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Armed Services Applicant Profile (ASAP): Development and Validation of Operational Forms

Thomas Trent
Mary A. Quenette

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Mary A. Quenette

Reviewed and approved by
W. A. Sands

Released by
Thomas F. Finley
Captain, U.S. Navy
Commanding Officer
and
Richard C. Sorenson
Technical Director (Acting)

Navy Personnel Research and Development Center
San Diego, California 92152-6800

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Thomas Trent, Mary A. Quenette

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The objectives of the research were (1) to develop operational forms of a biographic instrument (Armed Services Applicant Profile [ASAP]) that measure background dimensions related to applicants' propensity to adapt to military life, (2) to determine the validity of the ASAP to predict attrition, and (3) to implement the ASAP into the enlisted screening system. Applicants to the Armed Services (N = 120,175) were administered one of two forms of the ASAP and accessions were tracked through their first three years of enlistment. The weighted biographical data predicted three-year service completion (r_{pbis} = .30) and demonstrated significant incremental validity in addition to operational screens (education attainment and Armed Forces Qualification Test). If implemented for enlisted screening, this increased precision will decrease annual attrition by several thousand. The ASAP is a valid predictor of attrition for all groups and would not result in adverse impact against women or nonwhite groups.

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FOREWORD

This research was conducted under the Adaptability Screening Program (ASP) in support of Work Request Number N0002290WRASP01. It was sponsored by the Chief of Naval Operations (OP-01) and the Office of the Assistant Secretary of Defense, Force Management and Personnel (OASD, FM&P).

This report describes the development of proposed operational forms of a biographical instrument, the Armed Services Applicant Profile (ASAP), designed to differentiate among applicants for enlistment on the basis of individual propensity to complete first-term service. This technical report addresses the recommendations of the Government Accounting Office and the OASD, FM&P that a biographical data screen suitable for use by all branches of the Armed Services be developed and evaluated. The Navy Personnel Research and Development Center has served as the lead laboratory in this effort. The initial development of the ASAP was accomplished at NPRDC by Mr. David Atwater, Dr. Norman Abrahams, and Dr. Martin Wiskoff, and at the Army Research Institute for the Behavioral and Social Sciences (ARI) by Dr. Clinton Walker. Prior use of biographical information for predicting premature attrition of Navy enlisted personnel was accomplished by Mr. W. A. Sands.

Appreciation is expressed to the members of the Manpower Accession Policy Working Group (MAPWG) (Lt Col. Paul Cook, Chair), the Defense Advisory Committee (DAC) for Military Personnel Testing (Dr. Frank Schmidt and Dr. Fritz Drasgow, Chairs), Dr. W. Steve Sellman, and Dr. Anita Lancaster for their technical and administrative support. Special acknowledgment is extended to the U. S. Air Force Printing Committee (Lt Col. Paul Cook, Chair) for procuring and distributing the ASP testing materials. Also, Dr. Clarence McCormick provided the technical liaison needed to meet the operational requirements of the U. S. Military Entrance Processing Command (USMEPCOM). As the Chair of the ASP Policy Committee, Mr. Richard Hoshaw (PERS 234) served as program coordinator and represented the Navy as Executive Agent. Ms. Janice Laurence and Mr. Jeffrey Barnes of the Human Resources Research Organization (HumRRO), Dr. Leaetta Hough and Ms. Mary Ann Hanson of Personnel Decisions Research Institute, Inc. (PDRI), and Dr. Len White of ARI also made significant contributions. The support of the Defense Manpower Data Center, Monterey, CA, has been indispensable. Thanks to Mr. Mike Dove, Ms. Magge Lazanoff, Mr. Les Willis, Ms. Helen Hagen, and Ms. Michelle Saunders. Finally, the personal dedication and enthusiasm of Dr. Brian Waters (HumRRO) made a significant contribution to this project.

THOMAS F. FINLEY
Captain, U.S. Navy
Commanding Officer

RICHARD C. SORENSON
Technical Director (Acting)

SUMMARY

Problem

Military enlistment procedures need better screening instruments to control attrition, to expand the recruiting market, and to reduce the reliance on the three-tier classification of educational credentials as an enlistment standard. Self-reported biographical data (biodata) questionnaires are potentially valuable screening tools for selecting quality personnel.

Objectives

The objectives of the research were (1) to develop operational forms of a biographical instrument (Armed Services Applicant Profile [ASAP]) that measure background dimensions related to applicant propensity to adapt to military life, (2) to determine the validity of the ASAP for predicting service completion, and (3) to implement the ASAP into the enlisted screening system.

Method

For a three-month period, nonprior service applicants for active duty in the United States military (N = 120,175) were administered one of two forms of the ASAP. Each ASAP form contained 130 biodata items concerning personal, school, and work experiences in a multiple-choice format. The military performance of subsequent accessions (N = 55,675) was tracked during their first three years of service. Based on responding differences between attrites and service completers, scoring keys were developed and cross-validated on independent samples. Two alternate short forms with 50 items each were developed. All testing materials needed for operational use of the short forms were produced, including administration manuals, test booklets, scoring keys and templates, conversion tables, and expectancy tables.

Results

The proposed operational Forms A and B predicted service completion in the cross-validation samples (r_{pbis} = .30/.29). The ASAP also demonstrated significant incremental validity in addition to current operational screens (education attainment and the Armed Forces Qualification Test [AFQT]). A moderate degree of differential validity and differential prediction was evidenced for gender, racial, and educational groups.

Conclusions

The ASAP shows considerable potential for use as a screening instrument that would identify military applicants who are likely to complete first-term service and, more specifically, that could differentiate between low attrition-risk individuals and high attrition-risk groups, such as alternative high school credential holders and nonhigh school graduates. The ASAP is a valid predictor of attrition for all groups and would not result in adverse impact against women or nonwhite racial/ethnic groups. If implemented for enlisted screening, the increased precision afforded by the ASAP could substantially increase the annual number of 36-month service completions and save millions of dollars in attrition-related costs.

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INTRODUCTION

Problem

To maintain its career force, the Armed Services annually screen 800,000 or more applicants. Approximately 60 percent of these examinees do not subsequently enlist, about 20 percent having failed (1) minimum aptitude test scores, which vary in relation to high school diploma status, or (2) physical, medical, age, or moral criteria (Waters, 1983). Of those who do enlist, approximately 30 percent fail to complete their first three years of service (Budden, 1984). The cost associated with this attrition has been estimated to be $8.1 billion (GAO, 1979) and has been the subject of considerable research (e.g., Flyer & Elster, 1983; Hosek, Antel, & Peterson, 1989). While there are a number of possible strategies for reducing attrition (e.g., policy changes, intervention techniques, monetary inducements), a promising and cost-effective approach involves selecting from among the available and otherwise qualified applicants those most likely to adapt successfully to military life and complete their service (Sands, 1976a, 1976b, 1977).

Historically, enlisted selection procedures have emphasized intellectual screening and aptitude tests that identify applicants most likely to successfully complete technical training. While cognitive tests are valid predictors of school performance (e.g., Booth-Kewley, Foley, & Swanson, 1984), they are not highly related to nonacademic attrition. For predicting nonacademic attrition, the Armed Services have relied primarily on attainment of a high school diploma. Even though education level is a valuable predictor, attrition rates within the high school graduate group average 20 to 30 percent (Laurence, 1983). Relatedly, the predictive utility of the high school diploma has diminished with the proliferation of alternative diplomas and nonstandardized credentials (Eitelberg, Laurence, Waters, & Perelman, 1984; Laurence, 1987; Sellman, 1989).

In addition, advocates of equitable enlistment standards, such as the GED Testing Service of the American Council on Education (ACE), have criticized the use of a broad educational classification as a selection device and Department of Defense policies that require quota restrictions and higher Armed Forces Qualification Test (AFQT) scores for alternative high school credential applicants (Laurence, 1987). The ACE and others argue that these enlistment criteria ignore variation among individuals within different educational groups (Sellman, 1984; 1989). Despite the fact that alternative diploma and nonhigh school graduates as a group fail to complete their enlistment at nearly twice the rate of high school graduates, the Armed Services provide job training and career opportunities to men and women from all socioeconomic backgrounds. To this end, the development of more sophisticated selection technology can improve the balance between the institutional needs of the Department of Defense and the individual needs of military applicants.

Background

The Armed Services employ self-reported biographical data (biodata) from applicants as a means of improving the quality of their selected personnel (Sands, 1978). The utility of biodata is based on the assumption that it is minimally related to cognitive aptitude, but is associated with an "adaptability" construct. The premise supporting the use of biodata is simply that "the best predictor of future behavior is past behavior" (Owens, 1976). Biographical questionnaires provide a cost-effective method of identifying and quantifying experiences, behaviors, and attitudes relevant to adaptation to, and successful completion of, military service.

This use of biodata has received considerable support from industrial applications, where research has demonstrated that biodata items are valid predictors of a variety of complex behaviors such as job performance, creativity, and tenure (Asher, 1972; Chaney & Owens, 1964; Crawford & Trent, 1987; Schuh, 1967). In a comprehensive review of the validity of tests for predicting training and occupational success, Ghiselli (1966) concluded that biographical data, properly developed and empirically scored, outperformed all other types of instruments in validity. Cascio (1978) concluded, "Compelling evidence exists that when appropriate procedures are followed, the accuracy of personal history data as predictors of future work behavior may be superior to any known alternative" (p. 202). Finally, Reilly and Chao (1982) examined 58 biodata studies as part of a review of alternatives to conventional tests. They concluded that biodata instruments are the recommended alternative, demonstrating acceptable validity and little adverse impact.

Armed Service research and development programs that preceded the present research were summarized in a Government Accounting Office report (GAO, 1982). That report concluded that all the Armed Services were conducting research on similar biodata questionnaires--Recruiting Background Questionnaire (RBQ) for the Navy and Marine Corps (Atwater & Abrahams, 1983), the Army's Military Applicant Profile (MAP) (Eaton, Weltin, & Wing, 1982; Frank & Erwin, 1978), and the Air Force's History Opinion Inventory (HOI) (Bloom, 1977)--for essentially the same purpose: reducing first-term enlisted attrition.[1] The report suggested that significant savings and a better end-product could result from a Joint-service effort.

In response to the GAO report and to Congressional interest in enlisted screening procedures that place less emphasis on high school graduation status, the Office of the Assistant Secretary of Defense (Force Management and Personnel) asked the Manpower Accession Policy Working Group (MAPWG) to investigate the feasibility of developing a single biodata questionnaire suitable for use by all services to supplement the Armed Services Vocational Aptitude Battery (ASVAB) in applicant screening. The questionnaire was to predict first-term enlisted attrition and to be valid for different educational, ethnic, and gender groups of military applicants. The Armed Services Applicant Profile (ASAP) was born from a distillation of the RBQ and the MAP.

Objectives

The objectives of the research were (1) to develop operational forms of a biographical instrument (Armed Services Applicant Profile [ASAP]) that measure background dimensions related to applicant propensity to adapt to military life, (2) to determine the validity of the ASAP to predict service completion, and (3) to implement the ASAP into the enlisted screening system.

METHOD

Instruments

Armed Services Applicant Profile

Two alternate forms of the ASAP (Forms A and B) were developed, each consisting of 50 items in multiple choice format with two to five item options. Forms A and B contain 21 shared items. Forms A and B were derived from the original ASAP Forms 1 and 2. Forms 1 and 2 contained 130 items each, including 90 shared items. The items in the original Forms 1 and 2 were drawn from

[1] See Laurence (1985) for a comparison of biographical inventories of military selection.

the Navy's Recruiting Background Questionnaire (RBQ) (Atwater & Abrahams, 1983) and the Army's MAP (Eaton et al., 1982; Frank & Erwin, 1978).

Scoring Key Procedures. Half of the Form 1 accession sample (N = 13,685) and half of the Form 2 accession sample (N = 13,172) were randomly assigned to "key construction" groups. In order to develop a set of scoring weights with the greatest possible stability, the responses of accessions in the two key construction groups were combined (N = 26,857) for the 90 items common to the two original 130-item Forms 1 and 2. The combined responses to the common items then served as a basis for the scoring keys for all items on both forms. The other half of the recruits were assigned to "cross-validation" groups (Form 1, N = 13,501; Form 2, N = 13,093) and were used exclusively for testing (i.e., cross-validating in independent samples) the scoring keys developed in the key construction groups.

The ASAP scoring keys were developed using the "horizontal" percent method commonly used for scoring weighted application blanks (Guion, 1965). In this method, each item option is weighted by the percent of respondents choosing that option who are also successful on the criterion measure. The scoring weights derived for the ASAP item options were a modification of what Guion called "arbitrary unit directional weights." Several approaches to transforming the ASAP percent weights were evaluated in terms of the ability to predict the criterion and were found to have approximately equal validities. A three-point scale was chosen to be consistent with the scoring of the Army's ABLE (Eaton et al., 1982) and to facilitate the hand-scoring of answer sheets that some U. S. and all overseas operational testing requires. Since the ASAP percent weights were not symmetrically distributed (skewness = -1.58), the cutoff points for the derived weights (N = 408) were set such that approximately equal frequencies of weights fell into categories representing low, medium, and high (60.0 to 78.1, 78.2 to 80.3, and 80.4 to 88.6, respectively) probability of success. Finally, positive weights were assigned to each of the item options, with 1 indicating a low level and 3 indicating a high probability of success. A respondent's total score is the sum of the weights assigned to the options selected by that respondent. (Omissions, multiple responses, and other invalid responses were assigned a score of 1.)

Alternate Form Development. Administration time limitations mandated the development of two short forms (Forms A and B) based on the original Forms 1 and 2. Item deletion decisions were a function of rational and statistical fairness evaluations, item validation procedures, previous research, and a pilot study. Development of the short forms began after item reviews were conducted by the Educational Testing Service, the Manpower Accession Policy Working Group, and the American Institutes for Research (Wise, Hough, Szenas, Trent, & Keyes, 1989). The result was the rejection of 31 items, as summarized in Table 1.

Based on previous research (Trent, 1987a) and a pilot study (Barnes et al., 1989), the suitable questionnaire length was determined to be 50 items. The 21 common short-form items were drawn from the common long-form items, with item validity as the primary consideration in selection; other standards included subgroup mean scores, subgroup validities, and item content. The unique short form items were selected from the remaining common long-form items and unique long-form items, again with item validity as the major criterion in item selection. The short-form unique items were assigned such that the two forms were balanced according to content areas, subgroup means, subgroup validities, and overall item validity.

Table 1

ASAP Item Exclusion

Content Problem	Number of Items
Circumstances not under control of applicant	7
Racial/ethnic/gender bias	6
Bias against economically disadvantaged	8
Intrusiveness	4
Irrational scoring as related to content	3
High school diploma status	3
Total	31

Although the ASAP is not a theory-based instrument, the items were subjected to a rational content analysis and assigned to constructs (Wise et al., 1989) which had been developed in earlier biodata research. Table 2 summarizes the results of this content analysis.

Table 2

ASAP Item Content by Form

	Number of Items	
Construct	Form A	Form B
Academic Involvement (AI)	9	10
Nondelinquency (ND)	8	7
Work Orientation (WO)	11	9
Physical Condition (PC)	4	5
Interests (INT)	2	6
Conscientiousness (CON)	2	2
Energy Level (EL)	1	1
Influence on Life Decisions (ILD)	1	1
Self-esteem (SE)	1	1
Traditional Values (TV)	2	1
Sociability (SOC)	2	0
Demographics (DEM)	1	1
Intentions to Remain in the Military (IRM)	1	0
Dominance (DOM)	2	0
Cooperativeness (COOP)	1	0
Emotional Stability (ES)	0	1
Miscellaneous (MISC)	2	5
Total	50	50

Finally, to control context effects and to balance the forms, the common items appear in the same item-sequential position on each form and the unique items are ordered to correspond by content area across forms. Adjustments were made in the text of, and the empirical-scoring key for, several items (based on recommendations by Wise et al., 1989) to improve face validity or content validity.

Operational Screens

The validity of the ASAP for predicting military service completion was compared to the two primary military enlistment screens: the Armed Forces Qualification Test (AFQT) and educational achievement. The AFQT is a percentile score representing cognitive aptitude. Education was measured in accordance with a three-tier high school diploma classification: regular high school diploma, alternative credential, or no degree/certificate. The categories were coded using the percent in each group who succeeded on the criterion as the score for that group (74.1, 54.7, and 47.0, respectively).[2] See Table A-1 for descriptive statistics for ASAP score and AFQT in the accession sample.

Sample

Forms 1 and 2 were trial-administered to 120,175, nonprior service applicants for active duty in the continental United States from December 1984 through February 1985. As indicated in Table 3, 46 percent (N = 55,675) of the applicants subsequently enlisted.

Table 3

ASAP Sample

		Accessions[a]	
ASAP	Applicant N	N	Rate (%)
Form 1	61,215	28,301	46
Form 2	58,960	27,374	46
Total	120,175	55,675	46

[a]Persons who subsequently enlisted in the military.

The issue of sample representativeness was addressed through a comparison of ASAP applicants and accessions with their FY88 and FY89 population counterparts (Table 4). Among the applicant groups, the ASAP sample had lower AFQT scores, as indicated by smaller percentages in the higher mental ability categories (CAT I, II, and IIIA). ASAP applicants also had a lower percentage of regular high school diploma graduates. The total male-to-female ratio remained relatively constant, but for race-within-gender groups some differences were apparent. There was a larger percentage of whites in the ASAP sample for both males and females, and a smaller percentage of Hispanics. Nonetheless, the proportion of blacks was equivalent among males and similar among females. Finally, ASAP examinees were more heavily concentrated in the ages from 18 to 25, with fewer applicants 17 or younger.

[2]Indicator measures (0, 1) were also computed for the regular diploma and alternate credential categories (see Tables A-2 and A-3).

Table 4

ASAP Sample Representativeness

Subgroups	Applicant Percent[a]			Accession Percent[b]		
	ASAP Sample	Total DoD		ASAP Sample	Total DoD	
		FY88	FY89		FY88	FY89
AFQT						
CAT-I	2.90	3.95	3.41	3.52	4.43	3.92
CAT-II	24.62	29.81	27.52	31.62	35.96	34.30
CAT-IIIA	17.58	20.07	20.08	24.17	26.43	26.66
CAT-IIIB	28.37	27.93	27.76	32.61	28.24	28.64
CAT-IV	24.06	16.88	19.15	8.08	4.94	6.48
CAT-V	2.41	1.37	2.09	0.00	0.00	0.00
Males						
White	71.63	68.45	66.49	74.30	71.61	70.47
Black	22.15	21.75	22.98	18.70	19.53	20.15
Hispanic	1.77	6.31	6.97	3.65	5.73	6.32
Females						
White	62.29	59.60	56.33	65.23	62.44	61.89
Black	32.06	31.41	34.00	28.11	29.16	29.34
Hispanic	1.10	5.25	5.90	2.97	4.92	5.63
Total						
Males	82.38	83.21	82.56	86.02	87.40	86.26
Females	17.62	16.79	17.44	13.98	12.60	13.74
U.S. Census District						
North East	18.47	15.90	14.98	18.69	15.31	13.96
North Central	28.43	25.80	24.28	29.12	26.59	25.53
South	34.86	38.32	40.00	33.45	38.20	39.69
West	16.88	18.83	18.81	17.87	19.14	19.37
Other	1.36	1.14	1.93	0.88	0.76	1.46
HS Diploma						
Regular[c]	84.26	90.26	86.84	88.44	93.61	90.27
Alternative	6.20	5.15	5.20	6.22	4.34	5.95
None	9.54	3.52	6.18	5.34	2.02	3.50
Age						
17 or less	12.17	26.37	25.00	5.77	5.90	5.97
18 to 20	58.56	50.03	52.10	65.92	70.67	72.51
21 to 25	24.16	18.50	17.70	24.08	19.37	17.86
26 to 30	4.18	3.92	3.97	3.50	3.28	2.98
31 or more	0.93	1.18	1.23	0.72	0.78	0.68

Note. All applicants and accessions were DoD nonprior service personnel.

[a]ASAP applicants, N = 120,175; FY88 applicants, N = 504,733; FY89 applicants, N = 568,266.

[b]ASAP accessions, N = 55,675; FY88 accessions, N = 264,241; FY89 accessions, N = 267,947.

[c]Includes high school seniors.

A nearly identical pattern emerged from a comparison of the accession groups. ASAP examinees had lower AFQT scores, fewer high school graduates, similar race-within-gender differences, and a similar male/female ratio. Overall, the ASAP samples, both the applicants and accessions, parallel the more recent applicant and accession groups. As expected, the screening of applicants resulted in enlistment of larger percentages of individuals who hold a regular high school diploma and greater percentages in the higher mental ability categories on the AFQT.

Criterion

Personnel who were discharged at the expiration of their term of service, obtained an early release, or left to attend officer candidate school were designated "successful" on the criterion (N = 7,612). In addition, success was represented by completion of the first 36 months of service (N = 28,441). Attrition was defined as loss for pejorative reasons (N = 14,460), such as poor training performance or drug use (Table 5). Losses were most severe in the first year of enlistment, with 25 percent of losses having separated within 57 days and 50 percent of losses having separated within 344 days. The mean number of days served by attrites was 394, with a standard deviation of 332.

Active duty personnel who had yet to complete 36 months of service (N = 3,476) and personnel whose Interservice Separation Codes (ISCs) were unknown (N = 332) were excluded from statistical analyses. An additional 1,354 attrites who demonstrated nonpejorative reasons for separation (e.g., medical disability, hardship, death, breach of contract by the service) were also excluded. As seen in Table 5, 71.4 percent completed three years and 28.6 percent attrited. See Table A-4, for a breakdown of ISC assignment to criterion categories and Table A-5 for the ISCs.

Table 5

Criterion Measure: Service Completion vs. Attrition

Status on Criterion	*N*	Percentage
Successful on Criterion	36,053	71.4
Attrited (Reason)		
Training Performance	2,588	
Medical	2,341	
Behavioral Unsuitability	2,374	
Erroneous Enlistment	603	
Fraudulent Entry	596	
Alcoholism/Illegal Drugs	1,727	
Pregnancy/Parenthood	837	
Desertion	157	
Sexual Deviance	220	
Serious Offense	1,412	
Civil/Criminal/Military Court Action	350	
Other	1,255	
Total Attrited	14,460	28.6
Total Criterion Group	50,513	100.0

RESULTS

Item Analysis

Table 6 lists item validities, item cross-validities, and item score to total test score reliability for Form A and B items.

The ASAP item analyses are summarized in Table 7. The means of the validities, cross-validities, and reliabilities were very similar across forms, and there was little shrinkage of validity when the scoring keys were applied to the cross-validation groups.

The means of the validity, cross-validity, and reliability coefficients of the 21 common items also exhibited a high degree of correspondence across forms (Table 8). In addition, correlating each of the three sets of coefficients across forms ($r_{A, B}$) demonstrated stability of psychometric characteristics despite the fact that the common items did not appear in the same item sequential position on the two forms (Forms 1 and 2) in the original trial administration.

Test Reliability

The internal consistency of the ASAP forms was estimated as an additional assessment of reliability. Since the overriding objective was to optimize predictive validity, the instrument was not constructed to maximize homogeneity; nonetheless, estimates of internal consistency using coefficient alpha provided values of .76 for Form A and .74 for Form B, demonstrating a moderate degree of homogeneity.

Test-retest analysis represents another approach to evaluating reliability; however, the logistical constraints of military applicant testing and processing did not support a test-retest of the ASAP during the three-month trial administration. The ostensible demonstration of ASAP reliability was achieved by cross-validating scoring keys that were constructed in independent samples.

Score Distributions

Figure 1 provides the ASAP score distribution for applicants and the accession subgroup (Forms A and B combined). While the distributions are similar in shape, greater proportions of accessions have higher scores on the ASAP as a consequence of indirect restriction of range. For the raw score distributions, the mean of the accessions was 116.8 while that of the applicants was 114.8. Both raw score distributions were negatively skewed (applicants, skew = -4.60; accessions, skew = -.464), and the applicant distribution was markedly leptokurtic (kurtosis = .220).

Form Equating

The procedures used for construction of Forms A and B resulted in alternate forms that were essentially equated. Waters (1989) examined cumulative frequencies at each score level and concluded that the raw score scales nearly coincided. The means of the two forms were not significantly different ($t_{120,173} = 1.74$; $p = .082$) and the Form B/Form A variance ratio ($F = 1.047$) barely reached significance. While the equivalence of means and near-equivalence of variances argues for equivalence of forms, a linear equipercentile equating procedure (Lindsay & Prichard,

Table 6

ASAP Item Analysis: Validities, Cross-validities, and Reliabilities for Forms A and B

	Form A			Form B		
Item	Validity	Cross-validity	Reliability	Validity	Cross-validity	Reliability
1	.065	.044	.087	.051	.041	.031
2	.070	.070	.130	.042	.067	.144
3*	.049	.050	.068	.037	.049	.085
4	.047	.051	.166	.047	.047	.094
5*	.029	.019	-.012	.011	.028	-.036
6*	.087	.068	.380	.062	.078	.327
7*	.060	.046	.172	.046	.059	.213
8	.064	.062	.267	.154	.154	.406
9*	.093	.094	.377	.088	.086	.340
10*	.095	.093	.282	.085	.095	.276
11*	.077	.070	.335	.060	.075	.346
12*	.078	.065	.228	.054	.059	.212
13*	.125	.127	.261	.121	.135	.270
14	.039	.038	.242	.055	.054	.195
15*	.072	.071	.181	.084	.066	.182
16	.048	.048	.150	.012	.026	.170
17*	.086	.091	.228	.079	.067	.235
18*	.062	.063	.176	.066	.047	.183
19	.057	.045	.160	.172	.172	.335
20*	.067	.070	.247	.068	.072	.247
21	.052	.057	.182	.057	.058	.190
22	.063	.066	.121	.037	.037	.125
23	.156	.150	.366	.038	.032	.186
24	.045	.045	.041	.066	.048	.136
25	.144	.131	.341	.114	.122	.325
26	.053	.059	.191	.054	.053	.124
27	.050	.070	.162	.051	.049	.076
28	.057	.064	.156	.038	.041	.067
29	.042	.053	.078	.040	.046	.134
30	.052	.023	.224	.039	.034	.033
31	.053	.038	.085	.054	.048	.108
32	.027	.032	.130	.056	.062	.201
33	.030	.034	.051	.053	.049	.135
34	.180	.156	.444	.067	.068	.307
35	.042	.040	.121	.041	.029	.134
36	.122	.103	.397	.088	.069	.293
37*	.085	.078	.229	.086	.087	.237
38*	.089	.099	.272	.110	.099	.287
39*	.070	.079	.242	.076	.073	.252
40*	.108	.104	.312	.094	.079	.317
41*	.088	.092	.222	.082	.067	.229
42*	.060	.059	.123	.080	.055	.153
43*	.097	.105	.228	.097	.109	.223
44	.084	.095	.365	.146	.143	.336
45*	.089	.077	.245	.080	.069	.247
46	.074	.084	.244	.073	.052	.183
47	.072	.056	.061	.023	.022	.055
48	.041	.054	.162	.034	.024	.138
49	.098	.090	.286	.055	.061	.217
50	.055	.046	.114	.072	.068	.311

Notes:

1. Reliabilities are the corrected-item and total-score correlations.
2. Coefficients are calculated in the accession samples

*Denotes items common to Forms A and B

Table 7

Summary of ASAP Item Analysis: Validities, Cross-validities, and Reliabilities for Forms A and B

	Form A		Form B	
Coefficient	Mean	SD	Mean	SD
Validity	.073	.032	.068	.034
Cross-validity	.071	.030	.067	.033
Reliability	.212	.110	.205	.102

Notes.

1. Reliabilities are the corrected-item and total-score correlations.
2. Means and standard deviations are calculated from r to Fisher's Z-coefficient transformation values.

Table 8

ASAP Item Analysis: Validities, Cross-validities, and Reliabilities for the 21 Items Common to Forms A and B

	Form A		Form B		
Coefficient	Mean	SD	Mean	SD	$r_{A.B}$
Validity	.079	.021	.075	.025	.858
Cross-validity	.077	.024	.074	.023	.882
Reliability	.234	.098	.235	.091	.974

Notes.

1. Reliabilities are the corrected-item and total-score correlations.
2. Means and standard deviations are calculated from the r to Fisher's Z-coefficient transformation values.
3. $r_{A.B}$ = correlation between Form A and Form B item coefficients.

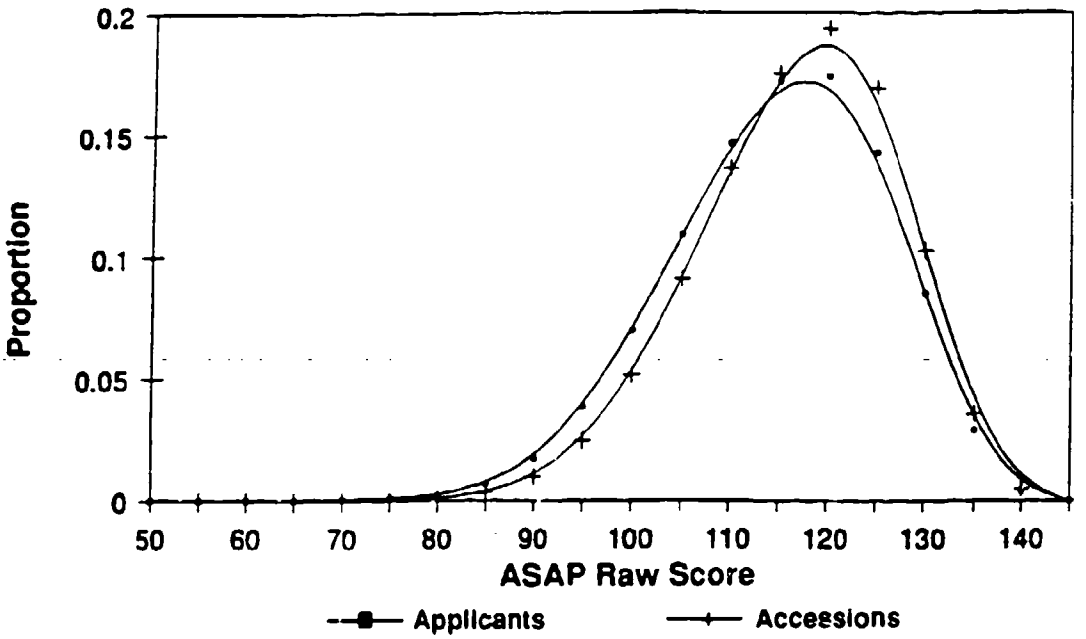

Figure 1. ASAP score distributions for applicants and accessions.

1971) was conducted. The results demonstrated that the standard error of equating was greater than the error that would otherwise exist; i.e., the use of a conversion table based on the equating procedure would have introduced a greater amount of error. Thus, the use of the raw scores provides greater accuracy than the use of equated scores. Figure 2 illustrates the similarity of the forms. (Figure A-1 contains a noncumulative plot of the proportions at the various score levels.)

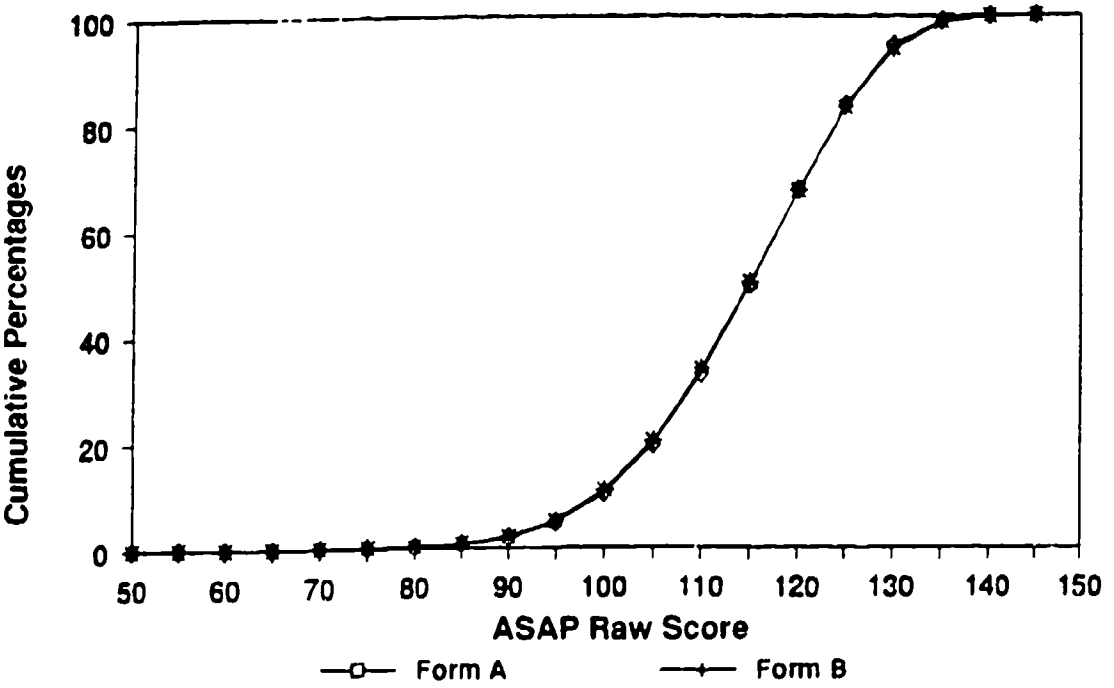

Figure 2. Cumulative percentages of scores on ASAP for Form A and Form B.

Key Construction and Cross-validation

Table 9 presents the point-biserial correlation coefficients between the test forms and the criterion at 21 months and 36 months. (Accessions had been tracked for 21 months when the scoring keys were developed.) The large key construction sample (N = 26,857) produced highly stable scoring keys, as demonstrated by the small degree of shrinkage in validity from key construction to cross-validation for both the long forms and the short forms at 21 months. With the criterion updated to 36 months, the forms also held up well upon cross-validation. Further evidence of the generality of the scoring keys is provided by the increase in cross-validity from 21 to 36 months (.21/.21 and .26/.25, respectively). The increase in validity presumably resulted from (1) an increase in the reliability of the criterion and (2) more equal proportions in the two criterion categories (pass/fail).

Table 9

Validity and Cross-validity of ASAP Long and Short Forms

		21-month Criterion		36-month Criterion[a]	
	Items	Sample N[b]	Correlation Coefficient[c]	Sample N	Correlation Coefficient
Form 1					
Key Construction	130	13,685	.22		
Cross-validation	130	13,501	.21		
Form A					
Key Construction	50	13,786	.21	12,954	.27
Cross-validation	50	13,613	.21	12,760	.26
Form 2					
Key Construction	130	13,172	.23		
Cross-validation	130	13,093	.21		
Form B					
Key Construction	50	13,288	.21	12,411	.26
Cross-validation	50	13,225	.21	12,388	.25

[a]Validation procedures using the 36-month criterion were carried out for the 50-item forms only.
[b]Slight differences in sample sizes between corresponding long and short forms are due to adjustment in the computation of the criterion.
[c]Point-biserial correlations.

Figure 3 graphically displays the association between ASAP raw scores, Forms A and B combined, and service completion rate in the cross-validation group as constituted at 36 months of service (N = 25,148). Completion rates are averaged at the extremes of the distribution where $N \leq 17$. Although completion rates at low ASAP score levels are considerably lower and somewhat more variable than completion rates at higher score levels, the association between the ASAP score and completion rate is linear. Nonetheless, the data were also analyzed using a logit model (see Table A-6).

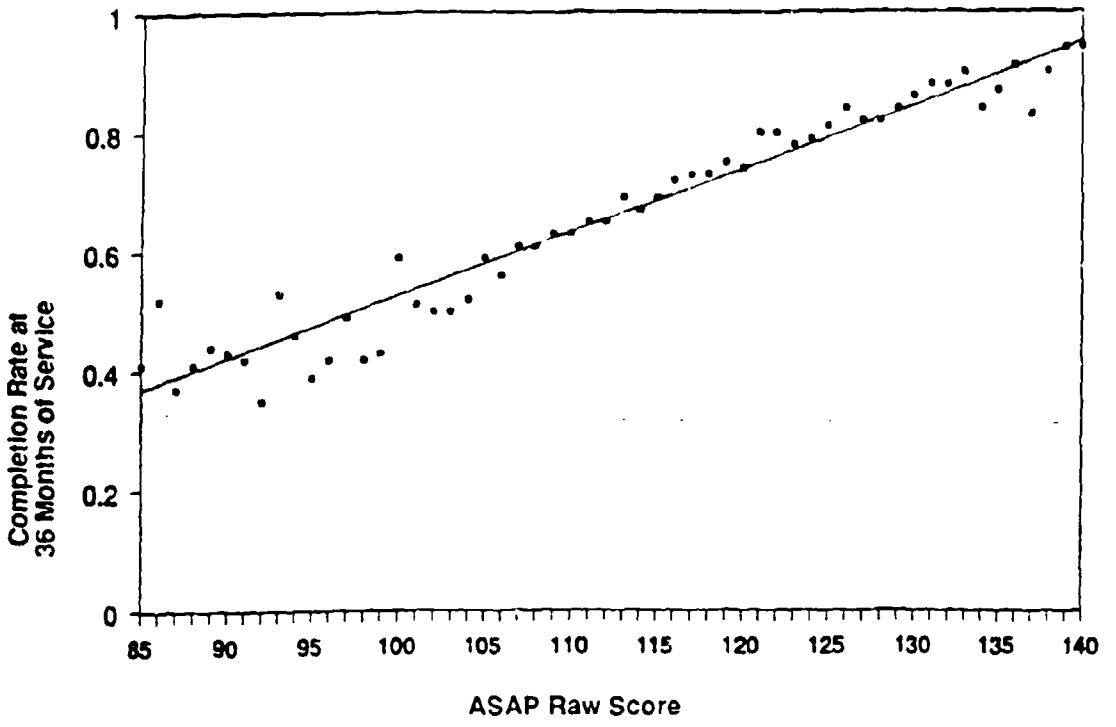

Figure 3. Completion rates at 36 months of service by ASAP score.

Incremental Validity

Table 10 presents the intercorrelations between the current screens and the ASAP in the applicant samples. While considered to be a noncognitive assessment instrument, the ASAP was moderately correlated with both AFQT (.32/.32) and high school diploma status (.38/.35). Table A-2 shows the intercorrelations in the accession sample, for ASAP score, AFQT percentile, three-tier education level designator, high school diploma, alternative credential, age, gender, marital status, number of dependents, and service completion.

Table 10

Intercorrelations of Screen Measures for Forms A and B Applicant Samples

	Form A			Form B		
Measure	ASAP	AFQT	Diploma	ASAP	AFQT	Diploma
ASAP	1.00			1.00		
AFQT	.32	1.00		.32	1.00	
Diploma	.38	.11	1.00	.35	.11	1.00

Table 11 shows the correlations between 36-month service completion and uncorrected AFQT, diploma, and ASAP scores. Additionally, the operational screens (AFQT and diploma) were corrected for direct restriction of range (multivariate correction; Mifflin & Verna, 1977) and ASAP was corrected for indirect restriction of range. These corrected correlations (r_c) plus the actual predictor intercorrelations found in the applicant samples were used to construct a matrix of correlations that was used in multiple regression tests of incremental validity. (See Table 10, and Tables A-7 and A-8 for the correlation matrices, means, and standard deviations on which the analyses were based.)

Table 11

ASAP Incremental Validity: Applicant Simulation

Step (forced entry)	Zero-order[a] r	Corrected[b] r_c	Multiple R	Incremental Change F	Incremental Change p
Form A (N = 58,884)					
1. Diploma	.147	.205	.205	559.7	.000
2. AFQT	.080	.125	.229	141.4	.000
3. ASAP	.261	.297	.315	656.1	.000
1. ASAP	.261	.297	.297	1234.2	.000
2. AFQT	.080	.125	.299	13.2	.000
3. Diploma	.147	.205	.315	137.7	.000
Form B (N = 56,710)					
1. Diploma	.168	.232	.232	704.6	.000
2. AFQT	.072	.123	.252	124.9	.000
3. ASAP	.253	.294	.326	595.1	.000
1. ASAP	.253	.294	.294	1171.9	.000
2. AFQT	.072	.123	.296	11.7	.001
3. Diploma	.168	.232	.326	262.1	.000

Note. Input matrix for simulation was constructed using available predictor correlations from applicant samples plus criterion (corrected for range restriction) from accession samples.

[a]Uncorrected correlations between predictors and criterion in accession samples.

[b]Correlations between predictors and criterion in accession samples corrected for range restriction (multivariate correction; Mifflin et al., 1977).

Forms A and B exhibited a considerable increase in incremental validity when regressed in addition to high school diploma and AFQT (Form A: $F = 656.1$, $p < .001$; Form B: $F = 595.1$, $p < .001$). This amounted to an increase in R of .09 and .07 in Form A and Form B, respectively. Reversing the order of entry, AFQT added minimally to prediction, while the entry of high school diploma status added slightly to predictive precision (an increase in R of .02 and .03, respectively, for Forms A and B). Incremental validity analyses using 0,1 indicator variables to designate educational levels can be found in Table A-3. There was no significant difference in the validity of educational credentials using the dummy coding (0,1) method as opposed to criterion-referenced scoring.

Differential Validity and Predictability

Table 12 describes subgroup analyses for the different services, for the three-tier educational levels, and for ethnic groups within male and within female groups. Of particular note is the interrelationship between high school diploma status, attrition rate, and mean ASAP score. High school graduates attrite at considerably lower levels (26%) compared to alternative credential holders (44%) and those without credentials (52%). High school diploma graduates also scored more than a standard deviation higher on ASAP (mean score of 118) than did the other two educational groups. Table A-9 presents a more detailed breakdown of education credentials. (Also, see Table A-10 for descriptive statistics for personnel enlisting with moral waivers; e.g., misdemeanor arrests).

Table 12

Subgroup Attrition Rates, Means, and Cross-validity Coefficients for Forms A and B Combined

Cross-validation Group	N	Attrition Rate	ASAP Score		Point-biserial r		
			Mean	SD	Coefficient	SE	p
Service							
Navy	5,442	.32	115.8	10.48	.28	.0136	.000
Marines	2,702	.32	115.7	9.48	.22	.0192	.000
Air Force	5,646	.24	120.6	8.79	.21	.0133	.000
Army	11,358	.29	115.3	10.32	.27	.0094	.000
Diploma							
High School	22,177	.26	118.0	9.52	.22	.0067	.000
Alternative	1,602	.44	107.6	9.74	.21	.0250	.000
None	1,369	.52	106.4	9.20	.17	.0270	.000
Males							
White	16,113	.29	116.2	10.67	.28	.0079	.000
Black	4,064	.27	117.5	8.85	.21	.0157	.000
Hispanic	787	.23	116.9	10.09	.22	.0356	.000
Females							
White	2,263	.39	117.9	9.34	.22	.0210	.000
Black	964	.27	118.4	8.21	.15	.0322	.000
Hispanic	97	.31	117.1	9.86	.17	.1015	.049
Total	25,148	.29	116.7	10.16	.26	.0063	.000

Within the male accessions, Hispanics and blacks have lower attrition rates than whites, although these three groups have comparable ASAP means. All female groups have similar ASAP means; yet whites have substantially higher attrition rates than do black or Hispanic women.

The correlation between ASAP score and 36-month service completion (cross-validity coefficient) is also listed in Table 12 for each group. The ASAP score was a significant predictor of 36-month service completion for all groups. (See Tables A-11 and A-12 for within-form subgroup validities.)

A comparison of ASAP mean scores and attrition rates between the total group and subgroups (Table 12) demonstrated that the use of a common regression line would overpredict white females and slightly underpredict nonwhites. To test for differential predictability, several forced entry and stepwise multiple regressions were performed (Table 13). The first four analyses concerned racial/gender slope comparisons (Step 2) with white males and the last examined education levels. Differences in criterion intercepts were examined in Step 3 (Humphreys, 1986).

For racial/gender groups, the slopes were significantly different for each of the two female subgroups compared to the white males while, for male subgroups, the comparisons did not yield significant differences. Since intercept differences cannot be interpreted when slope differences are significant, intercept differences were not tested for the female subgroups. The intercepts were not significantly different for male subgroups. The interaction between ASAP score and education level was significant.

Table 13

Test for Differential Predictability: ASAP Moderated by Gender, Race, and Diploma in Cross-validation Group (Forms A and B)

Step Variable	R^a	R^2	Change	
			F	p
Black males				
1. ASAP	.271	.074	1602.7	.000
2. Race *X* ASAP	.271	.074	0.0	.857
3. Race	.272	.074	3.1	.079
Hispanic males				
1. ASAP	.270	.073	1644.3	.000
2. Race *X* ASAP	.270	.073	1.0	.306
3. Race	.270	.073	6.1	.014
White females				
1. ASAP	.261	.068	1694.3	.000
2. Gender *X* ASAP	.263	.069	28.4	.000
Black females				
1. ASAP	.257	.066	1713.2	.000
2. Race *X* ASAP	.259	.067	26.2	.000
Diploma				
1. ASAP	.257	.066	1780.7	.000
2. Diploma *X* ASAP	.267	.071	142.0	.000

Note. All gender and race analyses are subgroup vs. white males.
[a]Point-biserial correlation coefficients.

A more detailed examination of the ASAP's test fairness, using the Cleary (1968) regression model and the Johnson-Neyman (1936) technique can be found in Wise et al. (1989). A summary of that research is included in the following Discussion and Conclusion section of the present report.

Adverse Impact

Given the proposed use of the ASAP as a pass/fail screen, the issue of adverse impact can be addressed by examining the percentages of racial/ethnic and gender subgroups that would be excluded at likely minimum passing (cutting) scores (Table 14). Without exception, each subgroup would have a larger percentage of its membership accepted for enlistment compared to that for white males or to the total group. For example, if the cutting score were set at 100 for Form A, 6.3 percent of the black male applicants would be ineligible for enlistment compared with 11.1 percent of the white males and 8.9 percent of all applicants.

Factor Analysis

The final 50-item forms were factor analyzed using principal axes factoring with a varimax rotation. Tables 15 and 16 present the results of the analyses (limited to items with a loading of .25 or greater) along with the constructs to which each item had been assigned in the earlier rational content analysis (see Table 2).

Table 14

Percentages of Applicant Subgroups Excluded at Selected ASAP Raw Score Levels

ASAP Raw Score	Percentage of Group						
	White Males	Black Males	Hispanic Males	White Females	Black Females	Hispanic Females	Overall
				Form A			
96	6.1	3.2	--	2.1	1.2	--	4.7
97	7.2	3.8	2.5	2.5	1.7	--	5.5
98	8.3	4.5	3.2	3.1	2.1	--	6.5
99	9.7	5.3	3.4	4.0	2.6	2.7	7.6
100	11.1	6.3	4.3	5.0	3.2	4.5	8.9
101	12.6	7.5	5.1	5.8	3.9	5.5	10.2
102	14.4	8.7	6.0	7.0	4.9	--	11.7
103	16.3	10.3	7.1	8.1	5.8	--	13.4
104	18.4	12.0	8.7	9.5	6.9	6.4	15.3
105	20.6	13.9	10.5	11.3	8.1	7.3	17.3
106	22.8	16.0	12.0	13.0	9.7	8.2	19.3
				Form B			
96	6.2	3.6	3.7	2.6	2.1	--	5.0
97	7.3	4.4	4.4	3.4	2.5	--	5.9
98	8.5	5.2	5.3	4.0	3.0	2.5	6.9
99	9.8	6.4	5.5	4.8	3.4	--	8.1
100	11.3	7.4	6.4	5.7	4.3	3.3	9.4
101	12.9	8.5	7.0	7.0	5.2	4.1	10.8
102	14.7	9.7	8.1	8.3	6.0	4.9	12.3
103	16.6	11.4	8.9	9.7	7.1	5.7	14.0
104	18.4	13.3	11.0	11.2	8.5	6.6	15.8
105	20.6	15.1	12.8	13.1	9.8	9.8	17.8
106	22.8	17.2	14.4	14.9	12.1	--	19.3

Note. Dashes indicate data were not available.

Table 15

Factor Analysis of Form A Items: Applicant Sample

Nondelinquency			Academic Achievement			Work Orientation			Social Adaptation			Work Ethic			Career Orientation		
Item	Loading	Content	Item	Loading	Content	Item	Loading	Content	Item	Loading	Content	Item	Loading	Content	Item	Loading	Content
6	.26	AI	6	.30	AI	38	.72	WO	1	.25	ILD	20	.65	WO	5	-.56	DEM
10	.40	ND	9	.54	AI	41	.27	WO	2	.41	CON	46	.48	WO	18	.46	AI
13	.27	ND	11	.45	AI	43	.74	WO	4	.28	MISC				38	.26	WO
23	.47	PC	34	.28	AI				16	.30	SE						
25	.41	ND	36	.61	AI				29	.40	DOM						
30	.48	ND	45	.39	AI				31	.33	DOM						
34	.37	AI							47	.35	COOP						
36	.25	AI															
37	.35	ND															
40	.36	WO															
44	.46	ND															

Note. See Table 2 for complete content/construct titles.

Table 16

Factor Analysis of Form B Items: Applicant Sample

Academic Achievement			Nondelinquency			Work Orientation			Athletic Involvement			Career Orientation			Work Ethic		
Item	Loading	Content	Item	Loading	Content	Item	Loading	Content	Item	Loading	Content	Item	Loading	Content	Item	Loading	Content
6	.42	AI	8	.25	AI	38	.69	WO	7	.72	PC	5	-.26	DEM	3	.37	WO
8	.37	AI	10	.34	ND	43	.74	WO	23	.70	PC	18	.59	AI	17	.30	WO
9	.57	AI	19	.29	PC							36	.46	AI	41	.35	WO
11	.46	AI	25	.56	ND										46	.62	WO
34	.46	AI	37	.32	ND												
39	.28	INT	40	.32	WO												
45	.33	AI	44	.51	ND												
50	.54	AI															

Note. See Table 2 for complete content/construct titles.

Factor 1 in Form A and Factor 2 in Form B measure primarily nondelinquency. The academic involvement items on those factors are also oriented toward nondelinquent behavior (in school). In contrast, the academic involvement items on Factor 2 in Form A and Factor 1 in Form B focus on academic achievement. Work Orientation (addressing employment/unemployment) and Work Ethic factors (quality of work) appear on both forms, as does Career Orientation. These factors and the remaining factors, Social Adaptation on Form A and Athletic Involvement on Form B, are similar to factors frequently emerging from analyses of biodata (Mumford & Owens, 1987).

Utility Analysis

Expectancy Tables

Table 17 is an expectancy table for Navy recruits who hold a regular high school diploma (Tier I). (Expectancy tables for each service by education level and percent of applicants excluded by service are provided in Appendix B.) The proportion excluded is the proportion of the sample who would not qualify for enlistment given the corresponding cutting score on Form A or B. The selection ratio is the number of examinees who scored at or above the cutting score divided by the total number of applicants. Correct acceptances are persons who scored at or above the cutting score and completed service; erroneous rejections are persons below the cutting score who completed service; correct rejections represent those who scored below the cutting score and failed to complete service; and erroneous acceptances consist of persons who scored at or above the cutting score and failed to complete their service contract. The hit rate is the ratio of correct decisions to the total number of accept/reject decisions, with correct decisions defined as correct acceptances plus correct rejections.

Figure 4, using data from Table 17 for Navy Tier I personnel, graphically portrays the trade-offs between proportions excluded at alternative cutting scores and the proportions of expected correct acceptances and erroneous rejections.

Attrition Cost Savings

The Taylor-Russell approach (Taylor & Russell, 1939) was used to estimate the proportion of service completions, given the base rate of success, the ratio of selected personnel to applicants, and the predictive accuracy of the ASAP. Computed from the Taylor-Russell tables for use with point-biserial correlation coefficients (Abrahams, Alf, & Wolfe, 1971), Table 18 estimates the percentages of expected 36-month service completion if the ASAP (r_{pbis} = .25) were used to select otherwise qualified applicants with a base rate of 70 percent completion. For example, if the ratio of manning requirements to eligible applicants would allow rejection of the bottom 10 percent of ASAP scorers, the projected 36-month completion rate would rise from 70.0 percent to 72.5 percent.

Table 17

Institutional Expectancy at 36 Months of Service: Navy Tier I
(Regular High School Diploma; *N* = 10,051)

ASAP Score	Excluded	Select. Ratio	Hit Rate	Proportion Correct Accept.	Erron. Reject.	Correct Reject.	Erron. Accept.	*N*
143	1.000	0.000	0.274	1.000	0.726	0.274	0.000	1
142	1.000	0.000	0.274	0.750	0.726	0.274	0.250	3
141	0.999	0.001	0.274	0.889	0.726	0.274	0.111	6
140	0.998	0.002	0.275	0.941	0.726	0.274	0.059	8
139	0.997	0.003	0.276	0.966	0.726	0.274	0.034	15
138	0.994	0.006	0.279	0.911	0.725	0.275	0.089	30
137	0.991	0.009	0.280	0.899	0.725	0.275	0.101	24
136	0.987	0.013	0.284	0.896	0.724	0.276	0.104	47
135	0.980	0.020	0.290	0.897	0.723	0.277	0.103	68
134	0.971	0.029	0.296	0.877	0.722	0.278	0.123	88
133	0.961	0.039	0.304	0.384	0.720	0.280	0.116	103
132	0.945	0.055	0.315	0.873	0.718	0.282	0.127	159
131	0.927	0.073	0.328	0.877	0.715	0.285	0.123	180
130	0.905	0.095	0.346	0.877	0.711	0.289	0.123	224
129	0.881	0.119	0.362	0.870	0.707	0.293	0.130	237
128	0.854	0.146	0.380	0.860	0.703	0.297	0.140	278
127	0.821	0.179	0.405	0.863	0.696	0.304	0.137	333
126	0.788	0.212	0.426	0.858	0.691	0.309	0.142	322
125	0.750	0.250	0.451	0.855	0.684	0.316	0.145	382
124	0.710	0.290	0.475	0.849	0.677	0.323	0.151	403
123	0.672	0.328	0.496	0.839	0.672	0.328	0.161	386
122	0.629	0.371	0.521	0.833	0.664	0.336	0.167	428
121	0.589	0.411	0.547	0.831	0.653	0.347	0.169	407
120	0.547	0.453	0.569	0.825	0.645	0.355	0.175	420
119	0.509	0.491	0.586	0.818	0.638	0.362	0.182	381
118	0.467	0.533	0.607	0.813	0.628	0.372	0.187	422
117	0.429	0.571	0.626	0.808	0.618	0.382	0.192	385
116	0.390	0.610	0.637	0.798	0.614	0.386	0.202	396
115	0.354	0.646	0.651	0.793	0.606	0.394	0.207	358
114	0.319	0.681	0.666	0.788	0.595	0.405	0.212	349
113	0.284	0.716	0.680	0.784	0.581	0.419	0.216	350
112	0.252	0.748	0.692	0.780	0.568	0.432	0.220	330
111	0.223	0.777	0.700	0.775	0.560	0.440	0.225	286
110	0.197	0.803	0.706	0.770	0.552	0.448	0.230	261
109	0.170	0.830	0.711	0.764	0.546	0.454	0.236	269
108	0.147	0.853	0.715	0.759	0.540	0.460	0.241	238
107	0.127	0.873	0.720	0.756	0.526	0.474	0.244	202
106	0.109	0.891	0.721	0.752	0.523	0.477	0.248	173
105	0.095	0.905	0.724	0.749	0.514	0.486	0.251	146
104	0.078	0.922	0.724	0.744	0.518	0.482	0.256	165
103	0.068	0.932	0.725	0.742	0.511	0.489	0.258	105
102	0.055	0.945	0.725	0.739	0.511	0.489	0.261	127
101	0.046	0.954	0.725	0.736	0.518	0.482	0.264	96
100	0.038	0.962	0.728	0.736	0.481	0.519	0.264	77
99	0.031	0.969	0.727	0.734	0.491	0.509	0.266	68
98	0.026	0.974	0.727	0.733	0.487	0.513	0.267	56
97	0.020	0.980	0.729	0.732	0.447	0.553	0.268	54
96	0.017	0.983	0.729	0.732	0.420	0.580	0.268	35
95	0.015	0.985	0.728	0.731	0.453	0.547	0.269	24
94	0.012	0.988	0.728	0.730	0.429	0.571	0.270	28
93	0.010	0.990	0.728	0.730	0.421	0.579	0.270	19
92	0.008	0.992	0.727	0.729	0.453	0.547	0.271	21
91	0.006	0.994	0.727	0.728	0.421	0.579	0.272	19
90	0.004	0.996	0.727	0.728	0.488	0.512	0.272	14
89	0.004	0.996	0.726	0.727	0.500	0.500	0.273	9
88	0.003	0.997	0.727	0.727	0.481	0.519	0.273	7
87	0.002	0.998	0.726	0.727	0.524	0.476	0.273	7
50-86	0.000	1.000	---	0.726	---	---	0.274	22

Note. Dashes indicate data were not available.

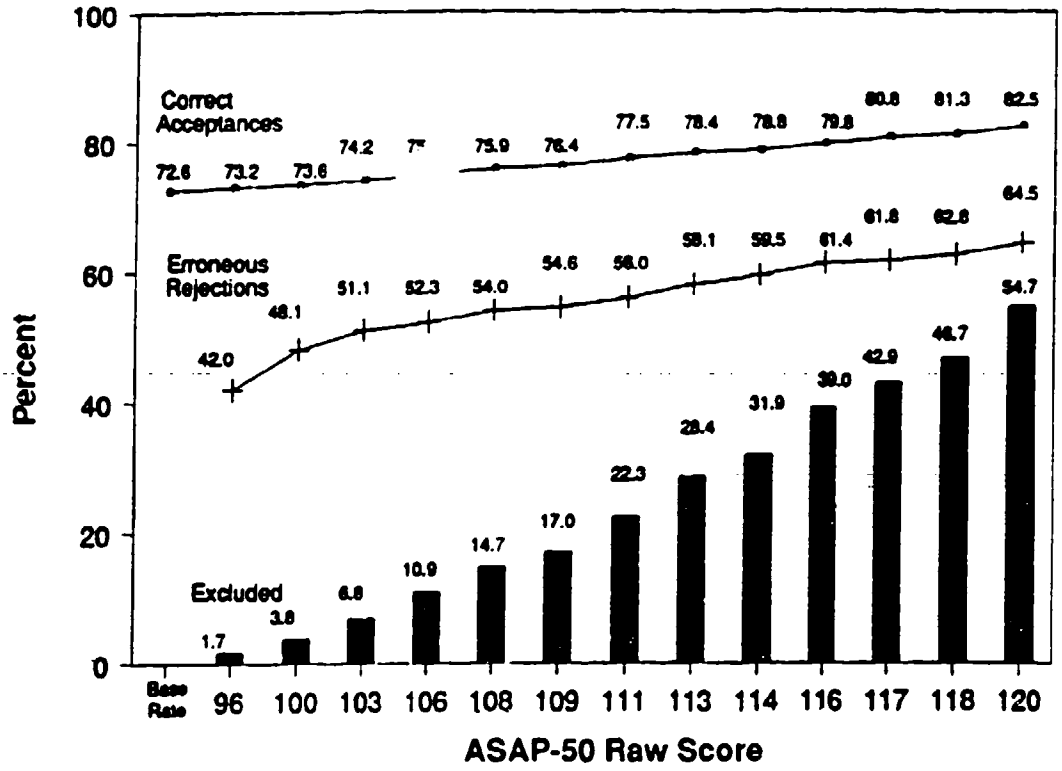

Figure 4. Correct acceptances, erroneous rejections, and percent excluded at selected cutting scores for ASAP Forms A and B combined.

Table 18

Expected Service Completion and Attrition Cost Savings

	Percent Rejected				
	0	5	10	20	30
Percent 36-month Completion	70.0	71.4	72.5	74.4	76.1
Number of Additional Completions	0	3,646	6,511	11,459	15,886
Annual Attrition Cost Saving in Millions of Dollars	0	67	120	211	292

Note. Based on 260,426 FY88 nonprior-service accessions and computed using an estimated mean attrition cost (adjusted for inflation) of $18,400 per loss (GAO, 1979).

DISCUSSION AND CONCLUSIONS

The findings support previous research related to military as well as civilian applications--that an empirically scored biodata instrument referenced to a single criterion results in a degree of validity that can be effectively utilized in pre-employment screening. In the present application, the use of the ASAP for Armed Services screening demonstrated practical incremental validity in addition to the use of three-tier high school diploma status and AFQT to minimize attrition. If fully integrated into the enlisted selection process, the magnitude of this improvement could increase the annual number of three-year service completions by thousands. The associated cost-of-attrition savings could amount to tens of millions of dollars annually. The actual utility of employing the ASAP as an additional screen measure would vary in relation to the size and quality of the applicant pool relative to recruiting goals, the prevailing enlistment standards of the institutionalized screens, and the cost of recruiting and processing additional applicants.

While general use of biodata eligibility scores would have the greatest impact on attrition rates, another cost-effective strategy would be to limit administration to marginally-qualified applicants; that is, according to AFQT category or type of high school credential. The additional predictive precision afforded by the ASAP would allow identification of low attrition-risk individuals within high attrition-risk groups. The ASAP's unique contribution to the prediction of service completion is accomplished by measuring an array of an individual's attributes and motivations, rather than focusing on the single fact of having earned a high school diploma. In general, the factors associated with service completion were rationally consistent with a profile of personal reliability.

One disadvantage of biodata is that empirical keying of items is likely to result in validity degradation over time. Hough (1989) has listed a number explanations for this instability: (1) item compromise, (2) capitalization on chance in the original validation samples, (3) changes in applicant supply and demand characteristics, and (4) changes in personnel policies and performance assessments. In the development of scoring keys for ASAP items, capitalization on chance was reduced by minor interventions into the scoring weights (Wise et al., 1989). That is, the content validity of the ASAP was enhanced by comparing the purely empirical keys to the conceptual content of the items (Hough, 1989) and making adjustments to scoring without reducing the original validity. However, the evidence from the literature indicates that the long-term stability of empirically-keyed biodata requires periodic revalidation, and the development of new items and new keys (Mumford & Owens, 1987). The most salient example of biodata instability has been reported by Walker (1988) and concerns the Army's Military Applicant Profile (MAP). Walker indicated that after a decade of operational use in selecting nonhigh-school graduate recruits, a lack of maintenance resulted in total validity failure and the withdrawal of the instrument.

Another potential disadvantage of biographical assessments is that they are susceptible to subgroup unfairness. That is, the general achievement content of many items can result in bias against relatively disadvantaged groups (Wise et al., 1989). The majority group influence on empirical keying can exacerbate this problem. A number of items, some with high validity, were excluded from the operational Forms A and B to reduce content and predictive bias. The result was that the ASAP was found to be a valid predictor of service completion for all of the groups studied. Nonetheless, a small degree of underprediction was apparent for nonwhites, while white females were considerably overpredicted. This overprediction results from the fact that white females

attrite at a substantially higher rate than males. Yet, the single most important finding of the ASAP fairness analyses was the lack of any adverse impact in eligibility rates for black males, Hispanic males, white females, and black females. Furthermore, the practical significance of the observed differential validity and prediction does not outweigh the goal of a uniform application of a single ASAP scale and cutting score across all groups. The observed differences do, however, indicate a degree of predictive bias that should be closely monitored during the instrument's operational performance (Waters & Demsey, 1989).

The biodata literature has increasingly emphasized the importance of construct reference and job-relatedness. Pace and Schoenfeld (1977), for example, have suggested that lack of job-relatedness defies the intent of the Civil Rights Act. More recently, Pannone (1984) has argued that specific job-referenced and rationally-scored biographical inventories are necessary to meet Equal Employment Opportunity Commission (EEOC) guidelines and to control for applicant faking. However, the Armed Services screen applicants for hundreds of distinctly different occupational specialties and economy of assessment requires the content of biographical questionnaires for enlistment screening to be generic.

Biographical instruments are frequently criticized for being "shotgun empirical devices." In fact, the construction of the original ASAP item pool did not result from a systematic construct-oriented methodology, aside from a broad adaptability construct and reliance on a general behavioral-consistency model. Nonetheless, the post hoc procedures used in the construction of the short forms resulted in two equivalent forms with rationally-derived content clusters that are similar to construct-keyed scales developed for the ABLE (e.g., nondelinquency, work orientation, physical condition, and academic involvement; Wise et al., 1989). The factor analysis of ASAP items also found factors similar to those reported by Childs and Klimoski (1986)--educational achievement, work ethic orientation, interpersonal confidence, and social orientation. In general, the ASAP's dimensions were characterized by items of homogenous content, such as athletic involvement and academic achievement (Mumford & Owens, 1987).

One of the most serious threats to validity and utility is the vulnerability of self-reported biographical and temperament items to response distortion. While Hough, Eaton, Dunnette, Kamp, and McCloy (1990) and Trent (1987b) have argued that military applicants do not exhibit manifest distortion, the Defense Advisory Committee for Military Personnel Testing and the Manpower Accession Policy Steering Committee have expressed considerable concern that operational use of the ASAP will result in score inflation and validity degradation. Notwithstanding this concern in the Armed Services, Shaffer, Saunders, and Owens (1986) have reported that both objective and subjective biodata are reliable from a long-term, test-retest perspective.

One advantage of empirical keying is its relative irrationality compared to conceptual scaling; that is, a proportion of the most socially desirable response options does not receive the highest weight, which reduces the impact of unrestrained distortion (Trent, Atwater, & Abrahams, 1986). Another advantage is that "weighted application blanks" tend to be conceptually broad, amorphous, and less operationally transparent compared to more construct-specific scales. Nonetheless, respondents coached to relatively subtle biodata items can distort scores on externally-developed scales (Meehl & Hathaway, 1946; Schrader & Osburn, 1977). Yet, these scales also tend to include a greater proportion of eclectic and behaviorally-objective background types of items that have been shown to be less susceptible to response distortion (Trent, 1987b).

Asher (1972) has recommended the use of verifiable items to enhance reliability. ASAP items vary in the extent to which they are perceived by the respondent as potentially verifiable (Hanson, Hallam, & Hough, 1989). Whether scale construction of biodata and temperament indices is rational or empirical, construct-driven or atheoretical, the concurrent employment of a validity (unlikely virtue) scale can detect unrestrained, but not subtle, distortion (Hough, 1986). Empirical keying, such as that used in the ASAP, mitigates against unrestrained distortion. Regarding subtle response distortion on the ASAP, Trent (1987b) has shown that (1) distortion and social desirability scales are highly correlated with the biodata scale and (2) distortion resulted in only a minor decrement in validity.

The fact remains that some policy managers and advisory groups in the military personnel arena are skeptical about the efficacy of biographical and temperament instruments. From a perspective of "lessons learned," there are two main options for future research and development: (1) to conduct a test and evaluation of the ASAP in an operational environment or (2) to develop a new attrition prediction model that confines predictors to objective and verifiable indicators such as type of high school credential, age, aptitude scores, arrest record, and employment history. To some degree, abandoning the full array of biographical items will reduce predictive validity in favor of enhancing face validity. It will also alleviate the concern that biographical inventories foster an undesirable climate of applicant faking, military recruiter coaching, and test compromise. While these are difficult problems, personal background screening will continue to offer the potential for improvements in the recruitment and classification of a career military force.

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APPENDIX A

SUPPLEMENTAL ANALYSES

LIST OF TABLES

Table A-1

Descriptive Statistics for ASAP and AFQT in Applicant and Accession Samples

	Applicants			Accessions		
	N	Mean	SD	*N*	Mean	SD
ASAP						
Form A	61,215	114.9	10.83	28,301	116.8	9.99
Form B	58,960	114.7	11.08	27,374	116.8	10.29
AFQT						
Form A	61,215	48.4	23.54	28,301	56.7	19.60
Form B	58,960	48.4	23.72	27,374	56.6	19.78

Table A-2

Intercorrelations: Total Accession Sample
(*N* = 50,513)

	ASAP Score	AFQT	3-tier[a]	HS Dipl.[b]	Alt. Cred.	Age	Gender[c]	Marital Status[d]	Number Deps.[e]	Serv. Comp.[f]
ASAP Score	1.00									
AFQT	.23	1.00								
3-tier	.35	-.05	1.00							
HS Diploma	.35	-.04	.98*	1.00						
Alt. Cred.	-.23	-.01	-.58*	-.71*	1.00					
Age	.08	.10	.09	.08	.01	1.00				
Gender	.05	.05	.12	.12	-.07	.08	1.00			
Marital Status	.01	.03	-.02	-.02	.03	.29	.00	1.00		
Number Deps.	.00	.01	.00	.00	.00	.02	.00	.04	1.00	
Serv. Comp.	.26	.08	.17	.16	-.10	.02	-.05	.00	.00	1.00

[a]In the 3-tier coding system, each category was coded using the percent successful on the criterion for that category (high school graduates, 74.1%; alternative credential holders, 54.7%; no certificate, 47.0%).

[b]1,0 indicator variables were used to designate group membership and nonmembership, respectively, for U.S. diploma and alternate credential analyses.

[c]0,1 coding was used for gender, with 0 assigned to males and 1 to females.

[d]0,1 coding was used for marital status (at time of enlistment), with 0 indicating single and 1 indicating married.

[e]Number of dependents (at time of enlistment).

[f]Service completion.

*Part-whole correlations.

Table A-3

ASAP Incremental Validity Using Education Indicators: Applicant Simulation

Step (forced entry)	Zero-order[a] r	Corrected[b] r_c	Multiple R	Incremental Change F	Incremental Change p
		Form A (N = 58,884)			
1. HS Diploma[c]	.142	.202	.202	542.7	.000
2. HS Alternate	-.073	-.072	.211	50.5	.000
3. AFQT	.080	.127	.235	143.9	.000
4. ASAP	.261	.299	.320	672.7	.000
1. ASAP	.261	.299	.299	1252.6	.000
2. AFQT	.080	.127	.301	14.5	.000
3. HS Diploma	.142	.202	.315	124.4	.000
4. HS Alternate	-.073	-.072	.320	47.7	.000
		Form B (N = 56,710)			
1. HS Diploma	.168	.228	.228	679.2	.000
2. HS Alternate	-.106	-.111	.231	16.1	.000
3. AFQT	.072	.122	.250	123.3	.000
4. ASAP	.253	.292	.324	584.7	.000
1. ASAP	.253	.292	.292	1154.5	.000
2. AFQT	.072	.122	.293	11.4	.001
3. HS Diploma	.168	.228	.322	245.6	.000
4. HS Alternate	-.106	-.111	.324	13.1	.000

Note. Input matrix for simulation was constructed using available predictor correlations from applicant samples plus criterion (36-month service completion) correlations (corrected for range restriction) from accession samples.

[a]Uncorrected correlations between predictors and criterion in accession samples.

[b]Correlations between predictors and criterion in accession samples corrected for range restriction (multivariate correction; Mifflin et al., 1977).

[c]Analyses using 0,1 indicator variables were conducted for educational attainment, with 1 designating group membership and 0 indicating nonmembership.

Table A-4

ASAP Criterion Groups
(*N* = 55,675)

Criterion Categories[a]						
0		1		2		Days
				1	(6.92)	Regardless of number of days in service
				2-8	(6.08)	
				40-42	(.68)	
0	(.60)					Unknown separations
0	(6.24)	10	(1.28)			Less than 1094[b] days in service
11-15	(1.38)	16-17	(2.92)			
22	(.51)	60-87	(18.82)			
30-33	(.21)	91-97	(2.60)			
90	(.03)	101	(.28)			
98-99	(.26)	102	(.07)			
100	(.01)					
103	(.04)					
				0	(48.68)	1094[b] or more days in service
				10-17	(.45)	
				22	(.13)	
				30-33	(.03)	
				60-87	1.34)	
				90-103	(.45)	
	(9.28)		(25.97)		(64.76)	

Notes.
1. Numbers in body of table correspond to Interservice Separation Codes (ISC) assigned to individuals upon separation from active duty (see Table A-5).
2. Numbers in parentheses indicate percentages of total sample.

[a] Criterion categories:
0 = Active, but less than 36 months completed, or attrited for nonpejorative reasons (excluded from staustical analyses).
1 = Did not complete first-term enlistment.
2 = Completed first-term enlistment.

[b] 36 months of active duty.

Table A-5

Interservice Separation Codes

Code	Explanation
000	Unknown or Invalid
	Release From Active Service
001	Expiration of Term of Service
002	Early Release, Insufficient Retainability
003	Early Release, To Attend School
004	Early Release, Police Duty
005	Early Release, In the National Interest
006	Early Release - Seasonal Employment
007	Early Release, To Teach
008	Early Release, Other (Including RIF)
	Medical Disqualifications
010	Conditions Existing Prior to Service
011	Disability, Severance Pay
012	Permanent Disability, Retired
013	Temporary Disability, Retired
014	Disability, Non EPTS, No Severance Pay
015	Disability, Title 10 Retirement
016	Unqualified for Active Duty, Other
017	Failure to Meet Weight/Body Standards (Included in 016 prior to FY85)
	Dependency or Hardship
022	Dependency or Hardship
	Death
030	Battle Casualty
031	Non-Battle, Disease
032	Non-Battle, Other
033	Death, Cause Not Specified
	Entry Into Officer Programs
040	Officer Commissioning Program
041	Warrant Officer Program
042	Service Academy
	Retirement (Other Than Medical)
050	20-30 Years of Service
051	Over 30 Years of Service
052	Other Categories
	Transactions
100	Immediate Reenlistment
101	Dropped from Strength for Desertion
102	Dropped from Strength for Imprisonment
103	Record Correction
104	Missing in Action or Captured
105	Other Dropped from Strength/the Rolls

Code	Explanation
	Failure To Meet Minimum Behavioral and Performance Criteria
060	Character or Behavior Disorder
061	Motivational Problems (Apathy)
062	Enuresis
063	Inaptitude
064	Alcoholism
065	Discreditable Incidents, Civilian or Military
066	Shirking
067	Drugs
068	Financial Irresponsibility
069	Lack of Dependent Support
070	Unsanitary Habits
071	Civil Court Conviction
072	Security
073	Court Martial
074	Fraudulent Entry
075	AWOL, Desertion
076	Homosexuality
077	Sexual Perversion
078	Good of the Service (In lieu of Court-Martial)
079	Juvenile Offender
080	Misconduct (Reason Unknown)
081	Unfitness (Reason Unknown)
082	Unsuitability (Reason Unknown)
083	Pattern of Minor Disciplinary Infractions
084	Commission of a Serious Offense
085	Failure to Meet Minimum Qualifications for Retention
086	Expeditious Discharge/Unsatisfactory Performance
087	Trainee Discharge/Entry Level Performance and Conduct
	Other Separations or Discharges
090	Secretarial Authority
091	Erroneous Enlistment or Induction
092	Sole Surviving Son
093	Marriage
094	Pregnancy
095	Minority
096	Conscientious Objector
097	Parenthood
098	Breach of Contract
099	Other

Table A-6

Comparison of Decision Accuracy at 5- and 10- percent Cutting Scores for Linear and Logistic Regression of Service Completion on ASAP Score

Model	Form A		Form B	
	5%	10%	5%	10%
Correct Selection Decisions[a]				
Linear	.717	.716	.716	.716
Logistic	.717	.716	.718	.714

Notes:
1. The percent cutting scores correspond to the percent of the accession group which would have been ineligible for enlistment.
2. Cross-validation groups: Form A, N = 12,760; Form B, N = 12,388.
[a]Correct selection decision equals the sum of correct acceptances and correct rejections divided by the total number of decisions.

Table A-7

Incremental Validity, Input Matrices: Applicant Simulation Accession Intercorrelations, Key Construction Groups

	Form A				Form B			
	AFQT	Diploma	ASAP	Serv Comp[a]	AFQT	Diploma	ASAP	Serv Comp[a]
AFQT	1.000				1.000			
Diploma	-.050	1.000			-.061	1.000		
ASAP	.222	.362	1.000		.223	.332	1.000	
Serv Comp[a]	.080	.147	.261	1.000	.072	.168	.253	1.000

Notes:
1. Uncorrected for range restriction. Corrected values, found in Table 11, were used in the regression procedure.
2. Form A, N = 12,760; Form B, N = 12,388.
[a]Service completion.

Table A-8

Incremental Validity, Applicant Simulation Means and Standard Deviations

	Applicants[a]				Accessions[b]			
	Form A		Form B		Form A		Form B	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AFQT	48.4	23.54	48.4	23.71	57.1	19.67	56.8	19.77
Diploma	69.2	9.80	69.4	9.67	71.3	7.59	71.4	7.46
ASAP	114.9	10.83	114.7	11.08	116.8	10.02	116.7	10.31
Serv Comp[c]					1.7	.46	1.7	.45

[a]Form A, N = 61,215; Form B, N = 58,960.
[b]Form A, N = 12,760; Form B, N = 12,388.
[c]Service completion.

Table A-9

Attrition by Education Achievement

Education Achievement	3-tier	Sample *N*	ASAP Mean	ASAP SD	36-month Attrition Rate
HSDG + 1 or More Years College	I	1,563	124.9	8.05	.16
HS Diploma (HSDG)	I	43,014	117.8	9.47	.26
Certificate of Completion/Attendance	II	1,371	109.5	9.28	.40
GED	II	1,810	106.4	9.90	.49
No Credential	III	2,755	106.2	9.17	.53
Total		50,513	116.8	10.16	.29

Table A-10

Means and Standard Deviations on ASAP and Attrition Rates for Accessions Enlisting with Moral Waivers

Waiver Status	*N*	ASAP Mean	ASAP SD	Attrition Rate
No Waiver	40,979	117.4	10.02	.27
Moral Waiver				
Minor Traffic	1,171	117.1	9.68	.30
Minor Nontraffic, <3	1,179	112.6	10.47	.34
Minor Nontraffic, 3+	216	111.2	10.53	.42
Other Nonminor Misdemeanor	3,540	112.5	10.39	.36
Adult Felony	48	117.1	10.07	.40
Juvenile Felony	82	110.8	8.72	.49
Preservice Drug Abuse	1,716	115.1	9.96	.35
Preservice Alcohol Abuse	115	114.3	9.20	.30
Other, Not Applicable	474	115.3	10.62	.34
All Others	993	116.8	9.75	.33
Waiver Total	9,534	114.1	10.34	.34
Total	50,513	116.8	10.16	.29

Table A-11

Subgroup Attrition Rates, Means, and Cross-validity Coefficients for Form A of the ASAP

Cross-validation Group	*N*	Attrition Rate	ASAP Score		Point-biserial *r*		
			Mean	SD	Coefficient	SE	p
Service							
Navy	2,766	.31	115.9	10.24	.28	.0190	.000
Marines	1,401	.32	116.4	9.45	.21	.0267	.000
Air Force	2,853	.25	120.7	8.47	.23	.0187	.000
Army	5,740	.30	115.3	10.23	.27	.0132	.000
Diploma							
High School	11,219	.27	118.1	9.34	.23	.0094	.000
Alternative	835	.42	107.6	9.40	.24	.0346	.000
None	706	.52	106.2	9.13	.17	.0376	.000
Males							
White	8,158	.29	116.2	10.49	.29	.0111	.000
Black	2,025	.28	117.6	8.73	.24	.0222	.000
Hispanic	393	.23	116.6	9.96	.18	.0504	.000
Females							
White	1,193	.39	118.0	9.21	.19	.0290	.000
Black	495	.27	118.9	8.08	.18	.0449	.000
Hispanic	43	.37	116.7	10.33	.23	.1525	.072
Total	12,760	.29	116.8	10.02	.26	.0089	.000

Table A-12

Subgroup Attrition Rates, Means, and Cross-validity Coefficients for Form B of the ASAP

Cross-validation Group	*N*	Attrition Rate	ASAP Score		Point-biserial *r*		
			Mean	SD	Coefficient	SE	p
Service							
Navy	2,676	.32	115.7	10.72	.28	.0193	.000
Marines	1,301	.32	116.9	9.50	.23	.0277	.000
Air Force	2,793	.23	120.4	9.10	.18	.0189	.000
Army	5,618	.29	115.3	10.40	.26	.0133	.000
Diploma							
High School	10,958	.26	117.9	9.71	.22	.0096	.000
Alternative	767	.47	107.6	10.11	.18	.0361	.000
None	663	.53	106.6	9.27	.17	.0388	.000
Males							
White	7,955	.29	116.3	10.85	.28	.0112	.000
Black	2,039	.26	117.4	8.97	.18	.0221	.000
Hispanic	394	.22	117.1	10.24	.27	.0504	.000
Females							
White	1,070	.38	117.7	9.50	.25	.0306	.000
Black	469	.27	117.9	8.33	.11	.0462	.007
Hispanic	54	.26	117.4	9.55	.11	.1361	.216
Total	12,388	.29	116.7	10.31	.25	.0090	.000

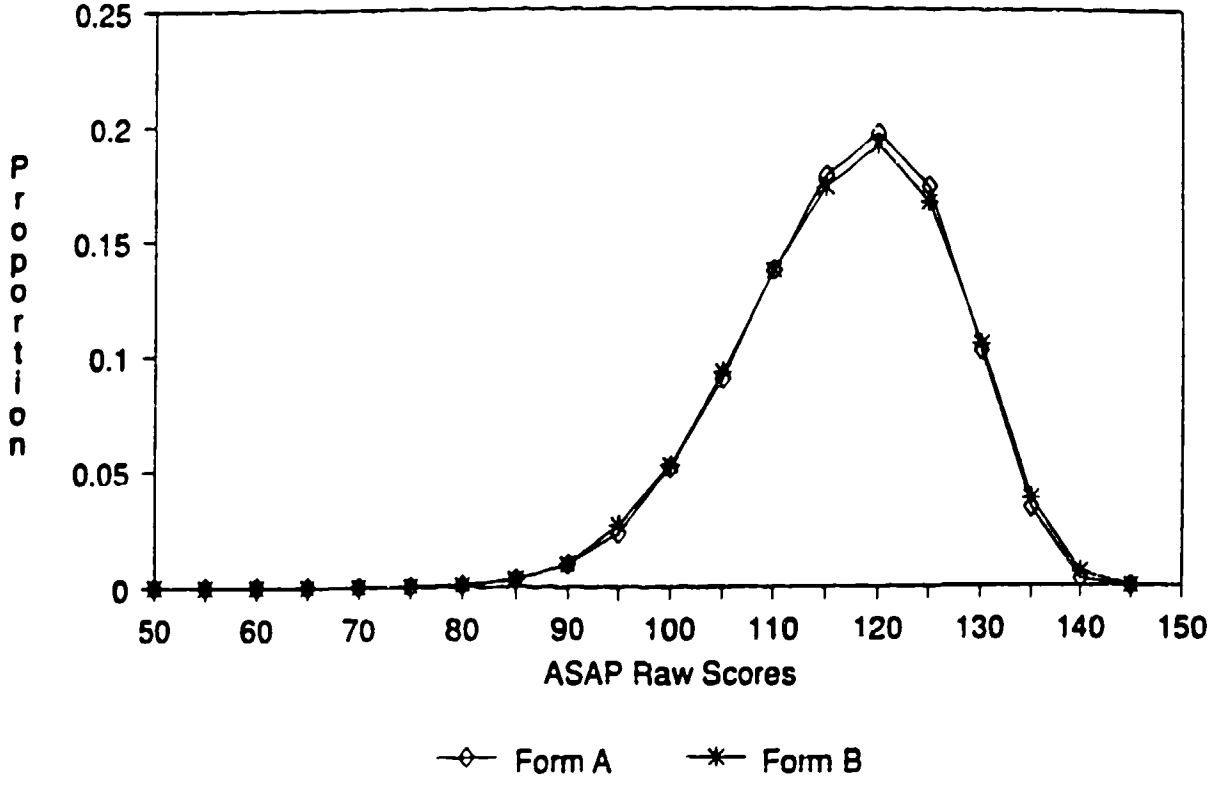

Figure A-1. Proportions in ASAP score intervals for Form A and Form B.

APPENDIX B

EXPECTANCY TABLES

LIST OF TABLES

Table B-1

Percent Excluded by ASAP Score by Service
(Applicant Sample; N = 120,175)

ASAP Raw Score	Percentile Rank	Percent Excluded at Raw Cut-score			
		Army	Navy	Air Force	Marines
50	.00	--	--	--	--
51	.01	.01	.01	--	.01
52	--	.01	--	--	--
53	--	--	--	--	--
54	.01	--	--	--	--
55	.01	--	--	--	.02
56	.01	.01	--	--	--
57	.01	.01	--	--	--
58	--	.02	--	--	--
59	.01	--	--	--	--
60	.01	.02	--	--	--
61	.02	.02	.02	--	--
62	.02	.03	--	--	--
63	.02	.04	.02	--	--
64	.03	.04	--	--	--
65	.03	.05	.02	--	--
66	.04	.05	.03	.01	.03
67	.04	.06	.03	--	.03
68	.05	.07	.04	--	--
69	.06	.08	.05	--	.04
70	.07	.09	.06	--	.05
71	.08	.11	--	.02	--
72	.09	.13	.07	.02	--
73	.11	.15	.09	--	--
74	.12	.16	.10	--	.08
75	.14	.19	.12	.02	.08
76	.16	.22	.14	.03	.11
77	.19	.25	.16	--	.13
78	.22	.29	.21	.05	.14
79	.26	.33	.21	.08	.15
80	.30	.38	.27	.09	.19
81	.35	.43	.32	.11	.22
82	.41	.51	.34	.13	.24
83	.49	.60	.41	.16	.32
84	.59	.73	.53	.17	.39
85	.71	86	.67	.20	.45
86	.86	1.03	.84	.23	.51
87	1.04	1.25	1.02	.25	.58
88	1.27	1.51	1.31	.29	.71
89	1.53	1.85	1.62	.35	.78
90	1.83	2.24	1.91	.43	.88
91	2.19	2.63	2.29	.53	1.02
92	2.64	3.16	2.87	.64	1.30
93	3.15	3.75	3.45	.76	1.57
94	3.78	4.48	4.12	.88	1.95
95	4.49	5.37	4.89	1.09	2.49
96	5.29	6.29	5.72	1.35	2.96
97	6.23	7.40	6.76	1.61	3.59
98	7.30	8.63	8.00	2.00	4.19
99	8.50	10.00	9.31	2.50	5.15
100	9.80	11.52	10.71	3.05	6.25

Note. Dashes indicate data were not available.

Table B-1 (continued)

ASAP Raw Score	Percentile Rank	Percent Excluded at Raw Cut-score			
		Army	Navy	Air Force	Marines
101	11.25	13.16	12.24	3.59	7.28
102	12.87	15.03	13.87	4.24	8.86
103	14.62	17.06	15.76	4.96	10.56
104	16.54	19.25	17.64	5.82	12.17
105	18.61	21.60	19.79	6.96	14.13
106	20.86	24.05	21.97	8.22	16.23
107	23.35	26.80	24.36	9.73	18.61
108	26.00	29.68	26.98	11.48	21.34
109	28.76	32.65	29.92	13.30	24.27
110	31.60	35.71	32.75	15.35	27.05
111	34.56	38.85	35.68	17.58	30.03
112	37.69	41.94	38.84	20.02	33.62
113	40.97	45.39	42.01	22.69	37.06
114	44.30	48.84	45.29	25.61	40.88
115	47.72	52.16	48.66	28.73	44.48
116	51.21	55.68	52.04	32.35	48.07
117	54.72	59.18	55.52	35.74	51.44
118	58.30	62.62	58.96	39.66	55.14
119	61.85	66.04	62.54	43.59	59.02
120	65.30	69.34	65.62	47.70	63.00
121	68.75	72.55	68.87	51.65	66.88
122	72.18	75.68	72.20	55.92	70.58
123	75.45	78.64	75.51	60.41	74.29
124	78.54	81.45	78.35	64.49	77.51
125	81.53	84.09	81.31	68.73	80.68
126	84.31	86.55	84.02	72.80	83.60
127	86.91	88.80	86.51	76.74	86.36
128	89.27	90.83	88.99	80.55	88.73
129	91.37	92.67	91.01	83.83	90.81
130	93.24	94.28	92.78	87.01	93.02
131	94.82	95.60	94.40	89.88	94.58
132	96.12	96.73	95.73	92.31	95.80
133	97.17	97.57	96.94	94.27	96.83
134	98.01	98.25	97.79	95.93	97.77
135	98.66	98.80	98.49	97.21	98.54
136	99.13	99.19	99.00	98.20	98.98
137	99.46	99.51	99.36	98.90	99.34
138	99.67	99.70	99.57	99.34	99.54
139	99.81	99.82	99.79	99.61	99.70
140	99.90	99.90	99.89	99.80	99.86
141	99.96	99.95	99.94	99.90	99.92
142	99.98	99.99	99.98	99.96	99.96
143	99.99	99.99	100.00	99.99	99.97
144	100.00	100.00	--	99.99	100.00
145	--	--	--	100.00	--

Note. Dashes indicate data were not available.

Table B-2

Institutional Expectancy at 36 Months of Service: Army Tier I
(Regular High School Diploma; N = 21,229)

ASAP Score	Proportions							N
	Excluded	Select. Ratio	Hit Rate	Correct Accept.	Erron. Reject.	Correct Reject.	Erron. Accept.	
143	1.000	0.000	0.255	1.000	0.745	0.255	0.000	3
142	1.000	0.000	0.256	1.000	0.745	0.255	0.000	3
141	0.999	0.001	0.256	1.000	0.745	0.255	0.000	10
140	0.999	0.001	0.257	1.000	0.744	0.256	0.000	13
139	0.997	0.003	0.258	1.000	0.744	0.256	0.000	26
138	0.996	0.004	0.259	0.975	0.744	0.256	0.025	31
137	0.993	0.007	0.262	0.936	0.743	0.257	0.064	64
136	0.988	0.012	0.265	0.918	0.743	0.257	0.082	100
135	0.982	0.018	0.270	0.899	0.742	0.258	0.101	126
134	0.974	0.026	0.277	0.899	0.741	0.259	0.101	180
133	0.964	0.036	0.285	0.895	0.739	0.261	0.105	209
132	0.951	0.049	0.295	0.894	0.737	0.263	0.106	278
131	0.935	0.065	0.307	0.888	0.735	0.265	0.112	345
130	0.915	0.085	0.321	0.884	0.732	0.268	0.116	408
129	0.892	0.108	0.338	0.879	0.728	0.272	0.121	491
128	0.867	0.133	0.354	0.867	0.726	0.274	0.133	539
127	0.838	0.162	0.374	0.862	0.722	0.278	0.138	607
126	0.807	0.193	0.395	0.859	0.717	0.283	0.141	667
125	0.773	0.227	0.418	0.856	0.712	0.288	0.144	722
124	0.737	0.263	0.444	0.854	0.705	0.295	0.146	769
123	0.698	0.302	0.465	0.844	0.701	0.299	0.156	825
122	0.658	0.342	0.491	0.841	0.694	0.306	0.159	839
121	0.617	0.383	0.516	0.837	0.687	0.313	0.163	869
120	0.577	0.423	0.538	0.832	0.680	0.320	0.168	856
119	0.537	0.463	0.559	0.826	0.674	0.326	0.174	849
118	0.495	0.505	0.583	0.823	0.664	0.336	0.177	888
117	0.455	0.545	0.602	0.817	0.658	0.342	0.183	845
116	0.416	0.584	0.623	0.814	0.647	0.353	0.186	828
115	0.377	0.623	0.642	0.809	0.637	0.363	0.191	830
114	0.342	0.658	0.655	0.803	0.632	0.368	0.197	751
113	0.308	0.692	0.671	0.800	0.620	0.380	0.200	726
112	0.274	0.726	0.682	0.793	0.615	0.385	0.207	724
111	0.246	0.754	0.692	0.789	0.607	0.393	0.211	589
110	0.217	0.783	0.704	0.786	0.595	0.405	0.214	613
109	0.191	0.809	0.713	0.783	0.584	0.416	0.217	553
108	0.168	[illegible]	0.721	0.780	0.571	0.429	0.220	496
107	0.145		0.727	0.776	0.561	0.439	0.224	485
106	0.124	0.[illegible]	0.732	0.773	0.549	0.451	0.227	429
105	0.107	0.893	0.737	0.770	0.535	0.465	0.230	365
104	0.092	0.908	0.740	0.767	0.526	0.474	0.233	320
103	0.078	0.922	0.742	0.764	0.519	0.481	0.236	298
102	0.066	0.934	0.744	0.762	0.506	0.494	0.238	259
101	0.056	0.944	0.745	0.759	0.499	0.501	0.241	210
100	0.047	0.953	0.746	0.757	0.488	0.512	0.243	188
99	0.038	0.962	0.746	0.755	0.486	0.514	0.245	188
98	0.032	0.968	0.746	0.753	0.479	0.521	0.247	138
97	0.026	0.974	0.745	0.751	0.492	0.508	0.249	118
96	0.022	0.978	0.746	0.750	0.482	0.518	0.250	96
95	0.018	0.982	0.745	0.749	0.487	0.513	0.251	83
94	0.014	0.986	0.745	0.749	0.483	0.517	0.251	73
93	0.011	0.989	0.745	0.748	0.481	0.519	0.252	63
92	0.010	0.990	0.745	0.747	0.486	0.514	0.253	37
91	0.008	0.992	0.745	0.747	0.483	0.517	0.253	40
90	0.007	0.993	0.745	0.747	0.477	0.523	0.253	22
89	0.005	0.995	0.745	0.746	0.489	0.511	0.254	43
88	0.004	0.996	0.745	0.746	0.493	0.507	0.254	24
87	0.003	0.997	0.745	0.745	0.509	0.491	0.255	12
50-86	0.000	1.000	---	0.745	---	---	0.255	66

Note. Dashes indicate data were not available.

Table B-3

Institutional Expectancy at 36 Months of Service: Army Tier II (Alternative Credential; *N* = 2,019)

ASAP Score	Proportions							*N*
	Excluded	Select. Ratio	Hit Rate	Correct Accept.	Erron. Reject.	Correct Reject.	Erron. Accept.	
137	1.000	0.000	0.447	1.000	0.553	0.447	0.000	1
136	0.999	0.001	0.447	1.000	0.553	0.447	0.000	1
135	0.998	0.002	0.448	1.000	0.553	0.447	0.000	2
134	0.998	0.002	0.447	0.750	0.553	0.447	0.250	1
133	0.997	0.003	0.448	0.800	0.553	0.447	0.200	1
132	0.996	0.004	0.449	0.857	0.553	0.447	0.143	2
131	0.996	0.004	0.449	0.875	0.552	0.448	0.125	1
130	0.994	0.006	0.450	0.818	0.552	0.448	0.182	3
129	0.992	0.008	0.451	0.750	0.552	0.448	0.250	5
128	0.986	0.014	0.453	0.731	0.551	0.449	0.269	11
127	0.981	0.019	0.455	0.722	0.550	0.450	0.278	10
126	0.973	0.027	0.455	0.673	0.550	0.450	0.327	16
125	0.965	0.035	0.460	0.692	0.549	0.451	0.308	17
124	0.957	0.043	0.460	0.662	0.549	0.451	0.337	15
123	0.945	0.055	0.465	0.670	0.547	0.453	0.330	26
122	0.931	0.069	0.476	0.713	0.542	0.458	0.287	28
121	0.913	0.087	0.474	0.656	0.544	0.456	0.344	36
120	0.902	0.098	0.479	0.670	0.541	0.459	0.330	21
119	0.887	0.113	0.482	0.657	0.540	0.460	0.343	31
118	0.864	0.136	0.494	0.675	0.535	0.465	0.325	46
117	0.838	0.162	0.500	0.664	0.532	0.468	0.336	54
116	.815	0.185	0.505	0.655	0.530	0.470	0.345	46
115	0.787	0.213	0.510	0.651	0.528	0.472	0.349	56
114	0.753	0.247	0.517	0.644	0.524	0.476	0.356	69
113	0.720	0.280	0.527	0.644	0.519	0.481	0.356	66
112	0.680	0.320	0.537	0.641	0.513	0.487	0.359	81
111	0.638	0.362	0.540	0.630	0.510	0.490	0.370	84
110	0.598	0.402	0.542	0.619	0.509	0.491	0.381	81
109	0.552	0.448	0.549	0.615	0.504	0.496	0.385	94
108	0.513	0.487	0.556	0.612	0.498	0.502	0.388	79
107	0.467	0.533	0.567	0.613	0.486	0.514	0.387	93
106	0.427	0.573	0.570	0.608	0.481	0.519	0.392	79
105	0.387	0.613	0.579	0.608	0.467	0.533	0.392	82
104	0.346	0.654	0.578	0.601	0.464	0.536	0.399	82
103	0.309	0.691	0.584	0.599	0.451	0.549	0.401	76
102	0.274	0.726	0.586	0.596	0.441	0.559	0.404	69
101	0.239	0.761	0.590	0.595	0.424	0.576	0.405	71
100	0.213	0.787	0.600	0.598	0.391	0.609	0.402	52
99	0.187	0.813	0.590	0.589	0.403	0.597	0.411	54
98	0.159	0.841	0.585	0.583	0.401	0.599	0.417	55
97	0.141	0.859	0.582	0.579	0.398	0.602	0.421	37
96	0.119	0.881	0.573	0.572	0.416	0.584	0.428	44
95	0.104	0.896	0.573	0.570	0.404	0.596	0.430	32
94	0.080	0.920	0.569	0.566	0.403	0.597	0.434	48
93	0.067	0.933	0.569	0.566	0.378	0.622	0.434	26
92	0.053	0.947	0.568	0.564	0.362	0.638	0.436	27
91	0.044	0.956	0.565	0.562	0.364	0.636	0.438	20
90	0.038	0.962	0.563	0.561	0.364	0.636	0.439	11
89	0.030	0.970	0.561	0.559	0.377	0.623	0.441	17
88	0.025	0.975	0.560	0.558	0.372	0.628	0.442	10
87	0.019	0.981	0.560	0.558	0.324	0.676	0.442	11
50-86	0.000	1.000	---	0.554	---	---	0.446	39

Note. Dashes indicate data were not available.

Table B-4

Institutional Expectancy at 36 Months of Service: Army Tier III
(No Diploma or Certificate; *N* = 1,888)

ASAP Score	Proportions							*N*
	Excluded	Select. Ratio	Hit Rate	Correct Accept.	Erron. Reject.	Correct Reject.	Erron. Accept.	
134	0.999	0.001	0.532	0.000	0.467	0.533	1.000	1
133	0.999	0.001	0.533	0.500	0.467	0.533	0.500	1
132	0.998	0.002	0.533	0.667	0.467	0.533	0.333	1
131	0.998	0.002	0.534	0.750	0.466	0.534	0.250	1
130	0.996	0.004	0.536	0.875	0.465	0.535	0.125	4
129	0.993	0.007	0.538	0.846	0.464	0.536	0.154	5
128	0.990	0.010	0.537	0.722	0.464	0.536	0.278	6
127	0.984	0.016	0.537	0.654	0.464	0.536	0.346	11
126	0.980	0.020	0.540	0.697	0.463	0.537	0.303	8
125	0.972	0.028	0.545	0.723	0.460	0.540	0.277	14
124	0.964	0.036	0.544	0.651	0.460	0.540	0.349	16
123	0.956	0.044	0.546	0.641	0.459	0.541	0.359	15
122	0.948	0.052	0.547	0.634	0.458	0.542	0.366	16
121	0.936	0.064	0.550	0.632	0.456	0.544	0.368	22
120	0.921	0.079	0.552	0.620	0.454	0.546	0.380	28
119	0.904	0.096	0.553	0.601	0.452	0.548	0.399	33
118	0.880	0.120	0.553	0.581	0.451	0.549	0.419	44
117	0.857	0.143	0.562	0.599	0.445	0.555	0.401	44
116	0.831	0.169	0.563	0.590	0.442	0.558	0.410	50
115	0.797	0.203	0.563	0.575	0.439	0.561	0.425	64
114	0.771	0.229	0.566	0.571	0.436	0.564	0.429	49
113	0.743	0.257	0.574	0.580	0.428	0.572	0.420	52
112	0.711	0.289	0.579	0.580	0.421	0.579	0.420	60
111	0.673	0.327	0.572	0.560	0.422	0.578	0.440	72
110	0.630	0.370	0.565	0.543	0.423	0.577	0.457	82
109	0.592	0.408	0.566	0.542	0.417	0.583	0.458	71
108	0.553	0.447	0.562	0.532	0.415	0.585	0.468	73
107	0.505	0.495	0.554	0.521	0.415	0.585	0.479	92
106	0.456	0.544	0.552	0.518	0.407	0.593	0.482	92
105	0.416	0.584	0.550	0.515	0.400	0.600	0.485	75
104	0.366	0.634	0.543	0.508	0.396	0.604	0.492	95
103	0.331	0.669	0.543	0.508	0.385	0.615	0.492	67
102	0.289	0.711	0.545	0.509	0.365	0.635	0.491	79
101	0.252	0.748	0.541	0.505	0.354	0.646	0.495	70
100	0.219	0.781	0.527	0.496	0.363	0.637	0.504	62
99	0.183	0.817	0.520	0.492	0.356	0.644	0.508	68
98	0.155	0.845	0.513	0.488	0.353	0.647	0.512	52
97	0.132	0.868	0.512	0.488	0.332	0.668	0.512	43
96	0.109	0.891	0.507	0.486	0.314	0.686	0.514	45
95	0.088	0.912	0.499	0.481	0.323	0.677	0.519	39
94	0.066	0.934	0.490	0.477	0.331	0.669	0.523	41
93	0.051	0.949	0.487	0.476	0.315	0.685	0.524	29
92	0.043	0.957	0.484	0.474	0.312	0.688	0.526	15
91	0.034	0.966	0.479	0.472	0.339	0.661	0.528	16
90	0.026	0.974	0.478	0.472	0.298	0.702	0.528	16
89	0.023	0.977	0.477	0.471	0.293	0.707	0.529	6
88	0.016	0.984	0.474	0.470	0.286	0.714	0.530	13
87	0.013	0.987	0.471	0.469	0.348	0.652	0.531	5
50-86	0.000	1.000	---	0.467	---	---	0.533	25

Note. Dashes indicate data were not available.

Table B-5

Institutional Expectancy at 36 Months of Service: Navy Tier II
(Alternative Credential; *N* = 989)

ASAP Score	Proportions							*N*
	Excluded	Select. Ratio	Hit Rate	Correct Accept.	Erron. Reject.	Correct Reject.	Erron. Accept.	
138	0.999	0.001	0.481	0.000	0.519	0.481	0.000	1
137	0.999	0.001	---	---	---	---	---	0
136	0.998	0.002	0.482	1.000	0.519	0.481	0.000	1
135	0.998	0.002					---	0
134	0.996	0.004	0.484	1.000	0.518	0.482	0.000	2
133	0.996	0.004	---	---	---	---	---	0
132	0.993	0.007	0.487	1.000	0.516	0.484	0.000	3
131	0.991	0.009	0.487	0.875	0.516	0.484	0.125	2
130	0.987	0.013	0.492	0.917	0.514	0.486	0.083	4
129	0.984	0.016	0.491	0.800	0.515	0.485	0.200	3
128	0.977	0.023	0.494	0.773	0.513	0.487	0.227	7
127	0.969	0.031	0.503	0.833	0.509	0.491	0.167	8
126	0.957	0.043	0.505	0.775	0.507	0.493	0.225	12
125	0.948	0.052	0.507	0.750	0.506	0.494	0.250	8
124	0.946	0.054	0.509	0.760	0.505	0.495	0.240	2
123	0.934	0.066	0.514	0.742	0.503	0.497	0.258	12
122	0.922	0.078	0.517	0.726	0.501	0.499	0.274	12
121	0.912	0.088	0.519	0.711	0.500	0.500	0.289	10
120	0.895	0.105	0.524	0.697	0.498	0.502	0.303	17
119	0.866	0.134	0.540	0.714	0.488	0.512	0.286	29
118	0.844	0.156	0.546	0.701	0.484	0.516	0.299	21
117	0.814	0.186	0.558	0.701	0.476	0.524	0.299	30
116	0.786	0.214	0.567	0.697	0.470	0.530	0.303	28
115	0.761	0.239	0.572	0.688	0.465	0.535	0.312	24
114	0.734	0.266	0.580	0.683	0.459	0.541	0.317	27
113	0.698	0.302	0.594	0.683	0.446	0.554	0.317	36
112	0.664	0.336	0.597	0.671	0.441	0.559	0.329	33
111	0.626	0.374	0.596	0.651	0.438	0.562	0.349	38
110	0.585	0.415	0.600	0.641	0.430	0.570	0.359	40
109	0.547	0.453	0.596	0.625	0.429	0.571	0.375	38
108	0.503	0.497	0.593	0.611	0.425	0.575	0.389	44
107	0.466	0.534	0.601	0.611	0.411	0.589	0.389	36
106	0.433	0.567	0.604	0.608	0.401	0.599	0.392	33
105	0.383	0.617	0.593	0.590	0.402	0.598	0.410	49
104	0.334	0.666	0.593	0.584	0.388	0.612	0.416	49
103	0.296	0.704	0.596	0.582	0.370	0.630	0.418	37
102	0.262	0.738	0.600	0.580	0.346	0.654	0.420	34
101	0.241	0.759	0.595	0.575	0.342	0.658	0.425	21
100	0.216	0.784	0.587	0.568	0.343	0.657	0.432	24
99	0.190	0.810	0.585	0.565	0.328	0.672	0.435	26
98	0.160	0.840	0.583	0.561	0.304	0.696	0.439	30
97	0.124	0.876	0.572	0.552	0.289	0.711	0.448	35
96	0.107	0.893	0.563	0.546	0.300	0.700	0.454	17
95	0.092	0.908	0.561	0.544	0.279	0.721	0.456	15
94	0.085	0.915	0.557	0.542	0.287	0.712	0.458	7
93	0.069	0.931	0.552	0.538	0.266	0.734	0.462	16
92	0.052	0.948	0.547	0.535	0.234	0.766	0.465	17
91	0.037	0.963	0.537	0.529	0.265	0.735	0.471	14
90	0.033	0.967	0.537	0.529	0.233	0.767	0.471	4
89	0.028	0.972	0.535	0.528	0.231	0.769	0.472	5
88	0.025	0.975	0.536	0.528	0.174	0.826	0.472	3
87	0.017	0.983	0.530	0.525	0.188	0.813	0.475	8
50-86	0.000	1.000	---	0.519	---	---	0.481	17

Note. Dashes indicate data were not available.

Table B-6

Institutional Expectancy at 36 Months of Service: Navy Tier III
(No Diploma or Certificate; $N = 923$)

ASAP Score	Proportions							N
	Excluded	Select. Ratio	Hit Rate	Correct Accept.	Erron. Reject.	Correct Reject.	Erron. Accept.	
134	0.999	0.001	0.520	1.000	0.480	0.520	0.000	1
133	0.998	0.002	0.521	1.000	0.480	0.520	0.000	1
132	0.998	0.002	---	---	---	---	---	0
131	0.997	0.003	0.522	1.000	0.479	0.521	0.000	1
130	0.997	0.003	---	---	---	---	---	0
129	0.992	0.008	0.520	0.600	0.480	0.520	0.400	4
128	0.992	0.008	---	---	---	---	---	0
127	0.991	0.009	0.519	0.500	0.481	0.519	0.500	1
126	0.988	0.012	0.520	0.556	0.480	0.520	0.444	3
125	0.984	0.016	0.521	0.583	0.480	0.520	0.417	4
124	0.975	0.025	0.521	0.550	0.479	0.521	0.450	8
123	0.967	0.033	0.529	0.667	0.475	0.525	0.333	7
122	0.959	0.041	0.534	0.686	0.472	0.528	0.314	8
121	0.949	0.051	0.537	0.682	0.470	0.530	0.318	9
120	0.941	0.059	0.541	0.686	0.468	0.532	0.314	7
119	0.933	0.067	0.546	0.695	0.465	0.535	0.305	8
118	0.915	0.085	0.547	0.662	0.464	0.536	0.338	16
117	0.893	0.107	0.549	0.638	0.462	0.538	0.362	21
116	0.866	0.134	0.554	0.629	0.458	0.542	0.371	25
115	0.839	0.161	0.556	0.614	0.455	0.545	0.386	25
114	0.813	0.187	0.554	0.593	0.455	0.545	0.407	24
113	0.790	0.210	0.549	0.572	0.457	0.543	0.428	21
112	0.752	0.248	0.541	0.545	0.460	0.540	0.455	35
111	0.724	0.276	0.546	0.549	0.456	0.544	0.451	26
110	0.687	0.313	0.544	0.541	0.454	0.546	0.459	34
109	0.647	0.353	0.559	0.558	0.440	0.560	0.442	37
108	0.602	0.398	0.564	0.557	0.431	0.569	0.443	41
107	0.557	0.443	0.565	0.552	0.424	0.576	0.448	42
106	0.518	0.482	0.572	0.555	0.412	0.588	0.445	36
105	0.479	0.521	0.577	0.556	0.400	0.600	0.444	36
104	0.445	0.555	0.571	0.547	0.399	0.601	0.453	31
103	0.407	0.593	0.567	0.541	0.394	0.606	0.459	35
102	0.362	0.638	0.555	0.528	0.398	0.602	0.472	42
101	0.326	0.674	0.550	0.523	0.394	0.606	0.477	33
100	0.284	0.716	0.556	0.526	0.367	0.633	0.474	39
99	0.239	0.761	0.534	0.510	0.388	0.612	0.490	41
98	0.210	0.790	0.539	0.512	0.363	0.637	0.488	27
97	0.184	0.816	0.531	0.507	0.365	0.635	0.493	24
96	0.155	0.845	0.527	0.505	0.351	0.649	0.495	27
95	0.128	0.872	0.513	0.497	0.375	0.625	0.503	25
94	0.108	0.892	0.519	0.500	0.326	0.674	0.500	18
93	0.092	0.908	0.514	0.497	0.321	0.679	0.503	15
92	0.076	0.924	0.506	0.493	0.333	0.667	0.507	15
91	0.054	0.946	0.501	0.490	0.319	0.681	0.510	20
90	0.050	0.950	0.501	0.490	0.302	0.698	0.510	4
89	0.041	0.959	0.494	0.487	0.343	0.657	0.513	8
88	0.030	0.970	0.493	0.486	0.308	0.692	0.514	10
87	0.024	0.976	0.489	0.485	0.333	0.667	0.515	6
50-86	0.000	1.000	---	0.481	---	---	0.519	22

Note. Dashes indicate data were not available.

Table B-7

Institutional Expectancy at 36 Months of Service: Air Force Tier I (Regular High School Diploma; N = 12,293)

ASAP Score	Proportions							N
	Excluded	Select. Ratio	Hit Rate	Correct Accept.	Erron. Reject.	Correct Reject.	Erron. Accept.	
144	1.000	0.000	0.233	1.000	0.767	0.233	0.000	2
143	1.000	0.000	0.233	1.000	0.767	0.233	0.000	1
142	0.999	0.001	0.233	0.800	0.767	0.233	0.200	4
141	0.999	0.001	0.234	0.833	0.767	0.233	0.167	7
140	0.997	0.003	0.235	0.900	0.767	0.233	0.100	19
139	0.995	0.005	0.237	0.911	0.766	0.234	0.089	28
138	0.992	0.008	0.239	0.898	0.766	0.234	0.102	33
137	0.987	0.013	0.243	0.870	0.766	0.234	0.130	66
136	0.978	0.022	0.251	0.898	0.764	0.236	0.102	114
135	0.965	0.035	0.262	0.898	0.762	0.238	0.102	162
134	0.949	0.051	0.275	0.897	0.760	0.240	0.103	196
133	0.929	0.071	0.291	0.899	0.757	0.243	0.101	245
132	0.905	0.095	0.310	0.903	0.753	0.247	0.097	285
131	0.875	0.125	0.333	0.898	0.748	0.252	0.102	372
130	0.843	0.157	0.356	0.888	0.744	0.256	0.112	402
129	0.805	0.195	0.381	0.880	0.740	0.260	0.120	456
128	0.770	0.230	0.404	0.872	0.736	0.264	0.128	435
127	0.724	0.276	0.436	0.866	0.729	0.271	0.134	568
126	0.681	0.319	0.469	0.868	0.719	0.281	0.132	526
125	0.633	0.367	0.499	0.862	0.712	0.288	0.138	591
124	0.588	0.412	0.524	0.854	0.706	0.294	0.146	554
123	0.545	0.455	0.553	0.851	0.697	0.303	0.149	529
122	0.495	0.505	0.581	0.845	0.687	0.313	0.155	611
121	0.450	0.550	0.607	0.840	0.678	0.322	0.160	552
120	0.410	0.590	0.627	0.834	0.670	0.330	0.166	496
119	0.369	0.631	0.648	0.829	0.661	0.339	0.171	505
118	0.330	0.670	0.668	0.825	0.649	0.351	0.175	472
117	0.293	0.707	0.686	0.820	0.638	0.362	0.180	460
116	0.259	0.741	0.701	0.816	0.627	0.373	0.184	416
115	0.223	0.777	0.715	0.811	0.615	0.385	0.189	446
114	0.196	0.804	0.724	0.805	0.610	0.390	0.195	330
113	0.169	0.831	0.730	0.799	0.609	0.391	0.201	334
112	0.146	0.854	0.737	0.795	0.600	0.400	0.205	281
111	0.125	0.875	0.745	0.793	0.586	0.414	0.207	263
110	0.106	0.894	0.750	0.789	0.577	0.422	0.211	227
109	0.089	0.911	0.756	0.787	0.563	0.437	0.213	217
108	0.074	0.926	0.759	0.784	0.553	0.447	0.216	176
107	0.060	0.940	0.761	0.781	0.547	0.453	0.219	174
106	0.049	0.951	0.763	0.779	0.543	0.457	0.221	130
105	0.040	0.960	0.764	0.776	0.541	0.459	0.224	118
104	0.032	0.968	0.764	0.774	0.543	0.457	0.226	95
103	0.027	0.973	0.765	0.773	0.539	0.461	0.227	68
102	0.022	0.978	0.765	0.772	0.552	0.448	0.228	51
101	0.019	0.981	0.765	0.771	0.548	0.452	0.229	46
100	0.016	0.984	0.764	0.770	0.577	0.423	0.230	35
99	0.012	0.988	0.765	0.769	0.577	0.423	0.231	50
98	0.009	0.991	0.765	0.768	0.598	0.402	0.232	32
97	0.007	0.993	0.766	0.768	0.570	0.430	0.232	27
96	0.006	0.994	0.766	0.768	0.613	0.387	0.232	17
95	0.005	0.995	0.766	0.768	0.615	0.385	0.232	12
94	0.003	0.997	0.766	0.767	0.615	0.385	0.233	15
93	0.003	0.997	0.766	0.767	0.625	0.375	0.233	8
92	0.002	0.998	0.766	0.767	0.600	0.400	0.233	8
91	0.002	0.998	0.766	0.767	0.667	0.333	0.233	7
90	0.001	0.999	0.766	0.767	0.688	0.313	0.233	2
89	0.001	0.999	0.767	0.767	0.667	0.333	0.233	4
88	0.001	0.999	0.766	0.767	0.727	0.273	0.233	1
87	0.001	0.999	---	---	---	---	---	0
50-86	0.000	1.000	---	0.767	---	---	0.233	12

Note. Dashes indicate data were not available.

Table B-8

Institutional Expectancy at 36 Months of Service: Marine Corps Tier I (Regular High School Diploma; N = 5,659)

ASAP Score	Proportions							N
	Excluded	Select. Ratio	Hit Rate	Correct Accept.	Erron. Reject.	Correct Reject.	Erron. Accept.	
143	1.000	0.000	0.308	1.000	0.692	0.308	0.000	1
142	1.000	0.000	0.308	1.000	0.692	0.308	0.000	1
141	1.000	0.000	---	---	---	---	---	0
140	0.999	0.001	0.309	1.000	0.692	0.308	0.000	2
139	0.998	0.002	0.309	0.818	0.692	0.308	0.182	7
138	0.996	0.004	0.311	0.857	0.691	0.309	0.143	11
137	0.995	0.005	0.312	0.867	0.691	0.309	0.133	9
136	0.992	0.008	0.314	0.822	0.691	0.309	0.178	17
135	0.986	0.014	0.318	0.871	0.690	0.310	0.129	30
134	0.978	0.022	0.326	0.879	0.688	0.312	0.121	49
133	0.965	0.035	0.331	0.831	0.687	0.313	0.169	70
132	0.954	0.046	0.336	0.803	0.687	0.313	0.197	66
131	0.938	0.062	0.350	0.840	0.682	0.318	0.160	87
130	0.919	0.081	0.361	0.828	0.680	0.320	0.172	108
129	0.892	0.108	0.377	0.819	0.677	0.323	0.181	153
128	0.866	0.134	0.393	0.813	0.673	0.327	0.187	149
127	0.836	0.164	0.409	0.806	0.670	0.330	0.194	166
126	0.803	0.197	0.432	0.811	0.663	0.337	0.189	190
125	0.770	0.230	0.448	0.802	0.659	0.341	0.198	185
124	0.732	0.268	0.467	0.797	0.654	0.346	0.203	214
123	0.691	0.309	0.487	0.790	0.648	0.352	0.210	236
122	0.647	0.353	0.510	0.788	0.640	0.360	0.212	248
121	0.603	0.397	0.530	0.782	0.633	0.367	0.218	249
120	0.558	0.442	0.548	0.774	0.628	0.372	0.226	256
119	0.512	0.488	0.568	0.770	0.619	0.381	0.230	260
118	0.469	0.531	0.584	0.763	0.613	0.387	0.237	242
117	0.430	0.570	0.600	0.759	0.605	0.395	0.241	221
116	0.396	0.604	0.616	0.756	0.595	0.405	0.244	193
115	0.357	0.643	0.630	0.752	0.586	0.414	0.248	219
114	0.325	0.675	0.637	0.745	0.585	0.415	0.255	183
113	0.286	0.714	0.648	0.740	0.576	0.424	0.260	216
112	0.252	0.748	0.656	0.734	0.571	0.429	0.266	193
111	0.221	0.779	0.667	0.732	0.555	0.445	0.268	180
110	0.193	0.807	0.676	0.730	0.540	0.460	0.270	157
109	0.172	0.828	0.679	0.726	0.536	0.464	0.274	117
108	0.145	0.855	0.684	0.721	0.527	0.473	0.279	151
107	0.125	0.875	0.686	0.717	0.522	0.478	0.283	118
106	0.105	0.895	0.688	0.713	0.517	0.483	0.287	109
105	0.086	0.914	0.690	0.710	0.510	0.490	0.290	107
104	0.073	0.927	0.694	0.708	0.488	0.512	0.292	78
103	0.062	0.938	0.691	0.704	0.511	0.489	0.296	58
102	0.051	0.949	0.689	0.701	0.529	0.471	0.299	63
101	0.042	0.958	0.690	0.700	0.521	0.479	0.300	54
100	0.035	0.965	0.691	0.699	0.514	0.486	0.301	37
99	0.028	0.972	0.692	0.698	0.493	0.507	0.302	40
98	0.023	0.977	0.690	0.696	0.534	0.466	0.304	29
97	0.019	0.981	0.691	0.696	0.515	0.485	0.304	23
96	0.015	0.985	0.691	0.694	0.533	0.467	0.306	24
95	0.012	0.988	0.691	0.694	0.540	0.460	0.306	15
94	0.009	0.991	0.691	0.694	0.531	0.469	0.306	15
93	0.007	0.993	0.692	0.694	0.487	0.513	0.306	13
92	0.006	0.994	0.692	0.693	0.515	0.485	0.307	6
91	0.005	0.995	0.692	0.693	0.520	0.480	0.307	8
90	0.004	0.996	0.691	0.693	0.571	0.429	0.307	5
89	0.003	0.997	0.692	0.693	0.500	0.500	0.307	3
88	0.002	0.997	0.692	0.693	0.500	0.500	0.307	2
87	0.003	0.997	0.692	0.693	0.533	0.467	0.307	1
50-86	0.000	1.000	---	0.692	---	---	0.308	15

Note: Dashes indicate data were not available.

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