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SELECTIVE RETENTION: A LONGITUDINAL ANALYSIS. III. A COMPARISON OF RECRUIT TRAINING ATTRITES, DELAYED GRADUATES, AND GRADUATES

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AND
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San Diego, California 92152

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SELECTIVE RETENTION: A LONGITUDINAL ANALYSIS. III. A COMPARISON OF RECRUIT TRAINING ATTRITES, DELAYED GRADUATES, AND GRADUATES

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The objective of this effort was to compare the attitudinal responses, collected during the first and last weeks of recruit training, of recruits who were discharged during recruit training (attrites), those who graduated from recruit training after a delay for remedial or medical treatment (delayed graduates), and those who graduated from recruit training without delay (graduates). At the beginning of recruit training, the attitudes of delayed graduates and graduates were similar and were significantly

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more positive than those expressed by the attrites. At the end of training, delayed graduates and graduates exhibited a large number of attitudinal differences. The delayed graduates reported more negative experiences during recruit training, less intention to complete their enlistment, less satisfaction with the Navy, and less commitment to the Navy than did the graduates. The delayed graduates also experienced a higher rate of post recruit training attrition during the first 20-21 months of the first enlistment than did the graduates.

FOREWORD

This research and development was conducted within project Z1178-PN, Attrition Analysis and Management, under subproject Z1178-PN.02, Retaining Qualified Enlisted Personnel (formerly Selective Retention: A Longitudinal Analysis) and the sponsorship of the Deputy Chief of Naval Operations (OP-01). The objective of this subproject is to identify factors related to attrition of first-term enlisted personnel that will aid in retaining those who can best benefit the Navy. Factors will be identified by analyzing responses to questionnaires administered to a cohort of enlisted personnel at various points during their first enlistment.

This is the third of a series of reports being prepared under this subproject. The first report (NPRDC TR 79-5 of December 1978) identified factors that are predictive of attrition during recruit training. The second (NPRDC TR 80-18 of April 1980) concerned recruits' attitudinal changes between the beginning and end of recruit training, their perceptions of recruit training, their commitment to the Navy, and their future expectations. This report compares the attitudes of recruit training graduates, delayed graduates, and attrites.

Appreciation is expressed for the cooperation and assistance provided by the three Recruit Training Commands, particularly to Captain Robert Munson of RTC San Diego, Commander Roger Aydt of RTC Great Lakes, and Commander Barbara Suse of RTC Orlando.

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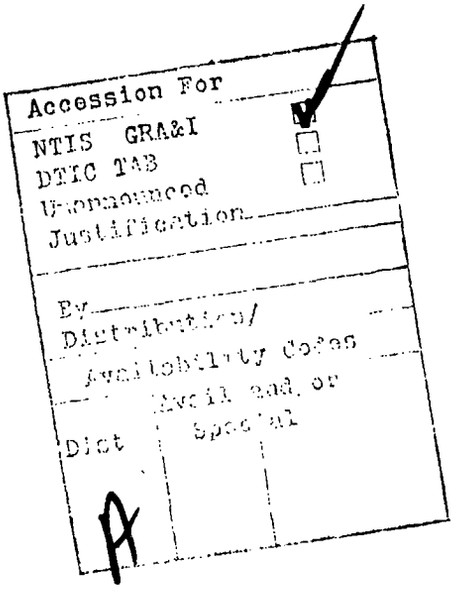

SUMMARY

Problem and Background

Turnover rates of first-term enlisted personnel, due to either attrition occurring during their 4-year enlistment or their failure to reenlist at the end of that enlistment, have been high. This has resulted in increased costs associated with recruitment, selection, placement, and training. To address this problem, the Navy Personnel Research and Development Center is conducting a longitudinal study of a cohort of first-term enlisted personnel. In this study, subjects have been or will be administered questionnaires at various points during their enlistment and responses analyzed to identify factors related to attrition and reenlistment. Previous reports issued concerning this study addressed (1) factors that were related to attrition during recruit training and (2) changes in recruit attitudes and perceptions that occurred between the beginning and end of recruit training.

Purpose

The objective was to identify differences between recruits who were prematurely discharged during recruit training (attrites), those who graduated from recruit training after a delay for remedial or medical treatment (delayed graduates), and those who graduated without delay (graduates).

Approach

The sample consisted of 4011 recruits: 419 attrites, 265 delayed graduates, and 3327 graduates. Of the 265 delayed graduates, 150 were delayed for academic reasons; 58, for behavioral reasons; and 57, for medical reasons.

The three types of recruits were compared based on (1) demographic variables and (2) attitude scales developed from sets of items in questionnaires administered during the first and last weeks of recruit training.

Results

1. The Armed Services Qualification Test (AFQT) scores obtained by the attrites and the delayed graduates did not differ significantly, but both groups had significantly lower AFQT scores than did the graduates ($p < .005$). The graduates delayed for medical reasons scored significantly higher than did those delayed for academic or behavioral reasons ($p < .01$).

2. The attitudes and motivations of the delayed graduates were more like those of the graduates than those of the RTC attrites.

3. The delayed graduates reported having more problems with supervisors and peers, less role acceptance of the Navy, and less commitment to remain in the Navy than did the graduates.

4. During the first 20 to 21 months of the first enlistment, the delayed graduates had a higher post-training attrition rate than did the graduates (14.1% vs. 10.0%, $p < .05$).

5. At the beginning of recruit training, the delayed graduates were similar to the graduates on almost two-thirds of the variables. By the end of recruit training, the delayed graduates differed from the graduates on almost two-thirds of the variables.

Conclusions

1. Being delayed during recruit training apparently has a profound negative effect on the delayed graduate.

2. The delayed graduates who were delayed for academic reasons--nearly 50 percent--received from 1 to 6 weeks of additional training. If recruits identified as most likely to be delayed for academic reasons were told about the nature and duration of the extra training required before they began recruit training, their attitudes would be more positive.

Recommendations

1. The feasibility of identifying and forewarning prospective recruits who are most likely to be delayed for academic reasons during recruit training should be determined.

2. Methods should be developed to reduce the number of recruits who are delayed during recruit training.

3. Methods should be developed for reducing the stress experienced by delayed graduates when they have to reenter recruit training after the delay. These methods may improve the attitudes of the delayed graduates and decrease their post-training attrition.

CONTENTS

LIST OF TABLES

INTRODUCTION

Problem

Turnover rates of first-term enlisted personnel, due to either attrition occurring during their 4-year enlistment or their failure to reenlist at the end of that enlistment, have been high. This has resulted in increased costs associated with recruitment, selection, placement, and training (Sinaiko, 1977).

Background

To address this problem, the Navy Personnel Research and Development Center (NAVPERSRANDCEN) is conducting a longitudinal study of a cohort of first-term enlisted personnel. Since such personnel attrite throughout their enlistment cycle, from the beginning of recruit training to the expiration of active obligated service (EAOS), it was decided to administer questionnaires to the subjects at eight points during the cycle. Responses to these questionnaires will be useful in providing information that will aid in identifying and retaining those who can best benefit the Navy and in determining how attitudinal changes--occurring from one assessment point to the next--affect attrition and reenlistment.

This is the third report issued on the longitudinal study. The first report (Landau & Farkas, 1978) provided information obtained from a questionnaire (Q1) administered to 4911 recruits at the three Recruit Training Centers (RTCs) during their fourth day of recruit training. Q1, comprised of 144 items, was designed to examine the relationship between individual (personal) and organizational (work environment) factors and to determine how these factors relate to attrition and reenlistment. Individual factors were covered by items assessing (1) demographics, (2) motivations for joining the Navy, (3) behavioral intentions (e.g., to complete enlistment), (4) expectations (e.g., of boot camp), (5) general attitudes (e.g., toward the Navy), and (6) personality attributes (e.g., extent to which one perceives that environmental situations are controlled by oneself or by external events). Organizational factors were covered by items assessing (1) rated desirability of work outcomes, and (2) expectancies of realizing those outcomes in the Navy. A copy of Q1 was provided as in an appendix to Landau and Farkas.

By the end of recruit training, 428 recruits (8.7%) had attrited and 4483 (91.3%) remained on duty. Thus, to identify any differences between the two groups, Landau and Farkas compared questionnaire data for attrites and nonattrites. Also, they analyzed the records of attrites to determine why and when they left the Navy.

The second report (Landau, Farkas, & Wagner, 1980) provided information obtained from a questionnaire (Q2) administered to 3672 recruits during the last week of recruit training. Although 4483 members of the original sample remained on active duty at that time, 811 of them either were not present (e.g., because of illness, duty) on the day the Q2 was administered or had been "set back" for academic, behavioral, or medical reasons. (About 18 percent of recruits entering the RTCs are required to repeat portions of training or make up those that they missed.)

Q2 comprised 144 items, 79 (55%) of which were similar or identical to those included in Q1. It included items assessing demographics, general attitudes, boot camp experiences, met expectations (in boot camp), personal considerations (desired outcomes that conceivably could have been attained in recruit training), commitment to the Navy, and future expectations (of the Navy). A copy of Q2 was provided as an appendix to Landau et al.

Responses to items included in both Q1 and Q2 were analyzed to determine how recruits' attitudes and perceptions changed between the beginning and end of recruit training. Responses to items included in Q2 only, were analyzed to assess recruits' perceptions of boot camp, commitment to the Navy, and future expectations.

Objective

The objective of this effort was to identify differences among recruits who were discharged during recruit training (attrites), who graduated after a delay due to remedial or medical treatment (delayed graduates), or who graduated without delay (graduates).

APPROACH

Sample

This study is based on a sample of 4011 recruits: 3327 graduates, 265 delayed graduates, and 419 attrites. Nine hundred members of the original cohort of 4911 were excluded for various reasons: 132 because demographic and attrition data for them could not be located on the Enlisted Master Record; 29 because they failed to indicate whether they had been delayed during training, and 739 because they did not complete Q2.

Of the 265 delayed graduates, 150 were delayed for academic reasons; 58, for behavioral reasons; and 57, for medical reasons. Most recruits who are delayed for academic reasons are functionally illiterate (i.e., they can read but not at a high enough grade level). These recruits are sent to a remedial reading/study skills school. If they improve their reading/study skills sufficiently, they are returned to boot camp. If they then meet all of the boot camp requirements, they become delayed graduates; if they do not, they become attrites.

Most recruits delayed for behavioral reasons have either shown a profound lack of motivation or become disciplinary problems. These recruits, after attempts to motivate/discipline them at the company level have failed, are usually sent to a special training company. If they respond well to the special training they receive there, they are returned to boot camp. If they then meet all of the boot camp requirements, they become delayed graduates; if they do not, they become attrites.

Finally, recruits delayed for medical reasons have become ill or have been injured during training. These recruits are treated and then either discharged or returned to boot camp. If the returned recruits then meet all of the boot camp requirements, they become delayed graduates; if they do not, they become attrites.

Attitude Scale Construction

To reduce the number of questionnaire items to a more manageable number of variables, principle component factor analyses with varimax rotation were performed on three sets of items in Q1 (those assessing general attitudes, motivations for joining, and outcome desirability/environmental expectancies), and four sets of items in Q2 (those assessing general attitudes, boot camp experiences, met expectations, and future expectations). These analyses accounted for 74.9 percent to 90.9 percent of the variance observed in the seven sets of items, with a median value of 81.8 percent. They isolated the 20 factors shown in Table 1, all of which had eigenvalues of 1.0 or greater.

Table 1

Factors Derived from Sets of Q1 and Q2 Items

Item Set[a]		Factor
Q1 Items Assessing:		
General attitudes	1.	Role acceptance
	2.	Long-term intentions
Motivations for joining	3.	Maturity
	4.	Self-improvement
	5.	Situational/environmental
Outcome desirability/ environmental expectancies	6.	Self needs
	7.	Discipline
	8.	Job autonomy
	9.	Impersonal relationships
Q2 Items Assessing		
General attitudes	10.	Role acceptance
	11.	Long-term intentions
Boot camp experiences	12.	Group cohesion
	13.	Physical activity
	14.	Negative aspects of supervision
	15.	Adjustment
Met expectations	16.	Supervision
	17.	Peer relations
	18.	Individual needs
Future expectations	19.	Supervisory support
	20.	Personal concerns

[a]Items included in each item set are provided in the appendix.

Attitude scales were constructed for these 20 factors using the following procedure. Items were included in the scales if they had a factor loading of .30 or more. If an item loaded higher than .30 on more than one factor, it was included in that factor scale in which it had the highest loading. The items for the scales constructed for 16 factors (all but numbers 6-9, which reflected Q1 outcome desirability/environmental expectancies) were summed and the results divided by the number of items included in the scale. (The sign of items with negative loadings was changed before being summed with the remaining scale items.) For Factors 6-9, the desirability ratings for the outcomes included in each scale were multiplied by the environmental expectancies values to produce a set of desirability x expectancy cross products. Finally, the cross products were summed and results divided by the number of cross-products in the scale.

In addition to the 20 factorially-derived scales, scales were developed for two more sets of Q2 items--those assessing personal considerations and commitment. These scales consisted of the means computed for the 5 personal consideration items and the 15 commitment items. For items with negative scores, the scoring system was reversed before averaging the scores with those for the other items.

The number of items included in the 22 attitude scales ranged from 2 to 22, with a median of 4. The reliability of these scales, as measured by Cronbach's alpha (1951), ranged from .49 to .90, with a median of .76, which indicated that the scales were generally reliable.

Analyses

1. Preliminary analyses were performed to identify any differences between the three types of delayed graduates. First, two chi square tests were calculated to determine whether the type of delayed graduate was related to race or to marital status. Next, 25 one-way analyses of variance (ANOVAs) were performed with the type of delayed graduate as the independent variable and AFQT score, age, years of education, and the 22 attitude scales as the dependent variables. Since the three types of delayed graduates did not differ on nearly 75 percent of the variables used, they were pooled into a single group for use in subsequent analyses. This was done to simplify the presentation of data, and does not imply that the three types form a homogeneous group.

2. Identical analyses were performed to identify any differences between the three types of recruits--attrites, delayed graduates, and graduates. In addition, Scheffe tests (Winer, 1971) were performed for all pairwise comparisons of the three types of recruit.

3. The three types of recruits were randomly divided into groups of approximately the same size--a prediction and a cross-validation sample. A stepwise discriminant analysis was then performed on the prediction group, using the demographic variables and the nine Q1 attitude scales, in an attempt to classify recruits as attrites, delayed graduates, or graduates. The accuracy of this classification scheme was then tested on the cross-validation group.

4. A chi square analysis was performed that crossed the type of graduate with post-RTC attrition status, to determine how being a delayed graduate affects attrition.

RESULTS

Differences Among Types of Recruits

The results of the chi square tests performed to compare types of recruits are provided in Table 2; and the results of the ANOVAs, in Table 3. Differences found are described in the following paragraphs.

Demographics

As shown, the three types of recruits differed on all five of the demographic variables. Table 2 shows that a disproportionately large number of delayed graduates were black, and that a disproportionately large number of attrites were married. Similarly, Table 3 shows that there were significant overall differences between the three types on AFQT scores, age, and years of education.

The attrites and the delayed graduates did not differ significantly as to AFQT scores and years of education, but both of these types had significantly lower AFQT scores and less education than did the graduates. Similarly, the delayed graduates and the graduates did not differ significantly as to age, but both types were significantly older than the attrites.

Table 2

Results of Chi-Square Tests Performed to Compare Types of Recruits

Variable	Attrites (N=419) %	Delayed Graduates (N=265) %	Graduates (N=3327) %	χ^2
Race				
Caucasian	85.8	78.1	87.3	25.39*
Black	9.9	19.2	9.9	
Other	4.3	2.7	2.8	
	100.0	100.0	100.0	
Marital Status				
Never Married	90.0	94.8	94.6	16.86*
Married	8.1	3.4	4.0	
Previously Married	1.9	1.8	1.4	
	100.0	100.0	100.0	

*$p < .005$

Table 3

Results of ANOVAs Performed to Compare Types of Recruits

Variable	Attrites (N=419) Mean	S.D.	Delayed Grads. (N=265) Mean	S.D.	Graduates (N=3327) Mean	S.D.	F[a]
Demographics							
AFQT score	51.12	16.18	51.04	16.14	60.08	17.85	73.17*
Age	18.92	2.12	19.79	1.90	19.70	2.02	28.10*
Years of education	11.30	1.07	11.44	1.10	11.61	0.99	18.61*
Attitude Scales							
Q1 General attitudes[b]							
Role Acceptance	-0.34	1.10	-1.03	0.80	-1.15	0.72	196.79*
Long-Term Intentions	0.39	1.17	-0.10	1.05	-0.06	1.02	34.98*
Q1 Motivations for joining[c]							
Maturity	2.98	1.20	3.28	1.15	3.18	1.14	7.07*
Self-improvement	3.55	0.99	3.84	0.81	3.94	0.74	44.22*
Situation/environmental	2.23	0.73	2.23	0.82	2.00	0.67	28.39*
Q1 Outcome desirability/ environmental expectancies[d]							
Self needs	0.14	0.66	0.46	0.57	0.39	0.53	32.73*
Discipline	-0.09	0.59	0.11	0.49	0.02	0.50	11.71*
Job autonomy	-0.31	0.93	-0.10	0.33	-0.15	0.74	7.97*
Impersonal relationships	0.14	0.73	0.38	0.69	0.34	0.62	19.49*
Q2 General attitudes[e]							
Role acceptance	--	--	2.56	0.54	2.69	0.50	15.20**
Long-term intentions	--	--	-0.04	0.83	-0.01	0.80	< 1
Q2 Boot training experiences[f]							
Group cohesion	--	--	3.59	0.67	3.68	0.70	3.81
Physical activity	--	--	2.19	0.98	1.94	0.94	16.47**
Negative aspects of supervision	--	--	0.21	0.79	-0.01	0.67	25.40**
Adjustment	--	--	3.05	1.02	2.62	0.99	45.26**
Q2 Met expectations[g]							
Supervision	--	--	0.25	0.38	0.28	0.36	1.55
Peer relations	--	--	0.39	0.34	0.46	0.28	14.52**
Individual needs	--	--	-0.01	0.46	-0.18	0.44	36.31**
Q2 Future expectations[g]							
Supervisory support	--	--	0.44	0.31	0.47	0.27	1.90
Personal concerns	--	--	0.49	0.32	0.56	0.26	15.87**
Q2 Personal considerations[h]	--	--	3.74	0.80	3.81	0.74	1.62
Q2 Commitment[h]	--	--	3.53	0.59	3.70	0.54	19.97**

[a]For Q1 scales, the F-ratio numerators had two df; and the denominators, between 3348 and 4001, depending on the number of respondents. For Q2 scales, the F-ratio numerators had one df; and the denominators, between 3129 and 3552.

[b]The means of the attitude scale range from -2 to +2, with lower values indicating greater role acceptance and long-term intentions.

[c]The means of the attitude scale range from +1 to +5, with lower values indicating more influence.

[d]The means of the attitude scale range from -2 to +2, with lower values indicating the Navy environment is less attractive than the civilian environment.

[e]For role acceptance, the means of the attitude scale range from -.2 to +3.8, with higher scores indicating greater acceptance. For long-term intentions, the means range from -2 to +2, with lower scores indicating more intentions.

[f]The means of the attitude scale for the supervision factor range from -1 to +3; and the means for the other factors, from +1 to +5. For the cohesion factor, higher scores mean more cohesion; for the other factors, higher scores mean more difficulty with that aspect of training.

[g]The means of the attitude scale range from -1 to +1, with higher scores indicating more agreement that the expectation had been or would be met.

[h]The means of the attitude scale range from +1 to +5, with higher scores indicating more agreement.

*p < .005.
**p < .001.

Q1 Attitude Scales

1. General Attitudes. The graduates expressed significantly more role acceptance than did the delayed graduates, who, in turn, expressed significantly more acceptance than did the attrites. The delayed graduates and the graduates did not differ significantly as to long-term intentions, but both types expressed significantly more long-term intentions than did the attrites.

2. Motivations for Joining. The graduates and the delayed graduates did not differ significantly as to maturity and self-improvement, but both types were significantly more influenced by these motivations than were the attrites. For the situational/environmental scale, which assessed the influence of such events as "Had nothing better to do" and "Difficulty finding a civilian job" on the motivation to enlist, no significant differences were observed betwen the attrites and the delayed graduates, but both types were significantly more influenced by this factor than were the graduates.

3. Outcome Desirability/Environmental Expectancies. The delayed graduates and the graduates did not differ significantly as to self needs, job autonomy, and interpersonal relationships, but both groups found that the Navy environment was more attractive than the civilian environment in regard to these factors. For the remaining scale, discipline, the graduates found the Navy and civilian environments equally attractive, the delayed graduates found the Navy environment more attractive, and the attrites found the civilian environment more attractive.

Q2 Attitude Scales

1. General Attitudes. Although the graduates and the delayed graduates did not differ as to long-term intentions, the delayed graduates reported significantly less role acceptance than did the graduates.

2. Boot Training Experiences. The delayed graduates had significantly more difficulty with physical activity and adjustment to boot camp and experienced more negative aspects of supervision than did graduates. They also reported less group cohesion than did the graduates, but this difference was only marginally significant ($.05 < p < .10$).

3. Met Expectations. The graduates and the delayed graduates did not differ as to the degree they felt their expectations concerning supervision had been met. However, the delayed graduates reported significantly less agreement that their expectations concerning peer relations had been met and significantly more agreement that their expectations concerning individual needs had been met than did the graduates.

4. Future Expectations. The delayed graduates and the graduates did not differ significantly as to their expectations concerning supervisory support. However, the delayed graduates were significantly less likely to expect that their personal concerns would be met by the Navy than were the graduates.

5. Personal Considerations. On this scale, which assessed the degree to which recruits' motivations for joining had been met by the end of recruit training, there were no significant differences between the graduates and the delayed graduates.

6. Commitment. On this scale, which assessed the degree to which the recruits were committed to remain in the Navy, the graduates reported significantly more commitment than did the delayed graduates.

Differences Among Types of Delayed Graduates

Although the three types of delayed graduates--those delayed for academic (A), behavioral (B), or medical (M) reasons--were included in the analyses as one type of recruit, they did differ in one demographic variable and in five of the attitude scales. These differences are discussed below:

1. AFQT Score. The mean AFQT score obtained by the medical type was significantly higher than those obtained by the academic and behavioral types (M = 60.77, A = 46.89, B = 52.43; $F(2,260) = 17.24$; $p < .01$). In fact, as shown in Table 2, the mean AFQT obtained by the medical type was quite close to that obtained by the graduates, while the mean AFQT scores obtained by the academic and behavioral types were quite close to those obtained by the attrites and delayed graduates.

2. Role Acceptance (Q1 and Q2 general attitudes). On both of the role acceptance scales, the behavioral type reported significantly more role acceptance than did the academic type. The scores reported by the medical type fell between those for the behavioral and academic types and did not differ significantly from either (For Q1 role acceptance, B = -1.24, M = -1.10, A = -.91; $F(2,255) = 3.93$, $p < .05$. For Q2, B = 2.73, M = 2.57, A = 2.49, $F(2,256) = 4.04$; $p < .05$).

3. Self-improvement (Q1 motivations for joining). The behavioral type reported significantly more influence by self-improvement as a motivation for joining than did either the medical or academic types (B = 4.20, M = 3.82, A = 3.72; $F(2,262) = 7.86$; $p < .01$).

4. Physical activity (Q2 boot training experiences). The behavioral type reported having significantly less difficulty with the physical activities of boot camp than did the medical type. The difficulty reported by the academic type fell between that reported by the behavioral and medical types, and did not differ significantly from either (B = 1.90, A = 2.23, M = 2.40; $F(2,260) = 4.14$; $p < .05$).

5. Q2 Commitment. The behavioral type expressed significantly more commitment to the Navy than did the academic type. The commitment expressed by the medical type fell between that reported by the behavioral and academic types and did not differ significantly from either (B = 3.77, M = 3.52, A = 3.44; $F(2,230) = 6.38$; $p < .05$).

The behavioral type of delayed graduate expressed more role acceptance, more self-improvement motivation, more commitment to the Navy, and less difficulty with the physical aspects of training than did the graduates. The academic and medical types, however, expressed less role acceptance, less self-improvement motivation, less commitment, and more difficulty with physical activities than did the graduates.

Predicted Versus Actual Recruit Type

Table 4 presents the results of the stepwise discriminant analysis performed to predict which recruits would become attrites, delayed graduates, and graduates. As shown, four of the five demographic variables, both of the Q1 general attitudes factors, two of the three Q1 motivations for joining factors, and three of the four Q1 outcome desirability/environmental expectancies factors were included in the final step of the analysis, which accounted for 13 percent of the variance. In the prediction group, the three types of recruit differed significantly on all of these variables except for the discipline scale. In the cross-validation sample, they differed significantly on all of

Table 4

Prediction and Cross-Validation Group Means and Standard Deviations of Variables Included in the Discriminant Analysis for the Three Types of Recruits

Variable	Attrites Mean	Attrites SD	Delayed Graduates Mean	Delayed Graduates SD	Graduates Mean	Graduates SD	F
Prediction Group							
Demographics							
Age	18.57	1.66	19.69	1.75	19.71	1.99	13.57***
Years of Education	11.21	1.12	11.30	1.03	11.57	.90	8.70***
AFQT	54.18	16.56	50.83	15.71	61.12	17.91	18.03***
Race	.08	.27	.20	.41	.12	.33	3.32*
Q1 General Attitudes							
Role Acceptance	-.37	1.16	-1.11	.81	-1.19	.70	47.94***
Long-term intentions	.26	1.24	-.13	1.11	-.06	1.03	4.15*
Q1 Motivations for Joining							
Self-improvement	3.52	.93	3.82	.80	3.93	.73	12.38***
Situational-environment	2.24	.73	2.12	.75	2.00	.67	6.11***
Q1 Outcome desirability/ environmental expectancies							
Self-needs	.22	.65	.45	.59	.40	.52	5.25**
Discipline	-.04	.56	.06	.50	.04	.51	0.98
Interpersonal relationships	.10	.78	.46	.67	.36	.60	8.35***
Cross-Validation Group							
Demographics							
Age	19.22	2.38	19.80	1.92	19.66	2.06	3.17*
Years of Education	11.33	1.01	11.51	1.20	11.60	1.00	4.75***
AFQT	51.17	16.08	51.01	16.80	60.91	18.03	18.68***
Race	.15	.36	.20	.40	.11	.32	4.14*
Q1 General Attitudes							
Role acceptance	-.19	1.08	-.91	.86	-1.17	.71	106.66***
Long-term intentions	.49	1.14	-.04	1.01	-.03	1.02	16.11***
Q1 Motivations for Joining							
Self-improvement	3.57	.98	3.89	.83	3.97	.72	17.67***
Situational-environmental	2.21	.74	2.33	.81	2.00	.67	15.72***
Q1 Outcome desirability/ environmental expectancies							
Self-needs	.07	.66	.47	.61	.39	.52	23.24***
Discipline	-.11	.60	.08	.49	-.01	.48	4.84**
Interpersonal relations	.09	.70	.35	.73	.32	.59	9.23***

[a]The F-ratio numerators had 2 df. For the development group, the denominators had 1251 df; and for the cross-validation group, 1538 df.

*p < .05
**p < .01
***p < .005

the variables. For 8 of the 11 variables (all but age, race, and the situational/environmental scale), the order of the means for the three types of recruits was the same for the prediction and the cross-validation samples.

Table 5 shows how the developmental and cross-validation samples of recruits were classified as to predicted and actual type. The expected number of correct classifications in the cross-validation groups was 44 attrites, 43 delayed graduates, and 770 graduates, by chance alone. However, as shown, the actual number of recruits correctly classified (110, 61, and 851) exceeded these expectations; the t-test suggested by Lubin (1950) shows that the differences between expected and observed correct classifications for both groups were highly significant ($p < .001$).

Table 5

Predicted Versus Actual Type of Recruit

		Predicted Recruit Type			
		Attrite	Delayed Graduate	Graduate	Total
		Prediction Group			
Actual Recruit Type	Attrite	(107)[a]	55	45	207
	Delayed Graduate	27	(61)	36	124
	Graduate	318	460	(870)	1648
	Total	452	576	951	1979
		Cross-Validation Group			
Actual Recruit Type	Attrite	(110)[b]	55	35	200
	Delayed Graduate	35	(61)	53	139
	Graduate	293	500	(851)	1644
	Total	438	616	929	1983

[a]Cases shown on the diagonal are correctly classified (52.5%): $t = 7.38$, $p < .001$.

[b]Cases shown on the diagonal are correctly classified (51.5%): $t = 7.48$, $p < .001$.

Effect of Delayed Graduation on Post-Recruit-Training Attrition

The Enlisted Master Record showed that, during the first 20-21 months of the first enlistment, 367 recruit training graduates were discharged. As shown in Table 6, significantly more delayed graduates attrited than did the graduates during this period.

Table 6

Post-Recruit-Training Attrition for
Delayed Graduates and Graduates

Type of Graduate	Nonattrite	Attrite	Total[a]	χ^2	df
Delayed Graduate	225 (85.9%)	37 (14.1%)	262	4.02*	1
Graduate	2969 (90.0%)	330 (10.0%)	3299		
Total	3194	367	3561		

[a]Complete data were not available for 31 members of the sample--3 delayed graduates and 28 graduates.

*< .05

DISCUSSION

Differences Among Recruit Types

From the very beginning of recruit training (i.e., the 4th day), the future RTC attrites, delayed graduates, and graduates differed significantly on a wide range of variables. The typical attrite was younger, had less formal education and mental aptitude, and was more likely to be married than the typical graduate. Except for race, delayed graduates typically occupied a position between the attrites and graduates. They were more likely to be black than either the attrites or graduates, were similar to the attrites in mental aptitude and years of education, and were similar to the graduates in age and marital status.

On the two Q1 general attitude factors, the typical delayed graduate and graduate expressed more acceptance of the Navy role and stronger long-term intentions to remain in that role than did the typical attrite. On the Q1 motivations for joining factors, the typical attrite was less influenced by maturity and self-improvement needs but more influenced by situational-environmental factors than was the typical graduate. The typical delayed graduate again occupied a position between the graduates and the attrites. The delayed graduates were similar to the attrites in the degree to which they were influenced by situation-environmental factors, and similar to the graduates in the degree to which they were influenced by maturity and self-improvement needs. Finally, on the Q1 outcome desirability/environmental expectancies factors, the typical attrite found the Navy role less attractive than did either the typical delayed graduate or graduate; these two types of recruits, in turn, found the Navy role about equally attractive.

The recruits also differed on performance, which can be conceptualized as the product of two factors: aptitude and motivation. Since the attrites and delayed graduates had significantly lower aptitudes, as measured by their AFQT scores, than did the graduates, it is not surprising that they should do less well in boot camp than the

graduates, which was the case. The delayed graduates, however, had higher means for the four outcome desirability/environmental expectancies factor scales than did the attrites. Thus, according to expectancy theory (Mitchell, 1974), they could be expected to expend more effort and perform better than the attrites. Since the delayed graduates were eventually able to graduate from boot camp while the attrites were discharged, they obviously did perform better. Also, the delayed graduates scored higher on two of the three motivation-for-joining scales than did the attrites. If it can be assumed that these motivation scales measure need strength, then it follows that the delayed graduates would perform better than the attrites (Wofford, 1971).

Finally, Kraut (1975) has demonstrated that the intention to remain in an organization may be the best predictor of turnover. Both of the general attitude scales indicate that the delayed graduates have more intention to remain than do the attrites. Since the means for the Q1 role acceptance scale, which contains several items that assess various intentions to remain, and the Q1 long-term intention scale were significantly higher for he delayed graduates than for the attrites, the delayed graduates should be more motivated than the attrites to perform well enough to remain in the organization. Thus, the attitudes expressed by recruits on their way into boot camp appear to be important determiners of their subsequent performance.

Effects of Delayed Graduation from Recruit Training

The delayed graduates experienced more stress during recruit training than did the graduates for several reasons. First, they either failed some aspect of training or became ill or injured. Second, they experienced additional stress: poor students were forced to return to school; misbehaving or unmotivated recruits were disciplined; injured/ill recruits were treated medically. Finally, they were returned to a new company to continue training from the point where they had left off and were received as individuals with a history of substandard performance. In the competitive environment of recruit training, where recruit companies compete for awards based on their academic, disciplinary and physical performance, a suspected substandard performer may not be well received by either his new company commander or his fellow recruits. Thus, these stresses can be expected to have a negative impact on the attitudes of delayed graduates towards the Navy, which was the case. Compared to the graduates, the delayed graduates reported less satisfaction with peer relations and supervision, more difficulty with the physical aspects of training and adjustment to training, and less role acceptance and commitment to remain in the Navy. It is not surprising then that more delayed graduates than graduates (14.1% vs. 10.0%) become post-recruit-training attrites.

The higher rate of post-recruit-training attrition observed for the delayed graduates may be due to the characteristics that led them to be delayed (e.g., lower mental ability), to the stresses associated with being delayed, or to the interaction of these two possible causes. However, because of the relatively small number of delayed graduates who attrited after recruit training, it is not feasible to conduct a multivariate investigation of this problem.

Future Expectations

While the graduates and delayed graduates expect equal amounts of supervisory support, the delayed graduates are less certain than the graduates that their personal concerns will be met at their next duty station. The lower expectations of the delayed graduates relative to the graduates are probably due to their more negative experiences

during boot camp. After they arrive at their next duty station, the delayed graduates may continue to have more negative experiences than the graduates. Thus, even though their expectations would not have been violated, they would still experience less satisfaction than would the graduates; the absolute value of an outcome, as well as its discrepancy from expectation, jointly determine the amount of satisfaction induced by that outcome (Locke, 1969, Mobley & Locke, 1970).

General Attitudes

Two factors--long-term intentions and role acceptance--were extracted from the sets of Q1 and Q2 general attitude items. Since the long-term intentions factor was comprised of the same items from the two sets, there was no reason for not using the same label. However, there were some differences among the items that loaded onto the role acceptance factors. Only five of the eight items that loaded onto the Q1 role acceptance factor were included in the Q2 item pool, and only four of these, which dealt with general satisfaction and various intentions to remain in the Navy, loaded on the Q2 role acceptance factor. None of the six other Q2 items that loaded on the Q2 role acceptance factor were included in the Q1 item pool. Three of these items dealt with the reactions of three normative groups--the recruit's family, his civilian friends, and his fellow recruits--to his enlistment in the Navy, and the other three, with whether recruits felt that they (1) had been assigned to their desired training, (2) knew what they were going to do with their lives, and (3) expected regular advancement. Since these six items are all concerned with role acceptance, it seemed reasonable to use the role acceptance label for both general attitudes factors.

The role acceptance factor identified in the present study appears to be the same construct identified by Graen (1976) and Graen, Orris and Johnson (1973) in their groundbreaking study on role assimilation. According to Graen et al., a person exhibits high role acceptance when he perceives a positive relationship between his present job and his future career plans. Persons with high role acceptance express more overall job satisfaction, are better job performers, are less likely to quit, and express more satisfaction with the intrinsic outcomes of the work and the value of performance rewards than do persons with low role acceptance.

The present effort showed that recruits with high role acceptance are more likely to feel that they have been assigned to their desired training and to know what they plan to do with their lives than do recruits with low role acceptance. This suggests that recruits with high role acceptance perceive a more positive relationship between their current enlistment in the Navy and their future career plans, and more general satisfaction than do recruits with low role acceptance. In addition, if graduate/delayed graduate/attrite status is taken as a summary measure of recruit performance, then it follows that graduates, who have the highest level of role acceptance, are better performers than the attrites, who have the lowest level of role acceptance. Recruits with high role acceptance also express stronger intentions to remain in the Navy--the best predictor of turnover (Kraut, 1975)--than do those with low role acceptance. Finally, the attrites rated many of the potential work outcomes as less desirable than did the delayed graduates and graduates (Landau & Farkas, 1978), which means they should be less satisfied than the delayed graduates and graduates if they were to receive these intrinsic and extrinsic outcomes from the Navy.

There appears to be a good deal of overlap between the role acceptance factors identified in the present study and in Graen et al. (1973). In fact, the present study

expands the construct by uncovering the positive relationship between role acceptance and the approval of various normative groups. Thus, the construct of role acceptance consists of (1) the perception that role is positively related to future career plans, (2) various intentions to remain in the role, (3) general satisfaction with the role, and (4) the perception that various normative groups approve role occupancy. These attributes of role acceptance also are correlated with job performance, tenure, and the satisfaction obtained from various intrinsic and extrinsic outcomes provided by the job.

Prediction of Potential RTC Attrites, Delayed Graduates, and Graduates

The most discriminating variable on the first discriminant function was role acceptance; and the most discriminating variable on the second, AFQT. This suggests that the first discriminant function is a motivation factor while the second is an aptitude factor. Thus, performance in boot camp appears to be determined more by recruit motivation than by recruit aptitude. There are several reasons for this conclusion: (1) low aptitude individuals are barred from enlistment, which attenuates the effect of the aptitude factor, (2) poorly motivated recruits will drop out of training regardless of aptitude level, and (3) aptitude acts as a useful discriminant only for moderately and highly motivated recruits. Thus, aptitude must assume a secondary role to motivation in the discrimination of attrites, delayed graduates, and graduates.

CONCLUSIONS

1. At the beginning of recruit training, the delayed graduates were similar to the graduates on 8 of the 14 demographic and Q1 attitude scale variables, and to the attrites on only 4 of the 14 variables. By the end of recruit training, the delayed graduates differed from the graduates on 9 of the 13 Q2 attitude scale variables. In every case, the attitudes of the delayed graduates were less positive than those of the graduates. This finding suggests that being delayed during recruit training has a profound negative effect on the attitudes of the delayed graduates. This negative effect was also reflected in the higher rate of post-recruit-training attrition experienced by the delayed graduates.

2. Nearly half of the delayed graduates were delayed for academic reasons, usually due to their inability to read at a high enough grade level to cope with the written materials used in recruit training. These recruits received from 1 to 6 weeks of additional training to improve their reading and study skills before returning to complete recruit training. If recruits who were most likely to be delayed for academic reasons could be identified at the recruiting station, they could be forewarned about the nature and duration of the extra training they would most likely receive during recruit training. These recruits would then have more positive attitudes toward the Navy at the end of recruit training and, as a result, would be less likely to become post-recruit-training attrites (Porter & Steers, 1973; Hoiberg & Berry, 1978; Weitz, 1956; Katzell, 1968).

RECOMMENDATIONS

1. The feasibility of identifying and forewarning potential recruits who are most likely to be delayed for academic reasons during recruit training and of using remedial reading training as an enlistment incentive for low quality recruits should be evaluated.

2. Methods should be developed to reduce the number of recruits who are delayed during recruit training, and the stress experienced by delayed graduates when

they have to reenter recruit training after the delay. Such methods, such as training delayed graduates in companies comprised solely of delayed graduates, may improve the attitudes of the delayed graduates and decrease their post-training attrition, as well as reduce the cost of recruit training.

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APPENDIX

QUESTIONNAIRE ITEMS USED IN DEVELOPING ATTITUDE SCALES

Questionnaire Items Used in Developing Attitude Scales

Item Set	Factor	Component Items[a]
Q1 General Attitudes	Role Acceptance	[b]I gave much thought to enlisting in the Navy (20) [b]I intend to complete my enlistment (21) I really don't know why I joined the Navy (22) I am sorry that I joined the Navy (26) [b]I think a lot about getting out of the Navy (27) [b]I intend to complete boot camp (28) [b]I would leave the Navy if I had the chance (29) [b]So far, I am generally satisfied with the Navy (30)
	Long-term Intentions	I do not intend to reenlist after finishing my enlistment (24) [b]I intend to make the Navy my career (25)
Q1 Motivations for Joining	Maturity	To mature (3) To develop a sense of responsibility (4)
	Self-improvement	To get an education (5) Job security (6) To learn a skill (12) Benefits (financial, medical, insurance) (14)
	Situational/ Environmental	Friends (8) Difficulty in finding a civilian job (10) Had nothing better to do (13) My recruiter (17) Advice from family members (19)
[c]Q1 Outcome Desirability/ Environmental Expectancies	Self-needs	Interesting work/job duties (35 & 90) Good working conditions (36 & 91) Treated with respect by leaders/supervisors (37 & 92) Chances to better myself (38 & 93) Good benefits (medical, insurance) (39 & 94) Good salary (40 & 95) Helpful supervisors/leaders (41 & 96) Supervisors/leaders who think of me as a person (48 & 103)

[a]Numbers in parentheses refer to questionnaire item number. Q1 item numbers ending with "B" refer to items appearing on page B of the form.

[b]Negatively scored item.

[c]For this item set, analysis was based on two groups of items on work outcomes. On the first set, respondents were to rate the desirability of the outcomes; on the second, they were to indicate whether they expected to realize those outcomes in the Navy. The two numbers in parentheses behind component items refer to items within the two groups of items.

Questionnaire Items Used in Developing
Attitude Scales (Continued)

Item Set	Factor	Component Items[a]
[c]Q1 Outcome Desirability/ Environmental Expectancies (Continued)	Self-needs (Continued)	Being treated in a fair manner (50 & 105) Doing the type of work I want (51 & 106) Having job security (52 & 107) Able to talk and work well with others on the job (53 & 108) Improving the quality of my life (54 & 109) Knowing exactly what I'm expected to do on my job (55 & 110) Treated with respect by family and friends (56 & 111) Getting credit when I do my work duties well (58 & 113) Good leadership/supervision (62 & 117) Supervisors/leaders who set good examples for others to follow (67 & 2B) Learning skills that will be useful later in my life (68 & 3B) Opportunity to have privacy (70 & 5B) Regular promotions and advancements (74 & 9B) Able to question supervisors/leaders about what they want me to do (81 & 16B)
	Discipline	Supervisors/leaders who watch their workers closely (72 & 7B) Following strict rules about the way I look and dress (79 & 14B) Working in close quarters with others (80 & 15B) Doing hard physical activity (84 & 19B) Following strict rules of behavior (85 & 20B) Told exactly what to do (86 & 21B) Disciplined for poor work (87 & 22B)
	Job Autonomy	Freedom to set my own work goals (76 & 11B) Able to set my own pace in getting my work done (77 & 12B)

[a]Numbers in parentheses refer to questionnaire item number. Q1 item numbers ending with "B" refer to items appearing on page B of the form.

[b]Negatively scored item.

[c]For this item set, analysis was based on two groups of items on work outcomes. On the first set, respondents were to rate the desirability of the outcomes; on the second, they were to indicate whether they expected to realize those outcomes in the Navy. The two numbers in parentheses behind component items refer to items within the two groups of items.

Questionnaire Items Used in Developing
Attitude Scales (Continued)

Item Set	Factor	Component Items[a]
[c]Q1 Outcome Desirability/ Environmental Expectancies (Continued)	Impersonal Relationships	Friendly feelings between co-workers (60 & 115) Supervisors/leaders willing to listen to my problems (61 & 116) Co-workers who are helpful on the job (66 & 1B) Meeting and making new friends (73 & 8B)
Q2 General Attitudes	Role Acceptance	So far, I am generally satisfied with the Navy (1) I intend to complete my enlistment (2) [b]I am sorry I joined the Navy (5) [b]I would leave the Navy if I had the chance (7) I expect to advance regularly in the Navy (8) At this time, I know what I want to do with my life (9) I have been assigned to the type of training I wanted (14) My family approves of me being in the Navy (15) I expect my civilian friends to respect me because I am in the Navy (17) In general, my fellow recruits have good feelings about being in the Navy (18)
	Long-term intentions	I do not intend to reenlist after finishing my enlistment (4) [b]I intend to make the Navy my career (11)
Q2 Boot Camp Experiences	Group Cohesion	There was a lot of group spirit in my company (33) Recruits would often talk to each other about their personal problems (34) I had confidence in the members of my company (36)

[a]Numbers in parentheses refer to questionnaire item number. Q1 item numbers ending with "B" refer to items appearing on page B of the form.

[b]Negatively scored item.

[c]For this item set, analysis was based on two groups of items on work outcomes. On the first set, respondents were to rate the desirability of the outcomes; on the second, they were to indicate whether they expected to realize those outcomes in the Navy. The two numbers in parentheses behind component items refer to items within the two groups of items.

Questionnaire Items Used in Developing
Attitude Scales (Continued)

Item Set	Factor	Component Items[a]
Q2 Boot Camp Experiences (Continued)	Group Cohesion (Continued)	Recruits in my company helped each other get through boot camp (46) Trying to win flags helped to increase morale (48) My fellow recruits had positive attitudes about boot camp (58)
	Physical Activity	The amount of physical activity we had to do was difficult for me (49) The kind of physical activity we had to do was difficult for me (50)
	Negative Aspects of Supervision	I was personally "picked-on" by my company commander (27) [b]I was able to get along with my company commanders (37) I was not treated as a responsible person (43)
	Adjustment	It was difficult to adjust to boot camp life (22) It was difficult to get through boot camp (51)
Q2 Met Expectations	Supervision	Treated with respect by company commanders (62) Helpful company commanders (64) Company commanders who think of me as a person (69) Being treated in a fair manner (70) Getting credit when I do my duties well (74) Company commanders willing to listen to my problems (76) Good leadership/supervison (77) Company commanders who set good examples for others to follow (80) Able to question company commanders about what they want me to do (90)
	Peer Relations	Working as part of a team (65) Being part of a well-disciplined organization (67) Helping others get through boot camp (68) Able to talk and work well with others (71) Friendly feelings between fellow recruits (75) Helpful fellow recruits (79) Meeting and making new friends (85)

[a]Numbers in parentheses refer to questionnaire item number. Q1 item numbers ending with "B" refer to items appearing on page B of the form.

[b]Negatively scored item.

Questionnaire Items Used in Developing
Attitude Scales (Continued)

Item Set	Factor	Component Items[a]
Q2 Met Expectations (Continued)	Individual Needs	Opportunity to have privacy (82) Chance to use my free time for things I like to do (83) Chances to fully use my abilities (86) Able to set my own pace in getting my work done (87)
Q2 Future Expectations	Supervisory Support	Treated with respect by leaders/ supervisors (120) Helpful supervisors/leaders (121) Working as part of a team (122) Supervisors/leaders who think of me as a person (125) Being treated in a fair manner (127) Getting credit when I do my work duties well (130) Friendly feelings between co-workers (131) Supervisors/leaders willing to listen to my problems (132) Good leadership/supervision (133) Able to question supervisors/leaders about what they want me to do (140)
	Personal Concerns	Interesting work/job duties (118) Taking pride in my work (124) Gaining responsibility (126) Doing the type of work I want (128) Improving the quality of my life (129) Learning skills that will be useful later in my life (134) Chance to use my free time for things I like to do (135) Regular promotions and advancements (136) Chances to fully use my abilities (137) Freedom to set my own work goals (138) Studying to learn my job (144)
Q2 Personal Considerations	--	The Navy has helped me to mature (98) The Navy has helped me develop a sense of responsibility (99) The Navy has helped me get an education (100) The Navy has helped me learn a skill (101) The Navy has allowed me to be a part of something important (102)

[a]Numbers in parentheses refer to questionnaire item number. Q1 item numbers ending with "B" refer to items appearing on page B of the form.

Questionnaire Items Used in Developing
Attitude Scales (Continued)

Item Set	Factor	Component Items[a]
Q2 Commitment	--	I am willing to put forth effort beyond that normally expected in order to help the Navy be successful (103) I talk up the Navy to my friends as a great organization to work for (104) I feel little loyalty to the Navy (105) I would accept almost any type of job assignment in order to keep working for the Navy (106) I find that my values and the Navy's values are very similar (107) I am proud to tell others that I am in the Navy (108) I could just as well be working for a different organization as long as the type of work was similar (109) The Navy really inspires the best in me in the way of job performance (110) It would take little change in my present circumstances to cause me to leave the navy (111) I am glad that I chose the Navy over other organizations I was considering at the time I joined (112) There's not too much to be gained by sticking with the Navy indefinitely (113) Deciding to work for the Navy was a mistake on my part (114) I find it difficult to agree with the Navy's policies on important matters relating to its personnel (115) I care about what happens to the Navy (116) For me, this is the best of all possible organizations for which to work (117)

[a]Numbers in parentheses refer to questionnaire item number. Q1 item numbers ending with "B" refer to items appearing on page B of the form.

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