UNCLASSIFIED

AD NUMBER

ADB951549

NEW LIMITATION CHANGE

TO

Approved for public release, distribution unlimited

FROM

Distribution authorized to U.S. Gov't. agencies and their contractors; Administrative/Operational Use; OCT 1948. Other requests shall be referred to Adjutant General's Office [Army], Washington, DC 20310.

AUTHORITY

ARI Notice, 13 Nov 1979

THIS PAGE IS UNCLASSIFIED

UNANNOUNCED

PRS Report No. 767
PJ 4086-13
PRS-LI&PA
ER/cgp
12 Oct 48

ADB951549

PRS Report 767

FOLLOW-UP STUDY OF OFFICER PERFORMANCE OF WEST POINT GRADUATES

PJ 4086-13

I. Problem

A. Background

This is one of a series of studies authorized per Disposition Form File No. SPPP-L 351.11 Mil Ac (21 Mar 46), Subject: "Studies in Personnel Policies and Procedures at West Point."

B. General Problem

The general problem is that of determining the relationship between cadet performance at West Point and success in later years as Army officer. This is one of a series of research projects currently being conducted to devise methods by means of which the Academy may improve its selection system, grading procedures, and weights for the various elements which determine standing at the Academy. Most of the criterion data on which this report is based were collected during 1946 and the analyses substantially completed in 1947. On the basis of a preliminary analysis a report was presented at the 1947 APA meeting and an Interim Progress Report was written in 1947.

C. Specific Problem

The specific problem is:

1. To determine those of the available components of final standing at the United States Military Academy which are related to post-Academy efficiency. This was carried out for all cases available at the end of an eighteen-month period following graduation. The variables studied are found in column 1, Table I.

2. To determine the extent to which lack of contact between rating officers and subject officers affects the value of the coefficients obtained in study outlined in 1 above. (For variables, see column 5 of Table I).

79 11 20 024

3. To determine the extent to which Academy variables are related to officer success in three subdivisions of arms and services. The variables studied were those shown to be valid in the study mentioned in 1 above and those having presumptive validity for one or more of the arm or service subdivisions. (For variables, see columns 3 and 4 of Table I).

4. Determination of the relative value of components of the aptitude rating in predicting the later success criterion. (Column 2, Table I)

II. Population

Since the cadet evaluation methods, current when the study was initiated, were first used with the class of 1944, this group was selected for study. Of the 474 graduates in the Class of 1944, follow-up records were available for 280 officers eighteen months after graduation. The study was conducted on the basis of 280 officers.

Due to the pressures of war the class of 1944 differed from the average West Point graduating class in the following respects:

A. Its members were in attendance at the Academy during a time when requirements for admission and graduation were much less stringent than ordinarily.

B. The class was larger than usual.

C. An abridged curriculum which reduced the course of studies from 4 to 3 years was in effect.

D. Approximately 1/3 of the cadets were graduated as fully trained air pilots, whereas ordinarily cadets are given training just sufficient to provide them with a tactical understanding of air operations.

III. Description of Variables

The same variables are not used in all parts of the study. Although this was technically undesirable, limitations of time and personnel made it administratively necessary. Only the variables which appeared to be most significant for each problem were utilized.

The variables used for the specific statistical operations in each part of the study are listed in Table I. In most cases they are self-explanatory. Description follows of those variables whose meaning may not be self-evident.

A. Predictor variables

1. Total Proportional Parts: This is an over-all score which is determined upon graduation on the basis of a weighted combination of all the grades received throughout the 3 years at the Academy. It includes the other predictor variables. The specific weighting system used was devised at West Point and puts heavy emphasis upon academic achievements.

2. Conduct: Cadets failing to comply with academic regulations and customs are given demerits. On the basis of the number of demerits received, cadets are given grades for conduct at the end of each academic year and placed in a final order of merit at the end of the last year.

3. Aptitude for Service: This variable consists of a composite of ratings on a priori components of leadership ability. The yearly rating is a combination of the ratings accomplished by fellow-cadets and by tactical officers. Final standing in Aptitude-for-Service is a sum of the yearly ratings. For this study, Aptitude for Service total was broken down into ratings by officers and ratings by fellow cadets for each year.

4. Academic Course Grades: Grades in the following courses are used as predictor variables in one or another part of the study: Tactics, Physical Training, Military Instructor Training, Military Engineering, History, Ordnance, Law, Economics, Mechanics, Electricity, Mathematics and Physics. The specific class years are as indicated in Table I.

B. Criterion Variables

1. Desirability for Command (Attitude): This refers to Section F of the Form 67 which is the rating officer's attitude toward the ratee. For computational purposes the following code was utilized:

Code	Description
1	Particularly desire to have him
2	Be pleased to have him
3	Be satisfied to have him
4	Prefer not to have him
5	Definitely not want him
X	No entry

2. Army Grade: This was the officer's grade as it appeared in Section B of the latest Form 67 available.

3. Last Numerical Rating: This is the rating appearing in Section M of Form 67. It is the result of averaging ratings on the following:

a. Physical Activity and Endurance

b. Stability under pressure

c. Attention to duty

d. Cooperation

e. Initiative

f. Intelligence

g. Force

h. Judgment

i. Leadership

j. Ability to obtain results

4. Semi-Annual Ratings: This is an average of all the Numerical Ratings (Entry M on Form 67) weighted according to the time each covered, which were given to the ratee during the six-month period covered by the last Form 67 accomplished (June 1945 to Dec. 1945). Ratings are regularly given every six months, but are also given when an officer changes rank or organization.

C. Other variables

1. Arm or Service: specified on Form 67.

2. Degree of rater's contact: This refers to Section E of Form 67 in which the rater indicates the basis on which his entries on the form are formulated. For computational purposes the following code was utilized:

Code	Description
1	Intimate daily contact
2	Frequent observations of results of his work
3	Infrequent
4	Academic Record
5	Official Report
X	No entry

IV. Procedure

A. Collection of Data

1. Roster cards including components of graduation total proportional parts for the West Point graduates in the class of 1944 were secured from West Point.

2. Criterion information was secured from the Efficiency Reporting and Rating Sub-Section, Officers Branch, AGD, Washington.

B. Statistical Analysis

The statistical analysis can be roughly divided into five parts (as indicated in Table 1).

1. Intercorrelations were computed for representative predictor and criterion variables for the group as a whole, excluding only those 60 cases whose efficiency ratings were based on school records.

2. Intercorrelations were computed for the variables listed in columns 3 and 4 of Table 1 with the group divided into three sub-groups according to Arm or Service as follows:

a. Predominantly Infantry Officers; also included a few in Cavalry and Military Police (N = 97)

b. Technical Officers; including Field Artillery, Coast Artillery, Quartermaster Corps, Engineer (N = 127)

c. Air Corps Officers (N = 56)

3. In order to investigate the possibility that specific academic subject grades may predict the criteria significantly better than others in the different groups, intercorrelations were computed for academic subject grades and the criterion variables for the same three groups.

4. In order to investigate the possibility that degree of contact may influence the relationships found between the predictor and criterion variables, the group was divided into two sub-groups according to degree of contact as follows and intercorrelations computed.

a. Degree of Contact 1 (N = 156)

b. Degree of Contact 2, 3, 5 (N = 66)

5. In order to investigate the possibility that certain of the components of the Aptitude for Service rating had better predictive value, this rating was broken down into its components and these were related to the criteria and other representative predictor variables.

V. Results and Conclusions:

A. For Assignment Regardless of Branch or Service:

For a first approximation to the question of the extent to which scores on the curriculum elements at West Point are related to later success of West Point graduates, the variables found in column 1, Table 1 were intercorrelated. These variables include measures of success eighteen months after graduation as well as representative measures from those which formed the basis for final standing upon graduation from the Academy. All graduates in the class of forty-four were used for which efficiency records were available and based on a period of actual duty.

The full matrix of intercorrelations is found in Table II and a summary of the most important coefficients is found in Table III. It will be noted that the relationship of the West Point variables to on-the-job success is, in general, rather low. Measure of success at the Academy is not in general highly related to later success as a commissioned officer.

It is particularly interesting to note that Graduation Total Proportional Parts, which determined final standing and order on the promotion list for the cadets of any one year, has virtually no bearing upon the extent to which a graduate will be successful. (The r = .08 against semi-annual rating, .14 against Attitude and .15 against grade.) This suggests considerable need for revision of the method of determining final standing or a revision in the method of determining order for promotion.

On the other hand, Aptitude for Service showed a moderately high correlation with later success. (.39 with semi-annual rating, .26 with attitude, and .19 with grade.) Any composite of variables to obtain a final standing at West Point should emphasize Aptitude for Service. The present under-emphasis of this variable in determining final standing is shown by the lack of validity of Graduation Total Proportional Parts, which, with proper weighting, should have at least as high a correlation with success as its best component.

We have other interesting relationships present in these data. The fact that physical efficiency stands as the second highest variable in predicting success is in keeping with its prediction of a variety of non-physical variables in the Academy and indicates that the physical efficiency variables might carry greater weight in final class standing. It is clear that non-academic factors, e.g., Aptitude for Service and Physical Efficiency are better than academic grades, e.g., course grades and Total Proportional Parts (heavily weighted with class-room grades) in predicting officer success. This fact should certainly be given consideration as the relative weights of the components of Total Proportional Parts are modified through the years ahead.

It is significant that the correlation of the predictors and criterion variables with Grade seems to indicate that promotions did not occur primarily as a function of class standing at West Point. Grade correlates very close to zero with Graduation Total Proportional Parts (which would determine class standing) and shows some near appreciable correlation only with Aptitude for Service Ratings and Semi-annual Ratings. The correlations of this variable with the remaining variables of the analysis are all sufficiently low as to suggest that factors other than those included in the West Point grading system must have played an important role in determining promotions. This point is stressed to dispel any doubts the reader may have held as to the biasing effect of determination of promotion by West Point class standing on a prediction study of this sort.

B. Validity as a function of contact between raters and their superior officers:

In order to determine if low validities of the West Point Total Proportional Parts components are a function of inadequacy of the criteria, the group was separated into those who had intimate daily contact with raters and those who had no such contact. Tables IV and V show these correlations and Table VI a summary of the more important relationships. It will be noted that the means and SD's of Tables IV and V show few if any significant differences as a result of this subdivision of the population. For the two criteria, attitude and semi-annual rating, which would reflect the day-to-day efficiency of the raters, increase in the validity of all West Point variables was obtained when the ratings carried out by supervisors with little knowledge of daily performance were eliminated (see Table VI). There was only one major change in the relative importance of the West Point variables as a result of this change in the criteria. That is found in the much higher correlation ($.29 \nless .24$ rather than $.00 \nless .02$) of the conduct variable when the raters are basing their ratings upon daily contact.

It is interesting to note that Grade has higher correlation with the other two criterion variables in the low as opposed to the high contact group. Presumably, rating officers are influenced by Grade when the ratee is not well known but are little influenced when he is well known to them. Graduation Total Proportional Parts also shows higher correlation with grade in the low as opposed to the high contact. Its correlation with the other two criteria, however, is lower in low contact group than in the high contact. No convincing explanation of these latter findings can be offered. It is possible that they are sampling fluctuations.

In conclusion, we can state that although the criterion correlations were somewhat higher with improved opportunity for criterion observations, the conclusions reached in 1 above still stand. The non-academic variables are more highly related to the criteria than Total Proportional Parts which still bears a negligible relationship to all criteria.

C. Prediction of success within a more homogeneous assignment:

The above data have implied that, throughout the Army, academic achievement (Total Proportional Parts) is not particularly related to the success of West Point graduates. The possibility that certain of the academic variables would have predictive value within certain assignments seemed worth investigating. For example, the possibility that science and technical courses might have greater predictive value within the technical group was considered. Representative academic course grades were, therefore, related to the criterion within troop command, technical, and Air Corps assignment groups. To obtain a basis for comparison, the variables used in studying the group as a whole were also examined. These relationships are found in Tables VII, VIII, IX, X, XI and XII. Table XIII summarizes the more important relationships.

It will be noted from Table XIII that all criterion correlations are highest within the Infantry and show virtually no relationship within the Air Corps. It is particularly interesting to note that Grade is, within the Infantry, much more highly related to the final class standing than to the non-academic components. Apparently, promotion is more influenced by West Point class standing within the Infantry than in other arms and services.

If we take a semi-annual rating as the best indicator of success, recognizing that Grade bears a spurious relationship to the predictors and that the attitude variable is based upon a shorter period of contact and includes the bias of a single rater, we find that differential success within the three assignments studied cannot be predicted from academic grades. Validities against the other criteria do not significantly contradict the above generalization.

There is no indication from Table XIII that academic grades are useful predictors of success in the technical services. The academic subjects bore even less relationship to success in the technical services than they did in the group as a whole. Aptitude for Service was the only consistent predictor for this group.

As a result of this subsidiary study, it might appear that the findings for the Infantry field might modify the original conclusion that academic grades should receive less weight in future determination of final class standing. Grades have significant validity within this group. Their validity here, however, does not alter the earlier conclusion regarding their present over-emphasis in the determination of final standing. Since the increase in the validity of the academic components was accompanied by equivalent rise in the validity of the non-academic components. For this group, as for all others studied, the most valid weights for final class standing are roughly in the proportions: Physical Efficiency, 1; Conduct, $1\frac{1}{2}$; and Aptitude For Service, $2\frac{1}{2}$. We assume here that these weights are to be applied to variables with equal S.D.'s.

In summary, we point out that: (a) differential success in the three services cannot be predicted from West Point grades, (b) only the non-academic components have validity in the services other than Infantry, and (c) even within the Infantry where academic grades are more predictive, their composite is no better than any one of the non-academic variables, and Aptitude for the Service continues to be the best predictor of later success.

D. Determination of the relative validity of the components of the Aptitude for Service Rating:

The surprisingly high validity of the Aptitude for Service Rating throughout the preceeding portions of this project made an examination of its components highly desirable. To accomplish this, the various ratings going into Aptitude for Service were obtained and intercorrelated. The intercorrelations are found in Table XIV and a summary of the important relationships is found in Table XV.

These results indicate a slight superiority of the cadet ratings over the tactical officers ratings as evidenced by the first order validities. If we consider Aptitude for Service in connection with the academic grades, as we might for the Infantry, this superiority is still greater since the cadet ratings give a more independent estimate (see the higher correlation of Tactical Officers Rating with Total Proportional Parts).

It is also apparent from the correlations reported in the summary table that the leadership component is somewhat more valid than the remaining three. This is true for both Tactical Officers Ratings and Cadets Ratings.

Determination of the optimum weights for combining these various ratings, although originally planned, was dropped when it was learned that the Aptitude for Service Rating had been modified eliminating the components here studied.

VI. Recommendations for Future Research

Administrative action that may be taken on the basis of this study should be tempered by the following considerations: first, the number of cases involved in the study was not large and therefore the resulting correlations obtained would tend to be somewhat unstable. This is especially true when the total population is divided into sub-groups. Second, the criterion data was collected eighteen months after graduation from the Academy. During a period of such duration one cannot expect to obtain a criterion measure reflecting the long term value of an officer to the service.

It is therefore highly desirable that research be extended over a longer period of time and that more cases be obtained. Very possibly, with increase in the period of time between graduation and the evaluation of officer competence, the relationship between the predictor variables and the criterion will change. It would be desirable to analyze data from this same group after a five-to ten-year period and determine the effect of length of service on the predictive value of the various West Point measures. It is also necessary to continue similar follow-up studies with other classes in order to minimize the effect of the atypical characteristics of the present class and to appraise the effects of changes in the Aptitude-for-Service Ratings and the efficiency rating form.

A further limitation of these findings that must temper administrative action is the fact that the high weights, at present, given to academic components of Graduation Total Proportional Parts is undoubtedly a strong motivational factor governing the study habits of cadets. Should the weights given to academic components of Graduation Total Proportional Parts be reduced in order to increase the predictive value of graduation standing, a change in motivational level could result. This could be dangerous since the effects on officer efficiency of a reduction in academic achievement which might result from a changed motivational level are unknown. If a method can be devised whereby the present motivational level can be maintained, at the same time that the weights given to academic courses are reduced, such modification of the weighting procedure would be more feasible.

One criterion variable omitted from the present study which will be included in future analysis is attrition. Attrition records in the Official Army Register will be obtained and related to predictor variables. The cases lost to the service will be divided into sub-groups according to the reason, i.e., left the service, discharged, killed, etc.

VII. Personnel in charge

Former Project Director: G. Hamilton Crook

Project director and former statistical advisor: R. H. Gaylord

Statistical Advisor: K. Wood

Assistant to Project Director: E. Russell

TABLE I

LIST OF VARIABLES USED IN EACH PART OF THE STUDY

	Group as a Whole		Group Divided According to Arm of Service		Group Divided According to Degree of Contact
	General Predictors 1	Components of Aptitude for Service Differentiated 2	General Predictors 3	Academic Courses Differentiated 4	5
Predictor Variables	1. Fourth Class Year Proportional Parts 2. Third Class Year Proportional Parts 3. First Class Year Proportional Parts. 4. Graduation Total Proportional Parts. 5. Military Instructor Training (First Class Year) 6. Military Physical Efficiency (First Class Year) 7. Aptitude for Service (First Class Year) 8. Tactics(Third Class Year) 9. Conduct (Third Class Year)	1. Graduation-Total Proportional Parts 2. Military Instructor Training 3. Leadership Estimate-Officers 2nd Term 4. Attitude-Officers 2nd Term 5. Military Appearance-Officer 2nd Term. 6. Preference in War Officer 2nd Term 7. Tactics-3rd Class Yr. 8. Conduct-3rd Class Yr. 9. Av. Preference Officers 1st Term 10. Physical Efficiency 11. Aptitude for Sv - 1st Class Yr. 12. Leadership Est. Cadet 1st Term 13. Attitude 1st Term 14. Military Appear. 1st Term 15. Av. Pref by Cadets 16. Leadership-Cadets 2nd Term 17. Attitude 2nd Term 18. Military Appear. 2nd Term 19. Average Preference 2nd Term	1. Fourth Class Year Proportional Parts 2. Third Class Year Proportional Parts 3. First Class Year Proportional Parts 4. Graduation Total Proportional Parts. 5. Military Instructor Training (First Class Year) 6. Military Physical Efficiency (First Class Year) 7. Aptitude for Service (First Class Year) 8. Tactics (Third Class Year) 9. Conduct (Third Class Year)	1. Aptitude for Service 2. Proportional Parts Military Engineer. 3. Prop. Parts-Hist 4. Prop. Parts-Ordnance 5. Prop. Parts-Law 6. Prop. Parts-Economics 7. Prop. Parts-Mechanics 8. Prop. Parts-Electricity 9. Prop. Parts-Math. 10. Prop. Parts-Physics	1. Fourth Class Year Proportional Parts. 2. Third Class Year Proportional Parts. 3. First Class Year Proportional Parts 4. Graduation Total Proportional Parts. 5. Military Instructor Training (First Class Year) 6. Military Physical Efficiency (First Class Year) 7. Aptitude for Service (First Class Year) 8. Tactics (Third Class Year) 9. Conduct (Third Class Year)
Criterion Variables	10. Grade 11. Attitude (Desirability for Command) 12. Semi-annual Rating Form 67	20. Grade 21. Semi-Annual Rating 22. Attitude(Desirability for command) 23. Numerical Rating	10. Grade 11. Attitude (Desirability for Command) 12. Semi-Annual Rating	11. Grade 12. Attitude (Desirability for Command) 13. Semi-Annual Rating	10. Grade 11. Attitude (Desirability for Command) 12. Semi-Annual Rating

TABLE II

CORRELATION MATRIX REPORT FORM
(Total group - N=222)

MEAN	STANDARD DEVIATION	DESCRIPTION OF VARIABLES														
5.865	.413	Grade	1	1												
1.459	.648	Attitude	2	.080	2											
53.324	7.150	Semi-Annual Rating	3	237	499	3										
34.288	2.480	4th Class yr. Proportional Parts Total	4	098	096	.084	4									
65.198	3.976	3rd Class yr. Proportional Parts Total	5	118	135	.078	.867	5								
8.842	.663	1st Class yr. Proportional Parts Total	6	144	115	.123	.732	.839	6							
18.923	1.200	Graduation Proportional Parts Total	7	148	140	.078	.872	.943	.857	7						
38.874	1.642	1st Class yr. Military Instructor Tng.	8	091	043	.091	.550	.603	.623	.658	8					
11.270	.864	1st Class yr. Military Phys. Efficiency	9	087	109	.212	.172	.131	.153	.146	.116	9				
66.009	8.090	1st Class yr. Aptitude for Service	10	194	257	.385	.465	.472	.432	.468	.378	.370	10			
57.973	3.161	3rd Class yr. Tactics	11	148	108	.130	.660	.753	.740	.770	.660	.199	.447	11		
34.288	2.154	3rd Class yr. Conduct	12	118	205	.176	.287	.378	.322	.357	.220	.132	.424	.357	12	
			13													13
			14													

TABLE III

SUMMARY OF CRITERION RELATIONSHIPS OF REPRESENTATIVE WEST POINT VARIABLES

Predictor Variables	Criterion Variables		
	Grade	Attitude (Desirability for Command)	Semi-Annual Rating
Graduation Total Proportional Parts	.148	.140	.078
Military Instructor Training (First Class Year)	.091	.043	.091
Military Physical Efficiency (First Class Year)	.087	.109	.212
Aptitude for Service (First Class Year)	.194	.257	.385
Tactics (First Class Year)	.148	.108	.130
Conduct (Third Class Year)	.118	.205	.176

TABLE IV

CORRELATION MATRIX REPORT FORM
Correlation Matrix: "Degree of Contact 1" Group (N = 156)

MEAN	STANDARD DEVIATION	DESCRIPTION OF VARIABLES														
5.897	.303	Grade	1	1												
1.365	.600	Attitude	2	.030	2											
53.173	7.447	Semi-Annual Rating	3	179	549	3										
34.346	2.451	4th Class yr. Proportional Part Tot	4	056	169	.110	4									
65.321	4.048	3rd Class yr. Proportional Part Tot	5	093	191	.098	.853	5								
8.840	.684	1st Class yr. Proportional Part Tot	6	141	185	.159	.729	.852	6							
18.955	1.211	Graduation Proportional Part Tot	7	082	207	.113	.861	.947	.866	7						
38.904	1.644	1st Class yr. Military Instructor Tng	8	071	094	.144	.532	.619	.642	.668	8					
11.276	.852	1st Class yr. Military Phys. Efficiency	9	139	185	.218	.123	.092	.120	.118	.083	9				
66.609	8.121	1st Class yr. Aptitude for service	10	214	306	.441	.435	.428	.426	.427	.380	.409	10			
58.032	3.009	3rd Class yr. Tactics	11	130	138	.142	.635	.750	.750	.760	.665	.204	.433	11		
34.417	2.112	3rd Class yr. Conduct	12	043	287	.242	.335	.417	.361	.388	.259	.214	.409	.340	12	
			13													13
			14													

TABLE V

CORRELATION MATRIX REPORT FORM
Correlation Matrix: "Degree of Contact 2, 3, 5" Group (N = 66)

MEAN	STANDARD DEVIATION	DESCRIPTION OF VARIABLES													
5.788	.591	Grade	1	1											
1.682	.700	Attitude	2	.203	2										
53.682	6.377	Semi-Annual Rating	3	360	467	3									
34.152	2.542	4th Class yr. Proportional Parts Total	4	170	-061	.019	4								
64.909	3.785	3rd Class yr. Proportional Parts Total	5	185	-006	.025	.904	5							
8.848	.609	1st Class yr. Proportional Parts Total	6	174	-029	.011	.749	.809	6						
18.848	1.171	Graduation Proportional Parts Total	7	266	-015	.015	.899	.930	.839	7					
38.803	1.635	1st Class yr. Military Instructor Tng.	8	137	-078	.051	.590	.563	.579	.633	8				
11.258	.893	1st Class yr. Military Phys. Efficiency	9	040	-034	.201	.277	.227	.239	.211	.190	9			
64.591	7.833	1st Class yr. Aptitude for service	10	235	101	.250	.536	.584	.463	.566	.371	.288	10		
57.833	3.488	3rd Class yr. Tactics	11	186	047	.111	.710	.770	.737	.799	.653	.189	.480	11	
33.985	2.219	3rd Class yr. Conduct	12	245	003	.018	.178	.278	.234	.279	.129	-044	.442	.387	12
			13												13
			14												

TABLE VI

COMPARISON OF CORRELATIONS OF GROUPS HAVING DIFFERENT DEGREES OF CONTACT WITH THEIR RATING SUPERIORS

Predictor Variables	Criterion Variables			
	Attitude		Semi-Annual Rating	
	Daily Contact	Little Contact	Daily Contact	Little Contact
Graduation Total Proportional Part	.207	-.015	.113	-.051
Military Instructor Training (First Class Year)	.094	.078	.144	-.051
Military Physical Efficiency (First Class Year)	.185	.034	.218	.201
Aptitude for Service (First Class Year)	.306	.101	.441	.250
Tactics (Third Class Year)	.138	.047	.142	.111
Conduct (Third Class Year)	.287	.003	.242	.018

TABLE VII

CORRELATION MATRIX REPORT FORM

Intercorrelations of Non-Academic variables & the criteria:
Infantry Group (N = 97)

MEAN	STANDARD DEVIATION	DESCRIPTION OF VARIABLES														
5.866	.341	Grade Code (Standard)	1	1												
1.392	.602	Attitude	2	.046	2											
54.206	7.009	Semi - Annual Rating	3	.252	.513	3										
33.216	1.986	4th Class yr. Prop. pts. Total	4	.277	.114	.230	4									
63.093	3.012	3rd Class yr. Prop. pts. Total	5	.269	.151	.231	.796	5								
8.546	.538	1st Class yr. Prop. pts. Total	6	.388	.184	.320	.633	.752	6							
18.289	.930	Graduate Prop. pts. Total	7	.333	.147	.257	.815	.885	.777	7						
38.320	1.678	Military Instructor Training	8	.232	.063	.235	.446	.480	.538	.601	8					
11.371	.945	Military Physical Efficiency	9	.070	.147	.241	.325	.238	.189	.300	.205	9				
64.918	8.204	Aptitude for Service	10	.299	.309	.508	.429	.480	.447	.538	.389	.444	10			
56.804	3.021	Tactics 3rd Class Year	11	.216	.156	.236	.597	.701	.643	.725	.580	.253	.458	11		
33.814	2.165	Conduct 3rd Class Year	12	.132	.221	.364	.252	.325	.317	.329	.277	.119	.501	.352	12	
			13													13
			14													

TABLE VIII

CORRELATION MATRIX REPORT FORM

Intercorrelation of Non-Academic Variables & the criteria for the Technical Group (N 127)

MEAN	STANDARD DEVIATION	DESCRIPTION OF VARIABLES															
5.866	.459	Grade Code (Standard)	1	1													
1.504	.674	Attitude	2	-.142	2												
52.646	7.154	Semi-annual Rating	3	.233	.479	3											
35.079	2.509	4th Class yr. Prop Parts Total	4	.032	.144	.077	4										
66.748	3.890	3rd Class yr. Prop Parts Total	5	.076	.210	.096	.867	5									
9.063	.661	1st Class yr. Prop Parts Total	6	.050	.142	.103	.709	.833	6								
19.394	1.158	Grad. Class yr Prop Parts Total	7	.093	.224	.079	.868	.948	.852	7							
39.268	1.492	1st Class yr. Military Instructor tng.	8	.017	.064	.039	.552	.627	.621	.650	8						
11.189	.791	1st Class yr. " Physical Efficiency	9	.104	.060	.182	.163	.189	.248	.168	.104	9					
66.921	7.851	Aptitude for Service	10	.134	.250	.319	.469	.460	.398	.415	.317	.327	10				
58.874	2.956	3rd Class yr. Tactics	11	.123	.138	.138	.621	.728	.749	.746	.652	.256	.412	11			
34.654	2.063	3rd Class yr. Conduct	12	.116	.231	.065	.229	.334	.235	.294	.079	.175	.335	.274	12		
			13													13	
			14														

TABLE IX

CORRELATION MATRIX REPORT FORM

Intercorrelation of the Non-Academic variables and the criteria:
Air Corps Group (N 56)

MEAN	STANDARD DEVIATION	DESCRIPTION OF VARIABLES														
5.982	.132	Grade code (Standard)	1	1												
1.411	.676	Attitude	2	-.082	2											
53.393	5.876	Semi Annual Rating	3	.082	.563	3										
34.232	2.155	4th Class yr. Prop. Parts Total	4	-.077	-.033	-.112	4									
65.107	3.589	3rd Class yr. Prop. Parts Total	5	-.080	.018	-.078	.817	5								
8.786	.619	1st Class yr. Prop. Parts Total	6	.047	.003	-.080	.654	.782	6							
18.786	1.013	Grad. Class yr. Prop. Parts Total	7	-.105	.054	.002	.849	.940	.782	7						
38.411	1.623	1st Class yr. Military Instructor Tng.	8	-.117	.235	.045	.437	.655	.639	.640	8					
11.036	.944	1st Class yr. " Physical Efficiency	9	-.005	.023	.017	.057	.015	.044	.008	.130	9				
65.768	7.996	Aptitude for Service	10	-.030	.138	.175	.337	.471	.322	.439	.455	.472	10			
57.875	3.042	3rd Class yr. - Tactics	11	-.084	.071	.135	.405	.636	.498	.568	.575	.008	.491	11		
34.107	1.970	3rd Class yr. - Conduct	12	-.213	-.074	.066	.280	.397	.458	.307	.254	.031	.336	.381	12	
			13													13
			14													

TABLE X

CORRELATION MATRIX REPORT FORM

Intercorrelation between Components of Academic Grade, Aptitude for Service, and the criteria: Infantry Group (N 97)

MEAN	STANDARD DEVIATION	DESCRIPTION OF VARIABLES														
5.866	.341	Grade	1	1												
1.392	.602	Attitude	2	.046	2											
54.206	7.009	Semi-Annual Rating	3	.252	.513	3										
64.918	8.204	Aptitude for Service	4	.299	.309	.508	4									
55.381	3.335	Prop Parts 1st class yr -Mil. Engineering	5	.200	.198	.269	.363	5								
11.814	.967	Prop Parts 1st class yr -Mil. History	6	.295	.035	.202	.328	.575	6							
72.485	4.130	Prop Parts 1st class yr-Mil. Ordnance	7	.313	.143	.222	.454	.689	.596	7						
57.000	2.766	Prop Parts 1st class yr- Law	8	.230	.136	.219	.299	.551	.551	.538	8					
56.948	3.645	Prop Parts 1st class yr- Economics	9	.304	.085	.243	.366	.674	.694	.674	.727	9				
13.412	.961	Prop Parts 1st class yr- Mechanics	10	.209	.208	.193	.333	.749	.538	.708	.504	.589	10			
13 +	.987	Prop Parts 1st class yr- Electricity	11	.288	.134	.178	.345	.750	.564	.686	.555	.709	.805	11		
10.680	.781	Prop Parts 3rd class yr- Mathematics	12	.200	.129	.070	.236	.570	.468	.483	.315	.523	.740	.653	12	
11.155	.751	Prop Parts 3rd class yr - Physics	13	.161	.088	.172	.305	.639	.466	.654	.407	.628	.755	.711	.700	13
			14													

TABLE XI

CORRELATION MATRIX REPORT FORM

Intercorrelations between components of Academic Grade, Aptitude for Service & the Criteria: Technical Group (N 127)

MEAN	STANDARD DEVIATION	DESCRIPTION OF VARIABLES														
5.866	.459	Grade	1	1												
1.504	.674	Attitude	2	-.142	2											
52.646	7.154	Semi Annual Rating	3	.233	.479	3										
66.921	7.851	Aptitude for Service	4	.134	.250	.319	4									
59.331	4.390	Prop Parts 1st class yr Mil. Engr.	5	.037	.227	.122	.364	5								
12.457	.986	Prop Parts 1st class yr Mil. Hist.	6	.021	.263	.104	.354	.713	6							
77.827	4.635	Prop Parts 1st class yr Ordnance	7	.096	.126	.041	.387	.865	.698	7						
59.331	3.512	Prop Parts 1st class yr Law	8	.031	.077	.119	.199	.623	.554	.607	8					
60.850	3.971	Prop Parts 1st class yr Economics	9	.102	.119	.098	.272	.782	.735	.785	.731	9				
14.630	1.279	Prop Parts 1st class yr Mechanics	10	.058	.167	.061	.395	.894	.659	.837	.541	.744	10			
14.520	1.402	Prop Parts 1st class yr Electricity	11	-.022	.169	.004	.362	.897	.688	.857	.610	.783	.911	11		
11.646	1.016	Prop Parts 3rd class yr Mathematics	12	.034	.165	.037	.339	.803	.570	.704	.463	.637	.845	.826	12	
11.961	.991	Prop Parts 3rd class yr Physics	13	.071	.164	.089	.382	.805	.648	.738	.520	.720	.837	.842	.811	13
			14													

TABLE XII

CORRELATION MATRIX REPORT FORM

Intercorrelations between components of Academic Grade Aptitude for Service & the Criteria: Air Corps Group (W 56)

MEAN	STANDARD DEVIATIONS	DESCRIPTION OF VARIABLES															
5.982	.132	17 - Grade	1	1													
1.411	.676	21 Attitude	2	-.082	2												
53.393	5.876	28-29 Semi-Annual Rating	3	.083	.563	3											
65.768	7.996	45-46 Aptitude for Service	4	-.030	.138	.175	4										
57.411	14.023	51-52 Prop Parts - Mil. Engr	5	-.033	.018	.024	.141	5									
11.946	.990	53-54 Prop Parts - Mil. Hist.	6	.007	-.033	-.144	.287	.192	6								
75.107	4.832	55-56 Prop Parts Ordnance	7	-.087	.134	-.008	.437	.265	.688	7							
57.821	3.252	57-58 Prop Parts Law	8	-.034	.137	.029	.285	.200	.768	.669	8						
58.518	4.079	59-60 Prop Parts Economics	9	-.116	.149	.028	.320	.197	.723	.722	.821	9					
14.030	1.133	61-62 Prop Parts Mechanics	10	-.004	.043	.022	.438	.265	.591	.821	.646	.637	10				
13.911	1.138	63-64 Prop Parts Electricity	11	.011	.092	.013	.347	.257	.646	.833	.690	.675	.847	11			
11.179	.889	65-66 Prop Parts Mathematics	12	-.027	-.056	-.119	.375	.209	.579	.757	.512	.516	.792	.740	12		
11.643	.883	67-68 Prop Parts Physics	13	.058	-.070	-.139	.494	.234	.497	.715	.583	.506	.789	.757	.689	13	

TABLE XIII
CORRELATIONS OF PREDICTOR AND CRITERION VARIABLES FOR THE GROUP
DIVIDED INTO 3 SUB GROUPS ACCORDING TO ARM OR SERVICE

Predictors		Criteria								
		Semi-Annual Ratings			Attitude (Desirability)			Grade Attained		
	(Class Year)	Infantry	Technical Services	Air Corps	Infantry	Technical Services	Air Corps	Infantry	Technical Services	Air Corps
Total Prop. Parts	I-IV	.26	.08	.00	.15	.22	.05	.33	.09	-.11
1st Class Yr. Prop. Parts	I	.32	.10	-.08	.18	.14	.00	.39	.05	.05
Mil. Eng.	I	.27	.12	.02	.20	.23	.02	.20	.04	-.03
History	I	.20	.10	-.14	.04	.26	-.03	.30	.02	.01
Ordnance	I	.22	.04	-.01	.14	.13	.13	.31	.10	-.09
Law	I	.22	.12	.03	.14	.08	.14	.23	.03	-.03
Economics	I	.24	.10	.03	.09	.12	.15	.30	.10	-.12
Mechanics	I	.19	.06	.02	.21	.17	.04	.21	.06	.00
Electricity	I	.18	.00	.01	.13	.17	.09	.29	-.02	.01
Mathematics	III	.07	.04	-.12	.13	.17	-.06	.20	.03	-.03
Physics	III	.17	.09	-.14	.09	.16	-.07	.16	.07	.06
Mil. Instr. Tng.	I	.24	.04	.05	.06	.06	.24	.23	.02	.12
Tactics	III	.24	.14	.14	.16	.14	.07	.22	.12	-.08
Mil. Phys. Eff.	I	.24	.18	.02	.15	.06	.02	.07	.10	-.01
Conduct	III	.36	.07	.07	.22	.23	-.07	.13	.12	-.23
Apt. for Service	I	.51	.32	.18	.31	.25	.14	.30	.13	-.03
4th Class Yr. Total Prop Parts	IV	.23	.07	-.11	-.11	-.14	.03	-.27	-.03	.07
3rd Class Yr. Total	III	.23	.09	-.08	-.15	-.21	.02	-.26	-.07	.08

TABLE XIV

INTERCORRELATIONS OF THE GENERAL PREDICTOR VARIABLES AND THE CRITERION VARIABLES FOR THE GROUP AS A WHOLE

	M	σ	Description of Variable	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1.	5.889	.377	Grade	216	134	087	144	137	136	150	125	097	085	070	071	086	168	128	119	132	131	143	132	075	103
2.	53.366	6.895	Semi-annual Rating		063	077	245	207	222	218	126	159	261	507	457	172	344	329	311	316	327	331	281	289	295
3.	18.889	1.166	Grad. Total Prop. Parts			656	506	575	437	480	735	348	467	119	094	125	457	259	354	263	235	258	350	206	220
4.	38.771	1.652	Mil. Inst. Training				379	432	333	408	635	230	432	072	097	129	385	208	294	237	179	193	279	215	138
5.	11.036	1.477	Leadership Off. 2nd Term					911	923	750	405	354	626	176	204	242	667	450	518	501	395	474	526	463	417
6.	8.079	1.081	Attitude Off. 2nd Term						877	698	442	377	574	180	150	185	572	317	459	396	297	341	482	366	310
7.	3.197	.449	Mil. Appear. Off. 2nd Term							715	362	330	597	155	161	217	639	420	507	545	369	446	526	467	396
8.	12.595	1.682	Pref. in War. " " "								433	347	662	159	158	319	720	493	568	574	427	507	547	552	439
9.	57.962	3.134	Tactics - 3rd Class Yr.									362	427	098	053	160	456	290	374	300	295	293	376	272	276
10.	34.244	2.113	Conduct " " "										310	154	029	103	408	278	438	413	277	265	455	333	292
11.	12.570	1.834	Av. Pref. Off. 1st Term											188	214	325	728	516	571	568	478	512	558	516	461
12.	1.444	.653	Attitude												384	081	235	202	219	198	225	209	222	218	188
13.	53.034	1.001	Numerical Rating													151	199	172	161	133	155	178	155	117	160
14.	11.226	.886	Phys. Efficiency														389	344	266	350	308	359	303	329	333
15.	65.993	8.068	Aptitude for Service															888	896	879	844	882	873	789	827
16.	8.358	1.934	Leader. Cadets 1st Term																828	841	913	953	779	728	889
17.	6.320	1.357	Attitude " " "																	867	813	791	913	696	781
18.	2.305	.637	Mil. Appear. Cad. 1st Term																		778	806	820	799	752
19.	14.459	3.315	Av. Pref. by Cadets																			879	767	667	914
20.	8.272	1.708	Leadership Cadets 2nd Term																				804	734	913
21.	6.262	1.221	Attitude " " "																					748	802
22.	2.276	.561	Mil. Appear. Cad. 2nd Term																						683
23.	14.685	2.940	Av. Pref.																						

TABLE XV

CHART SHOWING RELATIONSHIPS BETWEEN THE COMPONENTS OF THE GRADUATION TOTAL PROPORTIONAL PARTS AND THE CRITERIA FOR THE GROUP AS A WHOLE

Predictor Variables	CRITERION VARIABLES		
	Semi-annual Rating (Dec. 45)	Attitude	Army Grade (temp)
Total Proportional parts (grad.)	.06	.12	.13
Mil. Instr. Tng.	.08	.07	.09
Tactics	.13	.10	.13
Conduct	.16	.15	.10
Phys. Efficiency	.17	.08	.09
Aptitude for Service	.34	.24	.17
Aptitude ratings by ---			
Tac O's	.26	.19	.09
Cadets, 1st term	.32	.23	.13
Cadets, 2nd term	.30	.19	.10
Aptitude ratings ---			
By Tac O's, 2d term:			
Leadership	.25	.18	.14
Attitude	.21	.18	.14
Mil. Appearance	.22	.16	.14
Desir/command	.22	.16	.15
By Cadets, 2d term:			
Leadership	.33	.20	.14
Attitude	.28	.22	.13
Mil. Appearance	.29	.22	.08
Desir/command	.30	.19	.10