32	41.34	6.51	41	44.68	7.67	2.01*
Basic Flight	11	3.01	0.09	26	3.02	0.16	.26
Basic Academic	15	39.36	6.89	26	44.72	6.84	2.40*
Advanced Flight †	6	3.02	0.08	13	3.04	0.09	.41
Advanced Academic †	6	63.48	26.47	12	65.88	21.17	.19
Final Overall Grade	4	41.45	4.13	7	47.80	6.51	1.98

* $p < .05$

† Air Force Grades excluded

The category of attrition entitled "Drop on Request" was the predominant category of attrition for both the black student naval flight officers and the white student naval flight officers. Previous research has found this category to contain a multitude of reasons for attriting, including fear of flying, availability of other career opportunities, family pressures, as well as encountering difficulties in academic and flight training (6). An additional factor may be the conflict between the expectations and the realities of the naval flight officer program. Exit interviews should be utilized to determine the true reasons for the Drop on Request.

Although the groups were matched on AQT/FAR scores, significantly more black students than white students attrited for academic reasons. An analysis of the AQT/FAR subtests may indicate that although the groups were equated on overall test scores, they may not be equated on all abilities as measured by the subtests. That significantly more white than black students attrited for reasons of physical disqualifications and not aeronautically adapted is unexplainable.

Statistically significant differences between pipeline assignments of the black SNFOs and pipeline assignments of the white SNFOs were found. Significantly more black students than white students were assigned to the Navigation pipeline and significantly fewer black students than white students were assigned to the Tactical Navigator pipeline. Personal preferences, needs of the service, and training performance variables are considered in making pipeline assignments. Data on pipeline preferences of the students were not available; therefore, no further analysis was attempted. It is recommended that pipeline preference data be retained to determine the reasons for the disproportionate assignments. No statistically significant differences between the black student attrition rates and the white student attrition rates from the various pipelines were found.

An analysis of the black SNFO population in terms of the racial composition of the college attended indicated that the majority of the students attended predominantly white colleges, and that there were no statistically significant differences in attrition rates between black SNFOs from predominantly black colleges and black SNFOs from predominantly white colleges.

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APPENDIX A

Lists of Colleges and Universities Attended by Black Students in Naval Flight Officer Training

Traditionally and Predominantly White Colleges and Universities

Abilene Christian University
Atlantic Union College
Central University of Iowa
California State College
California State University
City University of New York
Coe College
Colorado State University
Durham College
Georgia Institute of Technology
Georgia Southwestern College
Hendrix College
Illinois Wesleyan University
Louisiana Tech University
Loyola University of New Orleans
Macalester College
Marshall University
Michigan State University
Oklahoma State University
Pennsylvania State University
Rice University
Sangamon State University
South Central Community College
Southern Methodist University
St. Peters College
Syracuse University
Tennessee Technological University
United States Naval Academy
University of Arkansas
University of California
University of Houston
University of Illinois
University of Kentucky
University of Maryland
University of Nebraska
University of New Orleans
University of North Carolina
University of Pittsburgh
University of San Francisco
University of South Florida
University of Southern Mississippi
University of Tennessee
University of Texas
University of West Florida
Western Kentucky University
Western Illinois University
Wayne State College

Traditionally and Predominantly Black Colleges and Universities

Alabama A&M University
Albany State College
Alcorn State University
Barber-Scotia College
Benedict College
Central State University
Edward Waters College
Fisk University
Florida A&M University
Fort Valley State College
Grambling State University
Hampton Institute
Howard University
Lane College
Mississippi Valley State College
Morehouse College
Morris Brown College
North Carolina A&T State University
North Carolina Central University
Savannah State College
South Carolina State College
Southern University A&M
Southern University in New Orleans
Tougaloo College
Tuskegee Institute
Winston-Salem State University

APPENDIX B

Percentages of Attrition by Procurement Source and Attrition Type

APPENDIX B

Percentages of Attrition by Procurement Source and Attrition Type

Attrition Type	AOC		USNA		NROTC/OCS		USMC/USMCR		OTHER	
	Black N=96	White N=154	Black N=3	White N=4	Black N=12	White N=17	Black N=9	White N=14	Black N=7	White N=10
Drop on Request	44.79	46.10	0.00	0.00	16.67	17.65	11.11	0.00	14.29	30.00
Not Physically Qualified	4.17	12.99	0.00	0.00	8.33	0.00	11.11	7.14	0.00	0.00
Not Aeronautically Adapted	1.04	.65	0.00	0.00	0.00	0.00	0.00	14.29	0.00	0.00
Academic Failure	19.79	5.84	0.00	0.00	8.33	5.88	33.33	7.14	42.86	0.00
Practical Work Failure	9.38	3.25	0.00	0.00	16.67	5.88	11.11	14.29	0.00	20.00
Transfer to Pilot	1.04	3.25	0.00	0.00	0.00	5.88	11.11	14.29	0.00	0.00
Other	3.12	.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	83.33	72.73	0.00	0.00	50.00	35.29	77.77	57.15	57.15	50.00

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

This is the fourth and final report in a series of reports analyzing minority officer accessions and attritions in the Naval Air Training Program. Previous reports compared black civilian procured applicants and white civilian procured applicants in terms of aviation selection test performance. In addition, black students in pilot training were compared with a matched sample of white students on training performance variables and college background factors. This report examines for differences in selection test scores, training grades, complete/attrite data, and college background factors between black students and a matched sample of white students in naval flight officer training.

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This report shows that black student naval flight officers performed significantly poorer on most training variables than a matched sample of white student naval flight officers. The overall attrition rate for the total group of black SNFOs was significantly higher than the overall attrition rate for the total group of matched white SNFOs. The category of attrition entitled "Drop on Request" was the predominant category of attrition for both the black student naval flight officers and the white student naval flight officers. Significantly more black students than white students attrited for academic reasons, while significantly more white students than black attrited for reasons of physical disqualifications and not aeronautically adapted.

Statistically significant differences between pipeline assignments of the black SNFOs and pipeline assignments of the white SNFOs were found. However, no statistically significant differences between the black student attrition rates and the white student attrition rates from the various pipelines were found.

An analysis of the black SNFO population in terms of the racial composition of the college attended indicated that the majority of the students attended predominantly white colleges, and that there were no statistically significant differences in attrition rates between black SNFOs from predominantly black colleges and black SNFOs from predominantly white colleges.