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AIR FORCE OFFICER TRAINING SCHOOL
SELECTION SYSTEM VALIDATION

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LABORATORY

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13. ABSTRACT (Maximum 200 words) The present effort examined the selection process used for Air Force Officer Training School (OTS) candidates, with a view toward identifying and validating the component variables. In addition, the predictive validity of an experimental OTS selection algorithm was examined. Variables which were most highly related to selection decisions were examined for their relation to measures of performance in training and on the job. Criterion measures included: performance in OTS (instructor evaluations, final grade, completion, distinguished graduate); technical training school final grade; completion of Undergraduate Pilot Training; completion of Undergraduate Navigator Training; Officer Effectiveness Report ratings; and experimental measures of performance, motivation, and potential for career progression.) It was concluded that (a) variables recommended by USAF Recruiting Service for OTS selection decisions are significantly related to selection outcome; (b) different predictor variables are related to selection for different occupational specialties; (c) there are significant differences among occupational specialties as to the extent to which selection decisions are predicted; (d) additional variables not examined here may influence selection decisions (e.g., narrative information contained in the applicant folder); (e) most of the variables recommended by USAF Recruiting Service for OTS selection decisions are significantly related to measures of performance in training and on the job; (f) a few variables which are unrelated or negatively related to selection are related to some of				
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the performance criteria (e.g., age, prior military experience, and letters of recommendation from military personnel); and (g) the experimental OTS selection algorithm was not effective in predicting either selection or performance.

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SUMMARY

The U.S. Air Force has three primary methods for recruiting and selecting Air Force Officers: (a) The Air Force Academy (USAFA) selects high school graduates for a 4-year college program, (b) the Air Force Reserve Officer Training Corps (AFROTC) selects college students for a 2-year Professional Officer Course (POC) located at participating institutions, and (c) the Air Force Officer Training School (OTS) selects college graduates for a 12-week training program. The present effort examined the selection process used for Air Force OTS candidates, to identify and validate the variables used for selection. The selection methods used by USAFA and AFROTC are not examined in this report; however, they are described in previous reports (Cowen, Barrett, & Wegner, 1989; Jackson & Gordon, 1977; Stokes, 1984).

This research was conducted to validate the OTS selection process using selection, training, and post-commissioning performance criteria as outlined in the Request for Personnel Research (RPR) 80-06, Validation of the OTS and AFROTC Selection Systems. The purpose, method, and validity of the OTS selection system were examined.

In addition, the predictive validity of the variables used for OTS selection was compared to the predictive validity of an OTS selection algorithm proposed by Scott (1984). The selection algorithm was derived from policy-specifying techniques which captured the consensus judgments of 14 persons experienced with regard to OTS selection procedures and policies.

Validation was performed in two phases. The first step involved the identification of variables related to OTS selection decisions. The OTS selection boards assign a selection score to each applicant for OTS. Because the actual scores were not available for use, validation began with the identification of variables which are significantly related to OTS selection decisions. Variables examined included most of the information available to the OTS selection boards. It was expected that the variables most highly related to OTS selection would be those applicant characteristics which are recommended by USAF Recruiting Service for the assessment of OTS applicants: AFOQT scores, cumulative grade point average (GPA), type of degree, work experience, awards and/or achievements, extra-curricular activities, indicators of leadership, letters of reference, recommendations made by the interviewing officer, etc.

The second phase of the validation effort examined all variables for their relation to performance in OTS, technical training school, Undergraduate Pilot Training (UPT), Undergraduate Navigator Training (UNT), and on-the-job. The variables which were most highly related to selection were examined for their relation to training and job performance criteria. Selection variables were then compared to the variables identified as most highly related to training and performance criteria.

In addition, the predictive validity of an experimental OTS selection algorithm developed under RPR 79-03, Development of a General Purpose Selection and Classification Model for Officer Accessions in the Pipeline Management System, (Scott, 1984) was examined and compared to the predictive validity of an optimal combination of predictive factors identified through regression analysis. It was concluded that:

1. The OTS selection boards base their selection decisions, to a large extent, on those applicant characteristics which are recommended by USAF Recruiting Service. Variables which, as a set, had the greatest impact on the prediction of selection decisions included AFOQT scores, cumulative GPA, recruiter evaluations, a combination of possession of private pilot license and completion of calculus requirements for a technical degree, and letters of recommendation from military officers.

2. Many of the optimal predictors of training and job performance are included in the USAFRS data base. These include AFOQT scores, GPA, recruiter evaluations, having a private pilot license, having prior military service, military performance appraisals, and age.

3. AFOQT scores and cumulative GPA were consistently related to measures of performance in OTS training and technical training final grades. AFOQT scores were also related to completion of UNT, completion of UPT, and an experimental rating of performance on the job. GPA was also related to experimental ratings of motivation and potential for career progression.

4. A few of the additional variables captured from applicant file folders added significantly to the prediction of training and performance. These include previous aeronautical training/experience; Patton ratings of overall university quality; non-military awards and/or achievements; previous work experience; recruiter ratings of appearance, confidence, and attitude; and letters of recommendation from military personnel.

5. There were a few variables which were significantly related to OTS selection but were either unrelated or negatively related to all training and job performance criteria, such as having an MS or MA degree, having completed the calculus requirements for a technical degree, and number of semester hours in math.

6. A few variables which were unrelated or negatively related to selection were positively related to training and/or job performance criteria. These included prior military service, age, full-time non-managerial work experience, and letters of recommendation from military personnel.

7. OTS selection boards consider candidate characteristics differently when considering applicants for different occupational specialties. For example, having a private pilot license had much more weight in the prediction of selection for pilots and navigators. AFOQT scores had a higher weight than GPA in the prediction of selection for technical specialties, but cumulative GPA had more weight than AFOQT scores in the prediction of selection into non-technical fields.

8. There are significant differences between selection boards in the assessment process, particularly for certain occupational specialties. A larger degree of prediction was obtained for the selection of pilot candidates across selection boards, whereas a much smaller degree of prediction was obtained for the selection of engineers across selection boards. There may be additional variables not examined in this report which may influence selection decisions, particularly for occupational specialties which were not well predicted. There may also be a lack of agreement among selection boards as to the assessment process. An investigation of rating reliability across selection boards would be necessary to identify the source of disagreement.

9. There are additional variables contained within the applicant folder which were not available in this study but which may also relate to selection and/or performance. These include demographic variables such as race and/or sex, and other background characteristics such as past military awards and/or achievements, academic major, participation in team sports, descriptive information provided by interviewers and letters of recommendation, and whether or not the applicant worked while in college.

10. The overall rating assigned by the OTS recruiter was the only predictor which was significantly and positively related to Officer Effectiveness Reports. Recruiter ratings were also related to OTS instructor evaluations, experimental ratings of performance on the job, and completion of UPT and UNT.

11. The algorithm proposed for OTS selection decisions was not effective in predicting either selection or performance. The algorithm formulas need further adjustment in order to achieve optimal prediction.

12. Because most of the the applicant characteristics which are most highly recommended by USAFRS for selection assessment were significantly related to measures of performance in training and/or on the job, OTS selection boards should continue to consider those factors in assessment for selection. However, the characteristics which did not predict performance in training or on the job may not be relevant for selection decisions, such as type of academic degree and completion of calculus courses. Though these factors may be required for selection into some occupational categories (for example, a degree in computer science is required for certain specialties), they may not be most desirable for unrelated occupational categories. In addition, variables which were not related or were negatively related to selection decisions, but were positively correlated with performance criteria should be considered for selection into some specialties. These included prior military service (positively related to OTS final grades, OTS instructor evaluations, OTS completion, OTS distinguished graduate, and experimental ratings of motivation and potential for career progression); age (positively related to several training and job performance measures but negatively related to technical training grades and completion of UNT); and having letters of recommendation from military personnel.

PREFACE

This work was completed under task number 771918, Selection and Classification Technologies, which is part of a larger effort in Force Acquisition and Distribution. It was subsumed under work unit number 77191847, Development and Validation of Selection Methodologies. This work was begun in response to Request for Personnel Research (RPR) 80-06, Validation of Officer Training School and Air Force Reserve Officer Training Corps Selection Systems.

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AIR FORCE OFFICER TRAINING SCHOOL SELECTION SYSTEM VALIDATION

I. INTRODUCTION

The U.S. Air Force (USAF) has three primary methods for recruiting and selecting Air Force Officers: (a) The Air Force Academy (USAFA) selects high school graduates for a 4-year college program, (b) the Air Force Reserve Officer Training Corps (AFROTC) selects college students for a 2-year Professional Officer Course (POC) located at participating institutions, and (c) the Air Force Officer Training School (OTS) selects college graduates for a 12-week training program. The purpose of the present effort was to examine the selection process for OTS candidates, in order to identify, compare and validate those applicant characteristics which are most highly related to selection, training, and performance criteria.

This report also examines an alternative OTS selection method proposed by Scott (1984). In his study, policy-specifying techniques were used to develop an OTS selection algorithm. The algorithm is a numerical combination of variables identified as most highly relevant to OTS selection decisions. The selection processes used by USAFA and AFROTC are not examined in this report; however, they are described elsewhere (Cowan, Barrett, & Wegner, 1989; Jackson & Gordon, 1977; Stokes, 1984).

The Current OTS Selection Method

USAF Recruiting Service (USAFRS) is responsible for the recruitment and selection of candidates for OTS. Eligibility for OTS requires a Baccalaureate degree from an accredited university or college, and passing scores on the Air Force Officer Qualifying Test (AFOQT) (Rogers, Roach, & Wegner, 1986). In addition, specialized degrees are required for selection into technical fields such as computer science, engineering, cartography, and meteorology. Applications from eligible applicants are reviewed by a selection panel composed of five active duty senior officers (Lieutenant Colonel or above). The applicant folder contains a great deal of biographical and academic information, such as AFOQT scores, college transcripts, interview information, references, resume, and responses to a security checklist. Also included are applicant responses to questions such as "Why do you want to become an Air Force Officer?" Responses to questions are reviewed for composition, grammatical structure, and content as indicators of written communication ability, motivation, and commitment to Air Force goals.

The candidate must make a minimum percentile score of 15 on the AFOQT Verbal composite and a minimum percentile score of 10 on the AFOQT Quantitative composite. In addition, if the candidate wants to be a pilot or navigator, he or she must attain minimum scores on the Pilot and Navigator composites of the AFOQT. Pilot candidates must make a minimum of 25 on the Pilot composite and a minimum of 10 on the Navigator composite, with a minimum combined score of 50 for both composites. Navigator candidates must make a minimum of 25 on the Navigator composite and a minimum of 10 on the Pilot composite, with a minimum combined score of 50 for both composites.

The selecting officers review each applicant file folder and assign each applicant an overall score from 0 to 10. The applicants are then ranked from highest to lowest based on their summed scores from all five panel members. Evaluation and rating by the OTS selection board address the applicant's background in three broad areas: (a) education and aptitude, (b) work experience and accomplishment, and (c) adaptability to the USAF. Applicants with the highest ranked scores are offered the opportunity to attend the 12-week OTS course.

Experimental OTS Selection Algorithm

An alternative to this centralized OTS selection board procedure was explored by Scott (1984). Scott's study was designed to develop an experimental OTS selection algorithm using a policy-specifying technique (Ward, 1977; Ward, Pina, Fast, & Roberts, 1979). A group of 14 persons knowledgeable with respect to OTS selection policies was assembled from various offices in the Air Training Command (ATC) and the Air Force Military Personnel Center (AFMPC) to serve as the policy panel for developing the algorithm. Thirteen variables were judged relevant for OTS student selection and combined into three major categories: (a) objective cognitive measures, such as AFOQT scores and cumulative grade point average; (b) military performance measures, such as past performance appraisals and/or awards; and (c) civilian performance measures, such as awards and extracurricular activities. A consensus policy was developed using statistical methods, resulting in a numerical combination of the 13 variables which represents the overall quality of an applicant. This algorithm has not been applied operationally for selection into the OTS program. In the present investigation, algorithm scores were examined for their relation to selection, training, and job performance criteria.

II. METHOD

General Description

Validation of the OTS selection system is somewhat problematic in that the OTS selection process does not have a standardized assessment formula. Therefore, the factors which influence selection may include any information contained in an applicant file folder. In addition, though the OTS selection board assigns a numerical score to each OTS candidate and selection is based on the assigned scores, the scores assigned to each candidate were not available.

Validation of the applicant rating procedure was based instead on the identification of applicant characteristics most highly related to OTS selection. These characteristics were then compared to the characteristics that the USAF Recruiting Service has identified as relevant to the OTS candidate rating process and to the characteristics that were most highly related to training and job performance criteria.

In addition, this study investigated the predictive validity of Scott's OTS selection algorithm. Correlations between algorithm scores and selection, training and job performance criteria were compared to those of the optimal predictor set identified by regression analysis.

Subjects and Criteria

Data on applicants applying for entrance into OTS considered by USAFRS central selection boards 83-01 through 84-12 were obtained from Headquarters USAFRS ($N = 12,989$). Most of the subjects were Caucasian ($N = 12,100$) males ($N = 11,896$), with no prior military service ($N = 10,294$). The average age was 24.6 years. Most of the subjects had listed their highest degree as either a BA ($N = 3,525$) or a BS ($N = 9,041$). Samples were generated from the data base consisting of subjects with complete information on the predictor variables, according to the availability of 12 criteria:

1. OTS Selection (OTS-SEL): A dichotomous variable indicating selection to OTS (Total $N = 9,967$; N selected = 6,151).

2. OTS Student Performance Ratings (OTS-RAT): A rating of overall performance, from 1 to 5, assigned by instructors (Total N = 3,260).
3. OTS Final Course Grade (OTS-GRD): A numerical score from 75 to 99, averaged from OTS coursework scores (Total N = 5,517).
4. OTS Completion (OTS-COM): A dichotomous variable indicating successful completion of OTS (Total N = 4,442; N completed = 3,873).
5. OTS Distinguished Graduates (OTS-DG): A dichotomous variable (Total N = 1,649; N distinguished graduates = 163).
6. Technical School Final Grade (TEK-GRD): A numerical score from 75 to 99 (Total N = 916).
7. Undergraduate Navigator Training Completion (UNT-COM): A dichotomous variable indicating successful completion of UNT (Total N = 282; N COM = 239).
8. Undergraduate Pilot Training Completion (UPT-COM): A dichotomous variable indicating successful completion of UPT (Total N = 1,124; N COM = 884).
9. Experimental Rating of Job Performance (EXP-PER): A rating of overall job performance ranging from 1 to 9, based on an average of 24 performance-related ratings. See Appendix B for sample form (Total N = 803).
10. Experimental Rating of Potential for Progression (EXP-POT): A rating of potential for career progression ranging from 1 to 9 (Total N = 793).
11. Experimental Rating of Motivation to Perform (EXP-MOT): A rating of motivation to perform ranging from 1 to 9 (Total N = 762).
12. Officer Effectiveness Report (OER): An official rating of effectiveness ranging from 1 to 6 (Total N = 2,821).

Predictor Variables

A total of 60 variables were examined for their relation to the selection, training and job performance criteria. Twenty-seven variables were readily available in the USAF Recruiting Service automated data base. These variables will be referred to as RS-DB variables. They include academic predictors such as AFOQT scores, cumulative grade point average, and type of degree; they also include other information such as the overall rating assigned by the OTS recruiter, prior military experience, and whether waivers were necessary for eligibility. This information is collected routinely on each applicant considered by an OTS selection board.

In addition, a subset of the data base, composed of a random sample of OTS applicant record folders reviewed by selection boards 83-11 through 84-12 (N = 3,556), was screened to capture additional applicant information not provided in the USAFRS data base. This resulted in 33 additional predictor variables. Additional information included the type and amount of previous work experience; the number and source of letters of reference; ratings of specific characteristics, assigned by the OTS recruiter; and the number of extracurricular activities, awards, and achievements listed in the applicant folder. RS-DB and the additional variables are listed in Appendix A.

Analyses

Because the scores assigned by the OTS selection boards were not available, analyses were accomplished in two parts: (a) identification of variables related to selection, and (b) identification of variables related to performance in training and on the job. In addition, the experimental OTS selection algorithm was examined for its relation to performance measures.

Identification of variables related to OTS selection decisions. The 27 RS-DB variables were first examined for correlation with OTS selection board decisions. Variables were then examined using regression analysis in order to determine the predictive ability of the full variable set. Regression weights derived from the full regression model of RS-DB variables were used to generate selection scores for each subject. Subjects who would be selected with the generated scores were compared to subjects who were actually selected, in order to determine the degree of agreement between the regression model of selection and actual selection decisions.

It was hypothesized that certain variables--such as (a) having a private pilot license (PPL), (b) completion of calculus requirements for a technical degree (CALC), and (c) AFOQT composite scores--would have greater weight in selection for pilots, navigators, and technical specialties, as compared to selection for other specialties. The contribution of these variables for the prediction of OTS selection board decisions was investigated for each of five occupational specialties: (a) pilots, (b) navigators, (c) technical fields, (d) engineers, and (e) nontechnical fields.

The 33 additional predictors available in the secondary data set were examined, along with the RS-DB variables, to determine if any of the additional predictors significantly enhanced the prediction of selection. All predictors were analyzed using regression analysis to identify the most effective predictors of OTS selection. Nine restricted models were formulated in order to examine the effect of selected variables on selection and performance criteria. The variables of interest included (a) having a private pilot license (PPL); (b) completion of calculus requirements for a technical degree (CALC); (c) AFOQT composite scores; (d) non-military awards, achievements, and extra-curricular activities; (e) number of semester hours completed in mathematics, computer science, and programming; (f) previous work experience; (g) recruiter evaluations of applicant characteristics; and (h) letters of recommendation. OTS selection boards are instructed to consider these variables when assessing applicants for OTS.

Identification of variables related to performance criteria. The 27 variables available in the RS data set were examined for their correlations to measures of performance in OTS, technical training, undergraduate pilot and navigator training, and on-the-job. They were then analyzed using stepwise regression, which resulted in optimal weights for the prediction of each of the training and job performance criteria. Because the weight of each predictor variable differed according to the criterion, variable weights were averaged across the criteria in order to obtain a single set of optimal weights.

Further analyses, which included the 33 additional variables, investigated whether these additional variables were significantly related to training and job performance criteria. The additional variables were then analyzed along with the RS-DB variables to ascertain whether any of the additional variables significantly added to the prediction of training and job performance criteria.

Predictive validity of the OTS selection process. The variables which were identified as most highly predictive of OTS selection were examined for their relation to training and job performance criteria. The variables most highly related to selection were compared to the variables most highly related to performance in training and on-the-job. Selection variables were expected to be the same variables that USAFRS advises OTS selection boards to consider

in the assessment process. They were also expected to be the optimal predictors of performance in training and on-the-job.

Effectiveness of the OTS selection algorithm. Algorithm scores were generated and examined for their relation to actual selection decisions. The correlation between algorithm scores and OTS selection was compared to the multiple R^2 obtained using regression analyses for the prediction of selection decisions. Algorithm variables were then compared to the variables identified as most highly related to training and job performance measures. Algorithm scores were examined for their relation to performance criteria; the correlations were then compared to the multiple R^2 obtained using regression analyses, for each criterion.

III. RESULTS

Identification of Selection Variables

RS-DB and additional variables were examined through zero-order correlations to identify the factors most highly related to OTS selection board decisions. They were then examined through regression analyses to identify and compare the optimal set of predictor variables obtained with the RS-DB variables, and the total set of RS-DB and additional variables. The effect of selected variables on the prediction of selection decisions was examined through restricted regression models, for the total sample and within broad occupational specialties: engineer, pilot, navigator, technical, and nontechnical.

RS-DB variables. Descriptive statistics for the RS-DB predictors are shown in Table 1. Many of the dichotomous variables were very disproportionate, to the extent that less than 0.5% of applicants (a) had a PhD, (b) were disenrolled from a previous commissioning program, (c) had an age waiver, (d) had a Moral and DD Form 785, *Record of Disenrollment from Officer Candidate-Type Training*, waiver. Other variables also showing very small percentages included: (a) having any type of waiver (4%), (b) having a private pilot license and having completed calculus requirements for a technical degree (PPL/CALC, 4%), and (c) having an MA or MS degree (3%).

Means, standard deviations, and ranges of values for the criterion measures are shown in Table 2. Job performance as measured by the Officer Effectiveness Reports (OERs)--using a reversed scale--showed almost no variance (mean = 1.01, SD = 0.09, range = 1-6). Other variables, such as OTS final grade, had only a small degree of variance (mean = 91.07, SD = 3.31, range = 73-99). This could be expected to attenuate the observed validity of the predictors to a certain degree.

Table 3 lists the zero-order correlations between the RS-DB predictors and OTS selection board decisions, along with the multiple R and R^2 when entered in stepwise regression analysis. Intercorrelations between the predictor variables and OTS selection outcomes are listed in Appendix C. Most of the predictor variables were significantly correlated with selection. The variables which had the highest correlations were academic-related variables such as GPA ($r = .26$), AFOQT scores (r ranged from .21 for Verbal scores to .35 for Nav-Tech scores), and type of degree ($r = -.18$ for BA degree and .15 for BS degree). Non-academic variables were also significantly related to selection, including age ($r = -.08$), previous military experience ($r = -.10$), having a private pilot license ($r = .22$), and overall recruiter evaluations ($r = .21$).

When all 27 predictor variables were considered for entry in a stepwise regression analysis, the resulting full model accounted for almost 32% of the variance in OTS selection (Final $R = .56$). Scores were generated for each subject using the regression weights obtained in the full model. Generated scores were then ranked and the top 62% were labeled as "selected," to correspond with the actual selection ratio. The subjects who were selected by the regression

model were compared to those who were actually selected, in order to determine the accuracy of the regression model for the prediction of OTS selection. Table 4 shows the percent of overlap between selection by the regression model and actual selection. Of the subjects who were actually selected, 79% were also selected by the regression model; and 62% of the subjects who were not selected were also not selected by the regression model. Thus, the selection board decisions were fairly well explained by the regression model.

Table 1. Means, Standard Deviations, and Ranges for RS-DB Variables^a (N = 9,967)

Variable Title	Mean/ proportion	SD	Range
1. BA degree	0.25	0.43	0-1
2. BS degree	0.72	0.45	0-1
3. MA/MS degree	0.03	0.17	0-1
4. PhD degree	0.00 ^b	0.02	0-1
5. PPL	0.16	0.36	0-1
6. CALC	0.36	0.48	0-1
7. PPL/CALC	0.04	0.18	0-1
8. GPA	2.98	0.45	1.00-4.00
9. AFOQT-PILOT	61.41	22.21	01-99
10. AFOQT-NAVT	63.13	22.99	01-99
11. AFOQT-AA	63.96	22.38	01-99
12. AFOQT-VERBAL	64.91	23.36	01-99
13. AFOQT-QUANT	61.16	23.60	01-99
14. DIS-ENR	0.00 ^b	0.07	0-1
15. REC-EVAL	4.86	0.54	0-5
16. RS-AGE	0.04	0.21	0-1
17. MPC-AGE	0.00 ^b	0.06	0-1
18. MOR/DRG Waiver	0.01	0.11	0-1
19. 785-Waiver	0.03	0.17	0-1
20. ReENL-Waiver	0.01	0.08	0-1
21. MOR/785 Waiver	0.00 ^b	0.05	0-1
22. ReENL/785 Waiver	0.04	0.19	0-1
23. MOR/ReENL Waiver	0.00 ^b	0.00	0-1
24. 3AP = 9	0.38	1.80	0-9 ^c
25. MIL-Applicant	0.11	0.32	0-1
26. CIV-Applicant	0.89	0.32	0-1
27. AGE	24.63	2.70	19.50-37.75

^aDescriptions of variables are provided in Appendix A.

^bProportions are less than .005.

^cThis variable was coded such that 9 represents having the last three military performance appraisals = all 9s; 0 = otherwise. All civilian applicants were coded with 0. The proportion of military applicants with 9 codes = 51%. The 9/0 coding does not affect correlation values, and the raw score regression weights are valid as long as they are applied to scores coded in the same way as in this report.

Effect of selected RS-DB variables on selection for occupational specialties. The variables which were hypothesized to have a significant effect on OTS selection decisions--(a) having a private pilot license, (b) completion of calculus requirements for a technical degree, (c) AFOQT composite scores, and (d) overall recruiter evaluations--were among the first entered in the stepwise regression. Restricted models were formulated to test whether the omission of these variables resulted in significantly lower multiple R^2 values.

**Table 2. Means, Standard Deviations, and Ranges for
Criterion Variables (Ns vary by criterion)**

Criterion	Mean/ proportion	SD	Range	N
OTS criteria:				
1. Selection	0.62	0.49	0-1	9,967
2. Completion	0.87	0.34	0-1	4,442
3. Final Course Grade	91.07	3.31	73-99	3,868
4. Student Evaluation	4.01	0.69	1-5	3,260
Training criteria:				
5. Tech. School Grade	91.79	7.75	75-99	916
6. UNT ^a Pass/Fail	0.85	0.36	0-1	282
7. UPT ^b Pass/Fail	0.79	0.41	0-1	1,124
Job Performance criteria:				
8. EXP-Performance ^c	7.05	1.81	1-9	803
9. EXP-Potential	7.48	1.45	1-9	793
10. EXP-Motivation	7.47	1.45	1-9	762
11. OER ^d	1.01	0.09	1-6	2,821

^aUNT = Undergraduate navigator training.

^bUPT = Undergraduate pilot training.

^cExperimental measures of Performance, Potential, and Motivation (see Appendix B for sample form).

^dOER = Officer Effectiveness Report, uses a reversed scale rating with 1 = highest rating; 6 = lowest rating.

Table 5 lists the variables used in the full and restricted models from the primary data source to predict selection into OTS. The models were used for the total sample and five applicant groups (i.e., engineer, navigator, pilot, technical and nontechnical). The full model encompassed all of the primary variables. Restricted models were formulated in order to investigate the effect of particular variables on the prediction of selection. Model 2 omitted private pilot license, calculus, and combination of private pilot license and calculus; model 3 omitted grade point average; model 4 omitted the five AFOQT composites; and model 5 omitted the overall recruiter evaluation.

A summary of regression results is shown in Table 6. F-tests are listed in Appendix D, Tables D-1 through D-6, for each of the applicant groups and models. All variables of interest (private pilot license, calculus, AFOQT scores, GPA, and overall recruiter evaluation) were shown to contribute significantly to the prediction of OTS selection for the total sample. In addition, GPA, AFOQT scores, and overall recruiter evaluations contributed significantly to the prediction of OTS selection for each occupational specialty. Consideration of private pilot license, calculus, and a combination of license and calculus contributed significantly to the prediction of selection with regard to pilots, navigators, and engineers, but was not significant for the technical and nontechnical applicant groups.

Results indicated that selection boards consider applicants differently depending on which occupational specialty they are applying for. Although the contributions of GPA, AFOQT scores, and overall recruiter evaluations were significant for the prediction of selection into all occupational specialties, there were differences in the importance of each variable in prediction among groups. GPA, though significant for all groups, had a lesser in effect in predicting selection into engineering career fields than did the AFOQT. Also, although having a private pilot license and

completed calculus requirements were significant for the prediction of selection of pilots, navigators, and engineers, they had greatest impact in the prediction of pilot selection decisions.

Table 3. Zero-Order Correlations and Stepwise Regression Summary of RS-DB Variables^a for Prediction of OTS Selection (N = 9,967)

Step	Predictors	r	b-wt ^b	R	R ²
1.	AFOQT-NAV	.35**	.0004	.3483	.1213
2.	GPA	.26**	.2461	.4283	.1835
3.	PPL	.22*	.3655	.4783	.2288
4.	CALC	.15**	.2114	.5059	.2560
5.	PPL/CALC	.11**	.3894	.5267	.2775
6.	AFOQT-AA	.33**	.0003	.5404	.2920
7.	REC-EVAL	.21**	.0939	.5507	.3032
8.	ReENL/785 Waiver	.16**	.2042	.5554	.3085
9.	BA degree	-.18**	-.4263	.5583	.3117
10.	3AP = 9	-.03	.0075	.5596	.3132
11.	AFOQT-PILOT	.31**	.0025	.5607	.3143
12.	MOR/DRG-Waiver	-.02	-.1162	.5613	.3150
13.	CIV-Applicant	.10**	-.0820	.5617	.3155
14.	AGE	-.08**	-.0007	.5624	.3163
15.	BS degree	.15**	-.3610	.5628	.3167
16.	MOR/785 Waiver	.02	.2028	.5631	.3171
17.	AFOQT-QUANT	.34**	.0023	.5633	.3174
18.	AFOQT-VERBAL	.21**	.0019	.5636	.3176
19.	RS-AGE Waiver	-.02	.0472	.5638	.3178
20.	MA/MS Degree	.06*	-.2967	.5639	.3180
21.	785-Waiver	.01	-.0338	.5640	.3181
22.	ReENL-Waiver	.01	-.0394	.5641	.3182
23.	MPC-AGE Waiver	-.02	.0475	.5641	.3182
24.	DIS-ENR	-.01	-.0414	.5641	.3183
25.	MIL-Applicant	-.10**	-.0175	.5641	.3183
Not Entered:					
	PhD degree	.02			
	MOR/ReENL Waiver	.00			

^aVariables are described in Appendix A-1.

^bRaw score regression weights.

*Significant at $p \leq .05$ level.

**Significant at $p \leq .01$ level.

Results also suggested that selection boards may be considering other additional factors when selecting for different occupational categories. The accuracy of prediction when all 27 predictors are considered varies considerably for different occupations. The full model R^2 for predicting selection decisions for the total sample was .32. However, when the full model was applied to the occupational subgroups, the R^2 values ranged from .37 for pilots to only .12 for engineers. The small amount of variance accounted for in predicting the selection of engineers may be due to inconsistency within or across selection boards with regard to selection of engineers, or to the consideration of other factors that were not included in this model, such as academic major. For example, degrees in particular engineering specialties may be preferred.

Table 4. Percent of Overlap Between Predicted and Actual Selection by the Full Model of 27 RS-DB Variables
(Total N = 9,967)

P R E D I C T E D	S E L E C T I O N		Selection boards				N
			Select		Nonselect		
			%	N	%	N	
		SELECT	79	4,684	38	1,452	6,136
		NON SELECT	21	1,227	62	2,364	3,591
				5,911		3,816	9,727

Table 5. RS-DB Variables^a Used in Full and Restricted Models to Predict OTS Selection

Full Model-1		Restricted Model-2	Restricted Model-3	Restricted Model-4	Restricted Model-5
1.	BA degree	X	X	X	X
2.	BS degree	X	X	X	X
3.	MA/MS degree	X	X	X	X
4.	PhD degree	X	X	X	X
5.	PPL		X	X	
6.	CALC		X	X	X
7.	PPL + CALC		X	X	X
8.	GPA	X		X	X
9.	AFOQT-PILOT	X	X		X
10.	AFOQT-NAVT	X	X		X
11.	AFOQT-AA	X	X		X
12.	AFOQT-VERBAL	X	X		X
13.	AFOQT-QUANT	X	X		X
14.	DIS-ENR	X	X	X	X
15.	REC-EVAL	X	X	X	
16.	RS-AGE Waiver	X	X	X	X
17.	MPC-Age Waiver	X	X	X	X
18.	MOR/DRG Waiver	X	X	X	X
19.	785-Waiver	X	X	X	X
20.	ReENL-Waiver	X	X	X	X
21.	MOR/785 Waiver	X	X	X	X
22.	ReENL/785 Waiver	X	X	X	X
23.	MOR/ReENL Waiver	X	X	X	X
24.	Last 3 APR = 9	X	X	X	X
25.	Military Applicant	X	X	X	X
26.	Civilian Applicant	X	X	X	X
27.	AGE	X	X	X	X

^aVariables are described in Appendix A-1.

**Table 6. R^2 Summary of Full and Restricted RS-DB Models^a for the
Prediction of OTS Selection by Occupational Specialty
(Full Model = 27 RS-DB Variables)**

Model	Group					
	Total	Eng	Nav	Pilot	Tech	Non-Tech
1. Full Model	.318	.119	.302	.370	.290	.228
2. PPL, CALC, PPL/CALC	.252**	.092**	.286**	.280**	.285	.227
3. Grade Point Average	.272**	.081**	.243**	.310**	.242**	.185**
4. AFOQT (all composites)	.256**	.114*	.209**	.282**	.158**	.151**
5. Recruiter Evaluation	.308**	.106**	.289**	.367**	.255**	.214**
N	9,967	2,267	1,787	3,304	684	1,888

^aRestricted models contain all variables in the full model except those listed for the model. Variable descriptions are in Appendix A.

*Difference in R^2 between full and restricted model is significant at $p \leq .05$.

**Difference in R^2 is significant at $p \leq .01$.

Overall results indicate that different predictor variables are considered by the selection boards when assessing candidates for different occupational specialties, and the importance of each predictor also varies among the different groups. The amount of variability accounted for when all predictors were considered ranged from low to moderate. This may be due to differences between selection boards as to which applicant characteristics are more highly considered and/or to the consideration of factors other than the 27 predictors considered in this analysis. Some of the information available to the selection boards was not captured for this effort, such as the content of narratives written by the OTS recruiter, the content of letters of reference, the particular university attended, and the academic specialty.

Contribution of additional factors. The 33 additional variables available in the secondary data source were examined for their relation to OTS selection decisions and compared to 26 of the RS-DB variables. One variable (Last 3 military appraisals = 9) was not available in the secondary data source. Because the additional predictors were available for only a subset of the total sample, descriptive statistics for the 26 RS-DB variables were calculated for the smaller sample which contained the additional information. Descriptive statistics for the 26 RS predictor variables for the smaller sample are listed in Table 7. Means, variability, and ranges of the RS-DB variables in the secondary data source were very similar to the results obtained in the primary data source (see Table 1). Only a very small percentage of the applicants had an advanced degree (4%), any type of waiver (11%), or a combination of private pilot license and completion of calculus requirements (4%).

Descriptive statistics for the 33 additional predictors are listed in Table 8. Some of the additional predictors were quite disparate. For example, almost none of the applicants had work experience as a commercial pilot or had completed a previous commissioning program (less than 0.5%). But, the recruiter ratings of applicant personal characteristics were consistently high ($\bar{x} = 4.93$, $SD = .33$).

Descriptive statistics for criterion variables are shown in Table 9. Criteria included OTS selection, completion, final grade, distinguished graduate, and instructor ratings; UPT completion; UNT completion; and Officer Effectiveness Reports. Values were similar to those found in the larger sample.

Zero-order correlations between all predictor variables and OTS selection are included in Table 10. The RS-DB variables displayed the same pattern as was found in the larger sample (see Table 3). The variables with the highest correlations to OTS selection were the academic predictors. The AFOQT Navigator/Technical score (AFOQT-NAV) had the highest correlation

with selection decisions ($r = .28$), followed by the AFOQT Pilot score ($r = .27$), the AFOQT Academic Aptitude score ($r = .25$), the AFOQT Quantitative score ($r = .23$), cumulative Grade Point Average ($r = .20$), and the AFOQT Verbal score ($r = .18$).

Table 7. Means, Standard Deviations, and Ranges for RS-DB Predictors^a (N = 3,142)

Variable ^b title	Mean/ proportion	SD	Range
1. BA degree	0.22	0.41	0-1
2. BS degree	0.74	0.44	0-1
3. MA/MS degree	0.04	0.19	0-1
4. PhD degree	0.00	0.03	0-1
5. PPL	0.11	0.32	0-1
6. CALC	0.45	0.50	0-1
7. PPL/CALC	0.04	0.20	0-1
8. GPA	3.07	0.43	1.00-4.00
9. AFOQT-PILOT	64.84	21.01	01-99
10. AFOQT-NAVY	66.95	21.28	01-99
11. AFOQT-AA	68.06	20.55	01-99
12. AFOQT-VERBAL	67.53	21.51	01-99
13. AFOQT-QUANT	65.28	21.88	01-99
14. DIS-ENR	0.01	0.10	0-1
15. REC-EVAL	4.95	0.26	2-5
16. RS-AGE Waiver	0.06	0.23	0-1
17. MPC-AGE Waiver	0.01	0.07	0-1
18. MOR/DRG Waiver	0.01	0.10	0-1
19. 785 Waiver	0.03	0.18	0-1
20. ReENL Waiver	0.00	0.07	0-1
21. MOR/785 Waiver	0.00	0.02	0-1
22. 785/ReENL Waiver	0.00	0.02	0-1
23. MOR/ReENL Waiver	0.00	0.00	0-1
24. Military Applicant	0.15	0.36	0-1
25. Civilian Applicant	0.85	0.36	0-1
26. Age	24.71	2.84	19.75-37.67

^aVariables are described in Appendix A-1.

^bThe variable associated with the last 3 APRS--relevant only to military--has been omitted.

Of the 33 additional variables, the best predictors of selection were the recruiter ratings (r ranged from .13 for ratings of appearance and ratings of motivation to .20 for ratings of leadership ability). Other additional variables which correlated significantly with OTS selection decisions were non-military awards ($r = .07$) and achievements ($r = .08$), mathematics hours ($r = .08$), and previous aeronautical training ($r = .14$).

Table 11 provides the regression summary for the prediction of OTS selection, using all predictor variables. Although several of the additional predictor variables were significantly correlated with OTS selection, the first seven variables entered in the stepwise regression analysis were RS-DB variables. Four of the 33 additional predictors were entered next, which raised the multiple R from .4668 to .4914. The four additional variables included letters of recommendation (from Generals and Colonels), recruiter evaluations of leadership ability, and non-military achievements.

**Table 8. Means, Standard Deviations, and Ranges for
33 Additional Predictors^a (N = 3,142)**

Variable title	Mean/ proportion	SD	Range
1. AERO-CPL	0.07	0.25	0-1
2. AERO-OTH	0.07	0.25	0-1
3. COM-COM	0.00	0.04	0-1
4. PATTON	7.19	0.71	1-10
5. NM-AWDS	0.07	0.31	0-n
6. NM-ACH	2.41	2.06	0-n
7. EXC-ACT	2.49	1.96	0-n
8. MATH-HRS	15.58	10.53	0-n
9. COMP-HRS	6.23	9.18	0-n
10. PROG-HRS	4.95	7.96	0-n
Prior Work Experience:			
11. WK-PT- NonMan/NonSup	0.83	0.37	0-1
12. WK-PT- Man/Sup	0.08	0.27	0-1
13. WK-PT- Comm Plt	0.00	0.04	0-1
14. WK-FT- NonMan/NonSup	0.64	0.48	0-1
15. WK-FT- Man/Sup	0.10	0.30	0-1
16. WK-FT- Comm Plt	0.00	0.05	0-1
Recruiter Ratings:			
17. Appearance	4.94	0.32	0-5
18. Confidence	4.94	0.31	0-5
19. Attitude	4.95	0.31	0-5
20. Motivation	4.95	0.33	0-5
21. Work Experience	4.81	0.49	0-5
22. Leadership	4.91	0.37	0-5
23. Mental ability	4.94	0.31	0-5
24. Communication skill	4.91	0.37	0-5
25. Potential	4.95	0.32	0-5
Waivers:			
26. Moral Waiver	0.01	0.08	0-1
27. Drug Waiver	0.00	0.03	0-1
28. Other Waiver	0.01	0.11	0-1
Letters of Reference:			
29. LOR-General	0.14	0.50	0-n
30. LOR-Colonel	0.36	0.82	0-n
31. LOR-Lt Col or lower	0.76	1.20	0-n
32. LOR-CMS or lower	0.20	0.63	0-n
33. LOR-Civilian	2.98	1.93	0-n

^aDescriptions of variables are in Appendix A.

**Table 9. Means, Standard Deviations, and Ranges for
8 Criterion Variables (N's vary by criterion)**

Criterion title	Mean/ proportion	SD	Range	N
1. OTS Selection	0.74	0.44	0-1	3,142
2. OTS Completion	0.87	0.34	0-1	1,890
3. OTS Grade	91.82	3.12	82-99	1,649
4. OTS Dist. Grad	0.10	0.30	0-1	1,649
5. OTS Rating	4.02	0.64	1-5	1,229
6. UPT Completion	0.78	0.41	0-1	431
7. UNT Completion	0.92	0.28	0-1	121
8. OER ^a	1.01	0.07	1-6	1,026

^aThe Officer Effectiveness Report uses a reverse scale rating with 1 = highest rating.

Nine restricted models were formulated in order to examine the effects of selected variables on selection and performance criteria. The full model included all 59 RS-DB and additional predictors. Models 2 through 5 were similar to the models used in the primary regression analysis, in that the same primary predictors were omitted; however, the 33 additional variables were included in the models. Model 2 omitted private pilot license, calculus, and a combination of private pilot license and calculus; model 3 omitted grade point average; model 4 omitted the five AFOQT composites; and model 5 omitted the overall recruiter evaluation.

Models 6 through 10 were constructed to investigate the contribution of selected additional variables. Model 6 omitted non-military awards, non-military achievement, and extracurricular activities; model 7 omitted number of mathematics hours, computer science hours, and programming hours; model 8 omitted work experience; model 9 omitted recruiter factor ratings; and model 10 omitted letters of recommendation.

Table 12 lists the R^2 values for the full and restricted models for the prediction of OTS selection. Seven of the nine restricted models demonstrated significant effects; model 7 (omission of math, computer science, and programming hours) and model 8 (omission of work experience) did not lead to a significant reduction in R^2 . All other variables contributed uniquely to the selection decision. The largest effect noted was for AFOQT composite scores (R^2 change = .0604; $p \leq .01$) followed by GPA (R^2 change = .0373; $p \leq .01$) and the set of variables that omitted private pilot license, calculus, and a combination of the two (R^2 change = .0223; $p \leq .01$).

Prediction of Training and Performance Criteria

The RS-DB variables and additional variables were examined for their relation to measures of performance in training and on-the-job using zero-order correlations. They were then examined using regression analysis to identify the optimal set of variables for the prediction of each criterion.

RS-DB variables. Table 13 lists the zero-order correlations between the RS-DB predictors and measures of performance in training and on-the-job. No single predictor was significantly related to all 10 post-selection criteria. Correlations were highest between academic-related predictors (AFOQT scores and GPA) and measures of performance in OTS. The highest correlation was between AFOQT Verbal scores and OTS grades ($r = .43$).

**Table 10. Zero-Order Correlations Between Predictor Variables
and OTS Selection (N = 3,142)**

Predictors ^a	OTS selection	Predictors ^a	OTS selection
1. BA degree	-.10**	31. NM-AWDS	.07*
2. BS degree	.07*	32. NM-ACH	.08**
3. MA/MS degree	.07*	33. EXC-ACT	.05
4. PhD degree	.01	34. MATH-HRS	.08**
5. PPL	.15**	35. COMP-HRS	.01
6. CALC	.07*	36. PROG-HRS	.02
7. PPL/CALC	.10**	37. WK-PT-NM/NonSup	.05
8. GPA	.20**	38. WK-PT-M/Sup	.03
9. AFOQT-PILOT	.27**	39. WK-PT-CPilot	-.01
10. AFOQT-NAVT	.28**	40. WK-FT-NM/NonSup	-.07*
11. AFOQT-AA	.25**	41. WK-FT-M/Supp	-.02
12. AFOQT-VERBAL	.18**	42. WK-FT-CPilot	.03
13. AFOQT-QUANT	.23**	43. Appearance	.13**
14. DIS-ENR	-.04	44. Confidence	.15**
15. REC-EVAL	.22**	45. Attitude	.15**
16. RS-AGE Waiver	-.03	46. Motivation	.13**
17. MPC-AGE Waiver	-.01	47. Work Experience	.16**
18. MOR/DRG Waiver	-.02	48. Leadership	.20**
19. 785 Waiver	.01	49. Mental ability	.16**
20. ReENL Waiver	.03	50. Communication	.18**
21. MOR/785 Waiver	.01	51. Potential	.16**
22. 785/ReENL Waiver	.01	52. Moral Waiver	.01
23. MOR/ReENL Waiver	.00	53. Drug Waiver	.01
24. Military App.	-.11**	54. Other Waiver	.00
25. Civilian App.	.11**	55. LOR-General	.04
26. AGE	-.11**	56. LOR-Colonel	.02
27. AERO-CPL	.14**	57. LOR-Lt Col/lower	-.02
28. AERO-OTH	.14**	58. LOR-CMS/lower	-.05
29. COM-COM	-.01	59. LOR-Civilian	.01
30. PATTON	.05		

*Significant at $P \leq .05$

**Significant at $P \leq .01$

^aThe variable associated with the last 3 APRS--relevant only to military applicants--has been omitted.

For technical school grades, the most highly related single predictor was the AFOQT Academic Aptitude score ($r = .15$). For completion of Undergraduate Navigator Training, the most highly related predictor was the AFOQT Nav/Tech composite score ($r = .20$). For completion of Undergraduate Pilot Training, the most highly related predictor was the AFOQT Pilot composite score ($r = .10$).

Of those correlations that were significant for the four on-the-job performance criteria (experimental performance ratings, experimental potential ratings, experimental motivation ratings, and Officer Effectiveness Reports), all were fairly low, ranging from $\pm .06$ to $\pm .14$. Only one predictor was significantly related to OER ratings (overall recruiter evaluation, $r = -.06$).

**Table 11. Stepwise Regression Summary for the Prediction of
OTS Selection Using All Predictors^a (N = 3,142)**

Step	Predictors	<u>r</u>	<u>R</u>	<u>R</u> ²
1.	AFOQT-NAVT	.28**	.2771	.0768
2.	GPA	.20**	.3599	.1295
3.	REC-EVAL	.22**	.4044	.1635
4.	PPL	.15**	.4260	.1815
5.	AFOQT-AA	.25**	.4382	.1920
6.	PPL/CALC	.10**	.4496	.2022
7.	CALC	.07*	.4668	.2179
8.	LOR-General	.04	.4789	.2294
9.	REC - Leadership	.20**	.4845	.2347
10.	LOR-Colonel	.02	.4884	.2385
11.	NM-ACH	.08**	.4914	.2415
12.	BA degree	-.10**	.4941	.2441
13.	BS degree	.07*	.4963	.2463
14.	AERO-OTH	.14**	.4983	.2483
15.	AFOQT-VERBAL	.18**	.5001	.2501
16.	AGE	-.11**	.5023	.2523
17.	EXC-ACT	.05	.5040	.2541
18.	REC- Work experience	.16**	.5055	.2555
19.	DIS-ENR	-.04	.5067	.2567
20.	PATTON	.05	.5074	.2575
21.	REC- Motivation	.13**	.5082	.2582
22.	RS-AGE Waiver	-.03	.5086	.2587
23.	AERO-CPilot	.14**	.5090	.2591
All predictors (Multiple R)			.5134	.2636

^aDescription of variables in Appendix A.

**Table 12. Regression Summary for the Prediction of OTS Selection
Using the Full and Restricted Models^a (N = 3,142)**

	Model	<u>R</u> ²	<u>R</u> ² Diff	<u>F</u>	<u>p</u>
1.	FULL MODEL: 59 Variables	.2636	.2636	19.37	.01
2.	Omits PPL, CALC, PPL/CALC	.2413	.0223	31.18	.01
3.	Omits GPA	.2263	.0373	156.05	.01
4.	Omits AFOQTs (all Composites)	.2032	.0604	50.57	.01
5.	Omits Overall Recruiter Eval	.2546	.0090	37.68	.01
6.	Omits NM-AWDS, NM-ACH, and EXC-ACT	.2597	.0039	5.46	.01
7.	Omits MATH,COMP,PROG HRS	.2631	.0005	0.67	ns
8.	Omits Work Experience	.2627	.0009	0.65	ns
9.	Omits Recruiter Ratings (9)	.2569	.0067	3.10	.01
10.	Omits Letters of Recommendation	.2480	.0156	13.10	.01

^aRestricted models contain all variables in the full model except those listed for the model. Variable descriptions are in Appendix A.

Table 13. Zero-Order Correlations Between 27 RS-DB Predictors and Performance Criteria in the Primary Data Sample^a (N's vary by criterion)

Predictors	Criteria									
	OTS Com	OTS Grade	OTS Rating	Tech School	UNT Com	UPT Com	Exp Perf.	Exp Pot.	Exp Mot.	OER Rating
1. BA degree	.05	.10**	.11**	.06*	-.01	-.04	-.07*	.04	.00	.01
2. BS degree	-.03	-.11**	-.10**	-.06*	.04	.05	.06*	-.03	-.01	-.01
3. MA/MS degree	-.02	.03	-.01	.02	-.05	-.02	.02	.00	.02	-.01
4. PhD degree	-.01	-.01	.01	.00	-.14*	.00	-.01	.01	-.01	.00
5. PPL	-.03	-.13**	-.07*	-.07*	.02	.04	.03	-.02	-.04	.00
6. CALC	-.02	.00	-.10**	.04	.02	-.05	.01	-.06*	-.04	.02
7. PPL/CALC	-.04	-.04	-.03	-.13**	-.01	.09**	.04	.01	.01	-.02
8. GPA	.04	.31**	.28**	.09**	.09	-.02	-.01	.13**	.10**	.01
9. AFOQT-PILOT	.13**	.11**	.04	.11**	.14	.10**	.03	.01	-.04	.01
10. AFOQT-NAVT	.11**	.14**	.00	.11**	.20**	.08*	.01	-.02	-.07*	.02
11. AFOQT-AA	.11**	.38**	.10**	.15**	.09	-.02	.04	-.02	-.05	.04
12. AFOQT-VERBAL	.13**	.43**	.17**	.12**	-.05	-.04	.06*	.02	-.01	.03
13. AFOQT-QUANT	.05	.19**	.00	.14**	.19**	.01	.00	-.06*	-.09**	.03
14. DIS-ENR	.02	.01	.02	.01	.00	.00	.01	-.01	-.01	-.01
15. REC-EVAL	-.01	.05	.05	-.01	.01	-.03	.06*	.02	.03	-.06*
16. RS-AGE Waiver	.03	.07*	.06*	-.07*	.00	.00	-.02	.04	.04	-.00
17. MPC-AGE Waiver	-.01	.00	.04	.01	.00	.00	.03	.00	.01	-.01
18. MOR/DRG Waiver	.01	.03	.02	-.01	.05	-.01	-.01	-.01	.01	-.01
19. 785 Waiver	.00	.01	.03	.03	.02	.03	-.04	-.06*	-.06*	-.01
20. ReENL Waiver	.00	-.02	-.02	.00	.03	-.03	-.09**	-.07*	-.10**	.02
21. MOR/785 Waiver	-.04	-.01	-.01	.00	.03	-.02	.02	-.01	-.01	.00
22. 785/ReENL Waiver	-.03	-.03	.03	-.03	-.02	.00	.05	.06*	.01	.03
23. MOR/ReENL Waiver	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
24. 3 APR = 9	.05	.09**	.11**	-.01	.00	.00	.01	.10**	.11**	.01
25. MIL-APP	.08**	.11**	.19**	-.02	.05	.10**	.01	.12**	.14**	-.01
26. CIV-APP	-.08**	-.11**	-.19**	.03	-.05	.10**	-.01	-.12**	-.14**	.01
27. AGE	-.01	.09**	.12**	-.06*	-.15*	-.05	.01	.07*	.10**	.00
N	4,442	3,868	3,260	916	282	1,124	803	783	762	2,821

*Significant at $p \leq .05$

**Significant at $p \leq .01$

^aThe highest correlation for each criterion are underlined

The full model of 27 RS-DB predictors was applied to the 10 training and job performance criteria. Table 14 provides an R^2 summary of the full model for these criteria. The r and R^2 values for the first four variables entered for the prediction of each criterion are listed in Appendix E. Predictor variables which were entered first varied across the different criteria. Academic-related predictors were entered first for OTS and technical school criteria; the AFOQT Navigator/Technical composite score was entered first for Undergraduate Navigator Training; and the AFOQT Pilot composite score was entered first for Undergraduate Pilot Training.

Table 14. Regression Summary for the Prediction of Performance Criteria Using the RS-DB Full Model (N's vary by criterion)

	Criterion	N	R^2	F	p
1.	OTS Completion	4,442	.0494	9.18	.000
2.	OTS Final Grade	3,868	.2772	58.94	.000
3.	OTS Student Eval	3,260	.1328	19.80	.000
4.	Tech School Grades	916	.0667	2.77	.000
5.	UNT Completion	282	.1285	1.92	.011
6.	UPT Completion	1,124	.0448	2.73	.000
7.	Exp. Performance	803	.0382	1.29	.162
8.	Exp. Potential	793	.0463	1.55	.044
9.	Exp. Motivation	762	.0538	1.75	.015
10.	OER	2,821	.0092	1.04	.413

Total R^2 values ranged from .0092 for the prediction of OER ratings to .2772 for OTS final course grade. Very little variance was accounted for by the full model for on-the-job performance criteria (R^2 ranged from .0092 for OER ratings to .0538 for experimental ratings of motivation), which was somewhat expected given the low variability of those criteria. Variables which were among the first entered for job performance criteria included overall recruiter evaluations, waivers (for previous disenrollment or reenlistment), AFOQT composite scores (Academic Aptitude and Verbal), and applicant status (civilian or military).

Applicant status appeared as one of the first three variables entered for several criteria, including OTS instructor evaluations, OTS completion, OTS final grade, completion of Undergraduate Navigator Training and Undergraduate Pilot Training, and experimental ratings of motivation and potential for career progress (see Appendix E). It is interesting that while having previous military experience was negatively related to OTS selection ($r = -.10$, $p \leq .01$; see Table 3), it was positively related to several training and job performance measures at $p \leq .01$ (OTS completion, $r = .08$; OTS final grade, $r = .11$; OTS instructor ratings, $r = .19$; experimental rating of potential, $r = .12$; and experimental rating of motivation, $r = .14$; see Table 13).

Contribution of additional predictors. Tables 15 and 16 provide the zero-order correlations between the RS-DB and 33 additional predictors and the 7 performance criteria in the secondary data sample. There was a general reduction in correlation values for the performance criteria as compared to the correlations with selection. Correlations between the 26 RS-DB predictors and the criteria were similar to those found in the primary data sample. Academic-related predictors (BA degree, GPA, AFOQT scores) were most highly related to measures of performance in OTS; prior military experience and recruiter overall ratings were also significantly related to some of the criteria.

Table 15. Zero-Order Correlations Between RS-DB Predictors and 7 Criteria^a in the Secondary Data Sample (N's vary by criterion)

Predictors ^b	Criteria						
	OTS Com	OTS Grade	OTS DG	OTS Rating	UPT Com	UNT Com	OER
1. BA degree	.05	.11**	.03	.09**	-.08	-.16	.02
2. BS degree	-.05	-.11**	-.01	-.09**	.08	.21*	-.02
3. MA/MS degree	.01	.01	-.02	.00	-.00	-.20*	.00
4. PhD degree	.01	.00	-.01	.03	.00	.00	.00
5. PPL	-.04	-.12**	-.06*	-.06*	.00	-.01	-.02
6. CALC	.00	-.01	-.03	-.11**	-.03	.09	.04
7. PPL/CALC	-.04	.00	-.01	-.03	.11*	.04	-.01
8. GPA	-.01	.28**	.21**	.30**	-.01	.04	.04
9. AFOQT-PILOT	.13**	.07*	.04	.00	.09	.04	-.04
10. AFOQT-NAVT	.09**	.10**	.03	-.05	.10*	.06	-.03
11. AFOQT-AA	.05	.32**	.05	.00	-.03	-.01	.00
12. AFOQT-VERBAL	.08**	.36**	.07*	.09**	-.06	-.09	.01
13. AFOQT-QUANT	.02	.15**	.01	-.08	.01	.07	.00
14. DIS-ENR	.04	.00	-.02	.03	.00	.00	-.01
15. REC-EVAL	.01	-.01	.04	.07*	.02	-.04	.01
16. RS-AGE Waiver	.03	.06*	.04	.06*	.00	.00	.01
17. MPC-AGE Waiver	.01	-.04	.00	.01	.00	.00	-.01
18. MOR/DRG Waiver	.00	.04	.01	.01	.04	.04	-.01
19. 785 Waiver	.01	.02	.03	.03	.00	-.03	-.02
20. ReENL Waiver	.01	.00	-.02	-.02	.00	.00	-.01
21. MOR/785 Waiver	.01	.02	.07*	.04	.03	.00	.00
22. 785/ReENL Waiver	.01	.02	.07*	.04	.00	.03	.00
23. MOR/ReENL Waiver	.00	.00	.00	.00	.00	.00	.00
24. Military App.	.10**	.11**	.11**	.22**	-.14*	.06	.01
25. Civilian App.	-.10**	-.11**	-.11*	-.22**	.14*	-.06	.00
26. AGE	-.03	.06*	.06*	.14**	-.01	-.10	.00
N	1,890	1,649	1,649	1,229	431	121	1,026

*Significant at $p \leq .05$.

**Significant at $p \leq .01$.

^aThe highest correlation for each criterion are underlined.

^bThe variable relating to the last 3 APRs has been omitted.

Table 16. Zero-Order Correlations Between 33 Additional Predictors and Criteria^a
in the Secondary Data Sample (N's vary by criterion)

Predictors	Criteria					
	OTS Com	OTS Grade	OTS DG	OTS Rating	UPT Com	UNT Com
1. AERO-CPL	-.03	-.08**	-.02	-.05	.11*	-.01
2. AERO-OTH	-.02	-.06*	-.04	-.07*	.08	.01
3. COM-COM	.02	.01	-.01	-.03	.00	.00
4. PATTON	-.02	.06*	.00	.02	-.02	-.04
5. NM-AWDS	.00	.03	.08**	.06*	.08	.07
6. NM-ACH	.00	-.01	.03	.00	-.00	-.10
7. EXC-ACT	.01	-.03	.01	.00	-.01	-.11
8. MATH-HRS	-.02	-.03	-.04	-.14**	-.02	.09
9. COMP-HRS	-.02	.00	-.01	-.05	.04	-.01
10. PROG-HRS	-.02	.01	-.03	-.08**	.06	.11
11. WK-PT-NM/NonSup	.00	-.04	-.03	-.08**	.09	-.04
12. WK-PT-M/Sup	.00	.00	-.01	.00	-.02	.03
13. WK-PT-CPilot	.01	-.02	-.01	-.05	.03	.00
14. WK-FT-NM/NonSup	.05	.04	.05	.12**	.15*	.10
15. WK-FT-M/Sup	.01	.00	.02	.02	.02	.12
16. WK-FT-CPilot	-.02	-.01	-.01	-.06*	.04	.00
17. RR-Appearance	-.02	-.01	.01	.07*	.01	.30*
18. RR-Confidence	.00	-.06*	-.01	-.03	.00	.34*
19. RR-Attitude	-.03	-.04	.01	-.01	-.03	.30*
20. RR-Motivation	-.01	-.01	.01	-.01	.03	.00
21. RR-Work Experience	.01	-.02	.03	.05	-.04	.03
22. RR-Leadership	.02	-.02	.02	.03	.04	-.06
23. RR-Mental ability	-.02	-.01	.04	.00	.03	.09
24. RR-Communication	-.01	-.04	.05	.03	.13*	-.05
25. RR-Potential	.02	-.03	-.01	.00	.07	-.03
26. Moral Waiver	.02	.01	-.03	-.02	.04	.03
27. Drug Waiver	.01	.02	.05	.03	.00	.00
28. Other Waiver	.01	-.05	.01	.01	-.09	.00
29. LOR-General	.04	.00	.07*	.10**	-.00	-.00
30. LOR-Colonel	.10**	.04	.06*	.11**	-.02	.08
31. LOR-Lt Col/lower	.10**	.02	.03	.12**	-.04	-.05
32. LOR-CMS/lower	.07*	.00	.01	.08**	-.01	-.13
33. LOR-Civilian	-.10**	-.06*	-.04	-.11**	-.05	-.10
N	1,890	1,649	1,649	1,229	431	121
						1,026

*Significant at $p \leq .05$.

**Significant at $p \leq .01$.

^aThe highest correlations for each criterion are underlined.

As shown in Table 16, additional variables which correlated significantly and positively with training and/or job performance criteria included: (a) previous aeronautical training (related to UPT completion); (b) Patton ratings of university quality (related to OTS grades); (c) non-military awards (related to OTS distinguished graduate and OTS ratings); (d) full-time non-managerial work experience (related to OTS ratings and UPT completion); (e) recruiter ratings of appearance, confidence and attitude (related to UNT completion); (f) recruiter ratings of communication skill (related to UPT completion); and (g) letters of recommendation from military personnel (related to OTS completion, distinguished graduate, and OTS ratings). Predictors varied in the strength and direction of relationships to different criteria. Optimal predictors for one criterion were not necessarily the best predictors for other criteria.

Table 17 lists the R^2 values for the secondary data source full model (59 variables) for the prediction of seven performance criteria. The highest R^2 value is for UNT completion (.4257), followed by OTS final course grade (.2664) and OTS student evaluations (.1816). Other R^2 values were quite low, such as an R^2 value of .0251 for the Officer Effectiveness Report criterion and an R^2 of .0680 for OTS completion. The first four variables which entered in the stepwise regression analyses are shown in Appendix F, along with r and R^2 values for each of the performance criteria.

Table 17. R^2 Summary of Full Model Prediction of Performance Criteria
(Full model = 59 variables, N's vary by criterion)

Criterion	N	R^2	F	p
1. OTS Completion	1,890	.0680	2.35	.000
2. OTS Final Grade	1,649	.2664	10.14	.000
3. OTS Dist. Grad	1,649	.1008	3.13	.000
4. OTS Student Eval	1,229	.1816	4.56	.000
5. UPT Completion	431	.1691	1.62	.774
6. UNT Completion	121	.4257	1.33	.139
7. OER	1,026	.0251	.464	.999

Predictive Validity of the OTS Selection Process

Predictor measures most highly related to OTS selection decisions were examined for their relation to measures of subsequent performance. The variables with the highest observed correlations to OTS selection were the academic-related variables. As shown in Table 10 previously, AFOQT Navigator/Technical composite score (AFOQT-NAV) had the highest correlation with selection ($r = .28$, $N = 3,142$), followed by the AFOQT Pilot composite score ($r = .27$), AFOQT Academic Aptitude composite score ($r = .25$), AFOQT Quantitative composite score ($r = .23$), cumulative Grade Point Average ($r = .20$), and the AFOQT Verbal composite score ($r = .18$). Nonacademic predictors of OTS selection included the overall recruiter evaluation ($r = .22$); having a private pilot license ($r = .15$); and having no prior military service ($r = .11$). Age and having a BA degree were negatively related to selection ($r = -.11$ and $-.10$, respectively).

Of the 33 additional variables, the most highly related predictors of OTS selection were the experimental recruiter ratings (r ranged from .13 to .20). Other additional variables which correlated significantly with OTS selection were non-military achievements ($r = .08$), mathematics hours ($r = .08$), and previous aeronautical training ($r = .14$).

Relation of selection variables to criteria. Most of the selection predictors were significantly related to at least one of the training or performance criteria. As shown in Table 15, there were, however, a few variables that were significantly related to selection but were not related to other criteria, or were negatively related. Having a BS, MA, or MS degree was positively

related to selection (Table 11), but was either unrelated or negatively related to all other criteria except UNT completion (Table 15). Having completed the calculus requirements for a technical degree was negatively related to OTS criteria and unrelated to all others. However, the combination of calculus requirements and private pilot license was predictive of UPT completion ($r = .11$).

The overall and specific recruiter ratings, though positively related to selection (Table 11), were not very predictive of training or performance criteria in general. The most notable exceptions were positive correlations of the experimental recruiter ratings of appearance, confidence, and attitude with UNT completion (Table 16). However, recruiter ratings did add to the prediction of several criteria in regression analyses (see Appendixes E and F).

Selection variables versus optimal predictors. Most of the variables that were most highly related to selection decisions were also included in the set of optimal predictors, for at least some of the criteria. However, there were some predictors which did not predict selection but were positively related to training and/or performance criteria. Having prior military service was negatively related to selection (Table 10), but was positively related to OTS completion, OTS grades, OTS distinguished graduate, OTS ratings, and experimental ratings of potential and motivation (Table 13). Similarly, having the last three military performance appraisals equal to all 9's (top ratings) was unrelated to selection, but positively related to OTS grades, OTS distinguished graduate, OTS ratings, and experimental measures of potential and motivation (Table 13). Age was negatively related to selection (Table 10) but positively related to OTS grade, OTS ratings, and experimental ratings of potential and motivation (Table 13). Age was negatively related to technical school final grades and UNT completion. Letters of recommendation were also unrelated to selection decisions (Table 10), but were predictive of OTS completion, distinguished graduate, and OTS ratings, if the letters were from military personnel (Table 16). Letters of recommendation from civilians were negatively related to OTS criteria.

Effectiveness of the OTS Selection Algorithm

Table 18 shows the results of correlating the generated algorithm score against actual selection and nonselection by total sample and occupational specialty. All of the selection correlation values reflect very low positive or negative correlations. For the training and job performance criteria, correlations were either negative or nonsignificant. This indicates that the policy-specified selection algorithm is not effective in predicting selection or performance, particularly when compared to prediction from empirically derived models. The algorithm formulas need further adjustment in order to achieve a practical degree of prediction.

IV. DISCUSSION

Prediction of OTS Selection

Results indicated that most of the applicant characteristics promoted by the USAF Recruiting Service for consideration by OTS selection boards are significantly related to actual selection decisions. Among those variables identified through regression analyses as being significantly related to selection decisions were cumulative GPA, AFOQT scores, overall and specific recruiter evaluations, non-military awards, private pilot license, previous aeronautical experience and letters of recommendation (Table 10). Other variables which were significantly correlated with selection decisions included applicant status (civilian or military), type of degree (BA, BS, MA, MS, or PhD) and age.

Table 18. Predictive Validity of Algorithm Scores

Prediction of OTS Selection						
	Engineer	Navigator	Pilot	Technical	Non-Tech	Total
$N =$	658	464	843	444	716	3,142
$r =$	.10**	.16**	.13**	-.04	.02	.13**
Prediction of Training Criteria						
	OTS-GRD	OTS-DG	OTS-COM	OTS-RAT	TEK-GRD	
$N =$	1,649	3,142	1,890	1,229	466	
$r =$	-.09**	-.07**	-.08**	-.18**	.03	
Prediction of Performance Criteria						
	OER	EXP-PER	EXP-MOT	EXP-POT		
$N =$	1,027	372	353	367		
$r =$	.00	-.02	-.08	-.11*		

*Significant at $p \leq .05$.

**Significant at $p \leq .01$.

Another source of variance in OTS selection was found to be due to differences in candidate assessment for different occupational specialties. Application of the full (27 predictors) regression model, along with four restricted models, resulted in significant differences in the importance of certain predictors for different fields. As shown in Table 6, grade point average and AFOQT scores, while significant for all groups, had much more effect for the prediction of pilot and navigator selection decisions. On the other hand, having a private pilot license and having completed calculus requirements was significant for the prediction of selection of pilots, navigators, and engineers. Also, since the 33 additional factors did contribute significantly to overall selection, further analyses were indicated in order to ascertain whether these additional variables contribute to the prediction of selection across occupational fields, or whether they may be considered more important for particular occupational categories.

In addition to the consideration of different characteristics for different occupational specialties, there were significant differences in the extent of prediction for the different fields. As shown in Appendix D, prediction of selection decisions was most accurate for pilots ($R^2 = .3705$), and least accurate for engineers ($R^2 = .1192$). This may be due to a higher degree of agreement between selection boards as to which variables are most important in the assessment of pilots as compared to engineers.

There is also the possibility that factors which are in the applicant file folder but were not captured in this investigation may also impact on selection decisions. Such variables could include other background data such as academic major; participation in team sports; military awards and achievements; descriptive summaries included in recruiter evaluation forms and letters of recommendation; and demographic variables such as marital status, ethnic group, and gender.

One restriction on the prediction of selection decisions is the dichotomous nature of the criterion (select/nonselect). In this case, the criterion gives no information as to the relative differences among individuals who were selected (such as rankings) or among individuals who were not selected (as to how close they came to being selected). Prediction of selection might be enhanced if selection board ratings could be obtained and considered in further analyses.

Another source of differential decision-making for selection may occur between pilot applicants with a private pilot license versus those without the license. These two types of pilot candidates are considered separately, and the decision-making process may differ for candidates with a private pilot license versus candidates who do not have a private pilot license. Also, assessment and selection decisions may differ for military versus civilian applicants.

Prediction of Performance in Training and On-the-Job

RS-DB variables which correlated significantly and positively (see Tables 13 and 15) to measures of performance included: (a) having a BA degree (related to OTS grades, OTS ratings, and technical school grades); (b) having both a private pilot license and calculus requirements for a technical degree (related to UPT completion); (c) GPA (related to OTS final grade, OTS distinguished graduate, OTS ratings, technical school grades, and measures of potential and motivation); (d) AFOQT Pilot and Nav/Tech scores (related to OTS completion, OTS grades, technical school grades, UNT completion, and UPT completion); (e) AFOQT Academic Aptitude (related to OTS completion, OTS grades, OTS ratings, and technical school grades); (f) AFOQT Verbal score (related to OTS completion, OTS grades, OTS ratings, OTS distinguished graduate status, and experimental job performance ratings); (g) AFOQT Quantitative score (related to OTS grades, technical school grades, and UNT completion); (h) RS age waiver (related to OTS grades and OTS ratings); (i) prior military experience (related to OTS completion, OTS grades, OTS distinguished graduate, OTS ratings, and measures of potential and motivation); (j) previous military performance appraisals (related to OTS grades, OTS ratings, and measures of potential and motivation); and (k) age (related to OTS grades, OTS ratings, and measures of potential and motivation).

Additional variables which correlated significantly and positively (see Table 16) with training and/or job performance criteria included: (a) Patton ratings of university quality (related to OTS grades); (b) non-military awards (related to OTS distinguished graduate and OTS ratings); (c) non-managerial/non-supervisory previous work experience (related to OTS ratings and UPT completion); (d) recruiter ratings of appearance (related to OTS ratings and UNT completion); (e) recruiter ratings of communication skill (related to UPT completion); and (f) letters of recommendation from military personnel (related to OTS completion, distinguished graduate, and OTS ratings).

No single predictor was significantly related to all 10 post-selection criteria. Correlations were highest between academic-related predictors (AFOQT scores and GPA) and measures of performance in OTS. Other variables significantly and positively related to OTS criteria include having a BA degree, RS age waiver, prior military experience, previous military performance appraisals, age, Patton ratings of colleges and universities, and letters of recommendation from military personnel.

For technical school grades, the most highly related single predictor was the AFOQT Academic Aptitude composite score. All other AFOQT scores were also significantly related to technical school final grades, as were cumulative GPA and having a BA degree. Only RS-DB variables were examined for the prediction of technical school grades.

For completion of Undergraduate Navigator Training, the most highly related predictors were recruiter ratings of appearance, confidence, and attitude; the AFOQT Nav/Tech score; the AFOQT Pilot score; and the AFOQT Quantitative score. Having a PhD was significantly, but negatively, related to UNT completion, as was age.

For completion of Undergraduate Pilot Training, the most highly related predictors were the AFOQT Pilot score, the AFOQT Nav/Tech score, a combination of having a private pilot license and having completed calculus requirements for a technical degree, having prior military or

aeronautical experience, having previous work experience in a non-managerial/non-supervisory position, and recruiter ratings of communication ability.

Although some significant correlations were apparent between the 27 RS-DB predictors and the four on-the-job performance criteria (experimental ratings of performance, potential, and motivation; Officer Effectiveness Reports), all were fairly low (see Table 13). Predictors of experimental performance ratings included having a BS degree, AFOQT Verbal scores, and overall recruiter evaluations; having a re-enlistment waiver was negatively related to the experimental performance ratings. The two main predictors of experimental ratings of potential were cumulative GPA and having previous military service, especially if the military applicant had high performance ratings. Having previous military service was also significantly related to experimental ratings of motivation, along with cumulative GPA and age. Only one predictor, the overall recruiter evaluation, was significantly related (negatively) to OER ratings.

Previous military experience was related to several training and performance criteria. Having prior military service was negatively related to OTS selection (Table 10), but was positively related to most post-selection criteria (Table 13). Further analysis of military applicants as a separate group is indicated. This would include the consideration of additional factors that are exclusive to the military applicant sample, such as prior military performance appraisals, military awards and achievements, type of previous duty, and letters of recommendation.

There is a problem in establishing predictive validity using on-the-job performance criteria. The Officer Effectiveness Report, ranging from 1 (very good) to 6, had a mean score of 1.01 and a standard deviation of 0.09. Therefore almost all individuals received a very high rating of job performance. Though it is tempting to interpret this phenomenon as further validation of the present selection system, it is clear that the ratings offer virtually no predictable variance. Other measures or indicators should be considered as additional performance criteria. One possibility is rate of promotion, and/or factors previously identified as relevant for promotion decisions (Scott, 1984), such as type of assignment, degree of responsibility, and number of awards, decorations, and/or letters of appreciation. Predictive validity of job performance may also be enhanced by further improvement of the experimental appraisal forms and strong assurance that the evaluations will be used only for research purposes.

Results from this report indicate that different characteristics are weighted more heavily in selection decisions for different occupational specialties. Follow-up analyses should investigate whether applicant characteristics differ in their relation to training and performance criteria in different occupations.

Predictive Validity of the OTS Selection Process

The analyses documented in this report indicate that the OTS selection boards base their selection decisions to a large extent on the applicant characteristics recommended by USAF Recruiting Service. Most of these characteristics were found to be significantly and positively related to measures of performance in OTS, technical school, Undergraduate Pilot Training, and Undergraduate Navigator Training. Optimal predictors varied according to the criteria; however, AFOQT scores and cumulative GPA were consistently predictive of all OTS and technical school performance measures.

Validation on the basis of job performance measures is more difficult, primarily because of the restriction in range of the criteria. Cumulative GPA, AFOQT scores, calculus courses, and age were the only variables which were positively related to appraisals of selectees made during their job assignments. Because the Officer Effectiveness Reports have so little variability, other criteria must be identified and/or developed. In addition, because different variables had more

or less importance for selection, depending on the occupational specialty, further analyses are indicated for validation of selection variables for different occupational groups.

Effectiveness of the OTS Selection Algorithm

Although most of the individual variables within the OTS selection algorithm were related to selection and/or performance criteria, the algorithm scores were not as effective for the prediction of selection or performance. A possible reason for the low validity of the algorithm is the exclusion of previous work experience in the formula--extra points were assigned if the applicant participated in extracurricular activities in college, but not if the applicant worked their way through school. Another factor which may have affected the predictive validity of the algorithm is that the optimal AFOQT Quantitative score was specified to be 75; applicants were assigned fewer points if they scored above or below the optimal score. Further analyses are needed in order to generate an OTS selection algorithm based on empirical relations to training and job performance criteria.

V. CONCLUSIONS

The principal conclusions reached as a result of these analyses are as follows:

1. The OTS selection board decisions are significantly related to applicant characteristics recommended by USAF Recruiting Service. Variables which, as a set, had the greatest impact on the prediction of selection decisions included AFOQT scores, cumulative GPA, overall recruiter evaluations, the combination of possession of a private pilot license and completion of calculus requirements for a technical degree, letters of recommendation from military officers, and participation in academic and/or social service organizations.
2. AFOQT scores and cumulative GPA were consistently related to all training criteria and also to supervisory ratings of motivation and potential for career progression.
3. Many of the optimal predictors of training and job performance are included in the USAFRS data base. These include academic-related variables (AFOQT scores, GPA, calculus courses, and type of degree), and other variables such as having a private pilot license, having prior military service, military performance appraisals, and age.
4. A few of the additional variables captured from applicant file folders added significantly to the prediction of training and performance. These included previous aeronautical training/experience; Patton ratings of overall university quality; non-military awards and/or achievements; previous work experience; recruiter ratings of appearance, confidence, and attitude; and letters of recommendation from military personnel.
5. There were a few variables which were significantly related to OTS selection but were either unrelated or negatively related to all training and job performance criteria, such as having a BS, an MS, or an MA degree, and having completed the calculus requirements for a technical degree. These variables may be related to success in particular occupations.
6. There were a few variables which were unrelated or negatively related to selection which were positively related to training and/or job performance criteria. These included prior military service, age, and letters of recommendation from military personnel.
7. OTS selection boards consider candidate characteristics differently when considering applicants for different occupational specialties. For example, a private pilot license in combination

with calculus had much more weight in the prediction of selection for pilots and navigators than for selection of engineers and members of other technical and non-technical specialties. AFOQT scores were better than GPA for the prediction of selection for technical specialties, but GPA was better than AFOQT scores for the prediction of selection into non-technical fields.

8. There were differences between selection boards in the assessment process, particularly across certain occupational specialties. Prediction of who would be selected as pilot and navigator candidates was more accurate than for the selection of engineers. There may be additional variables not examined in this report which may influence selection decisions, particularly for those occupational specialties which were not well predicted. There may also be a lack of agreement among selection boards as to the assessment process. An investigation of rating reliability across selection boards would be necessary to identify the source of disagreement.

9. There are additional variables contained within the applicant folder which were not available in this study but which may also relate to selection and/or performance. These include demographic variables such as race and/or sex, and other background characteristics such as past military awards and/or achievements, academic major, participation in team sports, descriptive information provided by interviewers and letters of recommendation, and whether or not the applicant worked while in college.

10. None of the predictors were significantly and positively related to Officer Effectiveness Reports. Additional job performance criteria need to be identified and/or developed in order to validate the selection process on the basis of job performance criteria.

11. The algorithm proposed for OTS selection decisions was not effective in predicting either selection or performance. The algorithm formulas need further development in order to achieve a practical level of prediction.

12. Because most of the applicant characteristics which are most highly recommended by USAFRS for selection assessment are significantly related to measures of performance in training and/or on the job, OTS selection boards should continue to consider those factors in assessment for selection. However, characteristics which did not predict performance in training or on the job (type of academic degree and completion of calculus courses) should be reviewed for relevance in selection decisions. Although these factors may be required for selection into some occupational categories (for example, a degree in computer science is required for certain specialties), they may not be most desirable for unrelated occupational categories. In addition, consideration should also be given to other variables which were not related or were negatively related to selection decisions, but were positively correlated with performance criteria; these included having prior military service, being somewhat older than usual (age was positively correlated with performance criteria), and having letters of recommendation from military personnel.

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APPENDIX A: PREDICTOR VARIABLES

A-1. RS-DB PREDICTOR VARIABLES: DESCRIPTION

- 1 BA: Bachelor of Arts degree.
- 2 BS: Bachelor of Science degree.
- 3 MS: Master of Arts/Science degree.
- 4 PHD: Doctor of Philosophy degree or equivalent.
- 5 PPL: Having a private pilot license.
- 6 CALC: Completed calculus requirements for engineering degree.
- 7 PPL/CALC: Having both private pilot license and calculus requirements.
- 8 GPA: Undergraduate grade point average.
- 9 AFOQT-PILOT: AFOQT Pilot Composite percentile score; includes subtests for instrument and scale interpretation, mechanical and spatial comprehension, verbal ability, and aviation knowledge.
- 10 AFOQT-NAVT: AFOQT Navigator/Technical Composite percentile score; includes subtests for ability to interpret dials and tables, understand mathematical & scientific principles, and comprehend mechanical and spatial concepts.
- 11 AFOQT-AA: AFOQT Academic Aptitude Composite percentile score; includes subtests for verbal and quantitative ability.
- 12 AFOQT-VERB: AFOQT Verbal Composite percentile score; includes subtests for vocabulary, English usage, and verbal analogies.
- 13 AFOQT-QUANT: AFOQT Quantitative Composite percentile score; includes subtests for mathematical reasoning, ability to understand graphs and tables.
- 14 DIS-ENR: Disenrolled from a previous commissioning program.
- 15 REC-EVAL: A numeric rating provided by a recruiter ranging from 0 to 5.
- 16 RS-AGE: Air Force Recruiting Service Age waiver.
- 17 MPC-AGE: Air Force Military Personnel Center Age Waiver.
- 18 MOR/DRG: Moral plus drug waiver: Waivers involving applicants who have committed both acts of moral turpitude and drug abuse.
- 19 785-W: DD Form 785 waiver: An official recommendation from another commissioning source indicating that consideration for acceptance into OTS should not be precluded because of prior disenrollment.
- 20 ReENL-W: Reenlistment waiver.
- 21 MOR/785: Moral plus DD Form 785 waiver.
- 22 ReENL/785: DD Form 785 plus reenlistment waiver.
- 23 MOR/ReENL: Moral plus reenlistment waiver.
- 24 3AP=9: Last 3 Airman Performance Reports equal 9 (military only).
- 25 MIL-AP: Military applicant.
- 26 CIV-AP: Civilian applicant.
- 27 AGE: Age in months.

A-2. ADDITIONAL PREDICTOR VARIABLES: DESCRIPTION

- 1 AERO-CPL: Aeronautical training; commercial pilot license.
- 2 AERO-OTH: Aeronautical training; other rating.
- 3 COM-COM: Completed previous commissioning program.
- 4 PATTON: Patton rating; an index of quality of an undergraduate institution as a function of average SAT scores, admission ratio of entering Freshmen, % graduate and professional students, and % of faculty with PhD or professional degrees; measured on a 10-point scale (10 = highest rating) and reported to two decimal points.
- 5 NM-AWDS: Nonmilitary awards: includes receipt of an outstanding employee award, any award or honor related to civic activity, the Outstanding Young Man in America Award, the Outstanding Young Woman in America Award; membership in the following national honor societies: Alpha Epsilon Delta, Alpha Kappa Delta, Alpha Lambda Delta, Alpha Pi Mu, Chi Epsilon, Delta Sigma, Eta Kappa Nu, Kappa Delta Pi, Omega Chi Epsilon, Omicron Delta Epsilon, Omicron Nu, Phi Alpha Theta, Phi Beta Kappa, Phi Eta Sigma, Phi Kappa Phi, Pi Delta Phi, Pi Epsilon Alpha, Pi Tau Epsilon, Psi Chi, Rho Chi, Sigma Delta Pi, Sigma Gamma Tau, Sigma Pi Sigma, Sigma Tau Delta, Tau Beta Pi, and Xi Sigma Pi. Each award is worth one point.
- 6 NM-ACH: Nonmilitary achievement: includes holding elective office to any of the following organizations: Sports Club; Student Judicial System, Living Group; Clubs; Professional Organizations/Societies; Service Organizations; Religious Organizations, Organizations Control Board; Student Government; Fraternities/Sororities; Debate Team; National Honor Society; National Recognition Societies; the Parent-Teachers Association; Sports League Coach; Religious Youth League; Religious Adult Organization; holding a position of Scouting Leader or Director; Varsity Sports Captain; Varsity Sports Manager; Drill Team Member; Member of Omicron Delta Kappa; Member of Lambda Sigma; Member of Mortar Board; Campus Radio Station Manager. Membership in the following national recognition societies: Alpha Epsilon Rho; Alpha Eta Rho; Alpha Phi Omega, Alpha Psi Omega; Alpha Zeta, Block and Bridle, Delta Sigma Pi, Gamma Sigma Sigma, Kappa Psi, Lambda Tau, Omicron Kappa Pi, Phi Chi Theta, Phi Delta Kappa, Phi Delta Chi, Phi Lambda Epsilon, Phi Mu Alpha, Phi Psi, Phi Zeta, Pi Alpha, Pi Mu Epsilon, Sigma Gamma Epsilon, Sigma Lambda Chi. Each position or membership counts as one point.
- 7 EXC-ACT: Extracurricular activities: membership in the following organizations: Sports Club, Living Group, Clubs (other than a sports club), professional organizations/societies, service organizations, religious organizations, organizations control board, fraternities/sororities, and the debate team. Each organizational membership is worth one point.
- 8 MATH-HRS: Total college level mathematics hours.
- 9 COMP-HRS: Total college level computer science hours.
- 10 PROG-HRS: Total college level programming hours.
- 11 WK-PT-NM: Work experience/part time/nonmanagerial/nonsupervisory.
- 12 WK-PT-M: Work experience/part time/managerial/supervisory.
- 13 WK-PT-P: Work experience/part time/commercial pilot.
- 14 WK-FT-NM: Work experience/full time/nonmanagerial/nonsupervisory.
- 15 WK-FT-M: Work experience/full time/managerial/supervisory.
- 16 WK-FT-P: Work experience/full time/commercial pilot.
- 17 REC-APP: Recruiter evaluation-appearance.
- 18 REC-CONF: Recruiter evaluation-confidence.
- 19 REC-ATT: Recruiter evaluation-attitude.
- 20 REC-MOT: Recruiter evaluation-motivation.
- 21 REC-WKEX: Recruiter evaluation-work experience.
- 22 REC-LEAD: Recruiter evaluation-leadership.
- 23 REC-MEN: Recruiter evaluation-mental.

A-2. ADDITIONAL PREDICTOR VARIABLES: DESCRIPTION (Concluded)

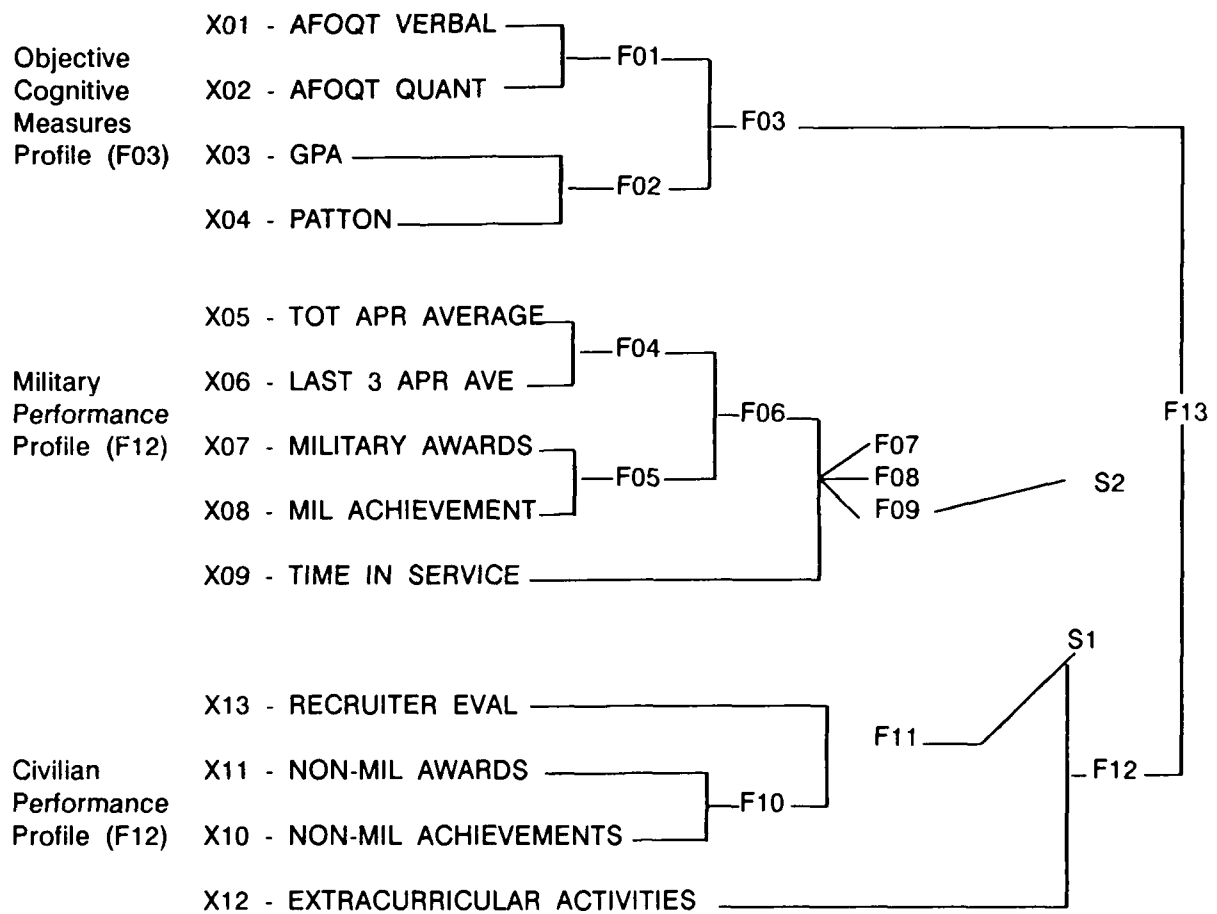
- 24 REC-COM: Recruiter evaluation-communication skill.
- 25 REC-POT: Recruiter evaluation-potential.
- 26 MOR-W: Waiver/moral.
- 27 DRUG-W: Waiver/drug.
- 28 OTHER-W: Waiver/other.
- 29 LOR-GEN: Letter of recommendation (General Officer).
- 30 LOR-COL: Letter of recommendation (Colonel).
- 31 LOR-LC: Letter of recommendation (Lt Colonel or lower officer grade).
- 32 LOR-CMS: Letter of recommendation (Chief Master Sergeant or lower).
- 33 LOR-CIV: Letter of recommendation (Civilian).

A-3. OTS SELECTION ALGORITHM PREDICTOR VARIABLES

- X01 AFOQT-VERB.¹
- X02 AFOQT-QUANT.¹
- X03 GPA.¹
- X04 PATTON.¹
- X05 TOT-AIRMAN: Total Airman Performance Rating Average.
- X06 LAST3: Last Three Airman Performance Rating Average.
- X07 M-AWARDS: Military decorations and awards (e.g. Medal of Honor, Air Force Cross, Distinguished Service Cross, Distinguished Service Medal, Soldier's Medal, Bronze Star Medal, Meritorious Service Medal, Air Medal, Joint Service Commendation Medal, Air Force Commendation Medal, Army Commendation Medal, Purple Heart, Outstanding Airman of the Year Ribbon, Air Force Achievement Medal, Basic Military Trainee Distinguished Graduate Ribbon). Each decoration has the same point value as reported in the Weighted Airman Promotion System (WAPS) portion of the Military Training Standard (MTS) Promotion Fitness Examination (PFE) Study Guide (AFP 50-34).
- X08 M-ACH: Includes achievement as a distinguished graduate of a military training program, selection as the Outstanding Airman or Noncommissioned Officer of the quarter, or of the year, for wing level or higher organization. Each distinction is worth one point.
- X09 TIME: Indicates previous time in service. Reflected as none; short (.1 to 48.5 months); moderate (48.6 to 84.5 months); and long (84.6 plus months) using a 1/0 dichotomy for each tenure period.
- X10 NM-ACH.¹
- X11 NM-AWDS.¹
- X12 EXC-ACT.¹
- X13 REC-EVAL: A numerical evaluation provided by the field recruiting officer after completing an interview with the applicant. Reported through 100 points in 20-point increments. This evaluation was not available. However, an approximately equivalent rating was generated by using the value of item 15, recruiter evaluation, shown in Appendix A-1, multiplied by 20.

¹ Description is provided in Appendix A-1

A-4. OTS SELECTION ALGORITHM FLOWCHART (Scott, 1984)



A-5. ALGORITHM FUNCTIONS

- F01 - Adjusted AFOQT Measure: Function AFOQT Verbal and Quantitative Scores, where the optimal Verbal score is 95% and the optimal Quantitative Score is 75%.
- F02 - Adjusted GPA Measure: Function of cumulative GPA and Patton rating of university academic quality, where the optimal score would be a 4.0 GPA from a university with a Patton rating of 10 (out of 10).
- F03 - Objective Cognitive Profile Score: Function of F01 and F02, with F02 assigned somewhat higher weight.
- F04 - Military Performance Appraisals (For active duty military applicants): Function of average of all past military appraisals and average of last 3 military performance appraisals, where optimal appraisal average is either 9 out of 9, or 1 out of 9 (see formula). Note: very few appraisals are lower than 7 out of 9.
- F05 - Military Awards/Achievements (For active duty military applicants): Function of number of military awards and number of military achievements.
- F06 - Military Performance Profile Score: Function of F04 and F05.
- F07 - Adjusted Military Performance Profile Score: Function of F06 and time in service, for active duty military applicants with 0-4 yrs of service. The longer the time in service, the lower the score.
- F08 - Adjusted Military Performance Profile Score: Function of F06 and time in service, for active duty military applicants with 5-7 yrs of service. The longer the time in service, the lower the score.
- F09 - Adjusted Military Performance Profile Score: Function of F06 and time in service, for active duty military applicants with 8-15 yrs of service. The longer the time in service, the lower the score.
- F10 - Non-Military Awards/Achievements: Function of civilian awards and civilian achievements, with somewhat more weight assigned to number of civilian awards.
- F11 - Civilian Past Performance Score: Function of F10 and recruiter evaluations of overall acceptability.
- F12 - Overall Applicant Past Performance Profile Score: Function of number of extracurricular activities and F07/F08/F09/ or F11. Note: F07, F08, F09, and F11 are mutually exclusive categories, depending on whether applicant is civilian or military, and if military, depending on time in service.
- F13 - OTS Selection Algorithm Final Score: Function of F03 and F12.
- F14 - Past Performance Measure: F11 or F07 or F08 or F09, whichever is applicable.

A-6. OTS ALGORITHM FORMULAE

F13 - OTS SELECTION ALGORITHM FINAL SCORE =

$$30 - 0.0000003(\underline{F03}-100)^4 + 0.8235(\underline{F12}-15) - 0.000000007059(\underline{F03}-100)^4(\underline{F12}-15)$$

Formulae from which F03 and F12 are derived:

$$\underline{F01} = 90 - 0.001108(\underline{X01}-95)^2 - 0.003556(\underline{X02}-75)^2 - 0.0000008564(\underline{X01}-95)^2(\underline{X02}-75)^2$$

$$\underline{F02} = 0.2(\underline{X03}-200) + 6.5(\underline{X04}) - 0.025(\underline{X03}-200)(\underline{X04})$$

$$\underline{F03} = 0.45(\underline{F01}) + 0.55(\underline{F02})$$

$$\underline{F04} = 0.00125(\underline{X06}-700)^2 + 0.00000003125(\underline{X05}-700)^2(\underline{X06}-700)^2$$

$$\underline{F05} = 35 + 1.5(\underline{X07}) + 2.5(\underline{X08}) - 0.1(\underline{X07})(\underline{X08})$$

$$\underline{F06} = 0.000001(\underline{F04})^4 - 0.0000000003889(\underline{F04})^4(\underline{F05}-65)^2$$

$$\underline{F07} = 25-5(\underline{X09}-1) + 0.0003768(\underline{F06})^{2.3} + 0.0004605(\underline{X09}-1)(\underline{F06})^{2.3}$$

$$\underline{F08} = -0.3704(\underline{X09}-7)^3 + 0.002512(\underline{F06})^{2.3} + 0.00002791(\underline{X09}-7)^3(\underline{F06})^{2.3}$$

$$\underline{F09} = 100 - 0.9375(\underline{X09}-7)^2 - 0.01(\underline{F06}-100)^2 + 0.00009375(\underline{X09}-7)^2(\underline{F06}-100)^2$$

$$\underline{F10} = 35 + 1.5(\underline{X10}) + 2.5(\underline{X11}) - 0.1(\underline{X10})(\underline{X11})$$

$$\underline{F11} = 100-0.01(\underline{X13}-100)^2 - 0.03889(\underline{F10}-65)^2 + 0.000003889(\underline{X13}-100)^2(\underline{F10}-65)^2$$

$$\underline{F12} = 15 + 1.133(\underline{F14}-25) + \underline{X12} - 0.01333(\underline{F14}-25)(\underline{X12})$$

$$\underline{F14} = \underline{F11} \text{ if civilian applicant}$$

$$= \underline{F07} \text{ if 0-4 yrs service}$$

$$= \underline{F08} \text{ if 5-7 yrs service}$$

$$= \underline{F09} \text{ if 8-15 yrs service}$$

APPENDIX B: ASSESSMENT FORMS

1a. Experimental ratings of performance

PERFORMANCE EVALUATION FOR RESEARCH AND DEVELOPMENT	
NAME OF OFFICER TO BE EVALUATED	FOR RESEARCH PURPOSES ONLY. RATINGS WILL NOT BE ENTERED INTO THE OFFICER'S PERSONNEL RECORD NOR WILL THE RATINGS BE RELEASED TO ANYONE OUTSIDE THE AIR FORCE HUMAN RESOURCES LABORATORY.
PERFORMANCE EVALUATION RATING SCALE 1 Performance is completely inferior to most other officers of the same grade 2 Performance is far below average 3 Performance is below average 4 Performance is only slightly below average 5 Performance is comparable to most other officers of the same grade (average) 6 Performance is only slightly above average 7 Performance is above average 8 Performance is far above average 9 Performance is completely superior to most other officers of the same grade	
PERFORMANCE CHARACTERISTICS	RATING
1. Assumes active leadership	
2. Decisions are sound and well thought out	
3. Works well under pressure	
4. Presents written facts in a clear and concise manner	
5. Is willing to accept responsibility	
6. Adapts quickly to new situations	
7. Accepts challenges willingly	
8. Demonstrates common sense	
9. Has skill in motivating others	
10. Functions effectively with only limited supervision	
11. Foresees future difficulties and plans accordingly	
12. Makes effective use of resources	
13. Has the ability to communicate ideas verbally	
14. Gives clear instructions to subordinates	
15. Consistently gets good results	
16. Is willing to do extra work when the need arises	
17. Maintains effective working relationships	
18. Sets realistic work objectives	
19. Lets subordinates know how they are doing	
20. Demonstrates real management abilities	
21. Is fair in disciplinary decisions	
22. Can be relied upon to find a solution to a new problem	
23. Accepts responsibility for subordinate's actions	
24. Gets results through careful delegation of responsibilities	
CONTINUE RATINGS ON REVERSE	

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- 1b. Experimental rating of potential
1c. Experimental rating of motivation

For the following two statements, check the response that best indicates your judgement of this officer's motivation to perform as an Air Force officer and his or her potential to progress to higher levels of leadership, management, or technical skills.

25. Motivation to perform

- ☐ 1 Has the lowest motivation of any officer of comparable grade
- ☐ 2 Very nearly the lowest motivation
- ☐ 3 Considerably less motivation
- ☐ 4 Slightly less motivation
- ☐ 5 No higher or lower motivation than other officers of comparable grade
- ☐ 6 Slightly more motivation
- ☐ 7 Considerably more motivation
- ☐ 8 Very nearly the highest motivation
- ☐ 9 Has the highest motivation of any officer of comparable grade

26. Potential for progression

- ☐ 1 Has the lowest potential of any officer of comparable grade
- ☐ 2 Very nearly the lowest potential
- ☐ 3 Considerably less potential
- ☐ 4 Slightly less potential
- ☐ 5 No higher or lower potential than other officers of comparable grade
- ☐ 6 Slightly more potential
- ☐ 7 Considerably more potential
- ☐ 8 Very nearly the highest potential
- ☐ 9 Has the highest potential of any officer of comparable grade

RATING OFFICIAL'S SIGNATURE, GRADE, AND DATE

COMMENTS:

THIS EVALUATION IS FOR RESEARCH PURPOSES ONLY

2. Officer Effectiveness Report Form

I. RATEE IDENTIFICATION DATA (Read APR 38-10 carefully before filling in any item)						
1. NAME Last, First, Middle Initial)		2. SSN		3. GRADE		4. DAFSC
5. ORGANIZATION, COMMAND, LOCATION					6. PAS CODE	
7. PERIOD OF REPORT FROM:		THRU:		8. NO. DAYS OF SUPERVISION		9. REASON FOR REPORT
II. JOB DESCRIPTION 1. DUTY TITLE: 2. KEY DUTIES, TASKS, AND RESPONSIBILITIES:						
III. PERFORMANCE FACTORS Specific example of performance required						
	NOT OBSERVED	FAR BELOW STANDARD	BELOW STANDARD	MEETS STANDARD	ABOVE STANDARD	WELL ABOVE STANDARD
1. JOB KNOWLEDGE (Depth, currency, breadth)	0	☐	☐	☐	☐	☐
2. JUDGMENT AND DECISIONS (Consistent, accurate, effective)	0	☐	☐	☐	☐	☐
3. PLAN AND ORGANIZE WORK (Timely, creative)	0	☐	☐	☐	☐	☐
4. MANAGEMENT OF RESOURCES (Manpower, material, fiscal)	0	☐	☐	☐	☐	☐
5. LEADERSHIP (Initiative, accept responsibility)	0	☐	☐	☐	☐	☐
6. ADAPTABILITY TO STRESS (Stable, flexible, dependable)	0	☐	☐	☐	☐	☐
7. ORAL COMMUNICATION (Clear, concise, confident)	0	☐	☐	☐	☐	☐
8. WRITTEN COMMUNICATION (Clear, concise, organized)	0	☐	☐	☐	☐	☐
9. PROFESSIONAL QUALITIES (Attitude, dress, cooperation, bearing)	0	☐	☐	☐	☐	☐
10. HUMAN RELATIONS (Equal opportunity participation, sensitivity)		☐	☐	☐	☐	☐

AF FORM 707
AUG 64

PREVIOUS EDITION WILL BE USED

OFFICER EFFECTIVENESS REPORT

2. Officer Effectiveness Report Form (Concluded)

IV. ASSIGNMENT RECOMMENDATION:			1. STRONGEST QUALIFICATION:																																															
2. SUGGESTED JOB (Include AFSC):																																																		
3. ORGANIZATION LEVEL:			4. TIMING:																																															
V. EVALUATION OF POTENTIAL: Compare the ratee's capability to assume increased responsibility with that of other officers whom you know in the same grade. Indicate your rating by placing an "X" in the designated portion of the most appropriate block. <table border="1" style="border-collapse: collapse;"> <tr><td style="width: 30px; height: 20px;"></td><td style="width: 30px; height: 20px;"></td><td style="width: 30px; height: 20px;"></td></tr> <tr><td style="font-size: x-small;">RATER</td><td style="font-size: x-small;">ADON</td><td style="font-size: x-small;">INDORS-ER</td></tr> <tr><td style="font-size: x-small;">RATER</td><td style="font-size: x-small;">ADON</td><td style="font-size: x-small;">INDORS-ER</td></tr> </table> ← Lowest <table border="1" style="border-collapse: collapse;"> <tr><td style="width: 30px; height: 20px;"></td><td style="width: 30px; height: 20px;"></td><td style="width: 30px; height: 20px;"></td></tr> <tr><td style="font-size: x-small;">RATER</td><td style="font-size: x-small;">ADON</td><td style="font-size: x-small;">INDORS-ER</td></tr> <tr><td style="font-size: x-small;">RATER</td><td style="font-size: x-small;">ADON</td><td style="font-size: x-small;">INDORS-ER</td></tr> </table> <table border="1" style="border-collapse: collapse;"> <tr><td style="width: 30px; height: 20px;"></td><td style="width: 30px; height: 20px;"></td><td style="width: 30px; height: 20px;"></td></tr> <tr><td style="font-size: x-small;">RATER</td><td style="font-size: x-small;">ADON</td><td style="font-size: x-small;">INDORS-ER</td></tr> <tr><td style="font-size: x-small;">RATER</td><td style="font-size: x-small;">ADON</td><td style="font-size: x-small;">INDORS-ER</td></tr> </table> <table border="1" style="border-collapse: collapse;"> <tr><td style="width: 30px; height: 20px;"></td><td style="width: 30px; height: 20px;"></td><td style="width: 30px; height: 20px;"></td></tr> <tr><td style="font-size: x-small;">RATER</td><td style="font-size: x-small;">ADON</td><td style="font-size: x-small;">INDORS-ER</td></tr> <tr><td style="font-size: x-small;">RATER</td><td style="font-size: x-small;">ADON</td><td style="font-size: x-small;">INDORS-ER</td></tr> </table> <table border="1" style="border-collapse: collapse;"> <tr><td style="width: 30px; height: 20px;"></td><td style="width: 30px; height: 20px;"></td><td style="width: 30px; height: 20px;"></td></tr> <tr><td style="font-size: x-small;">RATER</td><td style="font-size: x-small;">ADON</td><td style="font-size: x-small;">INDORS-ER</td></tr> <tr><td style="font-size: x-small;">RATER</td><td style="font-size: x-small;">ADON</td><td style="font-size: x-small;">INDORS-ER</td></tr> </table> ↑ Highest									RATER	ADON	INDORS-ER	RATER	ADON	INDORS-ER				RATER	ADON	INDORS-ER	RATER	ADON	INDORS-ER				RATER	ADON	INDORS-ER	RATER	ADON	INDORS-ER				RATER	ADON	INDORS-ER	RATER	ADON	INDORS-ER				RATER	ADON	INDORS-ER	RATER	ADON	INDORS-ER
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VIII. INDOORSER COMMENTS			☐ CONCUR ☐ NONCONCUR																																															
NAME, GRADE, BR OF SVC, ORGN, COMD, LOCATION			DUTY TITLE		DATE																																													
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AF FORM 767, AUG 64 (REVERSE)

APPENDIX C: INTERCORRELATIONS

Table C-1. Intercorrelations Between OTS Selection and RS-DB Predictors (N = 9,967)

Subjects = OTS applicant

	OTS	1	2	3	4	5	6	7	8	9	10	11	12	13
OTS-SEL	1.00													
1. BA	-.18	1.00												
2. BS	.14	-.93	1.00											
3. MA	.06	-.10	-.28	1.00										
4. PHD	.02	-.01	-.04	-.00	1.00									
5. PPL	.22	-.10	.10	-.02	.01	1.00								
6. CALC	.15	-.25	.25	-.02	-.01	-.33	1.00							
7. PPL/CAL	.11	-.06	.06	-.02	-.00	-.08	-.14	1.00						
8. GPA	.26	.04	-.09	.16	.02	-.02	-.08	-.02	1.00					
9. AFOQT-P	.31	-.12	.12	-.01	-.01	.07	.17	.10	.02	1.00				
10. AFOQT-NT	.35	-.17	.17	-.01	-.01	.03	.28	.09	.02	.92	1.00			
11. AFOQT-AA	.33	-.04	.02	.06	-.02	-.08	.24	.03	.15	.52	.63	1.00		
12. AFOQT-V	.21	.10	-.12	.08	-.02	-.09	.06	-.02	.17	.32	.32	.84	1.00	
13. AFOQT-Q	.34	-.18	.17	.02	-.01	-.03	.34	.07	.08	.55	.75	.81	.37	1.00
14. DIS-Enr	-.01	-.01	.00	.01	.07	-.02	-.03	-.00	.02	-.00	-.04	-.00	.01	-.01
15. REC-Eval	.21	-.04	.03	.02	.01	.03	.05	.03	.16	.09	.11	.14	.17	.12
16. RS-Age	-.02	.00	-.01	.02	-.00	-.07	-.03	-.03	.10	-.09	-.11	-.06	-.01	-.09
17. MPC-Age	-.02	.00	-.02	.04	-.00	-.03	-.03	-.01	.04	-.06	-.06	-.03	-.01	-.05
18. MOR/DRG	-.02	-.01	.01	-.01	-.00	-.02	.01	.01	.00	.02	.02	.02	.01	.02
19. 785-W	.01	.00	-.00	.01	-.00	.03	-.02	.05	-.01	.08	.08	.05	.03	.05
20. ReEnl-W	.01	-.02	.01	.02	-.00	.00	.04	.01	.01	.02	.02	.01	.00	.06
21. MOR/785	.02	-.03	.03	-.01	-.00	.08	-.03	-.01	-.01	-.00	-.00	-.01	-.02	.00
22. 785/ReE	.16	-.07	.06	.00	-.00	.34	-.14	-.00	-.01	.02	.04	.03	.00	.05
23. MOR/ReE	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
24. 3APP = 9	-.03	.06	-.06	.00	.02	-.08	-.13	-.04	.13	-.13	-.16	-.14	-.06	-.17
25. MIL-AP	-.10	.09	-.08	-.02	.01	-.12	-.21	-.06	.16	-.26	-.32	-.27	-.15	-.31
26. CIV-AP	.10	-.09	.08	.02	-.01	.12	.21	.06	-.16	.26	.32	.27	.15	.31
27. AGE	-.08	.05	-.10	.14	.02	-.09	-.12	-.04	.13	-.18	-.23	-.13	.01	-.22

Table C-1 (Concluded)

	14	15	16	17	18	19	20	21	22	23	24	25	26	27
OTS-SEL														
14. DIS-Enr	1.00													
15. REC-Eval	.01	1.00												
16. RS-Age	.04	.03	1.00											
17. MPC-Age	-.00	.01	-.01	1.00										
18. MOR/DRG	.02	.02	.00	-.01	1.00									
19. 785-W	.10	.01	-.01	-.00	-.02	1.00								
20. ReEnl-W	-.01	.00	.01	-.01	-.01	-.01	1.00							
21. MOR/785	-.00	-.05	-.01	-.00	-.01	-.01	-.00	1.00						
22. 785/ReE	-.01	.02	-.04	-.01	-.02	-.03	-.02	-.01	1.00					
23. MOR/ReE	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.00				
24. 3APP = 9	.12	.04	.26	.12	-.01	-.03	-.02	-.01	-.04	.00	1.00			
25. MIL-AP	.09	.05	.39	.13	.01	-.02	-.03	-.00	-.07	.00	.56	1.00		
26. CIV-AP	-.09	-.05	-.39	-.13	-.01	.02	.03	.00	.07	.00	-.56	-1.00	1.00	
27. AGE	.06	.02	.56	.22	.02	.00	.03	.01	-.02	.00	.32	.51	-.51	1.00

Table C-2. Intercorrelations Between 33 Additional Predictors: Secondary Data Source (N = 3,142)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. AERO-CPL	1.00	.76	-.01	-.06	-.04	-.01	-.01	-.11	-.05	-.05	.00	.01	.09	.02
2. AERO-OTH		1.00	-.01	-.04	-.03	.01	.00	-.12	-.05	-.04	.01	.02	.08	.01
3. COM-COM			1.00	.01	-.01	.00	.01	-.02	.02	-.00	.02	.01	-.00	.02
4. PATTON				1.00	.02	.06	.07	.06	-.00	.05	.08	.01	-.01	-.07
5. NM-AWDS					1.00	.05	.04	.08	-.02	.02	.04	.01	-.01	-.07
6. NM-ACH						1.00	.51	.07	.02	.06	.16	.08	-.02	-.14
7. EXC-ACT							1.00	.07	.02	.06	.17	.08	-.02	-.11
8. MATH-HRS								1.00	.31	.32	.10	-.03	-.02	-.11
9. COMP-HRS									1.00	.68	.02	-.04	-.02	-.01
10. PROG-HRS										1.00	.06	-.04	-.02	-.06
11. WK-PT-NM											1.00	.07	-.00	-.27
12. WK-PT-M												1.00	.05	-.13
13. WK-PT-CP													1.00	-.04
14. WK-FT-NM														1.00

	15	16	17	18	19	20	21	22	23	24	25	26	27	28
1. AERO-CPL	-.05	.18	.02	.02	.03	.03	.06	.04	.03	.01	.03	.01	-.01	-.03
2. AERO-OTH	-.04	.17	.02	.03	.03	.04	.07	.05	.04	.02	.04	-.01	-.01	-.03
3. COM-COM	.01	-.00	-.01	-.01	.01	-.02	-.01	-.03	-.02	-.01	.01	-.00	-.00	.06
4. PATTON	-.02	.00	-.01	-.02	-.02	-.02	-.01	.01	-.00	.01	-.02	.03	.01	-.03
5. NM-AWDS	-.02	-.01	.02	.03	.02	.02	.02	.04	.02	.02	.02	.02	-.01	-.03
6. NM-ACH	.00	.02	.06	.05	.04	.04	.03	.07	.04	.03	.05	-.00	-.01	-.03
7. EXC-ACT	.02	.02	.07	.05	.04	.03	.02	.07	.04	.03	.05	.00	-.01	-.02
8. MATH-HRS	-.05	-.01	.03	.03	.01	.02	-.02	-.00	.02	.01	.00	.01	.00	-.01
9. COMP-HRS	-.03	-.02	.02	.02	.02	.03	-.02	.00	.04	.01	.02	-.03	.00	.00
10. PROG-HRS	-.04	-.01	.03	.02	.02	.02	-.02	-.00	.02	.01	.01	.01	.00	.00
11. WK-PT-NM	-.12	.00	.02	.03	.03	.03	-.02	.03	.05	.04	.02	-.01	.01	-.04
12. WK-PT-M	.06	.01	-.00	-.00	-.01	.01	.04	.01	.03	.03	-.00	.00	-.01	.01
13. WK-PT-CP	-.01	-.00	.01	.01	.01	.01	.02	.01	.01	.01	.01	-.00	-.00	-.00
14. WK-FT-NM	.06	.01	-.02	-.01	-.02	-.01	.05	-.02	-.03	-.01	-.02	-.00	.02	.02

Table C-2 (Continued)

	29	30	31	32	33		29	30	31	32	33		23	24	25	26	27	28
1. AERO-CPL	-.03	-.02	.04	-.03	.03													
2. AERO-OTH	-.03	-.00	.03	-.04	.03													
3. COM-COM	.00	-.00	.02	-.01	-.02													
4. PATTON	-.06	-.09	-.12	-.08	.05													
5. NM-AWDS	-.04	-.06	-.04	-.04	.03													
6. NM-ACH	-.11	-.13	-.11	-.09	.17													
7. EXC-ACT	-.12	-.13	-.12	-.09	.17													
8. MATH-HRS	-.13	-.18	-.19	-.14	.10													
9. COMP-HRS	-.02	-.05	-.02	-.02	-.00													
10. PROG-HRS	-.06	-.10	-.07	-.07	.06													
11. WK-PT-NM	-.12	-.17	-.12	-.09	.18													
12. WK-PT-M	-.03	-.02	-.01	-.01	.03													
13. WK-PT-CP	.00	.03	.03	-.00	.00													
14. WK-FT-NM	.14	.15	.17	.13	-.14													
	15	16	17	18	19	20	21	22	23	24	25	26	27	28				
15. WK-FT-M	1.00	.01	-.01	-.02	-.00	-.01	.04	.01	-.02	-.01	-.01	.01	.03	.01				
16. WK-FT-CP		1.00	.01	.01	.01	.01	.02	.01	.01	.01	.01	-.00	-.00	-.01				
17. Appeal.			1.00	.63	.63	.55	.45	.59	.62	.54	.60	-.01	.01	.01				
18. Confid.				1.00	.76	.66	.50	.70	.72	.59	.73	.00	.00	.00				
19. Attitude					1.00	.76	.47	.68	.71	.54	.79	.00	.00	.00				
20. Motivat.						1.00	.44	.63	.62	.51	.70	-.01	.00	.00				
21. Work Exp.							1.00	.60	.47	.46	.47	.01	.01	.02				
22. Leadership								1.00	.68	.57	.71	.00	.01	.01				
23. Mental									1.00	.69	.73	-.01	.00	.00				
24. Commun.										1.00	.63	-.00	.01	-.03				
25. Potential											1.00	-.01	.00	.01				
26. Moral W												1.00	-.01	.00				
27. Drug W													1.00	-.01				
28. Other W														1.00				

Table C-2 (Concluded)

	29	30	31	32	33
15. WK-FT- M	.03	.04	.04	.02	-.00
16. WK-FT-CP	-.01	.00	.00	-.02	.04
17. Appear.	.02	.01	.01	-.02	.01
18. Confid.	.02	.01	.01	-.03	.02
19. Attitude	.03	.03	.04	.01	.01
20. Motivat.	.04	.03	.02	.01	.01
21. Work Exp.	.06	.05	.08	.02	-.02
22. Leadershp	.02	.02	.04	-.02	-.00
23. Mental	.03	.04	.02	-.00	-.01
24. Commun.	.03	.03	.04	.01	-.02
25. Potential	.03	.04	.05	.02	-.03
26. Moral W	-.01	-.03	-.02	.03	.02
27. Drug W	-.01	-.01	-.02	-.01	.03
28. Other W	.07	.04	.01	.05	-.04
29. LOR-Gen.	1.00	.42	.26	.18	-.25
30. LOR-Col.		1.00	.38	.32	-.35
31. LOR-Lt C.			1.00	.34	-.32
32. LOR-CMS				1.00	-.25
33. LOR-Civ.					1.00

APPENDIX D: SUMMARY OF F-TESTS FOR PREDICTION OF
OTS SELECTION: 27 RS-DB VARIABLES

Table D-1. F-Tests for OTS Selection - Total Sample (N = 9,967)

Source	Full	Rest	R^2	R^2 dif	df ₁	df ₂	F	p
All effects combined	1	0	.3183	.0000	25	9,941	185.63	.01
PPL, CALC, PPL/CALC	1	2	.2525	.0658	3	9,941	319.83	.01
Grade Point Average	1	3	.2718	.0465	1	9,941	677.94	.01
AFOQT (all composites)	1	4	.2557	.0626	5	9,941	182.33	.01
Recruiter Evaluation	1	5	.3078	.0105	1	9,941	152.25	.01

Table D-2. F-Tests for OTS Selection - Engineers (N = 2,267)

Source	Full	Rest	R^2	R^2 dif	df ₁	df ₂	F	p
All effects combined	1	0	.1192	.0000	23	2,243	13.20	.01
PPL, CALC, PPL/CALC	1	2	.0920	.0272	3	2,243	23.09	.01
Grade Point Average	1	3	.0810	.0382	1	2,243	97.40	.01
AFOQT (all composites)	1	4	.1143	.0049	5	2,243	2.48	.05
Recruiter Evaluation	1	5	.1060	.0132	1	2,243	33.66	.01

Table D-3. F-Tests for OTS Selection - Navigators (N = 1,787)

Source	Full	Rest	R^2	R^2 dif	df ₁	df ₂	F	p
All effects combined	1	0	.3025	.0000	19	1,767	40.33	.01
PPL, CALC, PPL/CALC	1	2	.2857	.0168	3	1,767	14.20	.01
Grade Point Average	1	3	.2431	.0594	1	1,767	150.51	.01
AFOQT (all composites)	1	4	.2088	.0937	5	1,767	47.46	.01
Recruiter Evaluation	1	5	.2888	.0137	1	1,767	34.67	.01

Table D-4. F-Tests for OTS Selection - Pilots (N = 3,304)

Source	Full	Rest	R^2	R^2 dif	df ₁	df ₂	F	p
All effects combined	1	0	.3705	.0000	21	3,282	91.97	.01
PPL, CALC, PPL/CALC	1	2	.2798	.0907	3	3,282	157.60	.01
Grade Point Average	1	3	.3103	.0602	1	3,282	313.49	.01
AFOQT (all composites)	1	4	.2824	.0881	5	3,282	91.83	.01
Recruiter Evaluation	1	5	.3667	.0038	1	3,282	19.68	.01

Table D-5. F-Tests for OTS Selection - Technical (N = 684)

Source	Full	Rest	R^2	R^2 dif	df ₁	df ₂	F	p
All effects combined	1	0	.2903	.0000	21	662	12.80	.01
PPL, CALC, PPL/CALC	1	2	.2846	.0057	3	662	1.77	.ns
Grade Point Average	1	3	.2422	.0481	1	662	44.92	.01
AFOQT (all composites)	1	4	.1584	.1319	5	662	24.61	.01
Recruiter Evaluation	1	5	.2551	.0352	1	662	32.85	.01

Table D-6. F-Tests for OTS Selection - Non-Technical (N = 1,888)

Source	Full	Rest	R^2	R^2 dif	df ₁	df ₂	F	p
All effects combined	1	0	.2285	.0000	24	1,863	22.99	.01
PPL, CALC, PPL/CALC	1	2	.2267	.0018	3	1,863	1.45	.ns
Grade Point Average	1	3	.1852	.0433	1	1,863	104.39	.01
AFOQT (all composites)	1	4	.1514	.0771	5	1,863	37.22	.01
Recruiter Evaluation	1	5	.2143	.0142	1	1,863	34.23	.01

APPENDIX E: SIGNIFICANT VARIABLES IN PREDICTING
PERFORMANCE CRITERIA: 27 RS-DB VARIABLES

Table E-1. Prediction of OTS Student Ratings (N = 3,260)

Step variable	<u>r</u>	Multiple <u>R²</u>	Change in <u>R²</u>
1. Grade Point Average	.28	.0775	.0775
2. AFOQT-Verbal	.17	.0958	.0182
3. Military Applicant	.19	.1161	.0203
4. AFOQT-Pilot	.04	.1190	.0028
25. Final <u>R²</u>		.1328	.0138

Table E-2. Prediction of OTS Final Grade (N = 3,868)

Step variable	<u>r</u>	Multiple <u>R²</u>	Change in <u>R²</u>
1. AFOQT-Verbal	.43	.1830	.1830
2. Grade Point Average	.31	.2513	.0683
3. Military Applicant	.11	.2582	.0069
4. AFOQT-Quantitative	.19	.2692	.0110
25. Final <u>R²</u>		.2772	.0080

Table E-3. Prediction of OTS Completion (N = 4,442)

Step variable	<u>r</u>	Multiple <u>R²</u>	Change in <u>R²</u>
1. AFOQT-Pilot	.13	.0175	.0175
2. Military Applicant	.08	.0290	.0115
3. AFOQT-Verbal	.13	.0389	.0099
4. Age	-.01	.0424	.0035
25. Final <u>R²</u>		.0494	.0070

Table E-4. Prediction of Technical School Course Grades (N = 916)

Step variable	<u>r</u>	Multiple <u>R²</u>	Change in <u>R²</u>
1. AFOQT-Academic Aptitude	.15	.0239	.0239
2. PPL/CALC	-.13	.0410	.0171
3. Grade Point Average	.09	.0472	.0062
4. RS Age Waiver	-.07	.0524	.0051
25. Final <u>R²</u>		.0667	.0143

Table E-5. Prediction of Navigator Training (N = 282)

Step variable	<u>r</u>	Multiple <u>R²</u>	Change in <u>R²</u>
1. AFOQT-Nav/Tech	.20	.0381	.0381
2. Age	-.15	.0616	.0235
3. PhD Degree	-.14	.0758	.0142
4. Military Applicant	.05	.0939	.0181
25. Final <u>R²</u>		.1285	.0346

Table E-6. Prediction of Pilot Training (N = 1,124)

Step variable	<u>r</u>	Multiple <u>R²</u>	Change in <u>R²</u>
1. AFOQT-Pilot	.10	.0107	.0107
2. Military Applicant	-.10	.0195	.0088
3. AFOQT-Academic Aptitude	-.02	.0282	.0087
4. PPL/CALC	.09	.0350	.0068
25. Final <u>R²</u>		.0448	.0098

Table E-7. Prediction of Experimental Performance Rating (N = 803)

Step variable	<u>r</u>	Multiple <u>R²</u>	Change in <u>R²</u>
1. Reenlistment Waiver	-.09	.0073	.0073
2. BA Degree	-.07	.0133	.0060
3. AFOQT-Verbal	.06	.0182	.0049
4. Recruiter Evaluation	.06	.0208	.0026
25. Final <u>R²</u>		.0382	.0174

Table E-8. Prediction of Experimental Potential Rating (N = 793)

Step variable	<u>r</u>	Multiple <u>R²</u>	Change in <u>R²</u>
1. Grade Point Average	.13	.0157	.0157
2. Military Applicant	.12	.0237	.0080
3. Form 785/RE Waiver	.06	.0305	.0068
4. Form 785 Waiver	-.06	.0342	.0037
25. Final <u>R²</u>		.0463	.0121

Table E-9. Prediction of Experimental Motivation Rating ($N = 762$)

Step variable	r	Multiple R^2	Change in R^2
1. Civilian Applicant	-.14	.0193	.0193
2. Reenlist Waiver	-.10	.0289	.0096
3. Form 785 Waiver	-.06	.0334	.0045
4. Grade Point Average	.10	.0370	.0036
25. Final R^2		.0538	.0168

Table E-10. Prediction of Officer Effectiveness Reports ($N = 2,821$)

Step variable	r	Multiple R^2	Change in R^2
1. Recruiter Evaluation	-.06	.0032	.0032
2. AFOQT-Academic Aptitude	.04	.0050	.0018
3. 785/Reenlist Waiver	.03	.0055	.0005
4. Reenlist Waiver	.02	.0061	.0005
25. Final R^2		.0092	.0031

APPENDIX F: SIGNIFICANT VARIABLES IN PREDICTING PERFORMANCE
CRITERIA SECONDARY DATA SOURCE

Table F-1. Prediction of OTS Completion (N = 1,890)

Step variable	r	Multiple R^2	Change in R^2
1. AFOQT-Pilot	.13	.0158	.0158
2. Civilian Applicant	-.10	.0330	.0171
3. LOR (LtCol)	.10	.0373	.0043
4. AFOQT-Verbal	.08	.0411	.0038
57. Final R^2		.0680	.0269

Table F-2. Prediction of OTS Final Course Grade (N = 1,649)

Step variable	r	Multiple R^2	Change in R^2
1. AFOQT-Verbal	.36	.1328	.1328
2. Grade Point Average	.28	.2045	.0717
3. Military Applicant	.11	.2155	.0110
4. AFOQT-Academic Aptitude	.32	.2322	.0167
57. Final R^2		.2664	.0342

Table F-3. Prediction of OTS Distinguished Graduates (N = 1,649)

Step variable	r	Multiple R^2	Change in R^2
1. Grade Point Average	.21	.0444	.0444
2. 785/RE Waiver	.07	.0496	.0052
3. Moral/785 Waiver	.07	.0542	.0046
4. Military Applicant	.11	.0588	.0046
57. Final R^2		.1008	.0419

Table F-4. Prediction of OTS Student Training Evaluations (N = 1,229)

Step variable	r	Multiple R^2	Change in R^2
1. Grade Point Average	.30	.0877	.0877
2. Military Applicant	.22	.1108	.0231
3. AFOQT-Verbal	.09	.1218	.0110
4. Extracurricular Activity	.00	.1321	.0103
57. Final R^2		.1816	.0495

Table F-5. Prediction of Officer Effectiveness Reports ($N = 1,026$)

Step variable	r	Multiple R^2	Change in R^2
1. Extracurricular Activity	.05	.0020	.0020
2. AFOQT-Pilot	-.04	.0048	.0028
3. Grade Point Average	.04	.0067	.0019
4. CALC	.04	.0096	.0029
57. Final R^2		.0251	.0155

Table F-6. Prediction of Undergraduate Pilot Training Pass/Fail ($N = 431$)

Step variable	r	Multiple R^2	Change in R^2
1. Work Exp-FT/NSNM	.15	.0223	.0223
2. Military Applicant	-.14	.0425	.0202
3. RR-Communication Skill	.13	.0588	.0163
4. PPL/CALC	.11	.0683	.0095
57. Final R^2		.1691	.1008

Table F-7. Prediction of Undergraduate Navigator Training Pass/Fail ($N = 121$)

Step variable	r	Multiple R^2	Change in R^2
1. RR-Confidence	.34	.1144	.1144
2. BS Degree	.21	.1759	.0615
3. BA Degree	-.16	.2001	.0242
4. RR-Appearance	.30	.2183	.0182
57. Final R^2		.4257	.2074