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REENLISTEE/NON-REENLISTEE PROFILES AND PREDICTION OF REENLISTMENT POTENTIAL

By

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A total of 3,062 enlisted personnel were administered an attitude and opinion survey after 33 to 45 months of service. When the career decisions of the population sample were obtained, distributional analyses of the biographical, aptitudinal, and attitudinal variables were obtained to develop profiles of individuals with varying reenlistment outcomes. The survey response data were used to investigate the feasibility of developing a reenlistment potential index derived from the noncognitive and cognitive variables which could be used to predict an individual's career decision. The multiple correlation of the composite developed from these data was .55; upon cross-application, the multiple R was .51. Using the reenlistment potential equation, 81% of the sample population at time of enlistment could have been correctly identified as to their ultimate reenlistment status. Although 56% of the

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reenlistees would have been incorrectly identified as non-reenlistees, only 6% of those who actually left service would have been incorrectly identified as reenlistees.

PREFACE

This research was conducted under project 7719, Selection and Classification Technology; task 771902, Methods for Increasing the Effectiveness of Personnel Programs.

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REENLISTEE/NON-REENLISTEE PROFILES AND PREDICTION OF REENLISTMENT POTENTIAL

I. INTRODUCTION

To some degree, every military organization experiences turnover or attrition of personnel. With increasing budgetary limitations imposed on military spending, excessive turnover becomes a critical issue, and the costs associated with recruiting and training large numbers of personnel to fill the vacancies of those who elect to leave the service becomes a matter of grave concern. In addition to overall replacement costs, such losses make it difficult to build a career force with the required experience and proficiency levels to maintain organizational effectiveness.

The costs associated with personnel losses would be minimized if a selection methodology could be devised to identify, at the time of enlistment, those individuals who might be career prospects. If airmen with such reenlistment potential could be assigned to the more critical specialty areas and/or to the more costly training programs, considerable savings would be realized.

Research designed to describe and identify careerists has been attempted by every branch of the armed services. Results of previous studies done in the Air Force indicate that the relationships between certain aptitude, attitude, and biographical data to reenlistment decisions were low but generally significant (Bryant, Gordon, & Carp, 1955; Fitzpatrick & Cullen, 1957; Gordon, 1962; Gordon, Carp, Burgess, Lawrence, & Clark, 1955).

Army research findings indicated moderate relationships between attitudinal/background variables and career decisions (Boyd & Boyles, 1969; Helme & Kotula, 1966; Helme, Kotula, & Fitch, 1960). However, these relationships were found to decrease substantially as a function of the time interval between data collection and actual career decision.

Variables related to retention have also been studied extensively by Navy research personnel (Abrahams & Lacey, 1972; LaRocco, Gunderson, & Pugh, 1975; Malone, 1967; Nickey & May, 1965). Abrahams and Lacey (1972) found that an experimental adjective checklist appeared to have some value in identifying men with superior reenlistment likelihood. In the preliminary investigation by LaRocco et al. (1975), the discriminant analysis approach was used to develop group profiles which differentiated sufficiently between varying reenlistment outcomes to provide a basis for assessing reenlistment potential early in a man's naval career.

Although researchers have been moderately successful in developing a measure of reenlistment potential, there is agreement that the task of predicting reenlistment is complex. It is recognized that many factors influence a man's decision to remain in service after completion of his initial tour (Bryant, Gordon, & Carp, 1955; Malone, 1967). Personal characteristics such as age, aptitude, number of years of education completed, and socio-economic level may have some effect on career decision. Other factors external to the individual and unpredictable at the time of enlistment may influence his final decision such as supply and demand in the civilian job market or unemployment rates at the time of separation. In-service variables related to job satisfaction, training, and experience as a function of military service also have impact. Marital status and number of dependents may play some part in a reenlistment decision which cannot be predicted early in an airman's initial tour. Finally, not to be ignored are the more subtle influences such as the attitudes of family and dependents toward the Air Force and an Air Force career.

The purpose of the present research is (a) to develop a profile comprised of biographic, demographic, and attitudinal data which describes individuals with varying reenlistment outcomes, and (b) to investigate the feasibility of developing a reenlistment potential index derived from biographical and attitudinal data to predict an individual's career decision.

II. METHOD

Sample Population

Survey questionnaires (SCN 72-63) were administered to a random sample of first-term enlisted personnel who had completed 33 to 45 months of service as of November 1972. Surveys were distributed to the consolidated base personnel offices (CBPO) on continental U.S. bases identified as having a sufficient number of

personnel with the required time in service. CBPOs then randomly selected individuals with the last digit Social Security account number (SSAN) of 3, 6, or 9.

After receipt of the completed surveys, aptitudinal and final disposition data on each respondent were retrieved from files maintained by the Computational Sciences Division of the Air Force Human Resources Laboratory. Complete data were available for 3,062 cases.

Survey Instrument

Response data obtained from the field survey included biographical items, reenlistment intent, personal and family attitudes, and opinions toward the Air Force and their specific career fields. Respondents were assured that information obtained would be kept strictly confidential and used for research purposes only.

Analyses

Distributional analyses including descriptive statistics of attitudinal, aptitudinal, and biographical variables by reenlistment eligibility/decision were obtained. Chi square analyses and tests of significance were accomplished where appropriate. Multiple linear regression analyses (Bottenberg & Ward, 1963) were used to develop a biographical composite and a reenlistment potential index. Hit/miss tables were computed to estimate the practical utility of the final regression model.

Criterion Variables

Final disposition of each respondent was used to establish criterion groups based on reenlistment decision and/or reenlistment eligibility. The three criterion groups, as shown in Table 1, were defined as follows:

Table 1. **Reenlistment Eligibility Versus Career Status/Reenlistment Decision**

Career Status/ Reenlistment Decision		Reenlistment Eligibility: Eligible N	Eligible Col %	Ineligible N	Ineligible Col %	Total N	Total Col %
In service/Reenlistee	N	813	32	–	–	813	27
	Row %	100				100	
Out of service/Loss	N	1,732	68	517	100	2,249	73
	Row %	77		23		100	
Total	N	2,545	100	517	100	2,062	100
	Row %	83		17		100	

1. *Career status: In versus out of service.* The sample population was divided into two groups to form this criterion category—all individuals who remained in service after their initial tour was completed (N = 813) and those who were separated (N = 2,249). No distinction was made in the separated group between those who were eligible to reenlist but did not, and those who were ineligible to reenlist or discharged prematurely for unsuitability.

2. *Reenlistment decision: Reenlistee versus loss.* This criterion category was composed of only those individuals who were eligible to reenlist subdivided into two distinct groups—individuals who were eligible and did reenlist (N = 813) and those who were eligible but elected to leave service (N = 1,732).

3. *Reenlistment eligibility: Eligible versus ineligible.* The third criterion classification consisted of two groups. The eligible group contained all individuals who were eligible to reenlist regardless of their decisions to remain on active duty or not (N = 2,545). The ineligible group included those who were considered ineligible for reenlistment or discharged prematurely for unsuitability (N = 517). It should be noted that that portion of the ineligible group who was discharged prematurely is restricted only to those individuals who received discharges after the survey was administered. Since those discharged for cause earlier in their active duty career cannot be included, this group may not be representative of all first-term personnel discharged prior to completion of their obligated tour.

III. RESULTS AND DISCUSSION

Differences between the personal and background characteristics, aptitudes, and individual and family attitudes of the different criterion category groups were compared. Chi square analyses were computed to determine the significance of the differences in the biographical and attitudinal data. Results of all comparisons were significant at or beyond the .05 level unless specifically noted. T-tests were computed to determine whether differences in mean aptitude performance between category groups were significant.

Aptitudinal Profile by Reenlistment Outcome

Table 2 presents mean scores of the various criterion groups on the Airman Qualifying Examination (AQE) and the Armed Forces Qualification Test (AFQT). Between eligible reenlistees and non-reenlistees, all comparisons of mean differences were significant at or beyond the .01 level. The higher aptitude personnel opted to leave service at the end of 4 years. Between total eligible and ineligible groups, only the comparison between the Electronics aptitude composite means for those two groups was significant at the .05 level. Eligibles had a higher mean Electronics score than their ineligible counterparts. No significant differences were found for the other aptitude scores although ineligibles did demonstrate slightly lower performance. All comparisons for in/out subgroups indicate a significant difference between means at or beyond the .01 level. Those electing to leave service demonstrated higher mean performance in every aptitude area than those who remained on active duty.

Table 2. **Mean Performance on the AQE and AFQT by Criterion Group**

	Mean Scores				
	AQE				
Criterion Groups	Admin AAI	Elec EAI	Gen GAI	Mech MAI	AFQT
In Service	61.07	64.04	64.45	61.53	59.43
Out Service	66.99	68.74	69.55	65.86	64.08
Eligible to Reenlist	65.46	68.07	68.38	64.73	63.05
Ineligible to Reenlist	64.88	65.88	67.27	64.22	62.32
Eligible to Reenlist, Did Reenlist	61.07	64.04	64.45	61.53	59.43
Eligible to Reenlist, Did Not Reenlist	67.52	69.97	70.23	66.24	64.61

Biographical/Demographic Profile of Reenlistees/Non-Reenlistees

Tables 3 through 5 show the percentage of enlisted personnel in each criterion group by survey item response category.

Race. It appears that the Black airmen are more inclined to remain in service; 51% of the Black sample elected to reenlist whereas only 24% of the "other than Black" group made that decision. However, no significant difference in reenlistment eligibility was indicated between the two racial subgroups.

Educational Level. Comparisons between reenlistment eligibility/reenlistment decisions and academic level at enlistment indicate a decrease in positive reenlistment decisions as the level of education increases. Forty-four percent of the high school non-graduates elected to remain in service while only five percent of the personnel with college degrees made the same decision. Differences in reenlistment eligibility vary significantly with level of education also. While 24% of high school nongraduates were contained in the ineligible category, some 19% of the college graduates were also included in this category. Overall, 95% of the first-term enlistees with college degrees left the service either prematurely or after completion of their initial tour. Although these figures indicate loss of the more highly educated personnel from service, it must be recognized that though such a decision reflects the desires of this

Table 3. **Frequency and Percent of Demographic/Biographical Subgroups by Reenlistment Eligibility/Decision**

Background Characteristic	Eligible: In — Extended/Reenlisted N	%	Eligible: Out — Loss, Eligible to Reenlist N	%	Ineligible: Out — Loss, Ineligible to Reenlist/Undesirable N	%	Total Loss N	%	Total Sample N	%
Race										
Black	132	51	84	32	45	17	129	49	261	100
Other than Black	681	24	1,648	59	472	17	2,120	76	2,801	100
Educational Level at Enlistment										
High School, Non-Graduate	58	44	42	32	32	24	74	56	132	100
High School, Graduate	653	29	1,208	54	384	17	1,592	71	2,245	100
College, 1–4 Years, No Degree	88	22	272	67	47	11	319	78	407	100
College Degree, 4 Years or more	14	5	210	76	54	19	264	95	278	100
Age at Enlistment										
17–18 Years Old	81	36	104	46	39	18	143	64	224	100
19 Years Old	309	37	405	49	115	14	520	63	829	100
20 Years Old	264	28	497	54	166	18	663	72	927	100
21 Years Old	85	18	304	63	93	19	397	82	482	100
22 Years Old	38	15	171	69	40	16	211	85	249	100
23 Years Old	23	10	164	73	37	17	201	90	224	100
24 Years Old or Older	13	10	87	69	27	21	114	90	127	100
Geographic Area										
North-Northeast	151	30	242	47	118	23	360	70	511	100
Mid-Atlantic	96	32	147	49	55	19	202	68	298	100
South-Southeast	115	29	227	57	55	14	282	71	397	100
Southwest	124	22	366	65	76	13	442	78	566	100
Great Lakes	112	33	170	51	54	16	224	67	336	100
Far West	110	24	280	62	63	14	343	76	453	100
Midwest	68	22	184	60	55	18	239	78	307	100
Other Territories	37	19	116	60	41	21	157	81	194	100
Family Socioeconomic Status										
$3,000 or less	59	42	59	42	23	16	82	58	141	100
$3,001–6,000	179	36	251	50	71	14	322	64	501	100
$6,001–10,000	290	27	622	57	172	16	794	73	1,084	100
$10,001–20,000	205	21	581	61	173	18	754	79	959	100
$20,001–50,000	48	23	124	59	39	18	163	77	211	100
Over $50,000	12	26	29	63	5	11	34	74	46	100
Unknown	20	17	66	55	34	28	100	83	120	100
Employment History										
No Full-time Job	70	20	225	63	61	17	286	80	356	100
Full-time Job 1–6 Mos	71	24	181	60	47	16	228	76	299	100
Full-time Job 6–12 Mos	160	26	351	57	108	17	459	74	619	100
Full-time Job 1–2 Years	222	27	466	56	145	17	611	73	833	100
Full-time Job 2 Years or more	290	30	509	53	156	17	665	70	955	100
Civilian Salary Per Month										
$200 or less	70	35	97	48	34	17	131	65	201	100
$201–300	162	35	229	49	76	16	305	65	467	100
$301–400	197	28	402	56	113	16	515	72	712	100
$401–500	171	25	401	57	127	18	528	75	699	100
$501 or more	134	23	343	60	99	17	442	77	576	100
Unknown or no Job Prior to Service	79	20	260	63	68	17	328	80	407	100

Table 4. **Frequency and Percent of Expressed Attitudes by Reenlistment Eligibility/Decision**

Background Characteristic	Eligible: In — Extended/ Reenlisted N	%	Eligible: Out — Loss Eligible to Reenlist N	%	Ineligible: Out — Loss Ineligible to Reenlist/ Undesirable N	%	Total Loss N	%	Total Sample N	%
Reenlistment Intent										
Favorable Toward Military Career	512	92	24	4	21	4	45	8	557	100
Uncertain	139	42	161	48	33	10	194	58	333	100
Unfavorable Toward Military Career	162	7	1,547	71	463	22	2,010	93	2,172	100
Parental Attitude Toward Military Career										
Extremely Displeased	79	15	320	63	112	22	432	85	511	100
Somewhat Displeased	110	20	337	61	108	19	445	80	555	100
Neutral	239	23	613	60	168	17	781	77	1,020	100
Somewhat Pleased	181	47	169	43	39	10	208	53	389	100
Extremely Pleased	124	60	65	32	16	8	81	40	205	100
Not Applicable	80	21	228	60	74	19	302	79	382	100
Wife's (Fiancee's) Attitude Toward Military Career										
Extremely Displeased	128	12	742	68	226	20	968	88	1,096	100
Somewhat Displeased	124	29	240	57	59	14	299	71	423	100
Neutral	170	46	156	42	43	12	199	54	369	100
Somewhat Pleased	146	72	45	22	12	6	57	28	203	100
Extremely Pleased	78	80	12	12	8	8	20	20	98	100
Not Applicable	167	19	537	61	169	20	706	81	873	100

Table 5. **Frequency and Percentage in Categories of Vocational Aspirations by Reenlistment Eligibility/Decision**

Background Characteristic	Eligible: In — Extended/ Reenlisted N	%	Eligible: Out — Loss Eligible to Reenlist N	%	Ineligible: Out — Loss Ineligible to Reenlist/ Undesirable N	%	Total Loss N	%	Total Sample N	%
Plans for the Future										
College/University	162	17	658	67	158	16	816	83	978	100
Military Career	250	91	14	5	10	4	24	9	274	100
Company/Industry	106	13	505	64	179	23	684	87	790	100
Government Work	70	30	131	56	32	14	163	70	233	100
Private Entrepreneur	50	18	183	65	50	17	233	82	283	100
Other Uncertain	175	35	241	48	88	17	329	65	504	100

particular sample, the trend may change under other circumstances. Although the overall number of college graduates entering service has declined with the implementation of the volunteer force (Vitola, Mullins, & Brokaw, 1974), the college graduate entering service as a volunteer may be more favorably inclined toward an Air Force career. In addition, the economic climate in the civilian sector could change the career decisions of personnel at every educational level.

Age at Enlistment. The younger airmen at the time of enlistment appear more likely to be career prospects. Over one-third of the 17- to 19-year-olds elect to remain in service. Although the differences among age groups and reenlistment eligibility are significant, no definite trend is apparent. The highest rate of ineligibles is found in the 24 years old or older age category.

Geographic Area. Airmen from the Midwest, Far West, and Southwest are less likely to reenlist upon expiration of their initial tour. On the other hand, airmen from the Great Lakes and Mid-Atlantic regions appear to be more favorably inclined to be careerists. The highest percentages of ineligible personnel come from the North-Northeast and territories outside the continental United States. These large percentages of ineligible/unsuitable personnel may reflect problems experienced by these airmen as a result of living in high-impact, high-crime areas, cultural deprivation, and/or language barriers.

Socio-economic Level. There was a tendency for airmen coming from homes, where the average income was $6,000 and below, to remain in service after their initial tour. Although the ineligible group displayed differences among socio-economic levels based on annual income, no definite trend is present.

Employment History Prior to Service. Differences in previous employment history between eligibles and ineligibles were not significant. However, it appears that among the eligibles, those who had never held a full-time job were more likely to leave service after 4 years. One explanation might be that those who had never held a job prior to service would not have a comparative base with which to make a valid career decision. When civilian salary is used to differentiate between criterion groups, differences between eligibles and ineligibles are not significant. Significant differences between in/out and eligible reenlistee/eligible non-reenlistee indicate the higher their pay in a civilian job, the more likely they were to leave service. Those who never earned a salary prior to enlistment are also more likely to separate at the end of their first term.

Career and Family Attitudes of Reenlistees/Non-Reenlistees (Table 4)

Reenlistment Intent. Expressed attitude toward reenlistment appears to be highly related to actual career decision. Ninety-two percent of those individuals who expressed that they had a positive attitude toward a military career actually did reenlist at the completion of their initial tour; 93% of those expressing an unfavorable attitude toward a military career separated at the completion of their initial commitment. It should be noted that, in this study, the individual's expressed intention toward a military career was ascertained after 2½ or more years of active duty. Other studies (Alley & Gould, 1975; Shenk, 1972) have shown that, although expressed career intention is related to actual career decision, the closer an individual comes to his actual decision point, the greater the relationship between these two factors.

Family Attitudes Toward Military Career. It has been noted previously that factors external to the individual can have a subtle influence on career decision. Both parents and wives (or girl friends) can exert a considerable amount of pressure in encouraging an individual for or against a military career. Only 15% of the individuals whose parents were extremely displeased with military service made a positive career decision compared to 60% whose parents were very favorably inclined making a similar decision. The same trend is evidenced for the wife's or girl friend's attitude toward a military service career. Previous studies have shown the importance of a wife's attitude toward the military and the effect of her attitude on job performance, morale, and career decision (Belt & Sweney, 1973; Muldrow, 1971). It has been suggested that programs designed to make the wife feel that she is an important part of the Air Force and her husband's career may be effective in enhancing career motivation.

Future Vocational/Educational Plans

Differences in future plans were found among all criterion groups (Table 5). In general, those indicating that their post-service goals were to attend college or work in the civilian sector were less likely to remain in service. In contrast, 91% of those indicating they were considering a military career did make a positive career decision.

However, these expressed plans, like reenlistment intent, are most likely a function of the time interval between survey and the actual career decision point. Therefore, goals expressed later in an airman's first term may not accurately reflect the goals he would express at time of enlistment.

The biographical and attitudinal profiles of the various criterion groups indicate that there are significant differences between these groups on a majority of the variables used in this study. However, differences between subgroups become even more important if they can be used to identify potential military careerists early in an initial tour. This study explores the feasibility of developing a reenlistment potential index from the biographical and attitudinal survey response data discussed above.

Predictability of Reenlistment Potential

The development of a reenlistment potential index (RPI) was accomplished in two phases. For these study phases, the total sample was randomly divided into two half-samples: half-sample 1 for Phase I, and half-sample 2 for Phase II. In Phase I, regression analyses were designed to develop a composite from the personal background and attitudinal data. In Phase II, regression models were developed from the biographical composite index, aptitudinal data, and experimental job attitude scores. In the development of the biographical composite and RPI, only the in/out criterion was used.

Phase I – Development of a Biographical/Attitudinal Composite. In the attempt to use personal background and attitudinal data in predicting reenlistment, it became apparent that the large number of item responses would have to be reduced to a composite variable. The preliminary step to obtain this objective was to develop a composite of item responses which were significantly related to the in/out criterion. Table 6 lists the categorical variables selected to be used in this phase.

The biographical/attitudinal composite developed from this analysis included items concerning personal data, family socio-economic status, educational aims, employment history, and family attitudes toward military service. Since the objective of this preliminary investigation is to develop an index for possible use in classification and assignment, an effort was made to include only those items in the index that would be available and accurate at time of entry. Therefore, item responses such as expressed reenlistment intent and vocational plans which might change as a function of time were omitted. The final biographical composite contained 25 categorical variables. Using half-sample 1 and the in/out criterion, the multiple correlation for the composite was .52. When the weights from this composite were cross-applied to half-sample 2, the multiple correlation maintained statistical significance (R = .51).

Phase II – Predictor Variables for an Optimal Reenlistment Index. As part of the survey, respondents were asked to provide data concerning their vocational aspirations. To do this, respondents rated a list of job attributes (Table 7) using a five-point scale on the following two dimensions: (a) their overall importance or worth to the individual on the job, and (b) their perceived obtainability in the Air Force. In previous research, Shenk (1972) investigated the utility of experimental scores developed from these attitudinal item responses to predict officer career status. Based on her findings, it was decided to include the experimental scores developed from the Importance/Possibility (I/P) scale to assess their effectiveness in predicting enlisted reenlistment decision. A description of the I/P experimental scores and classification of the I/P scale items according to Herzberg's theory is contained in Appendix A.

In addition to the biographical composite and I/P experimental scores, aptitudinal information readily available on each enlistee at time of enlistment was also included in the Phase II regression analyses. A complete listing of the predictor variables and the criterion used in this regression analysis is contained in Table 8. For this phase, half-sample 2 was further subdivided to provide for cross-application of regression weights.

The multiple correlation of the regression model containing the biographical composite, aptitudinal information, and I/P scores was .55, significant at or beyond the .01 level. Since the I/P experimental scores were added to the basic predictor composite for exploratory purposes only, an additional regression model was developed which omitted the I/P scales. The result of the comparison of the two models indicated that the I/P scales do make a significant contribution over and above the biographical composite and aptitudinal data in predicting the reenlistment criterion. Based on this comparison, it was considered worthwhile to include all predictor variables in the RPI. When the regression weights

Table 6. **Predictor Variables Used in Development of Biographical Composite**

Predictor Variable	Variable Number	Variable Categories
Educational level at enlistment	1	HS non-graduate
	2	HS graduate
	3	College, no degree
	4	College degree or higher
Age	5	17–18
	6	19
	7	20
	8	21
	9	22 and up
Geographic Area	10	North-Northeast
	11	Mid-Atlantic
	12	South-Southeast
	13	Southwest
	14	Great Lakes
	15	Far West
	16	Midwest
	17	Other
Socio-economic status family income	18	3–6 thousand
	19	7–10 thousand
	20	11 thousand and up
Educational aims	21	HS graduation
	22	College, no degree
	23	College degree BA
	24	MA, MS, PhD
Employment status prior to entry into service	25	None
	26	1–6 months
	27	7–12 months
	28	13–24 months
	29	25 and up
Pay prior to entry into services	30	Not applicable
	31	1–200 per month
	32	201–300
	33	301–400
	34	401–500
	35	501 and up
Parents attitude toward military career	36	Extremely displeased
	37	Somewhat displeased
	38	Neutral
	39	Somewhat pleased
	40	Extremely pleased
Wife's/Fiancee's attitude toward military career	41	Extremely displeased
	42	Somewhat displeased
	43	Neutral
	44	Somewhat pleased
	45	Extremely pleased
Race	46	Black
	47	Other than Black

Table 7. **List of Job Attributes**

Job Attribute	Abbreviated Title
Nature of work	
Be assigned an interesting job	Interesting job
Do a job which is equal to your abilities	Utilization of talent
Feel that you are accomplishing something	Feeling of achievement
Be given important responsibilities	Responsibility
Work environment	
Be in a competitive situation	Competitive situation
Have supervisors who know what they are talking about	Competent Supervision
Be allowed to choose for yourself how to go about doing a job	Independence I
Be allowed to work for long periods of time without supervision	Independence II
Have a say in what happens to you	Personal control
Have good job security	Job security
Work with friendly and cooperative people	Co-workers
Do your job under good working conditions	Working conditions
Compensation	
Make a lot of money	Salary
Do a great deal of traveling	Travel
Be promoted on the basis of ability	Promotion on ability
Be given recognition for work well done	Recognition
Gain technical training and experience	Technical training
Be promoted quickly	Rapid advancement
Receive fair or just payment for the type of work which you are doing	Equitable pay
Have enough time off the job	Leisure time
Have prestige and social status	Prestige

Table 8. **Variables Used in Regression Analysis to Develop Reenlistment Potential Index**

Variables
Predictor
AQE Mechanical aptitude score
AQE General aptitude score
AQE Electronics aptitude score
AQE Administrative aptitude score
Armed Forces Qualification Test Score
Biographical composite score
Importance/Possibility experimental scores
–Importance motivators
–Importance dissatisfiers
–Possibility dissatisfiers
–Possibility motivators
–Total importance
–Total possibility
–Total motivators
–Total dissatisfiers
–Difference IPM
–Difference IPD
–Positive score
–Total score
–Importance/possibility score
Criterion
In-out of service

were cross-applied to the hold-out sample, the multiple correlation (.51) maintained its statistical significance.

Practical Utility of the Reenlistment Index. In an operational setting, an RPI would be useful in optimizing the classification and assignment of enlisted accessions. Using the RPI, the reenlistment potential of an enlistee could be estimated at time of enlistment, and, based on his RPI score along with aptitudinal data, assignments could be made which would be more cost-effective for the Air Force. For example, an individual with a high probability of retention could be assigned to a critical specialty area or considered for one of the high-cost, long-term technical training programs. Such assignments would help to insure adequate manning levels in the critical Air Force specialty codes (AFSC) and maximize the return on training expenditures.

To illustrate the practical utility of the RPI, predicted reenlistment scores were generated from the RPI regression model. Hit/miss tables were developed to show the number of individuals whose actual reenlistment decision was correctly identified by their predicted score (Table 9). Hits include those individuals identified with high reenlistment potential who actually remained on active duty or those individuals identified as non-reenlistees who actually elected to separate from service or were discharged prior to completion of initial tour. Misses include those individuals incorrectly identified; i.e., those identified as possible non-reenlistees who actually remained on active duty; false positives include those identified as possible reenlistees who actually separated from service. Using the computer-determined cut score, 81% of the sample population at time of entry could have been correctly identified as to their ultimate reenlistment status. While 56% of the career personnel (reenlistees) would have been incorrectly identified, only 6% of the group who actually elected to leave service would have been incorrectly identified as possible career personnel. These figures would tend to indicate that considerable savings could be realized if personnel with high retention potential could be assigned to high-cost training programs or to those critical Air Force specialties which typically experience reenlistment shortfalls.

Table 9. **Hit/Miss Table**

Predicted Status	Actual Career Status: Reenlisted		Actual Career Status: Did Not Reenlist/ Separated		Total
Reenlisted	358 (hits)	44%	133 (false positives)	6%	491
Did not reenlist/separated	455 (misses)	56%	2,116 (hits)	94%	2,571
Total	813	100%	2,249	100%	3,062

IV. CONCLUSIONS AND RECOMMENDATIONS

Results of the chi square and regression analyses indicate that certain non-cognitive variables have a significant relationship with reenlistment status. Therefore, developing a reenlistment potential index from biographical, attitudinal, and aptitudinal data for operational use appears to be feasible. The use of such an index in an operational classification and assignment system could result in better placement and utilization of manpower resources with resultant savings in training investment costs. Since this investigation was based on a sample population which enlisted during the time period when the draft was in effect, a follow-on study should be initiated using a volunteer population to determine the validity and stability of the prediction system on volunteer male and female accessions.

In addition, an effort should be made to study the different validities and functional relationships between the predictor composite and first-term career decisions when specific AFSC are taken into account. Based on previous research concerning the differences in career intent among the various specialties (Alley & Gould, 1975), a career-field specific RPI might be more effective.

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APPENDIX A: DEVELOPMENT OF EXPERIMENTAL SCORES

The experimental scores were generated from responses to the Importance-Possibility Scale. To obtain the scores, the following weighted values were first assigned to each alternative:

Alternative	Value	Importance Scale Response	Possibility Scale Response
a	1	Not important at all	No possibility at all
b	2	Somewhat below average in importance	Less than average possibility
c	3	Of average importance	Average posibility
d	4	Somewhat above average in importance	Better than average possibility
e	5	Extremely important	Very good possibility

In addition, the Importance/Possibility items were categorized according to Herzberg's theory of motivators-dissatisfiers (Herzberg, Mausner, & Synderman, 1959). Motivators included content factors involving achievement, recognition, work itself, responsibility, and advancement. Factor inhibiting motivation called context factors involve issues: such as company policy and administration, supervision, salary, interpersonal relations, and working conditions. Content factors or motivators are necessary for motivation whereas context factors will not increase motivation but must be met at a minimum level to prevent dissatisfaction. There are 12 items classified as motivators and nine as dissatisfiers on the Importance/Possibility Scale. A complete listing of the scale items and their classification, according to Herzberg's theory of motivation to work, is given in Table A1.

Table A1. **Classification of Items of Importance/Possibility According to Herzberg's Theory**

Importance/Possibility Item	Classification
Be promoted on the basis of ability	Motivator
Be assigned an interesting job	Motivator
Be promoted quickly	Motivator
Have enough time off the job	Dissatisfier
Be allowed to work for long periods of time without supervision	Motivator
Work with friendly and cooperative people	Dissatisfier
Do a job which is equal to your abilities	Motivator
Do a great deal of traveling	Dissatisfier
Feel that you are accomplishing something	Motivator
Have supervisors who know what they are talking about	Dissatisfier
Be given recognition for work well done	Motivator
Be allowed to choose for yourself how to go about doing a job	Motivator
Be in a competitive situation	Motivator
Do your job under good working conditions	Dissatisfier
Receive fair or just payment for the type of work which you are doing	Dissatisfier
Be given important responsibilities	Motivator
Have prestige and social status	Dissatisfier
Have a say in what happens to you	Motivator
Have good job security	Dissatisfier
Make a lot of money	Dissatisfier
Gain technical training and experience	Motivator

Using the weighted values previously defined, the following experiemental scores were generated for each subject.

Experimental Scores

Importance Motivators	Sum of weighted responses on the importance scale for items identified as motivators
Importance Dissatisfiers	Sum of weighted responses on the importance scale for items identified as dissatisfiers
Possibility Dissatisfiers	Sum of weighted responses on the possibility scale for items identified as dissatisfiers
Possibility Motivators	Sum of weighted responses on the possibility scale for items identified as motivators
Difference IPM	Sum of weighted responses for items identified as motivators on the possibility scale subtracted from the same responses on the importance scale
Difference IPD	Sum of weighted responses for items identified as dissatisfiers on the possibility scale subtracted from the same responses on the importance scale
Total Motivators	Sum of weighted response for all items on both the importance and possibility scale identified as motivators
Total Dissatisfiers	Sum of weighted responses for all items on both the importance and possibility scale identified as dissatisfiers
Total Score	Sum of weighted responses for each item on the possibility scale subtracted from the same responses on the importance scale
Total Importance	Sum of weighted responses for each item on the importance scale
Total Possibility	Sum of weighted responses for each item on the possibility scale
Positive Score	Sum of all positive item-pair scores; i.e., the importance weight was greater than the possibility weight

The Importance-Possibility Score was generated by summing the weighted values given below for each pair of items on the Importance-Possibility Scale:

Weight	Importance Scale Responses	Possibility Scale Responses
4	Extremely important or somewhat above average in importance	Very good or better than average
3	Of average importance, below average in importance, or not important at all	Very good, better than average, or average
2	Extremely important or somewhat above average in importance	Less than average or none at all
1	Extremely important or somewhat above average in importance	Average
1	Of average importance, somewhat below average in importance, or not important at all	Less than average or none at all

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