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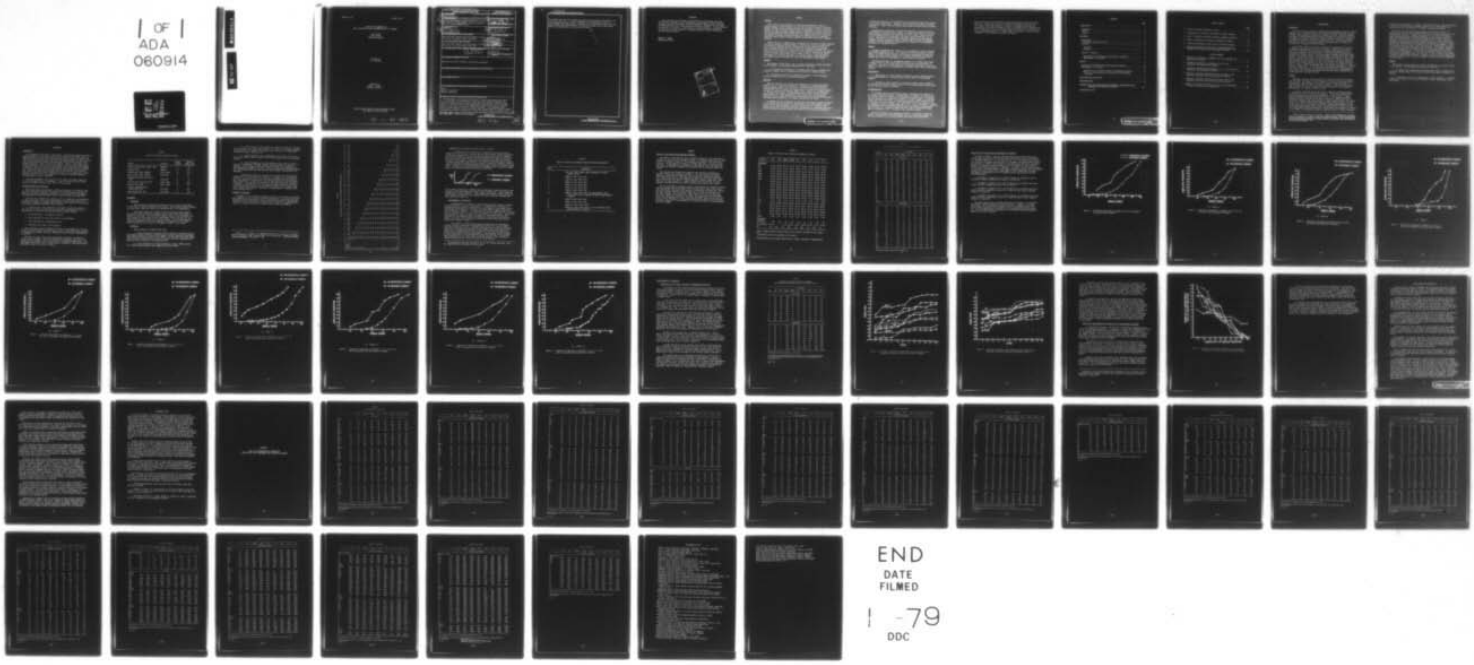

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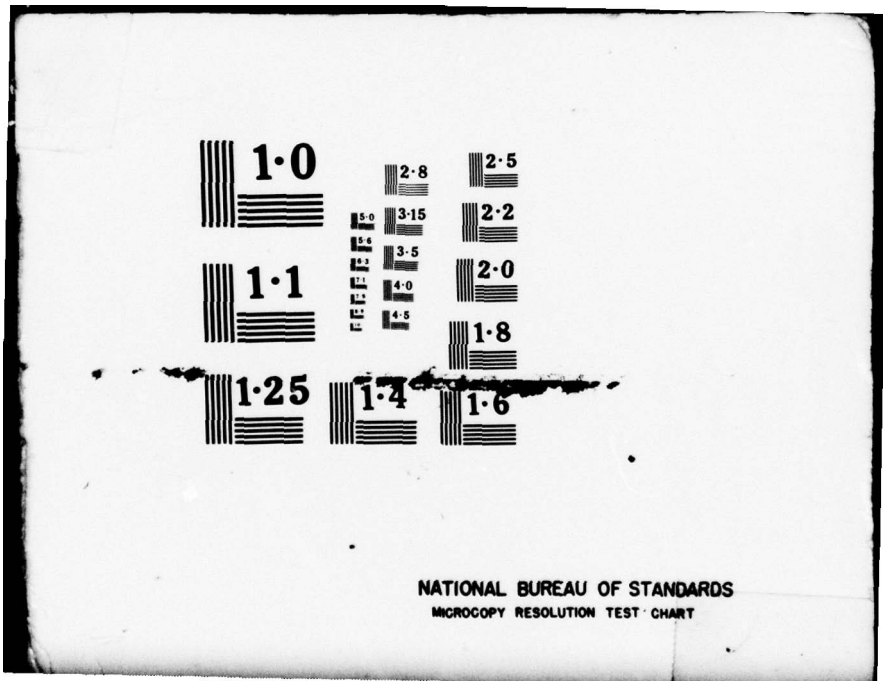
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October 1978

RELATING PERFORMANCE IN BASIC ELECTRICITY AND ELECTRONICS AND "A" SCHOOLS

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Relationships found between BE/E and "A" school performance were used: (1) to determine the feasibility of applying lower mastery standards for different ratings without significantly affecting follow-on school success; and (2) to develop criteria for reassigning a student early to a class "A" school on the basis of his early BE/E performance. Few differences were found on BE/E modules between successful and failing class "A" school students. Reassigning students to alternative class "A" schools using the models in

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this study were not very accurate in predicting performance and less so in predicting attrition. It was recommended that students be permitted through BE/E with lower mastery standards on an experimental basis and that some students omit BE/E entirely to determine whether and to what extent BE/E is a prerequisite to the follow-on school.

FOREWORD

This research was performed under Exploratory Development Task Area ZF55-522-002 (Methodology for Development and Evaluation of Navy Training Programs) and Work Unit Number ZF55-522-002-03.32 (Comprehensive Strategy for Reducing Attrition in Navy Technical Training Schools). It was initiated in response to a request from the Chief of Naval Technical Training to provide and evaluate a model for lowering attrition in Basic Electricity and Electronics schools.

DONALD F. PARKER
Commanding Officer

SUMMARY

Problem

Navy recruits are assigned to ratings and corresponding class "A" schools based on scores obtained on the Armed Services Vocational Aptitude Battery (ASVAB), which measures aptitudes in a number of areas. Class "A" schools for about 17 Navy ratings require prerequisite training at the Basic Electricity and Electronics (BE/E) schools. High BE/E attrition rates for recruits destined for certain follow-on "A" schools, which occur when they are unable to achieve 100 percent mastery of BE/E modules in a specific length of time, create a serious problem in the Navy's electronic training pipeline.

Since there is no evidence that indicates that "A" school success requires 100 percent mastery of BE/E modules, it appears that BE/E attrition could be reduced by lowering mastery standards for certain follow-on schools. Thus, it would benefit the Navy to study the relationship between BE/E and "A" school performance to determine those standards necessary for success. Results of such a study could also be used to improve progress in and thus reduce attrition from follow-on "A" schools; that is, if the early BE/E performance of a student destined for a certain school indicated that he was better suited for another, he could be reassigned to that school.

Purpose

The purpose of this effort was to relate performance in BE/E and follow-on "A" schools. Relationships identified were then used:

1. To explore the feasibility of applying lower mastery standards for different ratings without significantly affecting "A" school success.

2. To develop criteria for reassigning a student to an alternative follow-on school based on early BE/E performance.

Approach

BE/E and follow-on "A" schools were requested to provide performance measures for all students--graduates and nongraduates--attending those schools between January and June 1976. Criterion variables selected for relating BE/E and "A" school performance were attrition from and performance in nine "A" schools with adequate sample sizes. Predictor variables were (1) aptitude test scores, (2) BE/E mathematics pretest scores, (3) BE/E module scores, (4) BE/E comprehensive test scores, and (5) cumulative instruction time. Means of and correlations between predictor and criterion variables were computed for all schools included in the study.

To demonstrate the feasibility of applying differential mastery standards to the various follow-on schools, BE/E modules correlating higher than .30 with attrition were examined. For those schools with at least one such module and at least 10 failing students, performance of successful and unsuccessful students on these modules was compared by plotting the cumulative

frequency distributions of successful and unsuccessful students who scored at or below a given level. Ideally, a score level exists that successful students in a given follow-on school could exceed and unsuccessful students could not.

Reassigning of personnel to alternative follow-on schools is based on predictions of success in each school. To predict that success, two stepwise regression analyses were performed for each school, using attrition as the criterion for one analysis; and school test performance, for the other. The effects of using these regression analyses for reassigning students from one follow-on school to another were estimated by applying predictor scores obtained by unsuccessful FT students to the performance equations for the other schools.

Results

No mastery standards were found that all successful students surpassed and failing students did not. For the Electrician's Mate school at Great Lakes, a few BE/E modules showed a difference in performance between successful and unsuccessful students, but otherwise BE/E module performance relates very little to performance in the follow-on "A" schools.

The model developed for reassigning students to an alternative follow-on school based on their early BE/E performance has a minimal effect on attrition. The first 11 BE/E module scores significantly added to the accuracy of prediction of the performance criterion in only four of the schools studied.

Conclusions

1. Application of a lower mastery standard on certain modules appears to be quite feasible for the Electrician's Mate school at Great Lakes (EM/GL).

2. Although it may be feasible to reassign students early in BE/E to an alternative follow-on school, results of this study indicated that reduction in attrition would be minimal.

Recommendations

To determine whether differential mastery standards can be applied to the various follow-on schools, a random subset of students from one rating (not EM/GL) should be permitted to progress through BE/E with a 60 percent mastery standard on all modules with positive or small negative correlation coefficients with attrition. The remaining students should progress with a 100 percent mastery standard. The performance of the two groups can then be compared on each succeeding module and on "A" school performance. Assuming the findings using the remaining modules would be similar to those using only the first 11, a parallel effort should be made to determine whether BE/E is necessary at all to succeed in the follow-on school.

Although the method of reassigning students to alternative class "A" schools on the basis of BE/E performance did not yield great promise for reducing attrition in the existing BE/E curriculum (Course File 69),

better predictions may be obtained using the new BE/E curriculum (Course File 70). This would involve (1) obtaining performance data from the "A" schools using some specified criteria, (2) making provisions for determining the course performance score for setbacks and for students who did not take one or more of the tests that contribute to the total score, and (3) obtaining scores for a large number of students so that the error component in the regression analyses is minimal.

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INTRODUCTION

Background

Navy recruits are assigned to ratings and corresponding class "A" schools based on scores obtained on the Armed Services Vocational Aptitude Battery (ASVAB), which measures aptitudes in a number of areas. Class "A" schools for about 17 Navy ratings require initial training at the Basic Electricity and Electronics (BE/E) Preparatory Schools, which are located at Orlando, FL; Memphis, TN; Great Lakes IL: and San Diego, CA. These follow-on "A" schools vary widely in curriculum content and difficulty, as well as in the extent of prerequisite BE/E training.

At all BE/E schools, the course is identical, consisting of a series of modules, each comprised of one or two units. Students can proceed to new units or modules only after they have demonstrated mastery--a test score of 100 percent--on previous ones. They are processed through the prerequisite modules using a self-paced Computer-Managed Instruction (CMI) system. The student receives a unit assignment, consisting of one or more lessons, from the CMI system, and works through the lessons for that unit. After completing each lesson, he takes a self-scored "progress check" to determine for himself whether or not he has mastered the lesson materials. When he feels he has mastered the objectives for all the lessons in that unit, he takes a skill or knowledge test, marking his responses on a machine-readable answer sheet. If his obtained score demonstrates mastery of the unit (i.e., 100% correct), the system provides him with a new assignment. If it does not, the system indicates those sections where remediation is needed before he can take the test.

Problem

Attrition rates for those destined for certain follow-on "A" schools are very high, creating a serious problem in the Navy's electronics training pipeline. For example, the attrition rate for those destined for Gunner's Mate (GM) "A" school is about 33 percent. This attrition occurs when recruits are unable to achieve 100 percent mastery of prerequisite BE/E modules in a specific length of time.

It appears that BE/E attrition could be reduced by lowering mastery standards for certain follow-on "A" schools. Since these schools differ in curriculum content and BE/E prerequisites, it may be that the BE/E mastery standards required should also differ.[1] For example, students destined for GM "A" school may be able to succeed in that school with a lower BE/E standard than that required for Sonar Technician (ST) "A" school. In fact, no evidence exists that indicates that students going to the GM school--or to any of the follow-on schools--require total mastery in each of the BE/E modules prescribed. Thus, it would benefit the Navy to study the relationship between performance at BE/E school and follow-on "A" schools in an attempt to determine the mastery standards that are really necessary

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[1]Chief of Naval Technical Training. Operational requirement: Development of standards for learning objective mastery within a Navy instructional program providing training to a large volume of personnel with differential skill classifications, 1975.

for success at follow-on "A" schools. Lowering the current mastery standards to meet the actual standards required would not only reduce BE/E attrition but also the time required to complete prerequisite modules.

Results of a study relating performance in BE/E and follow-on "A" schools could also be used to improve progress in and thus reduce attrition from follow-on schools. Students selected for all ratings with BE/E school prerequisites must demonstrate mastery on the initial 11 modules. Those who perform poorly on certain BE/E modules may be less likely to succeed in one follow-on school than another; thus, it appears that BE/E performance measures would provide improved predictions of success in these schools over the ASVAB scores obtained at the time of recruitment. With these predictions, attrition could be reduced by reclassifying individuals to alternative ratings during their BE/E training. For example, suppose a recruit is assigned to an ST rating and the corresponding ST "A" school based on his ASVAB scores. If his early performance in BE/E school indicated that the assignment was a correct one, he would proceed to the specific modules required for ST school. However, if his early performance indicated that he was better suited for another rating, he could be reassigned to that rating.

Purpose

The purpose of this study was to relate performance in BE/E and follow-on "A" schools. Relationships identified were then used:

1. To explore the feasibility of applying lower mastery standards for different ratings without significantly affecting success in follow-on "A" schools.

2. To develop criteria for reassigning a student assigned to a specific follow-on "A" school to an alternative based on early performance in the BE/E course.

PROCEDURE

Assumptions

Two assumptions were made in this study. The first was that the student's degree of mastery on the Basic Electricity and Electronics (BE/E) tests is represented by the score he obtains the first time he takes the module test. Thus, the tests are valid and any difference between this score and the final test score--evidencing complete mastery--does not necessarily reflect increased learning. This is due to two reasons. First, at the time of this study, instructors could override the computer; that is, they could change a student's score on a retest to 100 percent, thus allowing him to progress to the next unit without having truly demonstrated mastery of the previous one. Second, students were retested only on sections that they had not mastered. Since such retests consisted of only 1 to 15 items--all of which were multiple-choice--it was possible for students to achieve "mastery" through random or chance responses.

The second assumption was that class "A" school performance measures are accurate indicators of achievement. Thus, attrition from "A" school is due to academic reasons rather than to other causes.

Performance Measures Obtained

This study related performance in BE/E and follow-on "A" schools; thus the four BE/E schools and the "A" schools with BE/E prerequisites were requested to provide performance measures for all students--both graduates and nongraduates--attending these schools between January and June 1976.

BE/E data were computerized; however, due to incomplete data maintenance at some BE/E schools, data could be obtained only from Great Lakes (day classes), San Diego, and Memphis BE/E schools. From these data, the following student performance measures were available:

1. Aptitude test scores obtained on the Basic Test Battery (BTB). At the time of the study, the BTB was the selection instrument used by the Navy instead of the Armed Services Vocational Aptitude Battery.

2. Score obtained on a mathematics pretest.

3. Score obtained on tests (all tries) for each module.

4. Score obtained on a comprehensive test.

5. Cumulative time spent on instruction.

Data received from the follow-on "A" schools were handwritten, and consisted of attrition data and performance scores. From these data, a sample of students was randomly selected, choosing as many failures (nongraduates) as possible.

BE/E and "A" school data were then matched by computer according to social security number. After the matching was completed, several of the schools were eliminated from the study due to inadequate sample sizes. The remaining nine schools, two of which provide training for the Electrician's Mate (EM) rating, are listed in Table 1.

Table 1

Class "A" Schools Included In Study

School	Location	Length in Weeks	Matched Sample Size
Aviation Electrician's Mate (AE)	Memphis	11	83
Aviation (AV)	Memphis	14	144
Electrician's Mate (EM/GL)	Great Lakes	9	116
Electrician's Mate (EM/SD)	San Diego	9	471
Electronic Warfare Technician (EW)	Pensacola	18	76
Fire Control Technician (FT)	Great Lakes	13	255
Gunner's Mate (GM)	Great Lakes	12	114
Interior Communications Electrician (IC)	San Diego	9	403
Sonar Technician (ST)	San Diego	15	81

Variables

Criterion

Two criterion variables were used--attrition from and performance in the nine "A" schools included in the study. All of these schools provided attrition data, which was coded 0 for graduates and 1 for nongraduates.

Performance measures provided varied considerably among schools. The Aviation (AV) school sent pass/fail grades only, which are simply a measure of attrition. The performance measure used for the Electronic Warfare Technician (EW) school was the "technology" score; and that for the Sonar Technician (ST) school, the course average. For the remaining six schools, performance scores were computed by dividing the total number of points obtained in the course by the number of weeks of the course.

Predictor

Twenty predictor variables were used:

1. Score obtained on five BTB subtests; namely, the General Classification Test (GCT), Arithmetic Reasoning Test (ARI), Electronics Selection Test (ETST), Mechanical Aptitude Test (MECH), and Shop Practices Test (SHOP). Scores obtained on these five subtests are used in various combinations for selection into ratings with BE/E prerequisites.

2. Score obtained on the BE/E mathematics pretest (PMTS), given to all BE/E students before they commence the first module.

3. Score obtained on test (first try only) for modules 1 through 11 (S1 through S11), since these modules are taken by all ratings requiring BE/E training. For modules having more than one unit, unit scores were averaged to yield a module score.

4. Score obtained on the comprehensive test (first try only) on DC circuits (DCS), which is given to all BE/E students after they complete module 7.

5. Log transformations of the cumulative time spent on instruction for (a) modules 1 through 7 (Log7) and (b) modules 1 through 11 (Log11). Since response latencies relate inversely to performance,[2] it was assumed that training time has a similar relationship with performance. The log transformation was used because time-variable relationships are nonlinear.

A correlation matrix of the predictor variables for EM San Diego students (N = 471) is provided in Table 2. As shown, the correlations are fairly low, except for a few correlations between aptitude measures, which was expected. Surpisingly, the aptitude measures do not correlate highly with scores obtained on the DCS or with those obtained on modules 1 through 7. As expected, Log7 and Log11 correlate negatively with the various achievement scores; the correlation between the two logs is high (.93) because the cumulative time spent through module 11 includes that spent through module 7.

Methods of Analysis

The means of and correlations between predictor and criterion variables were computed for all schools included in the study. These data were then analyzed using two approaches, one for applying differential BE/E mastery standards for the follow-on "A" schools and the other for reassigning personnel to alternative follow-on schools based on BE/E performance.

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[2]Judd, W. A., & Glaser, R. Response latency as a function of training method information level, acquisition, and overlearning. Journal of Educational Psychology, 1969, 60(4), 1-30.

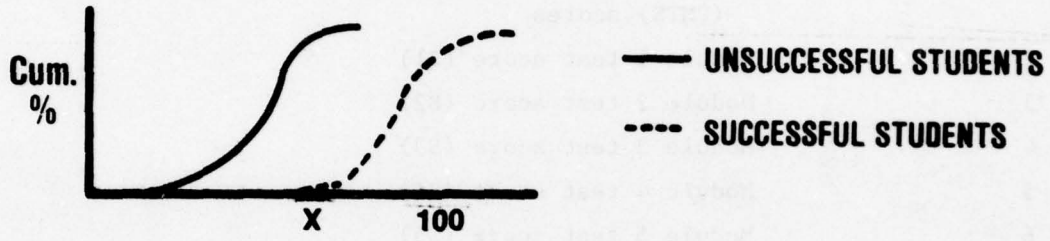
Table 2

Correlations of Predictor Variables for EM/SD Students

Predictor Variable	GCT	ARI	MECH	SHOP	ETST	PMTS	S1	S2	S3	S4	S5	S6	S7	Log7	DCS	S8	S9	S10	S11	Log11
GCT	1.00																			
ARI	.60	1.00																		
MECH	.20	.27	1.00																	
SHOP	.19	.16	.39	1.00																
ETST	.58	.68	.28	.18	1.00															
PMTS	.51	.68	.24	.16	.76	1.00														
S1	.13	.18	.10	.03	.22	.19	1.00													
S2	.32	.24	.21	.14	.33	.30	.10	1.00												
S3	.23	.18	.17	.08	.23	.25	.11	.40	1.00											
S4	.22	.19	.09	.13	.22	.25	.18	.15	.25	1.00										
S5	.23	.26	.11	.20	.30	.31	.22	.28	.21	.21	1.00									
S6	.30	.46	.22	.12	.50	.49	.18	.39	.34	.23	.31	1.00								
S7	.14	.17	.16	.06	.18	.22	.20	.16	.23	.25	.09	.28	1.00							
Log7	-.46	-.58	-.32	-.22	-.58	-.63	-.12	-.28	-.27	-.23	-.25	-.42	-.21	1.00						
DCS	.33	.34	.20	.19	.39	.36	.13	.24	.21	.26	.31	.37	.18	-.31	1.00					
S8	.33	.29	.15	.15	.29	.38	.18	.36	.28	.16	.18	.37	.15	-.24	.27	1.00				
S9	.30	.33	.12	.10	.26	.29	.05	.31	.27	.20	.24	.40	.17	-.24	.30	.28	1.00			
S10	.25	.35	.19	.09	.30	.32	.20	.28	.25	.17	.24	.33	.19	-.24	.24	.31	.28	1.00		
S11	.28	.32	.11	.12	.38	.38	.12	.32	.33	.29	.20	.41	.21	-.29	.28	.36	.34	.34	1.00	
Log11	-.27	-.28	-.18	-.15	-.35	-.61	-.14	-.28	-.22	-.21	-.26	-.39	-.19	.93	-.18	-.25	-.25	-.26	-.19	1.00

Application of Differential BE/E Mastery Standards

To demonstrate the feasibility of applying differential mastery standards to the various follow-on schools, BE/E modules having correlation coefficients greater than .30 with the attrition criterion were examined, since they yielded the greatest difference between successes and failures. For those schools with at least one such module and at least 10 failing students in the sample, performance of successful and unsuccessful students on these modules was compared by plotting the cumulative frequency distributions of successful and unsuccessful students who scored at or below a given level. Ideally, if differential mastery standards could be applied successfully, the resulting curves would appear as follows:



In the above illustration, students with scores above x would succeed in the follow-on school and those with scores below x would fail. Thus, a mastery standard of x could be applied. This assumes that module scores reflect the actual mastery achieved by the students and that no further learning took place beyond the first try.

Reassignment of Personnel

Reassignment of personnel to alternative follow-on schools is based on predictions of success in each school. To predict that success, two stepwise multiple regression analyses were performed for each school[3] using the Statistical Package for the Social Sciences (SPSS) stepwise multiple-linear regression program. A dichotomous attrition variable was the criterion for one analysis; and "A" school test performance, for the other. Since pairwise deletion of cases was used, the number of cases indicated for each analysis was the minimum number upon which any correlation coefficient is based. The order of the predictor variables entered at each step in the regression is shown in Table 3.

The effects of using these regression equations for reassigning students from one rating and corresponding follow-on "A" school in which they were predicted to fail to another rating and school in which they were predicted to succeed were estimated using students who failed the FT "A" school and for whom 80 percent of the predictor data were available (missing data were replaced with sample means). The predictor scores obtained by each individual in this unsuccessful group were applied to the performance equations for the other eight follow-on schools. This resulted in separate predictions of success in each of these schools.

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[3]No performance data were available for the AV school; therefore, only one regression was performed for this school.

Table 3

Order of Predictor Variables Entering Stepwise Regression

Step	Variables
1	GCT, ARI, ETST, MECH, SHOP, Mathematics Pretest (PMTS) scores
2	Module 1 test score (S1)
3	Module 2 test score (S2)
4	Module 3 test score (S3)
5	Module 4 test score (S4)
6	Module 5 test score (S5)
7	Module 6 test score (S6)
8	Module 7 test score (S7), DC comprehensive test score (DCS), Log of Cumulative Time through Module 7 (Log7)
9	Module 8 test score (S8)
10	Module 9 test score (S9)
11	Module 10 test score (S10)
12	Module 11 test score (S11), Log of Cumulative Time through Module 11 (Log11)

RESULTS

Means of and Correlations Between Variables

The means of the predictor and criterion variables for the nine schools included in the study are provided in Table 4. As shown, some schools, such as EW, are superior on most of the measures; and others, such as GM, are inferior. As mentioned previously, an attempt was made to include as many failures, or nongraduates, as possible in the sample; thus, the means for the attrition variable represent the proportion in the obtained sample who failed.

The correlations between the predictor and criterion variables for the nine schools are presented in Table 5. For the attrition variable, negative correlations are expected, indicating that students who passed the course scored high on the predictors, except for log time, where positive correlations are expected, indicating that students requiring a short time on the course passed it. However, EM/SD, GM, and IC have no large negative correlations with attrition, whereas AE and EM/GL have several.

For the performance variable, positive correlations are expected, indicating that students who scored high on the course scored high on the predictors, except for log time, where negative correlations are expected, indicating that students requiring a short time on the course scored high on it. For this variable, the correlation coefficients are all in the expected direction, except for the GM school, where all correlations but one (SHOP) are in the unexpected direction. For both variables, many correlations are close to zero, implying no relationship between the predictor and criterion variables; however, 15 correlations (1 for attrition and 14 for performance) are .50 or higher.

Table 4

Means of Predictor and Criterion Variables by School

Variable	AE	AV[a]	EM/GL	EM/SD	EW	FT	GM	IC	ST
Predictor									
GCT	54.20	60.89	60.15	59.30	62.32	59.62	55.96	59.42	61.66
ARI	53.65	58.75	57.32	56.91	59.86	57.70	53.74	55.52	57.90
MECH	50.75	54.64	55.01	55.85	55.28	54.44	54.23	55.25	55.65
SHOP	53.84	58.46	58.72	59.50	58.12	58.02	57.22	59.58	56.78
ETST	59.56	65.85	62.36	62.11	65.89	64.60	60.71	59.83	64.60
PMTS	45.00	55.29	64.00	58.80	63.17	59.71	48.74	53.38	60.48
S1	92.60	94.74	94.29	93.90	96.06	94.83	90.75	93.27	95.47
S2	85.04	88.07	88.06	88.67	90.76	87.96	82.12	87.93	87.93
S3	91.74	92.84	91.64	92.09	93.96	91.22	87.01	91.26	93.59
S4	90.36	92.93	92.82	91.59	94.14	92.04	90.11	90.69	93.51
S5	90.99	93.77	92.63	93.32	95.52	94.28	85.61	92.23	94.66
S6	76.51	82.69	82.03	82.45	85.95	81.53	72.84	81.64	83.47
S7	79.75	80.75	76.59	78.71	80.42	78.78	71.17	76.68	78.40
Log7	4.23	4.09	4.43	4.13	4.10	4.10	4.56	4.17	3.89
DCS	86.55	90.60	89.76	90.06	92.96	91.79	84.53	90.27	92.81
S8	83.08	84.89	85.74	86.07	86.94	85.71	80.25	85.20	86.63
S9	85.59	90.35	87.67	89.45	92.15	89.79	80.75	88.47	91.81
S10	84.56	88.91	87.19	89.15	91.13	89.90	79.16	88.45	90.09
S11	82.38	86.30	84.38	84.94	87.89	85.43	77.89	84.54	85.56
Log11	4.66	4.44	4.77	4.49	4.47	4.43	4.83	4.54	4.23
Criterion									
Attrition	.20	.10	.10	.03	.22	.14	.22	.02	.06
Performance	141.10	--	75.14	88.21	79.52	52.82	66.73	72.72	79.86
N[b]	67	119	91	363	60	130	82	285	61

Note. Means provided in this table do not reflect the mean in the course.

[a]Performance data not provided for AV school.

[b]Ns shown here do not agree with those in Table 1 because of missing data.

Table 5

Correlations Between Predictor and Criterion Variables

Predictor Variable	"A" School								
	AE	AV[a]	EM/GL	EM/SD	EW	FT	GM	IC	ST
Attrition									
GCT	-.03	-.13	-.21	-.03	.13	-.18	-.06	-.01	-.34
ARI	-.13	-.14	-.22	.02	.14	-.13	.05	-.02	-.14
MECH	.01	.03	-.15	-.02	.03	-.11	.16	-.04	-.10
SHOP	-.03	-.01	-.16	.07	.11	-.09	-.06	.01	-.15
ETST	-.06	-.09	-.30	-.07	.20	-.14	.08	.02	-.18
PMTS	-.10	-.10	-.33	-.01	.23	-.01	.03	-.02	.03
S1	-.27	-.13	-.41	.03	-.04	-.07	-.01	-.01	-.13
S2	-.29	.03	-.22	-.00	.06	.01	.06	-.02	-.05
S3	-.21	.04	-.25	.02	.23	-.14	.10	-.05	-.15
S4	-.04	-.15	-.36	-.00	-.00	-.06	.02	-.15	-.22
S5	-.34	-.22	-.33	-.12	.15	.01	-.16	-.00	-.26
S6	-.15	-.34	-.55	.01	.23	-.12	.10	-.06	-.15
S7	.10	-.09	-.24	-.02	.07	.00	.07	.02	-.30
Log7	.08	.23	.44	-.01	.07	.10	-.06	.01	.16
DCS	-.08	-.12	-.47	.06	.18	-.21	.09	-.11	-.08
S8	-.39	-.01	-.49	.03	.14	.03	.11	-.02	-.08
S9	-.16	-.09	-.23	-.01	.18	-.08	.08	-.06	-.21
S10	-.13	-.15	-.39	-.00	.06	-.10	-.07	-.03	-.12
S11	-.30	-.20	-.31	-.10	.18	-.04	.00	-.02	-.02
Log11	.13	.21	.36	.02	.11	.11	-.29	.04	.15
Performance									
GCT	.18	--	.31	.53	.21	.19	-.09	.42	.45
ARI	.12	--	.32	.53	.37	.14	-.27	.44	.48
MECH	.21	--	.15	.27	.32	.25	-.28	.27	.04
SHOP	.20	--	.15	.27	.37	.27	.08	.26	.10
ETST	.36	--	.39	.53	.33	.14	-.11	.42	.29
PMTS	.14	--	.42	.55	.46	.28	-.30	.41	.47
S1	.23	--	.48	.17	.32	.09	-.04	.11	.07
S2	.34	--	.32	.37	.36	.41	-.25	.30	.27
S3	.35	--	.29	.29	.16	.17	-.06	.21	.11
S4	.16	--	.41	.28	.28	.15	-.09	.17	.01
S5	.27	--	.39	.26	.30	.06	-.09	.27	.24
S6	.43	--	.63	.54	.50	.34	-.25	.48	.56
S7	.07	--	.32	.26	.30	.20	-.05	.28	.25
Log7	-.26	--	-.53	-.55	-.30	-.17	.23	-.43	-.48
DCS	.50	--	.57	.34	.36	.15	-.18	.35	.36
S8	.37	--	.58	.41	.38	.20	-.09	.36	.26
S9	.43	--	.32	.44	.43	.35	-.15	.31	.24
S10	.42	--	.46	.42	.25	.25	-.15	.30	.36
S11	.37	--	.42	.40	.49	.35	-.14	.28	.21
Log11	-.33	--	-.45	-.35	-.34	-.21	.20	-.43	-.53

[a]Performance data not provided for AV school.

Application of Differential BE/E Mastery Standards

As shown in Table 5, the only schools having correlations higher than .30 between attrition and BE/E modules were AE (Modules 5 and 8), (AV Module 6), and EM/GL (Modules 1, 4, 5, 6, 8, 10, and 11). As indicated previously, the cumulative frequency distributions of successful and unsuccessful students who scored at or below a given level on the module were plotted to determine whether differential mastery standards could be applied for those schools. Results are provided in Figures 1 through 3. As shown, none of these conform to the ideal; the differences in performance between successful and unsuccessful students are less distinct than those shown in the illustration on page 7. The largest differences occur for the EM/GL school, particularly for the following modules.

1. On Module 1 (Figure 3.a), 13 and 67 percent of successful and unsuccessful students respectively scored at or below 88.

2. On Module 6 (Figure 3.d), 5 and 50 percent of successful and unsuccessful students respectively scored at or below 56.

3. On Module 8 (Figure 3.e), 6 and 50 percent of successful and unsucesful students respectively scored at or below 70, and 1 and 25 percent scored at or below 65.

4. On Module 10 (Figure 3.f), 8 and 45 percent of successful and unsuccessful students respectively scored at or below 70, and 1 and 27 percent scored at or below 52.

With nine schools and 11 modules included in the study, it is possible that some of these differences occurred by chance. However, it is more likely that, for all schools but EM/GL, there are no module scores that all successful students would surpass and all unsuccessful students could not. For the EM/GL school, application of differential mastery standards appears to be quite feasible.

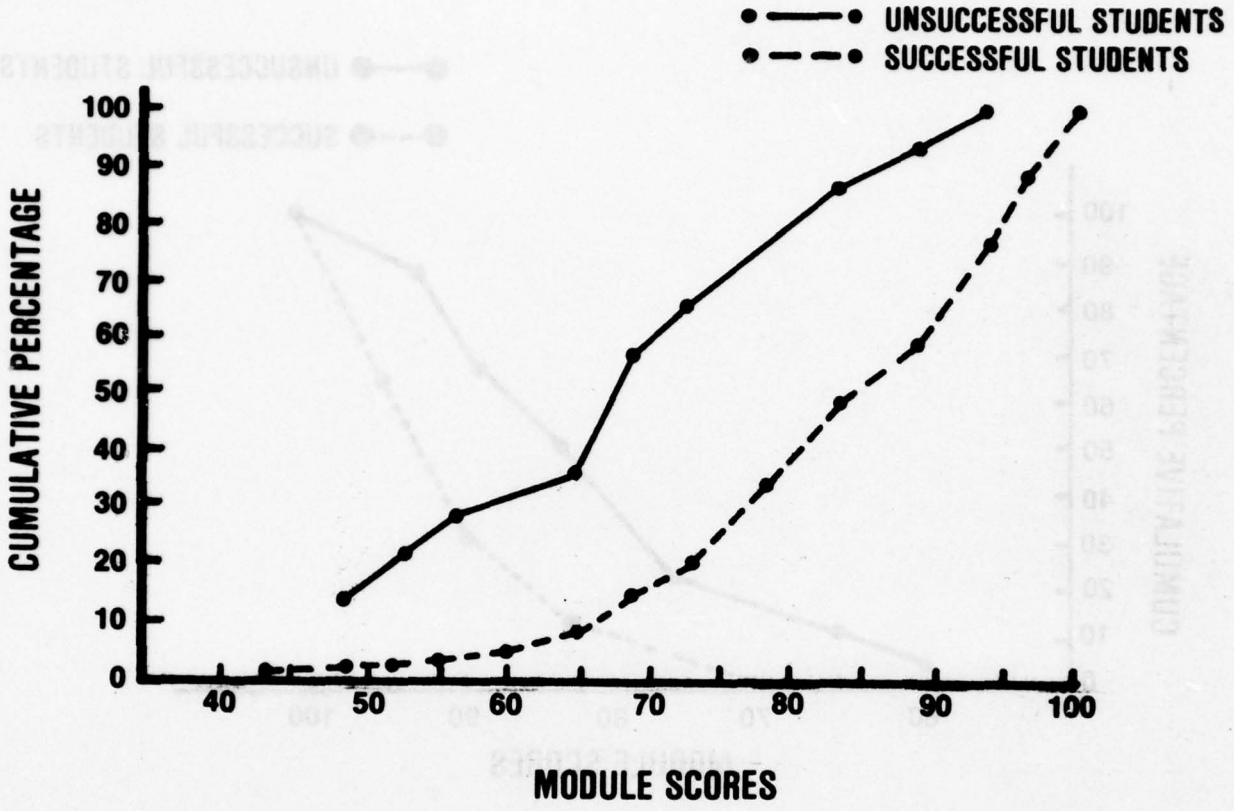
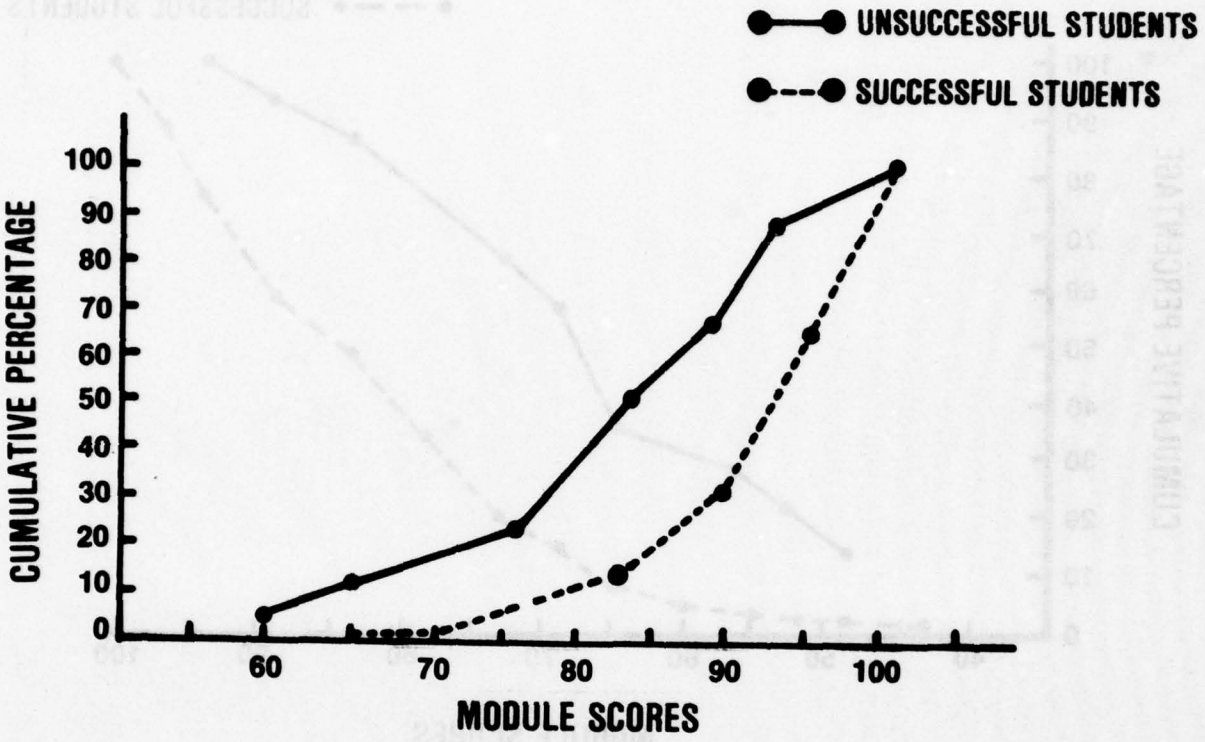
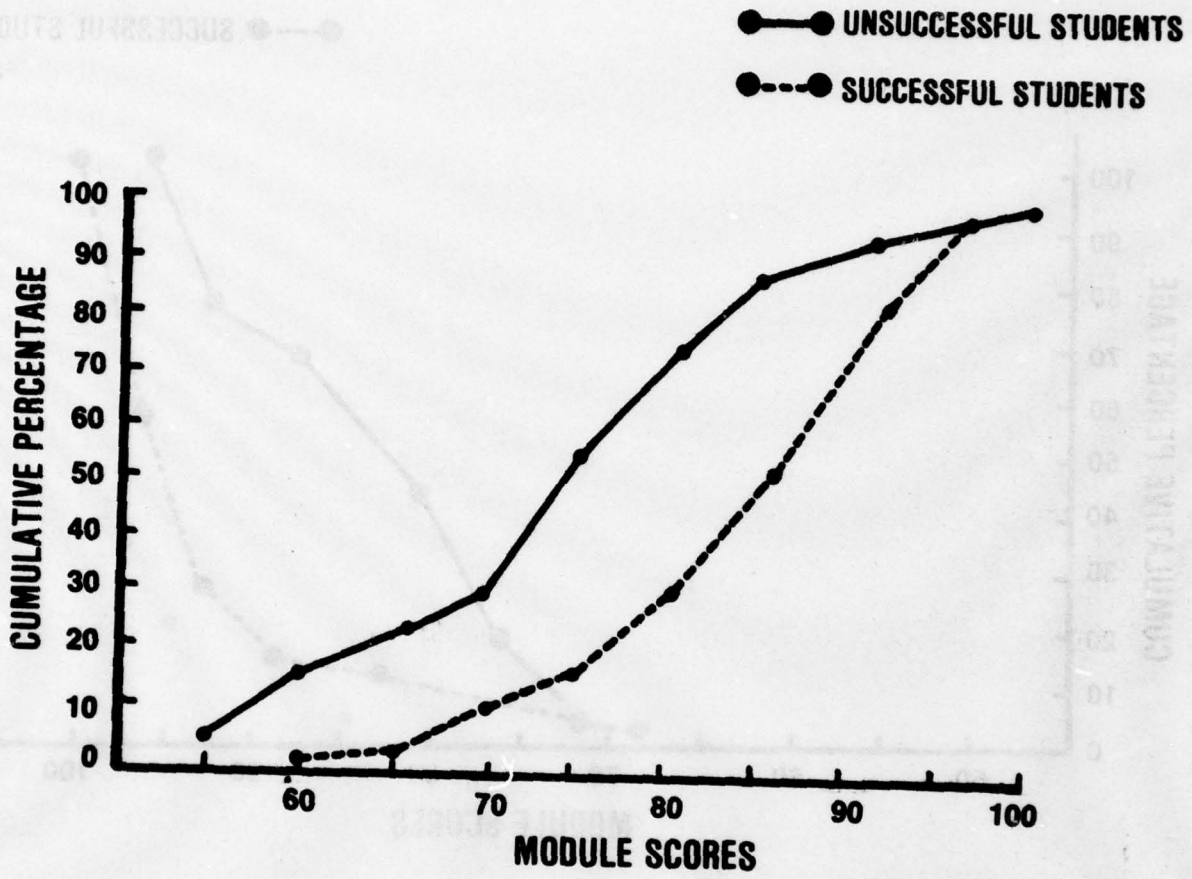


Figure 1. Cumulative frequencies on Module 6 for AV successful and unsuccessful students.



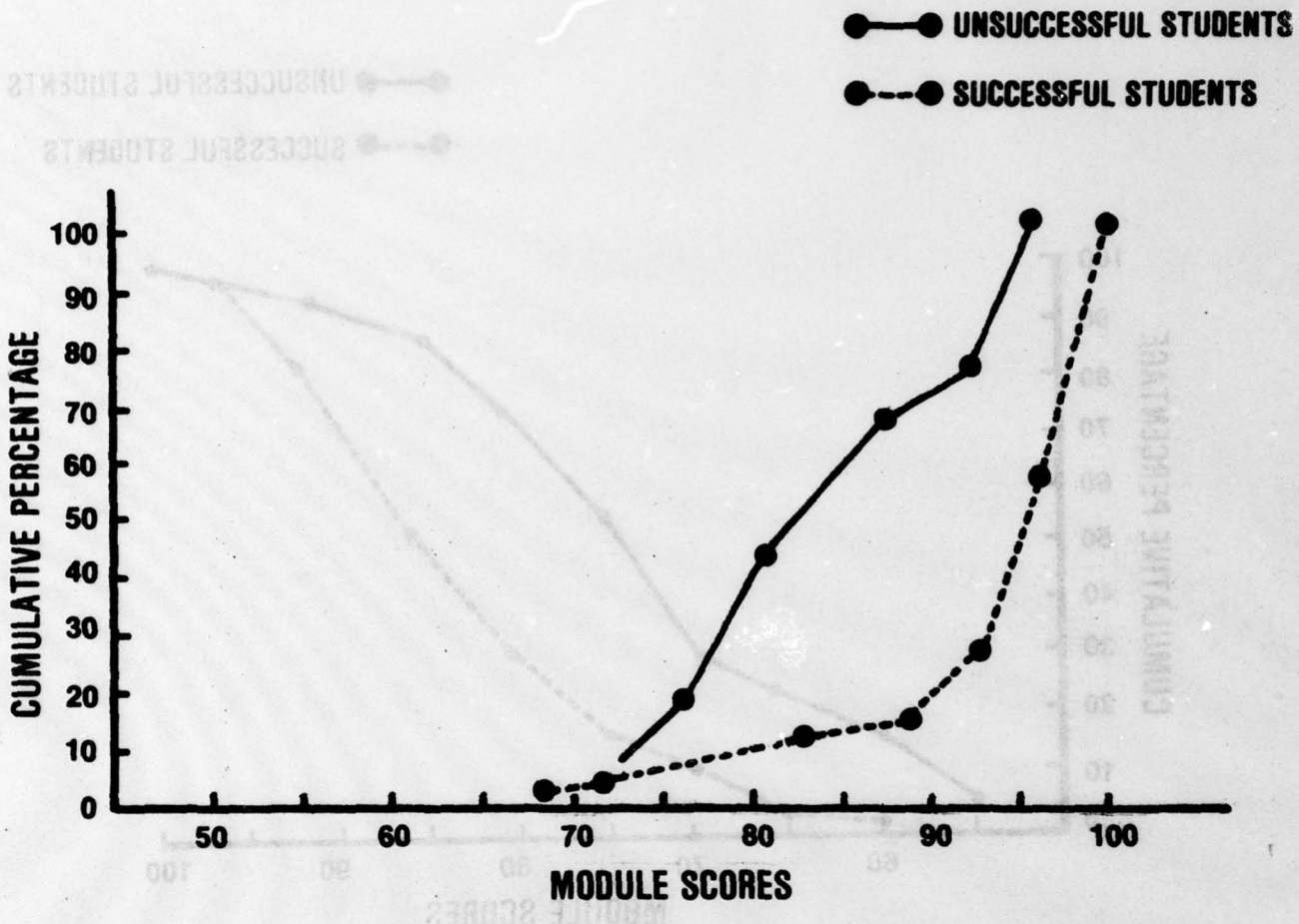
2.a. Module 5.

Figure 2. Cumulative frequencies on Modules 5 and 8 for AE successful and unsuccessful students.



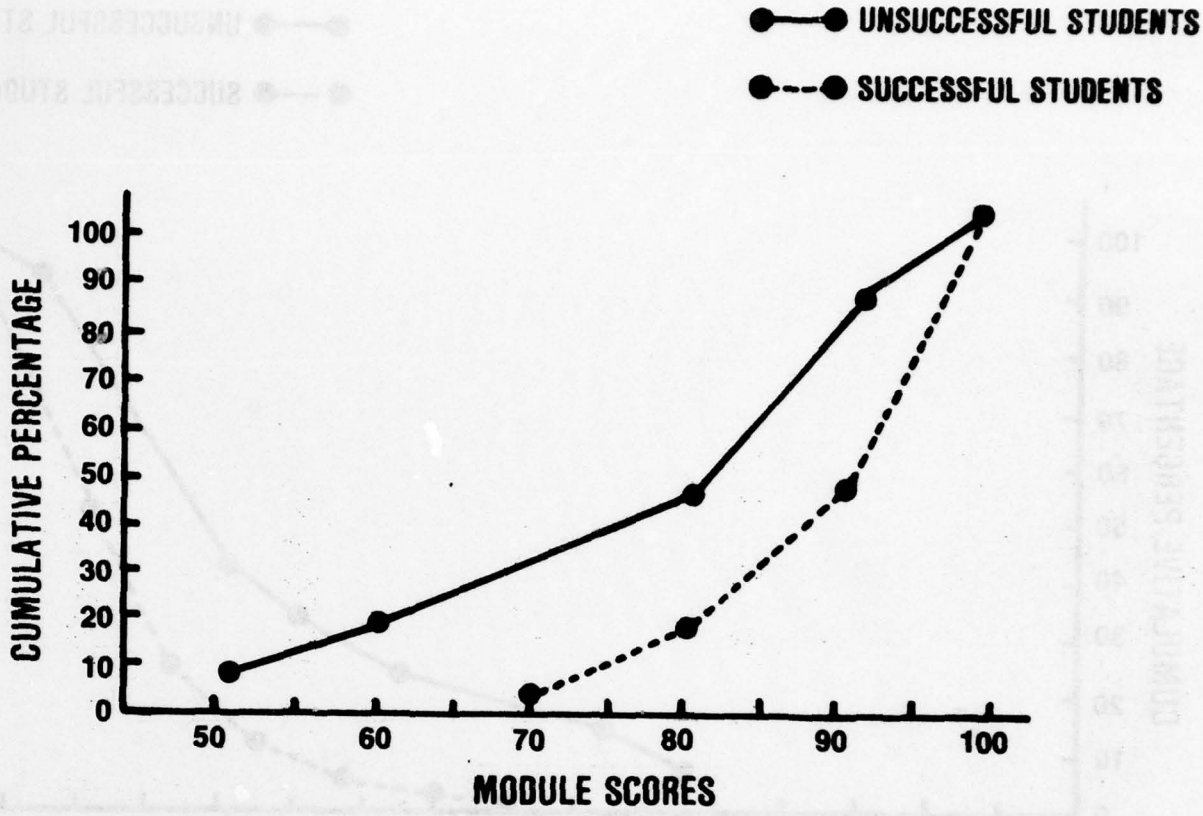
2.b. Module 8.

Figure 2. Cumulative frequencies on Modules 5 and 8 for AE successful and unsuccessful students.



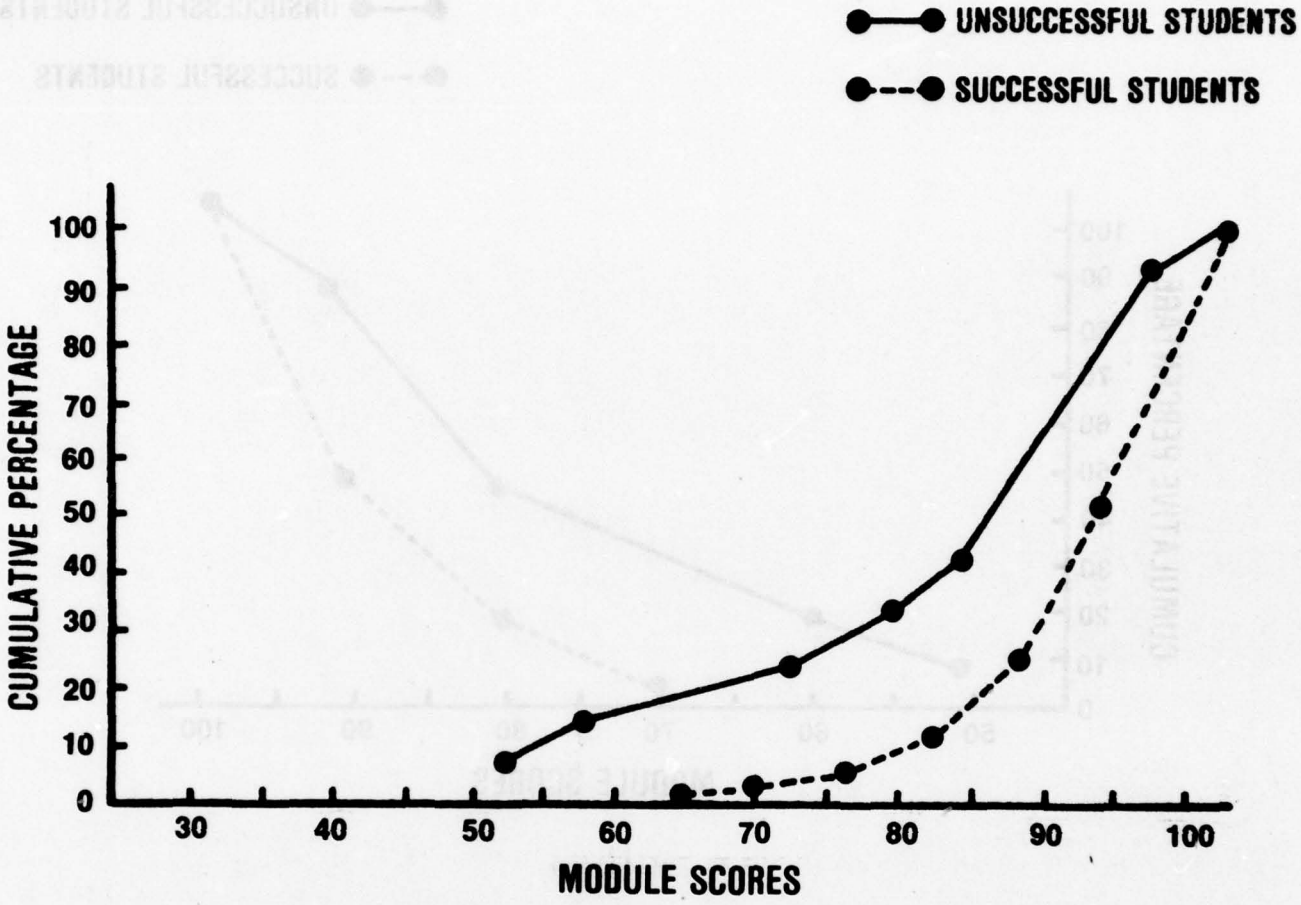
3.a. Module 1.

Figure 3. Cumulative frequencies on Modules 1, 4, 5, 6, 8, 10, and 11 successful and unsuccessful students.



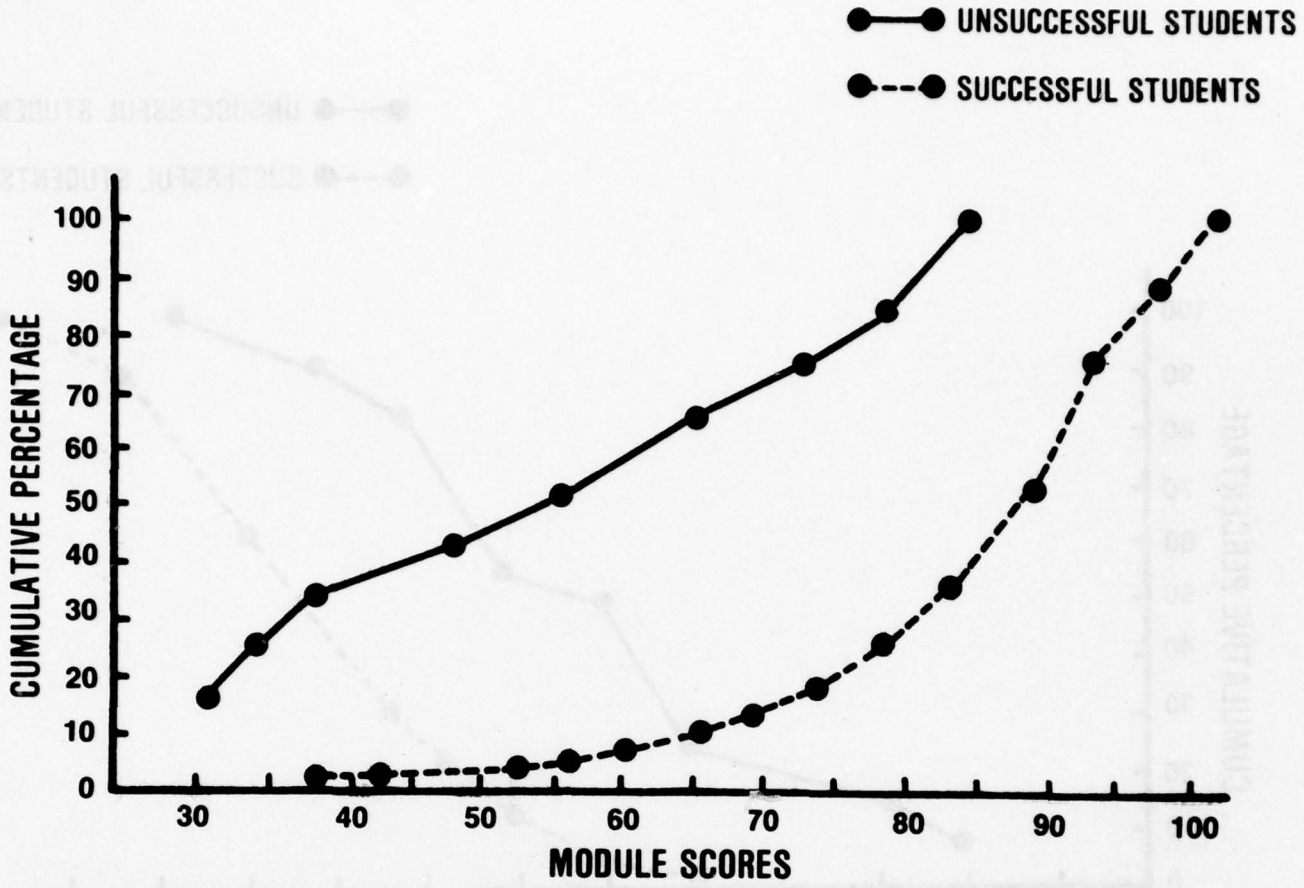
3.b. Module 4

Figure 3. Cumulative frequencies on Modules 1, 4, 5, 6, 8, 10, and 11 successful and unsuccessful students.



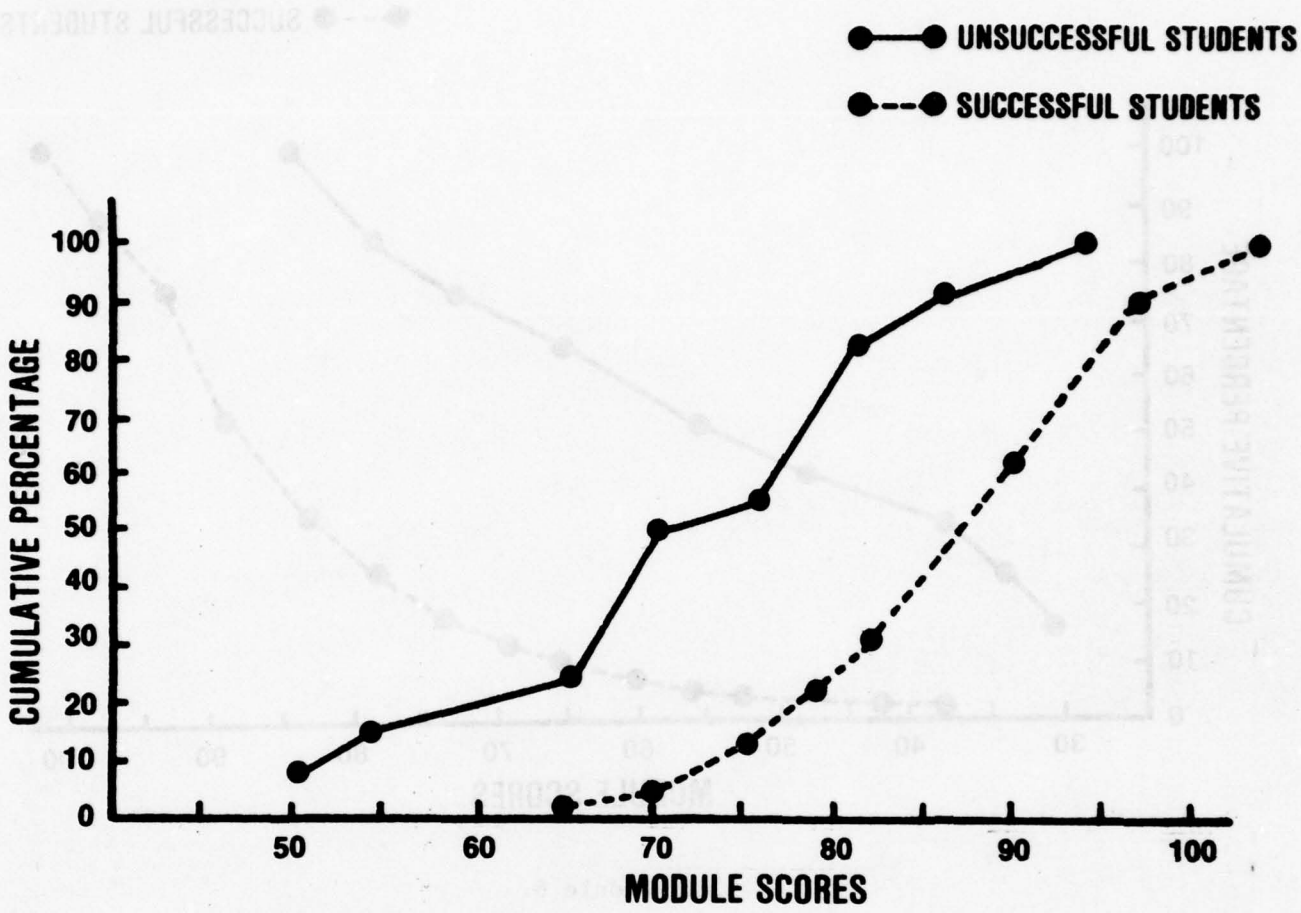
3.c. Module 5.

Figure 3. Cumulative frequencies on Modules 1, 4, 5, 6, 8, 10, and 11 successful and unsuccessful students.



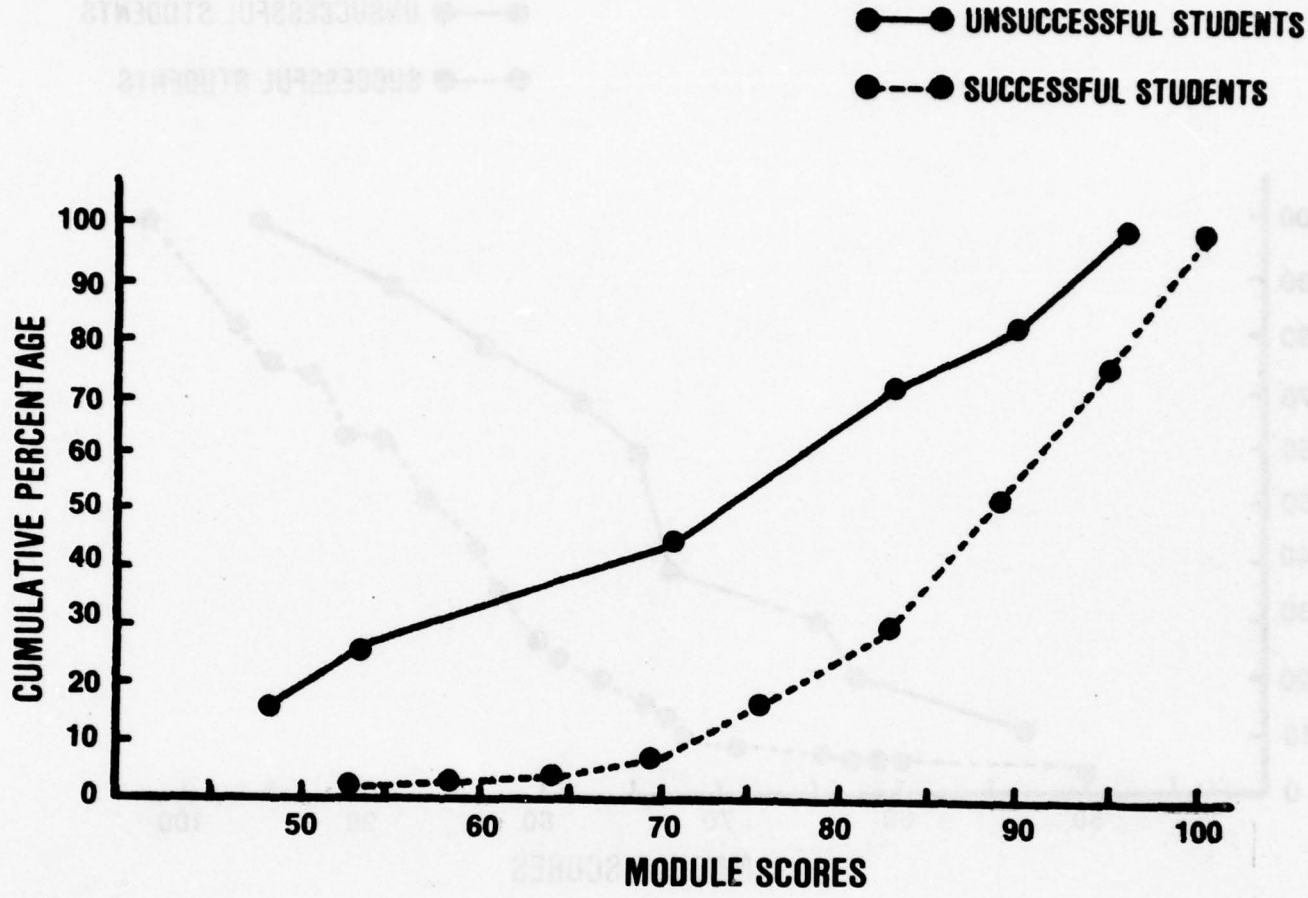
3.d. Module 6.

Figure 3. Cumulative frequencies on Modules 1, 4, 5, 6, 8, 10, and 11 successful and unsuccessful students.



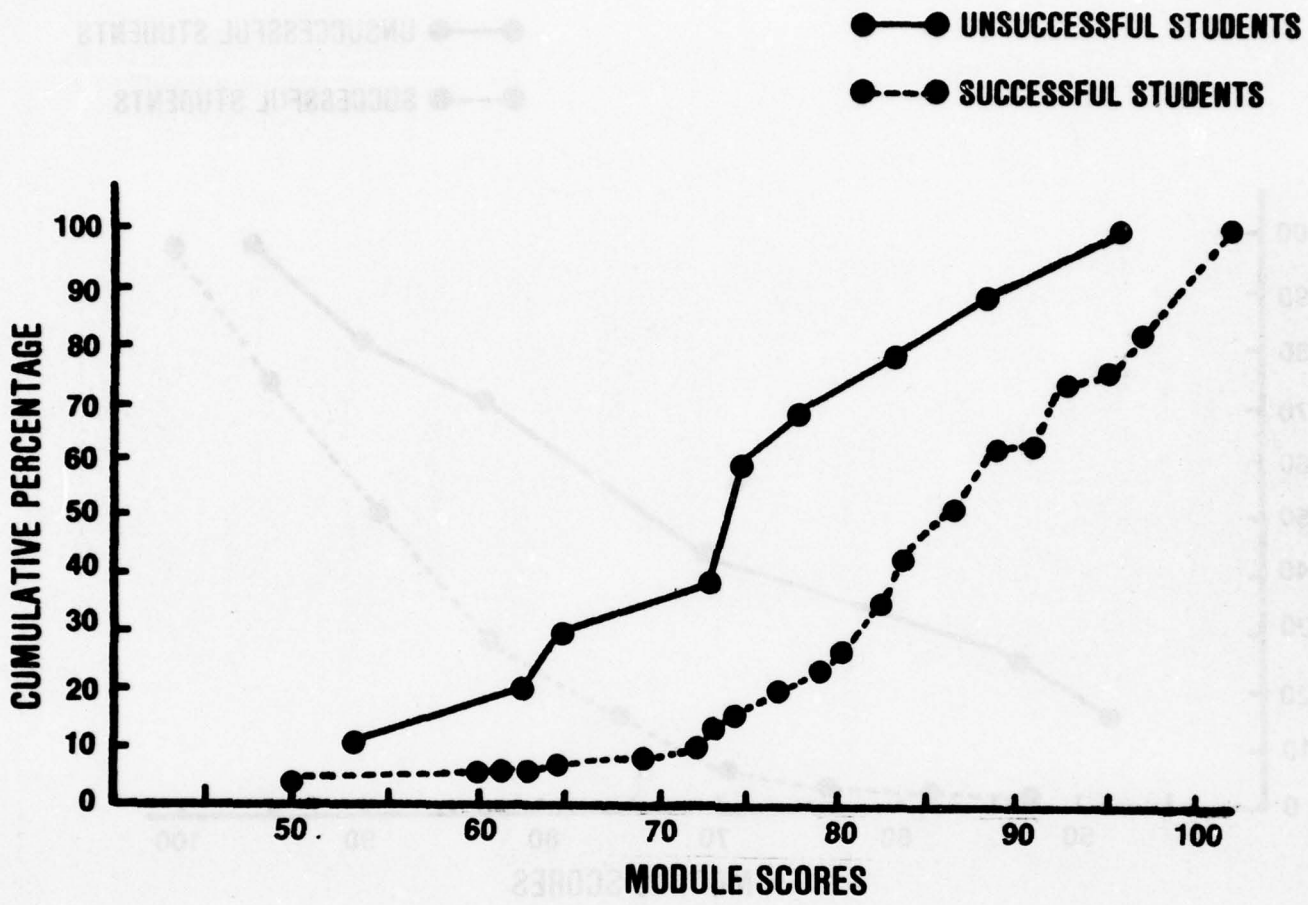
3.e. Module 8.

Figure 3. Cumulative frequencies on Modules 1, 4, 5, 6, 8, 10, and 11 successful and unsuccessful students.



3.f. Module 10.

Figure 3. Cumulative frequencies on Modules 1, 4, 5, 6, 8, 10, and 11 successful and unsuccessful students.



3.g. Module 11.

Figure 3. Cumulative frequencies on Modules 1, 4, 5, 6, 8, 10, and 11 successful and unsuccessful students.

Reassignment of Personnel

Prediction of "A" School Success by Regression Analysis

The results of the stepwise multiple-regression analyses with attrition and performance criteria for the nine schools are provided in Table 6 and shown visually in Figures 4 and 5. As shown in Table 6, some multiple correlations are less significant at higher steps although they do increase in magnitude. This is due to the larger number of predictor variables used at higher steps.

It is clear from the table that, at every stage of the regression analyses, the multiple correlation for the performance criterion is greater than that for the attrition criterion. Some schools had a small number of students (i.e., AE, EW, and ST) relative to the large number of predictor variables (N = 20). For those cases, the multiple correlations are expected to be larger than they would have been with larger samples.

As shown, for some schools, the correlations obtained by adding BE/E module test scores, DCS test score, and log time (Step 12) were not significantly higher than those obtained by using only aptitude and mathematics pretest scores (Step 1). This indicates that performance at BE/E school is not associated with follow-on "A" school performance beyond that identified in the aptitude and mathematics tests. The addition of BE/E data through Step 12 does greatly increase the multiple correlation for some schools; namely, AE and EM/GL with attrition (.46 and .32 respectively) and EM/GL with performance (.29). However, only the increases for EM/GL, EM/SD, FT, and IC with performance are significant at the .05 level.

Figures 4 and 5 show that, for several schools (i.e., AV and EM/GL with attrition and EM/GL, EW, and ST with performance), there is a larger increment at Step 7 (resulting from adding Module 6 test score) than at other steps. This indicates that little will be gained by making predictions between Steps 2 and 6 (Modules 1 through 5), but a preliminary prediction can be made just prior to Step 7 (Module 6).

A large discrepancy exists between the multiple correlations for the two EM schools with the attrition criterion, but not with the performance criterion. Although the two schools have the same curriculum, it appears that their policies for failing students differ greatly. Only in EM/GL does attrition relate strongly to the various predictor measures.

The coefficients of the regression equations for each of the 17 regression analyses performed are provided in the appendix. Table A-1 shows, for each step, the standardized beta coefficients, indicating the relative weights of the variables for each class "A" school with performance and attrition criteria. Within this table, the successive steps indicate the changes in beta weights as more variables are added to the predictor equation. Table A-2 shows the unstandardized regression weights.

Table 6

Multiple Correlation Coefficient of Stepwise Regression Analyses with Attrition and Performance Criteria

	"A" School								
Step	AE	AV[a]	EM/GL	EM/SD	EW	FT	GM	IC	ST
				Attrition					
1	.15	.19	.40**	.15	.26	.25	.23	.07	.37
2	.30	.21	.52*	.16	.29	.25	.23	.07	.38
3	.37	.22	.52*	.16	.29	.26	.24	.07	.40
4	.37	.23	.52*	.16	.34	.29	.25	.09	.42
5	.37	.25	.55*	.16	.34	.29	.25	.18	.44
6	.46	.29	.56*	.22	.34	.29	.31	.18	.52
7	.48	.41	.66*	.22	.38	.30	.33	.18	.52
8	.51	.43	.68*	.24	.46	.35	.35	.21	.54
9	.60**	.43	.71*	.24	.46	.36	.37	.21	.54
10	.61	.45	.72*	.24	.51	.36	.37	.21	.54
11	.61	.46	.72*	.24	.51	.36	.38	.21	.57
12	.61	.47	.72*	.27	.51	.36	.38	.22	.59
				Performance					
1	.42	--	.49*	.65*	.55*	.37*	.48*	.55*	.66*
2	.44	--	.61*	.65*	.56**	.37**	.49*	.55*	.68*
3	.48	--	.61*	.67*	.60*	.49*	.50*	.56*	.68*
4	.51	--	.61*	.67*	.61**	.49*	.51**	.56*	.68*
5	.51	--	.64*	.68*	.62**	.51*	.51**	.56*	.69*
6	.52	--	.64*	.68*	.63**	.51*	.51**	.57*	.69*
7	.54	--	.73*	.71*	.71*	.53*	.52**	.61*	.79*
8	.60	--	.76*	.72*	.71*	.56*	.54	.63*	.80*
9	.61	--	.78*	.73*	.74*	.57*	.54	.64*	.80*
10	.63	--	.78*	.74*	.75*	.60*	.54	.64*	.80*
11	.68	--	.78*	.76*	.75**	.60*	.55	.65*	.81*
12	.68	--	.78*[b]	.76*[b]	.78**	.62*[b]	.58	.65*[b]	.82*

[a]Performance data not provided for AV school.

[b]R obtained by adding all BE/E module data (Step 12) is significantly larger (.05 level) than that obtained using only aptitude scores and mathematics pretest (Step 1).

*p < .01
**p < .05

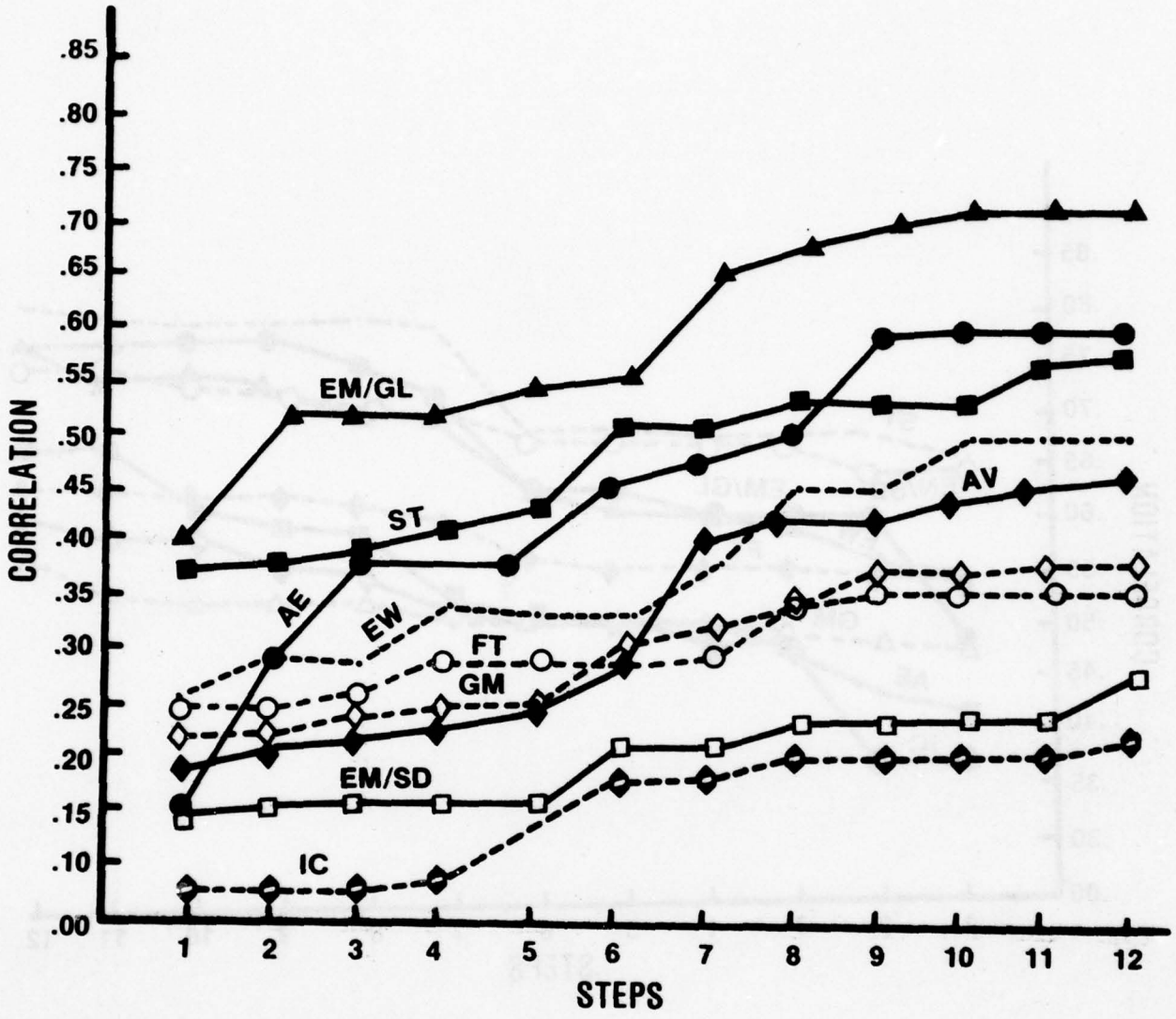


Figure 4. Multiple correlation coefficients for each step of the regression analyses using the attrition criterion.

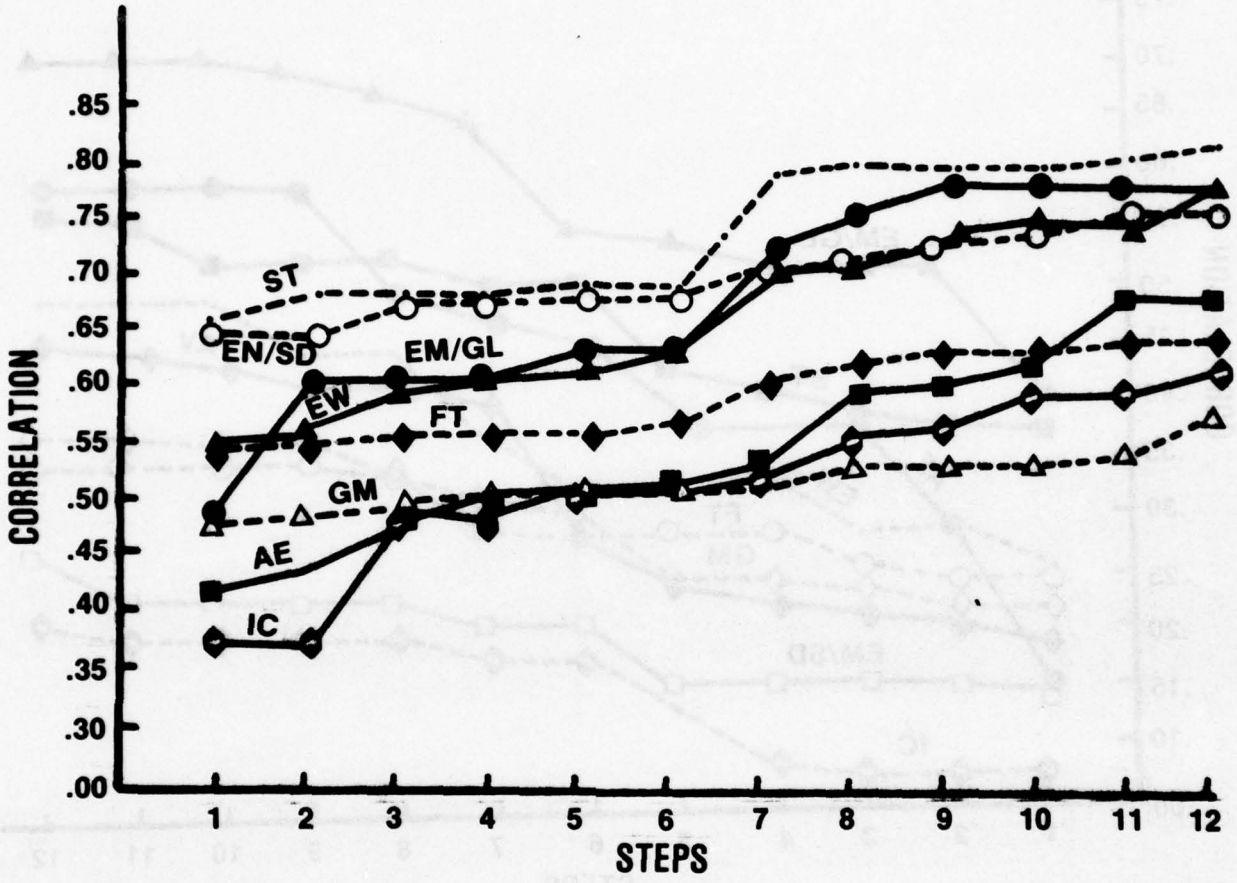


Figure 5. Multiple correlation coefficients for each step of the regression analyses using the performance criterion.

Significant coefficients (partial F-test at the .05 level) are indicated in both tables. The partial F-test for each beta coefficient indicates the value of adding that beta term to the model when the remaining terms that do not involve beta are already in the model. The partial F-test was made for all regression coefficients as though each corresponding variable was the last to enter the regression equation. This test permits a determination of the relative effect of each variable in excess of the others.

As indicated in Tables A-1 and A-2, few regression coefficients were significant. Those that were significant were not identical across schools, nor from step to step. At successive steps, new variables entering the equation account for some of the variation that was accounted for by variables already in the equation. For example, in Table A-2, the coefficient of S2 for AE attrition was significant from Step 3, where it entered, until Step 8, but not beyond that point. On the other hand, the coefficient of S1 for EM/GL attrition was significant from Step 2, where it entered, through the last step, with all variables in the equation. The coefficient of ARI for EM/SD attrition was significant in every step; however, the ARI coefficient did not reach significance in any step for any other school. This may reflect a heavier arithmetic component in the EM/SD course than in the others.

Effects of Using Regression Equations for Reassigning Personnel

As indicated previously, the effects of using these regression equations for reassigning personnel to alternative ratings and corresponding follow-on "A" schools were estimated using students who failed the FT school and for whom 80 percent of the predictor data were available. Fifteen FT students met these criteria: For eight students, complete predictor data were available; for the remaining seven, missing data (no more than 20%) were replaced by the mean values for the entire sample.

The predictor scores for these 15 students were substituted into the performance regression equations for the other eight schools, and the predictions was calculated. In addition, predictions from the FT regression analysis were made as a baseline. All predictions were converted to percentiles by first calculating percentiles from observed performance scores in each "A" school population, and then converting the predicted performance score for a given individual using the percentiles from the appropriate "A" school.

Figure 6 shows the FT baseline curve (the heavy line) and the cumulative distribution of predictions for the five class "A" schools for which performance regression analyses were significant; namely, EM/GL, EM/SD, EW, IC, and ST.[4] It is interesting to note that the curve for EM/SD is almost identical to that for the FT baseline.

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[4]EW and ST did not have significant increments at the .05 level in R by using BE/E data; however, the R for the entire set of predictors was significant at that level.

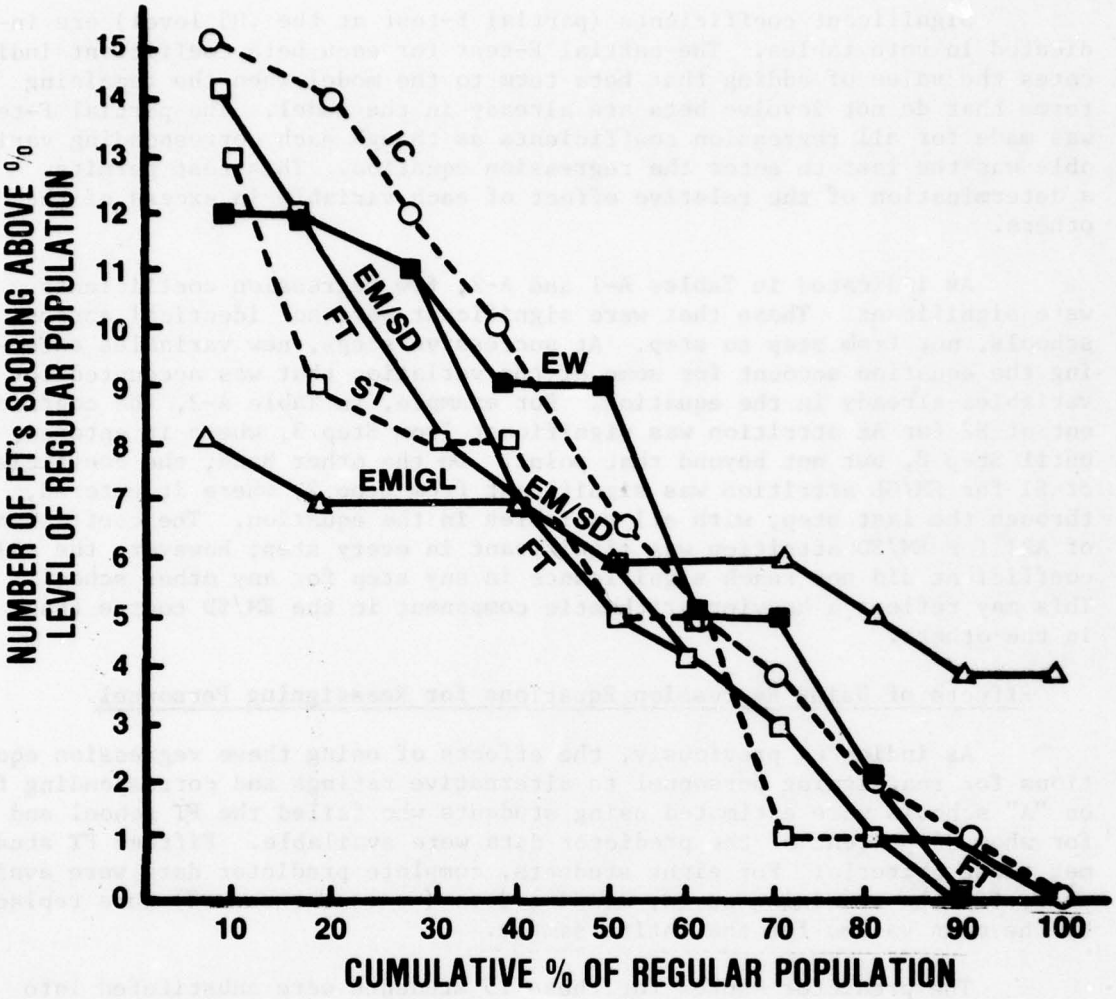

Figure 6. Number of FT failures predicted to score above percentile of other follow-on school populations.

Each curve represents the cumulative distribution of predictions of success in a particular school for the 15 FT failures. Each point indicates the number of those FT failures (vertical axis) who achieved the indicated or higher percentile score (horizonal axis). If reassignment to an alternative rating and school were beneficial for the majority of the FT failures, the predicted class ranks should be higher for that school than for the FT school; that is, the curve for that school should fall above the FT baseline curve.

It appears that reassignment to the IC rating and school would result in slightly higher predicted ranks than those predicted in the original FT school. Since all the curves in Figure 6 are fairly close, reassignment of FTs to other ratings and schools would have only a minimum effect in reducing attrition in follow-on schools. However, these curves apply to only one school at a time. Since it is possible to assign FT failures to a variety of schools, these curves represent minimum percentile rankings for the FT population.

DISCUSSION AND CONCLUSION

In this study, no mastery standards were found that successful students surpassed and failing students did not. For the EM/GL school, a few BE/E modules showed a difference in performance between successful and unsuccessful students, but otherwise BE/E performance relates very little to performance in the follow-on "A" schools.

In addition, we have shown that, with the data available, the model for reassigning students to an alternative follow-on course based on their early BE/E performance has a minimal effect on attrition. The first 11 BE/E module scores add to the prediction of the performance criteria in four of the eight schools (EM/GL, EM/SD, FT, IC), but not in the other four (AE, EW, GM, and ST). Thus, it appears that BE/E module scores do not add to the predictive power of aptitude scores in predicting attrition.

It is possible that, for some ratings (AE, EW, GM, and ST), the material in many BE/E modules is not needed to succeed in the follow-on school. Alternatively, the material may be necessary, but all students who pass BE/E might have mastered the material adequately to succeed in the follow-on school. It is not possible to discern from these data whether students who did not complete BE/E would have failed the follow-on school if they had been allowed to complete BE/E.

Several aspects of this research may have interfered with the identification of a relationship, if one exists, between BE/E and follow-on "A" schools. These aspects, which concern the criterion variables, the predictor variables, the design assumptions, and the models used, are discussed below.

With respect to criterion variables, "A" school records were hand-written, often illegibly. Furthermore, for some schools, weekly scores for several students were missing, and the total score for the course often did not appear to be adjusted for these scores. Accurate and complete data for students in both BE/E and "A" schools would remove such errors from the analyses and could conceivably improve predictions.

Even if complete and accurate test scores were available, the content of the performance tests may not reflect student achievement. If such tests were developed by test developers rather than instructors, their validity might be improved.

The attrition criterion may be a poorer measure of course achievement than performance scores. All poor students do not fail a course. Because a large investment has been made to train students in BE/E and in a portion of the follow-on school, instructors in the follow-on schools make an extended effort to remediate poor students to help them pass the tests. Students who make special efforts may be given extra tutorial time or are set back to a later class for review; those who do not fail the course. Thus, attrition is due to both achievement and motivation. Rather than provide extra remediation for poorer students (those whose performance is marginal), it would be more efficient in the Navy electronics-training establishment to identify these poor students and to reassign them to a school where they will be more proficient.

With respect to the predictor variables, the BE/E tests were used as measures of module achievement. However, if the tests are not valid in differentiating between those who know the material and those who do not, relationships with achievement cannot be demonstrated by using module test scores.

With respect to design assumptions, the score on the first try of a BE/E module test may not represent the student's final mastery of the module. It is possible that many students try to pass a module before they are ready, get a poor score, and then go on to master the module.

Lastly, the methods used to assess the relationships between BE/E module performance and follow-on school performance may have been inappropriate. Due to the small sample sizes relative to the number of variables, a linear model was used to analyze this relationship. A nonlinear or multiplicative model was not attempted. More important, however, was the constraint of working in an operational setting.

A more accurate estimate of the relationship between BE/E and follow-on school performance could have been made by experimentally manipulating the mastery standards required for certain individuals. This would involve permitting a set of students assigned to each follow-on school to progress through BE/E modules with less than 100 percent mastery. Expanding the mastery range would yield better information on the mastery level necessary to succeed in the follow-on course.

Adjusting the mastery level would require a policy change in BE/E. On the other hand, reassigning personnel would require policy changes in the entire training pipeline. The latter policy changes have several implications. Under the present system, a recruit is assured of training in a given rating, provided he meets the requirements. He is not guaranteed success in the training process, but is given the opportunity to succeed. Under a different assignment policy, the recruit could be assured training with the provision that his performance in BE/E exceed some minimal level. Applying the methods of this study, a combination of the student's aptitude and BE/E scores would be used. If this combination is below a specified level for expected success in the follow-on course, the assurance of further training in that rating would be rescinded.

An alternative policy would permit the student to make the decision. He could be informed of his expected success in his assigned follow-on school and in one or more other follow-on schools. He could also be informed of the probable pattern of his Navy career if he did not succeed in his assigned follow-on school. He could then be given the choice of training in the assigned school or in one of the other schools. This would require no modification of present recruitment policies, but would change classification patterns in the training system.

Implementing a complete study to determine reclassification procedures requires much time, effort, and funds. Therefore, before determining the models to predict success in follow-on schools, the administrative policies within which the models will operate should be considered. Further, the utilization of the models should be determined before they are developed.

RECOMMENDATIONS

To determine whether differential mastery standards can be used for the follow-on schools, a random subset of 200 students from one rating (not EM/GL) should be permitted to progress through BE/E with a 60 percent mastery standard on all modules with positive or small negative correlation coefficients with attrition. The remaining students should progress with a 100 percent mastery standard. The performance of the two groups on each succeeding module and on class "A" school can then be compared. It is possible that the first 11 modules are prerequisites to the remaining modules. If performance on the succeeding BE/E modules is poorer for the lower mastery group, then the lower mastery standard is compounding deficiencies. If, however, performance on succeeding BE/E modules and on the follow-on course is not affected by lower mastery standards, these standards can be used for all students in that school with no adverse effects on performance.

Assuming that the findings using the remaining modules would be similar to those using the first 11 modules, a parallel effort should be made to determine whether the first 11 BE/E modules are necessary for success in the follow-on school. A random subset of 200 students from another rating should be permitted to omit the first 11 modules. This rating should be one in which the correlations of BE/E module scores are positive with attrition and negative with performance (i.e., opposite to the expected direction). Performance on successive modules and on the follow-on course should be compared as described above to determine whether lower mastery standards can be applied.

If lower mastery standards can be used in BE/E for those ratings in which attrition is high (e.g., GM), it will save training dollars by reducing attrition. If methods used are successful in lowering mastery standards or eliminating the BE/E requirement, they can be applied in a similar manner to other ratings included in this study, and to the remainder of ratings require BE/E as a prerequisite.

A new version of the BE/E curriculum (Course File 70) will be implemented in 1978. Although the method of reassigning students to alternative class "A" schools on the basis of BE/E performance did not yield great promise for reducing attrition, the approach presented in this study may be implemented with this new BE/E curriculum. This would involve:

1. Obtaining performance data from the class "A" schools using some specified criteria.

2. Making provisions for determining the course performance scores for setbacks and for students who did not take one or more of the tests that contribute to the total score.

3. Obtaining scores for a larger number of students in order to decrease the error component in the regression analyses.

APPENDIX

BETA AND UNSTANDARDIZED REGRESSION COEFFICIENTS WITH PERFORMANCE AND ATTRITION CRITERIA

Table A-1

Beta Coefficients with Criteria

	AE	AV	EM/GL	EM/SD	EW	FT	GM	IC	ST
				Performance					
Step 1									
GCT	-.02	--[a]	.09	.25*	-.06	.05	.09	.19*	.35
ARI	-.04	--[a]	-.01	.12	.05	-.01	-.24	.16*	.26*
MECH	.16	--[a]	.06	.06	.19	.10	-.32*	.11	-.09
SHOP	.09	--[a]	.14	.13*	.18	.16	.27*	.12*	.05
ETST	.37*	--[a]	.19	.08	-.02	-.03	.11	.04	-.04
PMTS	-.03	--[a]	.27*	.24*	.38	.25*	-.26*	.14	.34*
Step 2									
GCT	-.02	--[a]	.03	.25*	-.05	.04	.07	.19*	.38*
ARI	-.06	--[a]	-.11	.12	.05	-.02	-.26	.16*	.31*
MECH	.16	--[a]	.03	.06	.17	.10	-.32*	.11	-.07
SHOP	.07	--[a]	.14	.13*	.17	.15	.27*	.12	-.03
ETST	.34*	--[a]	.19	.07	-.00[b]	-.04	.11	.06	-.01
PMTS	-.01	--[a]	.26*	.24*	.32	.24*	-.27*	.14	.35*
S1	.14	--[a]	.39*	.05	.14	.04	.08	.01	-.19
Step 3									
GCT	-.06	--[a]	.02	.22*	-.02	.03	.11	.17*	.37*
ARI	-.07	--[a]	-.10	.13*	.09	-.02	-.24	.16*	.31*
MECH	.15	--[a]	.03	.04	.12	.01	-.30*	.10	-.08
SHOP	.07	--[a]	.14	.12*	.20	.17	.24*	.11*	-.03
ETST	.31	--[a]	.19	.05	-.01	-.03	.10	.05	-.01
PMTS	-.00[b]	--[a]	.25*	.22*	.23	.19	-.24	.14	.35*
S1	.07	--[a]	.38*	.04	.12	-.01	.10	-.01	-.19
S2	.23	--[a]	.02	.16*	.23	.33*	-.14	.13	.02
Step 4									
GCT	-.06	--[a]	.03	.22*	-.03	.02	.11	.16*	.37*
ARI	-.08	--[a]	-.12	.14*	.09	-.03	-.24	.16*	.30*
MECH	.11	--[a]	.03	.03	.13	-.00[b]	-.31*	.10	-.08
SHOP	.09	--[a]	.13	.12*	.20	.18	.25*	.11*	.04
ETST	.31	--[a]	.18	.05	.00[b]	-.02	.09	.04	-.01
PMTS	-.02	--[a]	.25	.21*	.25	.16	-.24	.14	.35*
S1	.03	--[a]	.37*	.04	.12	-.02	.08	-.01	-.20
S2	.15	--[a]	.02	.13*	.24	.34*	-.17	.12*	.02
S3	.20	--[a]	.05	.08	-.09	.10	.08	.06*	.03
Step 5									
GCT	-.07	--[a]	.05	.21*	-.03	.03	.12	.16*	.37*
ARI	-.09	--[a]	-.12	.14*	.10	-.03	-.24	.16*	.31*
MECH	.12	--[a]	.06	.04	.12	-.01	-.31*	.10	-.08
SHOP	.09	--[a]	.12	.12*	.19	.17	.24*	.11	-.02
ETST	.30	--[a]	.12	.05	.01	-.05	.09	.03	-.01
PMTS	-.02	--[a]	.25*	.19*	.25	.18	-.25	.14	.36*
S1	.04	--[a]	.35*	.03	.08	-.05	.08	-.01	-.16
S2	.15	--[a]	-.03	.13*	.22	.36*	-.17	.12*	.01
S3	.18	--[a]	.01	.06	-.08	.08	.08	.06	.05
S4	.05	--[a]	.21*	.09*	.15	.12	.02	.02	-.10

[a]The variable did not appear in the regression equation at this step.

[b]The variable was used at this step in the regression, but the coefficient was not significant to two decimal places.

*p < .05

Table A-1 (Continued)

	AE	AV	EM/GL	EM/SD	EW	FT	GM	IC	ST
				Performance (Continued)					
Step 6									
GCT	-.06	--[a]	.06	.09*	-.03	.03	.12	.16*	.37*
ARI	-.08	--[a]	-.15	.09*	.10	-.03	-.24	.15*	.29*
MECH	.13	--[a]	.06	.09*	.11	-.01	-.31*	.10	-.09
SHOP	.07	--[a]	.10	.09*	.18	.17	.24	.10	-.02
ETST	.29	--[a]	.09	.09*	.02	-.05	.09	.03	-.01
PMTS	-.03	--[a]	.26*	.09*	.22	.18	-.24	.13	.35*
S1	.03	--[a]	.32*	.09*	.07	-.05	.08	-.02	.15
S2	.16	--[a]	-.03	.09*	.23	.36*	-.17	.11*	.01
S3	.16	--[a]	.01	.09*	-.08	.08	.08	.06	.01
S4	.04	--[a]	.21*	.09*	.14	.13	.02	.01	-.10
S5	.08	--[a]	.10	.09*	.07	-.03	-.02	.11*	.05
Step 7									
GCT	-.05	--[a]	.03	.24*	-.17	-.01	.10	.17*	.34*
ARI	-.07	--[a]	-.08	.08	.10	-.05	-.25*	.13	.20
MECH	.10	--[a]	.05	.03	.18	-.02	-.29*	.07	-.09
SHOP	.07	--[a]	.10	.12*	.17	.17	.25	.10	.00[b]
ETST	.28	--[a]	.06	-.00[b]	-.06	-.06	.07	.02	-.01
PMTS	-.08	--[a]	.12	.16*	.26	.13	-.21	.07	.33*
S1	.01	--[a]	.34*	.02	.04	-.04	.08	-.03	-.14
S2	.12	--[a]	-.19	.08	.23	.33*	-.14	.08	-.02
S3	.10	--[a]	-.05	.02	-.09	.07	.10	.03	.14
S4	.02	--[a]	.11	.07	.02	.11	.03	-.02	-.20*
S5	.02	--[a]	.02	--[a]	-.02	-.06	.02	.06	.01
S6	.22	--[a]	.50*	.27*	.41*	.18	-.13	.26*	.46*
Step 8									
GCT	-.15	--[a]	.03	.23*	-.17	-.04	.08	.08*	.32*
ARI	.05	--[a]	-.11	.05	.10	-.08	-.23	.09	.20
MECH	.10	--[a]	.08	.01	.20	-.04	-.32*	.05	-.11
SHOP	-.07	--[a]	.09	.11*	.17	.14	-.23*	.09	.01
ETST	.34	--[a]	-.01	-.01	-.03	-.12	.10	.02	.10
PMTS	-.11	--[a]	.02	.10	.26	.13	-.18	-.01	.31*
S1	.03	--[a]	.28*	.02	.03	-.04	.08	-.05	-.15
S2	.12	--[a]	-.17	.08	.24	.36*	-.14	.07	-.02
S3	-.03	--[a]	.05	.00[b]	-.11	.08	.13	.10	.14
S4	-.03	--[a]	.14	.06	.02	.10	.04	-.04	-.21
S5	-.04	--[a]	-.00[b]	-.02	-.03	-.10	.02	.04	-.01
S6	.04	--[a]	.40*	.25*	.44*	.19	-.09	.21*	.42
S7	-.06	--[a]	-.06	.05	--[a]	.11	.09	.06	.03
T7	.04	--[a]	.24	.18*	.08	-.10	.15	-.16*	-.04
DCS	.48*	--[a]	.16	--[a]	--[a]	.17	-.07	.07	.06

[a]The variable did not appear in the regression equation at this step.

[b]The variable was used at this step in the regression, but the coefficient was not significant to two decimal places.

*$p < .05$

Table A-1 (Continued)

	AE	AV	EM/GL	EM/SD	EW	FT	GM	IC	ST
				Performance (Continued)					
Step 9									
GCT	-.14	--[a]	-.06	.21*	-.29	-.05	.08	.19*	.31*
ARI	.04	--[a]	-.11	.05	.11	-.07	-.23	.08	.20
MECH	.10	--[a]	.08	.01	.21	-.03	-.32*	.05	-.12
SHOP	-.05	--[a]	.07	.10*	.14	.14	.29*	.09	.01
ETST	.33	--[a]	-.05	.01	-.00[b]	-.12	.10	.01	-.09
PMTS	-.09	--[a]	.04	.06	.21	.13	-.19	-.02	.31*
S1	.02	--[a]	.23*	.01	.08	-.04	.08	-.05	-.15
S2	.10	--[a]	-.20	.06	.18	.35*	-.13	.05	-.03
S3	-.06	--[a]	-.08	-.01	-.07	.08	.13	-.00[b]	.14
S4	-.09	--[a]	.15	.06	.01	.10	.04	-.02	-.21
S5	-.03	--[a]	-.05	-.02	-.01	-.11	.03	.02	.00[b]
S6	.03	--[a]	.31*	.23*	.39*	.18	-.09	.19*	.41*
S7	-.06	--[a]	-.09	.05	--[a]	.11	.09	.07	.03
T7	.40	--[a]	-.25*	-.20*	.05	-.10	.13	-.17	-.04
DCS	.47*	--[a]	.19	--[a]	--[a]	.17	-.07	.06	.06
S8	.14	--[a]	.29*	.12*	.27	.05	.02	.15*	.05
Step 10									
GCT	-.14	--[a]	-.09	.20*	-.25	-.07	.08	.18*	.33*
ARI	.00[b]	--[a]	-.10	.02	.14	-.10	-.24	.08	.22
MECH	.10	--[a]	.09	.01	.18	.01	-.32	.05	-.12
SHOP	-.01	--[a]	.07	.10*	.15	.12	.30	.09	.01
ETST	.33	--[a]	-.05	.03	-.01	-.13	.10	.01	-.09
PMTS	-.10	--[a]	.02	.06	.18	.12	-.19	-.02	.31*
S1	.04	--[a]	.25*	.02	.07	-.03	.08	-.05	-.17
S2	.07	--[a]	-.20	.04	.18	.35*	-.13	.05	-.04
S3	-.07	--[a]	-.07	-.02	-.08	.09	.13	-.00[b]	.14
S4	-.07	--[a]	.15	.05	.02	.10	.04	-.02	-.21
S5	-.03	--[a]	-.04	-.03	-.02	-.14	.02	.02	.01
S6	-.05	--[a]	.34*	.20*	.36*	.11	-.09	.19*	.41*
S7	-.01	--[a]	-.08	.05	.01	.09	.09	.07	.05
T7	-.00[b]	--[a]	-.25*	-.20*	.03	-.10	.15	-.17*	-.02
DCS	.39	--[a]	.20	-.03	-.06	.14	-.07	.06	.06
S8	.10	--[a]	.31*	.11*	.25	.05	-.03	.15*	.05
S9	.24	--[a]	-.13	.16*	.14	.24*	.03	.02	-.06
Step 11									
GCT	-.11	--[a]	-.08	.20*	-.27	-.07	.09	.18*	.26
ARI	.03	--[a]	-.10	-.00[b]	.14	-.10	-.22	.07	.20
MECH	.12	--[a]	.09	.00[b]	.20	.00[b]	-.33*	.04	-.13
SHOP	-.10	--[a]	.07	-.00[b]	.15	.12	.30*	.08	.06
ETST	.35	--[a]	-.06	.03	-.01	-.14	.12	.02	-.11
PMTS	-.13	--[a]	.02	.05	.18	.13	-.22	-.02	.31*
S1	.02	--[a]	.24*	.01	.08	-.04	.08	-.06	.19
S2	.06	--[a]	-.20	.03	.18	.33*	-.13	.04	.01
S3	-.08	--[a]	-.07	-.03	-.08	.10	.12	-.01	.14
S4	-.18	--[a]	.15	.05	.01	.09	.04	-.03	-.20
S5	-.07	--[a]	-.04	-.04	-.02	-.15	.06	.00[b]	-.01
S6	-.08	--[a]	.33*	.19*	.36*	.10	-.07	.18*	.43*
S7	-.02	--[a]	-.07	.04	.02	.08	.12	.05	.01
T7	.09	--[a]	.25	-.21*	.07	-.10	.14	-.17*	-.03

[a]The variable did not appear in the regression equation at this step.

[b]The variable was used at this step in the regression, but the coefficient was not significant to two decimal places.

*$p < .05$

Table A-1 (Continued)

	AE	AV	EM/GL	EM/SD	EW	FT	GM	IC	ST
Performance (Continued)									
Step 11 (Continued)									
DCS	.49*	--[a]	.21	-.03*	-.07	.13	-.07	.06	.05
S8	.08	--[a]	.31*	.09*	.26	.04	-.01	.14*	.04
S9	.15	--[a]	-.13	.15*	.14	.23*	.03	.02	-.05
S10	.31*	--[a]	.03	.14*	-.05	.06	-.13	.10	.16
Step 12									
GCT	-.11	--[a]	-.09	.20*	-.24	-.13	.50*	.17*	.21
ARI	.02	--[a]	-.10	-.00[b]	.18	-.13	-.11	.07	.18
MECH	.12	--[a]	.09	.00[b]	.16	.11	-.17	.04	-.06
SHOP	-.11	--[a]	.07	.11*	.14	.07	.34	.08	-.03
ETST	.34	--[a]	-.06	.03	-.01	-.21	.42	.02	-.12
PMTS	-.14	--[a]	.02	.05	.11	.14	-.41	-.03	.30*
S1	-.01	--[a]	.24*	.01	.05	-.01	.02	-.05	-.20
S2	.08	--[a]	-.19	.03	.17	.25*	-.24	.04	.00[b]
S3	-.07	--[a]	-.07	-.03	-.13	.09	.03	-.01	.10
S4	-.17	--[a]	.15	.04	.09	.09	.07	-.03	-.22
S5	-.10	--[a]	-.04	-.04	-.04	-.18	.22	.00[b]	.01
S6	-.10	--[a]	.33*	.19*	.27	.12	.07	.19*	.44*
S7	-.00[b]	--[a]	-.07	.04	.05	.09	-.08	.05	-.01
T7	.09	--[a]	-.25*	-.21*	.13	.11	1.99	-.14	.28
DCS	.52*	--[a]	.21	-.03	-.08	.17	-.14	.06	.02
S8	.05	--[a]	.31*	.09*	.26	.03	-.09*	.14*	.01
S9	.13	--[a]	-.13	.15*	.13	.20*	-.32	.01	-.01
S10	.29	--[a]	.03	.14*	-.05	.06	-.11	.09	.12
S11	.11	--[a]	-.02	.03	.25	.14	--[a]	.03	.12
T11	--[a]	--[a]	--[a]	--[a]	-.08	-.22	-1.85	-.04	-.38
Attrition									
Step 1									
GCT	--[a]	-.10	-.03	-.03	.06	-.12	-.11	-.02	-.30*
ARI	-.11	-.08	.05	.13*	-.06	-.07	.06	-.03	-.08
MECH	.04	.07	-.07	-.05	-.05	--[a]	.20*	.05	--[a]
SHOP	-.03	.01	-.15	.10*	.06	-.07	-.13	.02	-.04
ETST	.02	-.04	-.15	-.18*	.08	-.19*	.03	.08	-.09
PMTS	-.08	-.05	-.26*	.05	.19	.18*	.04	-.04	.14
Step 2									
GCT	--[a]	-.09	.03	-.03	.05	-.12	-.11	-.02	-.28*
ARI	-.08	-.07	.13	.12*	-.05	-.06	.06	-.03	-.06
MECH	.04	.08	-.04	-.05	-.04	--[a]	.20*	.05	--[a]
SHOP	-.00[b]	.02	-.14	.10*	.06	-.07	-.13	.02	-.07
ETST	.08	-.02	-.15	-.18*	.06	-.19*	.03	.08	-.08
PMTS	-.11	-.05	-.25*	.05	.26	.19*	.04	.04	.14
S1	-.27*	-.10	-.36*	.04	-.14	-.03	-.02	-.02	-.09

[a]The variable did not appear in the regression equation at this step.

[b]The variable was used at this step in the regression, but the coefficient was not significant to two decimal places.

*$p < .05$

Table A-1 (Continued)

	AE	AV	EM/GL	EM/SD	EW	FT	GM	IC	ST
				Attrition (Continued)					
Step 3									
GCT	--[a]	-.09	.01	-.04	.05	-.12	-.13	-.01	-.33*
ARI	-.05	-.07	.14	.13*	-.05	-.06	.05	-.03	-.10
MECH	.06	.07	-.05	-.06	-.04	-.03	.19*	-.05	--[a]
SHOP	.00[b]	.01	-.14	.10*	.07	-.06	-.12	.02	-.08
ETST	.13	-.02	-.15	-.19*	.06	-.19	.03	.08	-.07
PMTS	-.13	-.05	-.25*	.04	.25	.18*	.03	-.04	.14
S1	-.20*	-.10	-.37*	.04	-.15	-.04	-.03	-.01	-.11
S2	-.24*	.06	.04	.02	.02	.06	.06	-.02	.15
Step 4									
GCT	.04	-.09	.01	-.04	.06	-.10	-.13	-.01	-.32*
ARI	-.06	-.09	.15	.13*	-.05	-.06	.05	-.03	-.08
MECH	.05	.07	-.05	-.06	-.06	-.01	.19*	-.05	-.02
SHOP	-.00[b]	-.00[b]	-.13	.10*	.06	-.07	-.12	.03	-.04
ETST	.12	-.03	-.14	-.18*	.03	-.21*	.02	.09	-.09
PMTS	-.12	-.05	-.25*	.04	.21	.22*	.03	-.04	.13
S1	-.19	-.10	-.36*	.04	-.15	-.04	-.05	-.01	-.11
S2	-.24*	.05	.05	.01	-.02	.05	.04	-.01	.17
S3	-.03	.08	-.06	.04	.19	-.14*	.09	-.06	-.13
Step 5									
GCT	.04	-.09	-.01	-.04	.06	-.10	.09	-.00[b]	-.32*
ARI	-.06	-.07	.16	.13*	-.05	-.06	.09	-.03	-.07
MECH	.05	.07	-.08	-.06	-.07	-.01	.09	-.04	-.03
SHOP	-.00[b]	-.01	-.12	.10*	.06	-.08	.09	.04	-.02
ETST	.12	-.02	-.08	-.19*	.04	-.21*	.09	.10	-.10
PMTS	-.12	-.03	-.25*	.04	.21	.22*	.09	-.03	.15
S1	-.19	-.08	-.33*	.04	-.15	-.05	.09	-.00[b]	-.05
S2	-.24*	.06	.09	.01	-.02	.05	.09	-.01	.16
S3	-.02	.11	-.02	.04	.19	-.14*	.09	-.04	-.09
S4	-.02	-.13	-.22*	-.02	.02	.03	.09	-.16*	-.17
Step 6									
GCT	.02	-.06	-.02	-.04	.06	-.10	-.10	-.00[b]	-.35*
ARI	-.09	-.04	.18	.14*	-.04	-.06	.05	-.04	.04
MECH	.02	.07	-.08	-.07	-.08	-.01	.18*	-.04	.02
SHOP	.06	-.02	-.10	.13*	-.05	-.08	-.14	.04	-.05
ETST	.16	-.01	-.05	-.18*	.04	-.21*	.01	.10	-.11
PMTS	-.09	-.02	-.26*	.06	.18	.22*	.08	-.04	.18
S1	-.15	-.08	-.30*	.06	-.16	-.05	.04	-.00[b]	-.09
S2	-.25*	.03	.10	.03	-.01	.05	.03	-.01	.18
S3	.08	.11	-.02	.05	.19	-.15*	.09	-.04	-.02
S4	.04	-.10	-.22*	-.00[b]	.00[b]	.02	--[a]	-.16*	-.18
S5	-.32*	-.17*	-.09	-.16*	.09	.05	-.22*	.03	-.30*

[a]The variable did not appear in the regression equation at this step.

[b]The variable was used at this step in the regression, but the coefficient was not significant to two decimal places.

*$p < .05$

Table A-1 (Continued)

	AE	AV	EM/GL	EM/SD	EW	FT	GM	IC	ST
					Attrition (Continued)				
Step 7									
GCT	.03	-.05	.00[b]	-.03	-.01	-.08	-.09	-.00[b]	-.35*
ARI	-.09	.00[b]	.11	.13*	-.04	-.06	.06	-.03	.05
MECH	-.00[b]	.12	-.07	-.07	-.05	-.01	.16	-.04	.02
SHOP	.05	-.01	-.10	.13*	.04	-.08	-.14	.04	-.05
ETST	.16	-.01	-.02	-.19*	.01	-.21*	.02	.10	-.10
PMTS	-.13	-.02	-.12	.06	.20	.24*	.05	-.02	.18
S1	-.16	-.06	-.33*	.06	-.18	-.05	.04	-.00[b]	-.10
S2	-.28*	.09	.26*	.02	-.01	.06	-.10	-.00[b]	.18
S3	.03	.11	.04	.04	.19	-.14*	.07	-.03	-.03
S4	.02	-.05	-.12	-.01	-.06	.02	--[a]	-.16*	-.17
S5	-.37*	-.06	-.02	-.17*	.04	.06	-.26	.04	-.30*
S6	.18	-.34*	-.50*	.05	.21	.08	.13*	-.04	-.05
Step 8									
GCT	.00[b]	-.06	.01	-.05	.02	-.04	-.11	.00[b]	-.35
ARI	-.06	.02	.13	.12*	-.02	-.03	.06	-.04	.04
MECH	-.05	.11	-.09	-.08	.03	.02	.16	-.04	.00[b]
SHOP	.03	.01	-.10	.12*	.04	-.07	-.16	.05	-.01
ETST	.15	-.01	.03	-.20*	.09	-.18*	-.01	.10	-.14
PMTS	-.14	.02	-.04	.04	.21	.23*	.04	-.02	.18
S1	-.19	-.06	-.28*	.07	-.21	-.05	.03	-.00[b]	-.06
S2	-.25*	.09	.23*	.02	.04	.03	-.03	-.00[b]	.20
S3	-.01	.11	.04	.04	.13	-.15*	.08	-.02	-.03
S4	-.01	-.06	-.15*	-.01	-.07	.01	-.01	-.16*	-.12
S5	-.40*	-.06	.00[b]	-.18*	.02	.09	-.29*	.03	-.26*
S6	.09	-.34*	-.42*	.04	.29*	-.10	.09	-.03	-.01
S7	.15	.09	.10	-.04	--[a]	.05	.07	.06	-.19
T7	--[a]	.15	.18*	-.03	.31*	.08	-.04	-.02	--[a]
DCS	.19	.02	-.14	.10*	.04	-.16*	.12	-.10*	.08
Step 9									
GCT	-.01	-.06	.11	-.05	.01	-.07	-.11	-.10*	-.35*
ARI	-.05	.02	.12	.12*	-.02	-.02	.08	-.10*	.04
MECH	-.04	.11	-.09	-.08*	.03	.04	.16	-.10*	.01
SHOP	-.02	.01	-.08	.12*	.04	-.08	-.16	-.10*	-.01
ETST	.20	-.01	.08	-.20*	.09	-.18*	-.01	-.10*	-.14
PMTS	-.17	.02	-.06	.04	.20	.24*	.05	-.10*	.18
S1	-.16	-.06	-.23*	.07	-.21	-.07	.02	-.10*	-.06
S2	-.16	.09	.26*	.02	.03	.02	-.04	-.10*	.20
S3	.08	.11	.07	.04	.13	-.16*	.07	-.10*	-.03
S4	.11	-.08	.05*	-.01	-.07	.01	-.01	-.10*	-.12
S5	-.41*	-.06	.05	-.18*	.02	.08	-.31*	-.10*	-.27*
S6	.13	-.33*	-.33*	.04	.28*	-.12	.07	-.10*	-.01
S7	.14	.10	.13	-.04	--[a]	.05	.07	-.10*	-.19
T7	--[a]	.15*	.20*	-.03	.31*	.09	-.06	-.10*	--[a]
DCS	.21	.00[b]	-.17	.10*	.04	-.16*	.07	-.10*	.09
S8	-.43*	.06	-.31*	.01	.03	.12	.12	-.10*	-.18

[a]The variable did not appear in the regression equation at this step.

[b]The variable was used at this step in the regression, but the coefficient was not significant to two decimal places.

*p < .05

Table A-1 (Continued)

	AE	AV	EM/GL	EM/SD	EW	FT	GM	IC	ST
				Attrition (Continued)					
Step 10									
GCT	-.00[b]	-.08	.14	-.05	.03	-.07	-.12	.01	-.36*
ARI	-.04	.02	.10	.12*	.03	-.02	.07	-.04	.02
MECH	-.03	.17*	-.11	-.08*	.03	.04	.15	-.04	.01
SHOP	-.03	-.02	-.08	.12*	.03	-.08	-.15	.05	-.01
ETST	.18	.00[b]	.08	-.20*	.03	-.18*	-.02	.10	-.14
PMTS	-.19	.05	-.04	.04	.03	.24*	.04	-.02	.18
S1	-.15	-.10	-.26*	.07	.03	-.07	.02	.00[b]	-.05
S2	-.18	.08	.26*	.02	.03	.02	-.03	.00[b]	.20
S3	.08	.13*	.06	.04	.03	-.16*	.08	-.02	-.03
S4	.16	-.08	-.17*	-.01	.03	.01	-.01	-.16*	-.13
S5	-.41	-.07	.05	-.18*	.03	.08	-.32	.03	-.27*
S6	.12	-.38*	-.37*	.04	.03	-.12	.06	-.03	-.00[b]
S7	.14	.08	.10	-.04	.03	.05	.08	.07	-.20
T7	-.07	.17*	.20*	-.03	.03	.09	-.06	-.03	--[a]
DCS	.19	-.06	-.19*	.10*	.03	-.16*	.07	-.09	.09
S8	-.44*	.03	-.34*	.02	.03	.12	.11	--[a]	-.02
S9	.03	.20*	.19*	-.02	.03	-.01	-.05	-.03	.03
Step 11									
GCT	.00[b]	-.07	.19*	-.02	.03	-.07	-.11	-.03	-.46*
ARI	-.04	.03	.19*	-.02	.03	-.02	.08	-.03	-.01
MECH	-.02	.17*	.19*	-.02	.03	.05	.14	-.03	-.00[b]
SHOP	-.05	-.01	.19*	-.02	.03	-.09	-.15	-.03	.07
ETST	.18	.00[b]	.19*	-.02	.03	-.17*	-.01	-.03	-.17
PMTS	-.19	.04	.19*	-.02	.03	.22*	.02	-.03	.18
S1	-.15	-.09	.19*	-.02	.03	-.06	.02	-.03	-.10
S2	-.18	.08	.19*	-.02	.03	.03	-.04	-.03	.24*
S3	.08	.14*	.19*	-.02	.03	-.16*	.07	-.03	-.02
S4	.13	-.08	.19*	-.02	.03	.02	-.01	-.03	-.12
S5	-.42*	-.06	.19*	-.02	.03	.09	-.29*	-.03	-.29*
S6	.11	-.37*	.19*	-.02	.03	-.11	.08	-.03	.04
S7	.14	.09	.19*	-.02	.03	.05	.10	-.03	-.27*
T7	-.05	.17*	.19*	-.02	.03	.08	-.06	-.03	--[a]
DCS	.22	-.06	.19*	-.02	.03	-.16	.06	-.03	.07
S8	-.44*	.04	.19*	-.02	.03	.13	.11	-.03	-.04
S9	.00[b]	.19*	.19*	-.02	.03	-.01	.06	-.03	.04
S10	.08	-.08	.19*	-.02	.03	-.06	-.09	-.03	.24
Step 12									
GCT	.00[b]	-.09	.13	-.05	.03	-.06	-.09	.03	-.45*
ARI	-.04	.04	.10	.12*	.02	-.01	-.09	-.06	.03
MECH	-.03	.16*	-.11	-.09*	.03	.02	-.09	-.04	.09
SHOP	-.05	-.00[b]	-.07	.12*	.06	-.08	-.09	.04	-.02
ETST	.18	-.01	.08	-.18*	.07	-.15	-.09	.06	.18
PMTS	-.20	.07	-.04	.05	.30	.22*	-.09	.01	.16

[a]The variable did not appear in the regression equation at this step.

[b]The variable was used at this step in the regression, but the coefficient was not significant to two decimal places.

*$p < .05$

Table A-1 (Continued)

	AE	AV	EM/GL	EM/SD	EW	FT	GM	IC	ST
					Attrition (Continued)				
Step 12 (Continued)									
S1	-.16	-.09	-.26*	.06	-.30*	-.06	-.09	-.02	-.15
S2	-.17	.10	.25*	.03	.02	.05	-.09	.01	.22
S3	.08	.14*	.07	.06	.02	-.16*	-.09	-.01	-.08
S4	.13	-.07	-.18*	.01	-.00[b]	.02	-.09	-.16*	-.16
S5	-.44*	-.02	.04	-.19*	-.03	.10	-.09	.04	-.27*
S6	.10	-.36*	-.39*	.06	.32*	-.11	-.09	-.03	.01
S7	.15	.08	.10	-.04	-.04	.05	-.09	.07	-.27*
T7	-.05	.15	.20*	-.03	-.26	.03	-.09	-.22	--[a]
DCS	.23	-.04	-.19*	.11*	-.00[b]	-.16*	-.09	-.09	.04
S8	-.45*	.07	-.33*	.04	-.05	.13	-.09	--[a]	-.06
S9	-.01	.19*	.18*	-.00[b]	.08	-.00[b]	-.09	-.00[b]	.03
S10	.07	-.07	--[a]	--[a]	--[a]	-.06	-.09	--[a]	.15
S11	.05	-.13	.06	-.15*	.07	-.02	-.09	--[a]	.22
T11	--[a]	.04	--[a]	--[a]	.67*	.06	-.09	.21	-.08

[a]The variable did not appear in the regression equation at this step.

[b]The variable was used at this step in the regression, but the coefficient was not significant to two decimal places.

*p < .05

Table A-2

Unstandardized Regression Coefficients

	AE	AV	EM/GL	EM/SD	EW	FT	GM	IC	ST
					Performance				
Step 1									
Constant	118.47	--[a]	-40.11	55.88	59.05	30.26	111.53	37.42	39.62
GCT	-.01	--[a]	.31	.18*	-.06	.06	.27	.17*	.36*
ARI	-.03	--[a]	-.05	.09	.05	-.02	-.70	.13*	.25*
MECH	.10	--[a]	.22	.05	.13	.11	-.10*	.10	-.08
SHOP	.04	--[a]	.53	.11*	.13	16	.72*	.12*	.04
ETST	.31*	--[a]	.48	.05	-.02	-.04	.15	.04	-.05
PMTS	-.01	--[a]	.41*	.07*	.13	.12*	-.37*	.05	.15*
Step 2									
Constant	115.34	--[a]	-127.96	53.95	43.97	26.44	101.21	36.84	56.10
GCT	-.01	--[a]	.10	.18*	-.05	.05	.22	.17*	.38*
ARI	-.05	--[a]	-.36	.09	.04	-.03	-.75	.13*	.30*
MECH	.10	--[a]	.10	.05	.12	.12	-1.00*	.10	-.06
SHOP	.04	--[a]	.50	.11*	.13	.16	.73*	.12*	-.03
ETST	.28*	--[a]	.46	.04	-.00[b]	-.04	.15	.04	-.01
PMTS	-.00*[b]	--[a]	.39*	.07*	.10*	.12*	-.38*	.05	.18*
S1	.06	--[a]	1.37*	.02	.16	.05	.17	-.01	-.22
Step 3									
Constant	113.54	--[a]	-129.11	49.51	29.78	17.48	108.81	34.36	56.07
GCT	-.04	--[a]	.08	.15*	-.02	.04	.35	.15*	.38*
ARI	-.06	--[a]	-.35	.10*	.08	-.03	-.71	.13*	.29
MECH	.09	--[a]	.09	.04	.08	.02	-.96*	.10	-.07
SHOP	.04	--[a]	.50	.11*	.15	.17	.65*	.11*	-.03
ETST	.25	--[a]	.46	.03	-.01	-.04	.13	.03	-.01
PMTS	-.00[b]	--[a]	.38*	.06*	.08	.10	-.34	.05	.15*
S1	.03	--[a]	1.35*	.02	.13	-.02	.21	-.01	-.22
S2	.10	--[a]	.06	.09*	.18	.25*	-.23	.08	.01
Step 4									
Constant	109.50	--[a]	-132.56	46.18	33.97	11.47	105.14	31.84	54.15
GCT	-.04	--[a]	.09	.15*	-.03	.03	.35	.15*	.38*
ARI	-.07	--[a]	-.40	.10*	.08	-.04	-.71	.13*	.29*
MECH	.07	--[a]	.10	.03	.09	-.00[b]	.97*	.10	-.06
SHOP	.05	--[a]	.49	.11*	.15	.18	.65*	.10*	-.03
ETST	.25	--[a]	.44	.03	.00[b]	-.02	.11	.02	-.01
PMTS	-.01	--[a]	.38*	.06*	.09	.08	-.34	.05	.15*
S1	.01	--[a]	1.32*	.02	.13	-.02	.17	-.01	-.22
S2	.06	--[a]	.04	.07*	.19	.26*	-.28	.07*	.01
S3	.11	--[a]	.12	.06	-.07	.08	.14	.04*	.03

[a]The variable did not appear in the regression equation at this step.

[b]The variable was used at this step in the regression, but the coefficient was not significant to two decimal places.

*$p < .05$

Table A-2 (Continued)

	AE	AV	EM/GL	EM/SD	EW	FT	GM	IC	ST
				Performance (Continued)					
Step 5									
Constant	108.69	--[a]	-156.96	44.11	30.72	8.67	102.34	31.30	55.14
GCT	-.05	--[a]	.17	.14*	-.03	.04	.36	.15*	.38*
ARI	-.07	--[a]	-.42	.11*	.09	-.05	-.71	.13*	.30*
MECH	.08	--[a]	.19	.03	.08	-.02	-.98*	.10	-.07
SHOP	.05	--[a]	.45	.10*	.14	.17	.65*	.10	-.02
ETST	.24	--[a]	.30	.03	.01	-.05	.11	.02	-.01
PMTS	-.01	--[a]	.38*	.06*	.08	.09	-.35	.05	.15*
S1	.02	--[a]	1.24*	.01	.08	-.07	.16	-.01	-.18
S2	.07	--[a]	-.07	.07*	.18	.27*	-.28	.07*	.01
S3	.10	--[a]	.03	.05	-.07	.07	.14	.05	.04
S4	.02	--[a]	.57*	.05*	.10	.11	.05	.01	-.07
Step 6									
Constant	107.52	--[a]	-159.35	.05*	26.39	10.66	103.34	27.31	51.92
GCT	-.04	--[a]	.21	.05*	-.03	.04	.37	.15*	.38*
ARI	-.06	--[a]	-.51	.05*	.09*	-.04	-.71	.12*	.28*
MECH	.08	--[a]	.21	.05*	.08	-.02	.98*	.10	.08
SHOP	.04	--[a]	.37	.05*	.13	.18	.64	.10	.02
ETST	.24	--[a]	.23	.05*	.02	-.05	.11	.02	.01
PMTS	-.01	--[a]	.39*	.05*	.07	.09	-.35	.04	.15*
S1	.01	--[a]	1.12*	.05*	.08	-.06	.17	-.01	-.17
S2	.07	--[a]	-.07	.05*	.18	.27*	-.28	.07*	.01
S3	.09	--[a]	.02	.05*	-.07	.07	.14	.04	.03
S4	.01	--[a]	.56	.05*	.09	.12	.05	.00[b]	-.07
S5	.04	--[a]	.27	.05*	.06	-.03	-.03	.08*	.05
Step 7									
Constant	112.79	--[a]	123.43	45.91	39.15	14.75	102.56	30.12	49.27
GCT	-.04	--[a]	.11	.17*	-.17	-.01	.33	.15*	.34*
ARI	-.06	--[a]	-.27	.06	.09	.06	-.74	.11	.19
MECH	.06	--[a]	.16	.03	.13	-.02	-.92*	.06	-.08
SHOP	.03	--[a]	.36	.10*	.12	.17	.66	.09	--[a]
ETST	.23	--[a]	.15	-.00[b]	-.05	-.06	.10	.01	-.12
PMTS	-.02	--[a]	.18	.05*	.08	.07	-.31	.02	.14*
S1	.00[b]	--[a]	1.20*	.01	.04	-.06	.16	-.02	-.16
S2	.05	--[a]	-.49	.04	.18	.25*	-.23	.04	-.01
S3	.06	--[a]	-.13	.02	-.08	.06	.18	.02	.12
S4	.01	--[a]	.30	.04	.02	.10	.06	-.01	.13*
S5	.01	--[a]	.06	--[a]	-.02	-.07	.03	.04	.01
S6	.06	--[a]	.79*	.10*	.19*	.10	-.17	.11*	.22*

[a]The variable did not appear in the regression equation at this step.

[b]The variable was used at this step in the regression, but the coefficient was not significant to two decimal places.

*$p < .05$

Table A-2 (Continued)

	AE	AV	EM/GL	EM/SD	EW	FT	GM	IC	ST
				Performance (Continued)					
Step 8									
Constant	103.94	--[a]	-41.24	63.05	33.35	19.11	55.26	42.01	49.82
GCT	-.10	--[a]	.12	.16*	-.16	-.05	.26	.17*	.33*
ARI	.04	--[a]	-.39	.04	.10	-.11	-.69	.07	.19
MECH	.06	--[a]	.27	.00[b]	.14	-.04	-1.01*	.05	-.09
SHOP	-.04	--[a]	.34	.10*	.13	.15	.78*	.08	.01
ETST	.28	--[a]	-.03	-.01	-.03	-.13	.14	.02	-.12
PMTS	-.04	--[a]	.02	.03	.09	.06	-.26	-.00[b]	.13*
S1	.01	--[a]	.98*	.01	.03	.05	.16	-.03	-.16
S2	.05	--[a]	-.45	.04	.19	.27*	-.22	.04	-.01
S3	-.02	--[a]	-.12	.00[b]	-.09	.07	.22	.01	.13
S4	-.01	--[a]	.38	.03	.01	.10	.08	-.01	-.14
S5	-.02	--[a]	-.00[b]	-.01	-.02	-.12	.04	.03	-.01
S6	.01	--[a]	.63*	.10*	.20*	.11	-.12	.09*	.20*
S7	-.02	--[a]	-.12	.02	--[a]	.06	.14	.03	.01
T7	.25	--[a]	-16.49	-2.53*	.89	-1.93	7.35	-2.17*	-.49
DCS	.26*	--[a]	.57	--[a]	--[a]	.14	-.15	.06	.07
Step 9									
Constant	103.24	--[a]	-31.22	61.99	25.67	18.14	54.75	40.16	48.45
GCT	-.10	--[a]	-.23	.15*	-.28	-.07	.26	.17*	.32*
ARI	.03	--[a]	-.38	.04	.10	-.11	-.69	.06	.19
MECH	.06	--[a]	.26	.01	.15	-.03	-1.01	.05	-.10
SHOP	-.03	--[a]	.26	.09*	.11	.14	.78*	.08	.01
ETST	.27	--[a]	-.12	.01	.00[b]	-.13	.14	.01	-.11
PMTS	-.03	--[a]	.06	.02	.07	.06	-.27	-.01	.13*
S1	.01	--[a]	.83*	.00[b]	.09	-.06	.17	-.03	-.17
S2	.04	--[a]	-.52	.03	.15	.27*	-.22	.03	-.02
S3	-.03	--[a]	-.19	-.00[b]	-.06	.06	.22	.00[b]	.12
S4	-.03	--[a]	.40	.03	.01	.09	.08	-.01	-.14
S5	-.02	--[a]	-.13	-.01	-.01	-.13	.04	.01	.00[b]
S6	.01	--[a]	.48	.09	.18	.10	-.12	.08	.19
S7	-.02	--[a]	-.18	.02	--[a]	.06	.14	.03	.01
T7	.40	--[a]	-17.30*	-2.69*	.55	-1.88	7.46	-2.23	-.48
DCS	.26*	--[a]	.68	--[a]	--[a]	.14	-.13	.05	.06
S8	.06	--[a]	.77*	.06*	.15	.04	-.03	.09*	.03
Step 10									
Constant	104.20	--[a]	-28.87	61.07	26.86	12.78	55.54	40.22	50.31
GCT	-.09	--[a]	-.30	.14*	-.24	-.09	.25	.16*	.34*
ARI	.00[b]	--[a]	-.33	.02	.13	-.14	-.70	.06	.21
MECH	.06	--[a]	.31	.01	.13	.01	-1.02	.05	-.10
SHOP	-.00[b]	--[a]	.25	.09*	.11	.12	.79	.08	.01
ETST	.27	--[a]	-.12	.02	-.01	-.15	.13	.01	-.10
PMTS	-.03	--[a]	.03	.02	.06	.06	-.27	-.01	.13*
S1	.02	--[a]	.89*	.01	.08	-.04	.17	-.03	-.19

[a]The variable did not appear in the regression equation at this step.

[b]The variable was used at this step in the regression, but the coefficient was not signif[illegible]nt to two decimal places.

*p < .05

Table A-2 (Continued)

	AE	AV	EM/GL	EM/SD	EW	FT	GM	IC	ST
				Performance (Continued)					
Step 10 (Continued)									
S2	.03	--[a]	-.52	.02	.14	.26*	-.21	.03	-.02
S3	-.04	--[a]	-.17	-.01	-.07	.08	.23	-.00[b]	.12
S4	-.02	--[a]	.41	.03	.01	.09	.07	-.01	-.14
S5	-.01	--[a]	-.12	-.02	-.01	-.15	.04	.01	.01
S6	-.01	--[a]	.53*	.08*	.16*	.06	-.13	.08*	.19*
S7	-.00[b]	--[a]	-.14	.02	.01	.05	.15	.03	.02
T7	-.03	--[a]	-17.52*	-2.78	.34	-2.00	7.28	-2.24	-.33
DCS	.20	--[a]	.72	-.02	-.07	.12	-.14	.05	.06
S8	.04	--[a]	.82*	.06*	.14	.04	-.04	.09*	.04
S9	.08	--[a]	-.28	.08*	.09	.19*	.05	.01	-.04
Step 11									
Constant	97.63	--[a]	-27.49	60.28	27.58	13.12	55.05	39.69	50.55
GCT	-.07	--[a]	-.30	.14*	-.26	-.09	.27	.16*	.26
ARI	.02	--[a]	-.33	-.00[b]	.13	-.14	-.65	.06	.19
MECH	.08	--[a]	.31	.00[b]	.14	.00[b]	-1.04*	.04	-.11
SHOP	-.05	--[a]	.25	.10*	.12	.13	.81*	.07	.05
ETST	.29*	--[a]	-.14	.02	-.01	-.15	.16	.01	-.13
PMTS	-.04	--[a]	.04	.02	.06	.07	-.31	-.01	.13*
S1	.01	--[a]	.86*	.00[b]	.09	-.05	.18	-.03	-.22
S2	.03	--[a]	-.51	.02	.14	.25*	-.22	.02	-.01
S3	-.04	--[a]	-.18	-.02	-.06	.08	.21	-.01	.13
S4	-.07	--[a]	.40	.03	.01	.09	.09	-.02	-.13
S5	-.03	--[a]	-.11	-.02	-.01	-.17	.10	.00[b]	-.01
S6	-.02	--[a]	.52*	.07*	.16*	.06	-.09	.08*	.20*
S7	-.01	--[a]	-.14	.02	.01	.05	.19	.02	.00[b]
T7	.57	--[a]	-17.71*	-2.87	.37	1.88	7.17	-2.31*	-.42
DCS	.27*	--[a]	.73	-.02*	-.07	.11	-.15	.05	.05
S8	.03	--[a]	.81*	.05*	.15	.03	-.02	.08*	.03
S9	.05	--[a]	-.28	.08*	.09	.19*	.06	.01	-.04
S10	.11*	--[a]	.06	.08*	-.04	.05	-.20	.06	.11
Step 12									
Constant	97.53	--[a]	-27.55	60.19	24.44	14.86	-150.47	39.48	67.52
GCT	-.07	--[a]	-.30	.14*	-.23	-.16	1.57	.16*	.22
ARI	.01	--[a]	-.33	-.00[b]	.16	-.19	-.32	.06	.17
MECH	.07	--[a]	.32	.00[b]	.11	.13	-.52	.04	-.05
SHOP	-.06	--[a]	.24	.10*	.11	.08	.92*	.08	-.02
ETST	.28	--[a]	-.15	.02	-.01	.22	.56	.02	-.14
PMTS	-.05	--[a]	.04	.02	.04	.07	-.59*	-.01	.13*
S1	-.01	--[a]	.86*	.01	.06	-.02	.05	-.03	-.22
S2	.03	--[a]	-.51	.02	.13	.19*	-.39	.02	.00[b]
S3	-.04	--[a]	-.19	-.02	-.10	.08	.06	-.01	.09
S4	-.06	--[a]	.40	.02	.06	.08	.14	-.02	-.15
S5	-.05	--[a]	-.10	-.02	-.03	-.20	.37	.00[b]	.01
S6	-.03	--[a]	.52*	.07*	.12	.07	.09	.08*	.20*

[a]The variable did not appear in the regression equation at this step.

[b]The variable was used at this step in the regression, but the coefficient was not significant to two decimal places.

*$p < .05$

Table A-2 (Continued)

	AE	AV	EM/GL	EM/SD	EW	FT	GM	IC	ST
				Performance (Continued)					
Step 12 (Continued)									
S7	-.00[b]	--[a]	-.14	.02	.02	.05	-.13	.02	-.00[b]
T7	.59	--[a]	-17.72	-2.87	1.40	2.10	98.87	-1.79	3.66
DCS	.28*	--[a]	.73	-.02	-.09	.14	-.29	.05	.02
S8	.02	--[a]	.80*	.05*	.15	.02	-.15	.08*	.01
S9	.04	--[a]	-.27	.08*	.09	.16*	-.52	.01	-.01
S10	.10	--[a]	.07	.08*	-.04	.05	-.18	.06	.09
S11	.04	--[a]	-.03	.01	.14	.12	--[a]	.01	.06
T11	--[a]	--[a]	--[a]	--[a]	-1.03	-3.57	-53.84	-.52	-5.79
				Attrition					
Step 1									
Constant	.6286	.6239	1.1757	-.0001	-.5611	1.2926	.0486	.0499	1.1767
GCT	--[a]	-.0049	-.0011	.0007	.0049	-.0065	-.0073	-.0004	-.0120*
ARI	-.0084	-.0040	.0020	.0029*	-.0041	-.0042	.0034	-.0005	-.0030
MECH	.0021	.0031	-.0029	-.0014	-.0029	--[a]	.0129*	-.0011	--[a]
SHOP	-.0013	.0006	-.0064	.0028*	.0034	-.0030	-.0071	.0004	-.0012
ETST	.0016	-.0024	-.0045	-.0033*	.0057	.0089	.0008	.0012	-.0043
PMTS	-.0023	-.0008	-.0047*	.0004	.0050	.0038	.0011	-.0003	.0023
Step 2									
Constant	1.1705	.9816	2.1278	-.0533	.6346	1.4416	.0940	.0665	1.4915
GCT	--[a]	-.0042	.0011	-.0007	.0036	-.0062	-.0071	-.0004	-.0114
ARI	-.0159	-.0036	.0053	.0029*	-.0038	-.0039	.0036	-.0005	-.0021
MECH	.0022	.0032	-.0016	.0015	-.0021	--[a]	.0129*	-.0011	--[a]
SHOP	-.0002	.0006	-.0060	.0028*	.0038	-.0032	-.0071	.0005	-.0023
ETST	.0063	-.0015	-.0043	-.0034	.0043	-.0089*	.0007	.0012	-.0036
PMTS	-.0034	-.0009	-.0044*	.0004	.0067	.0039*	.0012	-.0003	.0023
S1	-.0105*	-.0051	-.0149*	.0007	-.0127	-.0079	-.0008	-.0002	-.0040
Step 3									
Constant	1.3629	.8747	2.1009	-.0705	.5591	1.3844	.0249	.0761	1.4771
GCT	--[a]	-.0044	.0006	-.0008	.0037	-.0062	-.0083	-.0003	-.0131*
ARI	-.0039	-.0035	.0055	.0029*	-.0036	-.0039	.0033	-.0005	-.0036
MECH	.0034	.0029	-.0019	-.0015	-.0023	-.0015	.0125*	-.0011	--[a]
SHOP	.0002	.0003	-.0059	.0028*	.0039	-.0027	-.0064	.0005	-.0028
ETST	.0197	-.0014	-.0044	-.0035*	.0043	-.0087*	.0009	.0012	-.0034
PMTS	-.0039	-.0009	-.0046*	.0004	.0066	.0038*	.0008	-.0003	.0024
S1	-.0077*	-.0054	-.0154*	.0007	-.0129	-.0024	-.0012	-.0002	-.0049
S2	-.0096*	.0020	.0014	.0003	.0010	.0019	.0021	-.0003	.0035

[a]The variable did not appear in the regression equation at this step.

[b]The variable was used at this step in the regression, but the coefficient was not significant to two decimal places.

*$p < .05$

Table A-2 (Continued)

	AE	AV	EM/GL	EM/SD	EW	FT	GM	IC	ST
Attrition (Continued)									
Step 4									
Constant	1.3995	.7122	2.1514	-.1209	-.1840	1.7533	-.0527	.1288	1.7758
GCT	.0024	-.0042	.0004	-.0009	.0050	-.0056	-.0081	-.0003	-.0130*
ARI	-.0043	-.0044	.0061	.0030*	-.0034	-.0035	.0033	-.0005	-.0030
MECH	.0031	.0031	-.0020	-.0016	-.0035	-.0033	.0124*	-.0011	-.0007
SHOP	.0001	-.0002	-.0057	.0028*	.0035	-.0033	-.0064	.0006	-.0015
ETST	.0089	-.0019	-.0040	-.0034*	.0025	-.0096*	.0005	.0014	-.0042
PMTS	-.0037	-.0009	-.0046*	.0004	.0056	.0046*	.0008	-.0003	.0022
S1	-.0074	-.0053	-.0150*	.0007	-.0133	-.0022	-.0021	-.0002	-.0047
S2	-.0194*	.0016	.0016	.0001	-.0011	.0016	.0012	-.0001	.0041
S3	-.0013	.0031	-.0017	.0009	.0123	-.0050	.0031	-.0009	-.0041
Step 5									
Constant	1.4284	.8102	2.4540	-.1092	-.2124	1.73	.0031	.2140	1.8399
GCT	.0026	-.0042	-.0005	-.0008	.0050	-.0155	.0031	-.00001	-.0130*
ARI	-.0042	-.0036	.0065	.0030*	-.0033	-.0036	.0031	-.0006	-.0025
MECH	.0028	.0029	-.0032	-.0016	-.0036	-.0005	.0031	-.0009	-.0010
SHOP	-.0001	-.0006	-.0052	.0028*	.0034	-.0034	.0031	.0009	-.0007
ETST	.0092	-.0012	-.0023	-.0034*	.0026	-.0099	.0031	.0016	-.0047
PMTS	-.0037	-.0004	-.0045*	.0004	.0056	.0047*	.0031	-.0002	.0025
S1	-.0075	-.0042	-.0139*	.0007	-.0137	-.0027	.0031	-.00001	-.0023
S2	-.0095*	.0021	.0029	.0001	-.0013	.0017	.0031	-.0001	.0038
S3	-.0011	.0042	-.0006	.0009	.0123	-.0151	.0031	-.0006	-.0032
S4	-.0007	-.0048	-.0071*	-.0003	.0009	.0010	.0031	-.0020*	-.0044
Step 6									
Constant	1.8433	-6969	2.4796	.0294	-.6356	1.60	.22	.1899	2.6029
GCT	.0013	-.0030	-.0010	-.0009	.0050	-.0050	-.0067	-.00002	-.0141*
ARI	-.0070	-.0018	.0074	.0032*	-.0031	-.0038	.0031	-.0007	.0016
MECH	.0012	.0029	-.0034	-.0020	-.0045	-.0004	.0118*	-.0009	.0008
SHOP	.0027	-.0007	-.0044	.0036*	.0027	-.0037	-.0076	.0009	-.0016
ETST	.0125	-.0007	-.0015	-.0033*	.0033	-.0098*	.0003	.0015	-.0050
PMTS	-.0027	-.0004	-.0047*	.0006	.0047	.0046*	.0025	-.0002	.0030
S1	-.0057	-.0041	-.0127*	.0011	-.0142	-.0029	.0017	-.0001	.0042
S2	-.0100*	.0012	.0030	.0006	-.0015	.0018	.0009	-.0001	.0041
S3	.0041	.0043	-.0005	.0011	.0122	-.0053*	.0033	-.0006	-.0008
S4	.0012	-.0039	-.0070*	-.0000[b]	.0001	.0006	--[a]	-.0021*	-.0047
S5	-.0140*	-.0077*	-.0029	-.0033*	.0058	.0022	-.0077*	-.0005	-.0108*
Step 7									
Constant	2.2410	.7473	2.0569	.0441	-.1342	1.51	.22	.1793	2.6133
GCT	.0018	-.0023	.0001	.0007	-.0004	-.0044	-.0058	-.0001	-.0139
ARI	-.0066	.0002	.0046	.0030*	-.0032	-.0034	.0038	-.0006	.0019
MECH	-.0022	.0051	-.0028	-.0020	-.0025	-.0004	.0106	-.0008	.0008
SHOP	.0024	-.0005	-.0043	.0036*	.0024	-.0036	-.0079	.0009	-.0017
ETST	.0123	-.0009	-.0006	-.0035*	.0006	-.0096*	.0007	.0015	-.0046
PMTS	-.0038	-.0003	-.0022	.0005	.0051	.0050*	.0016	-.0002	.0030
S1	-.0064	-.0033	-.0136	.0010	-.0156	-.0030	.0019	-.00003	-.0042

[a]The variable did not appear in the regression equation at this step.

[b]The variable was used at this step in the regression, but the coefficient was not significant to two decimal places.

*$p < .05$

Table A-2 (Continued)

	AE	AV	EM/GL	EM/SD	EW	FT	GM	IC	ST
					Attrition (Continued)				
Step 7 (Continued)									
S2	-.0012*	.0033	.0079*	.0004	-.0005	.0021	-.0003	-.0001	.0042
S3	.0017	.0044	.0012	.0010	.0120	-.0051*	.0026	-.0005	-.0011
S4	.0006	-.0018	-.0039	-.0010	-.0028	.0009	--[a]	-.0020*	-.0045
S5	-.0161*	-.0028	-.0005	-.0034*	.0028	.0030	-.0008	.0006	-.0107
S6	.0044	-.0079*	-.0093*	.0006	.0074	-.0021	.0039*	-.0004	-.0009
Step 8									
Constant	1.8842	.0649	1.3329	.0779	-2.0944	1.34	.32	.3056	2.1941
GCT	.0002	-.0029	.0005	-.0010	.0019	-.0202	-.0071	.00000[b]	-.0141*
ARI	-.0044	.0008	.0051	.0028*	-.0016	-.0021	.0039	-.0007	.0014
MECH	-.0030	.0046	-.0037	-.0021	.0014	.0011	.0107	-.0010	.0000[b]
SHOP	.0014	.0004	-.0044	.0033*	.0025	-.0032	-.0091	.0010	-.0002
ETST	.0014	-.0003	.0010	-.0038*	.0064	-.0085*	-.0002	.0015	-.0064
PMTS	-.0041	.0003	-.0007	.0004	.0054	.0050*	.0011	-.0002	.0030
S1	-.0072	-.0031	-.0116*	.0011	-.0189	-.0031	-.0041	-.00001	-.0027
S2	-.0100*	.0030	.0072*	.0004	.0026	.0011	-.0011	-.00000[b]	.0045
S3	-.0005	.0045	.0013	.0010	.0084	-.0053*	.0027	-.0030	-.0011
S4	-.0003	-.0024	-.0049*	-.0002	-.0035	.0006	-.0004	-.0020*	-.0032
S5	-.0175*	-.0026	.0001	-.0037*	.0014	.0045	-.0098	.0005	-.0095*
S6	.0022	-.0078*	.0079*	.0005	.0120*	-.0025	.0025	-.0030	-.0002
S7	.0042	.0022	.0022	-.0005	--[a]	.0012	.0023	.0006	-.0033
T7	--[a]	.0801	-.1525*	-.0134	.2734*	.0689	-.0397	-.0070	--[a]
DCS	.0093	.0009	-.0059	.0020*	.0033	-.0059*	.0049	-.0018*	.0035
Step 9									
Constant	1.8366	-.0057	1.2091	.0746	2.1494	1.25	.41	-.0018*	2.2147
GCT	-.0004	-.0032	.0048	-.0011	.0008	-.0038	-.0073	-.0018*	-.0139*
ARI	-.0035	.0011	.0050	.0028*	-.0016	-.0014	.0047	-.0018*	.0014
MECH	-.0022	.0048	-.0037	-.0021*	.0015	.0021	.0103	-.0018*	.0002
SHOP	-.0010	.0006	-.0034	.0033*	.0023	-.0036	-.0088	-.0018*	-.0002
ETST	.0153	-.0004	.0022	-.0037*	.0067	-.0083*	-.0004	-.0018*	-.0065
PMTS	-.0052	.0003	-.0011	.0004	.0052	.0051*	.0014	-.0018*	.0030
S1	-.0064	-.0032	-.0098*	.0011	-.0183	-.0037	.0009	-.0018*	.0026
S2	-.0064	.0031	.0080*	.0004	.0022	.0006	-.0014	-.0018*	.0047
S3	.0043	.0044	.0021	.0009	.0086	-.0056*	.0025	-.0018*	-.0011
S4	.0039	-.0029	-.0052*	-.0002	-.0035	.0006	-.0003	-.0018*	-.0032
S5	-.0176	-.0027	.0017	-.0037*	.0016	.0038	-.0107*	-.0018*	-.0096*
S6	.0032	-.0077*	-.0061*	.0005	.0101*	-.0031	.0020	-.0018*	-.0001
S7	.0039	.0023	.0030	-.0005	--[a]	.0012	.0021	-.0018*	-.0003
T7	--[a]	.0844*	.1625*	-.0140	.2710*	.0736	-.0573	-.0018*	--[a]
DCS	.0106	.0001	-.0071	.0020*	.0030	-.0059*	.0031	-.0018*	.0036
S8	-.0172*	.0022	-.0095*	.0002	.0014	.0038	.0042	-.0018*	-.0005
Step 10									
Constant	2.0992	-.0558	1.1694	.0795	.0014*	1.26	.44	.3046	2.1524
GCT	-.0003	-.0039	.0060	-.0010	.0014*	-.0037	-.0076	.0001	-.0413*

[a]The variable did not appear in the regression equation at this step.

[b]The variable was used at this step in the regression, but the coefficient was not significant to two decimal places.

*$p < .05$

Table A-2 (Continued)

	AE	AV	EM/GL	EM/SD	EW	FT	GM	IC	ST
				Attrition (Continued)					
Step 10 (Continued)									
ARI	-.0032	.0010	.0042	.0029*	.0014	-.0013	.0041	-.0007	.0009
MECH	-.0017	.0072*	-.0044	-.0022*	.0014	.0020	.0098	-.0009	.0003
SHOP	-.0012	-.0008	-.0033	.0033*	.0014	-.0036	-.0085	.0010	-.0002
ETST	.0136	.0003	.0022	-.0038	.0014	-.0083*	-.0005	.0015	-.0066
PMTS	-.0056	.0007	-.0008	.0004	.0014	.0051*	.0013	-.0001	.0031
S1	-.0057	-.0050	-.0108*	.0011	.0014	-.0038	.0008	.00003	-.0022
S2	-.0071	.0029	.0081*	.0004	.0014	.0060	-.0011	.00001	.0048
S3	.0043	.0053*	.0018	.0010	.0014	-.0057*	.0027	-.0003	-.0010
S4	.0053	-.0032	-.0053*	-.0002	.0014	.0006	-.0006	-.0020*	-.0033
S5	-.0178*	-.0033	.0015	-.0037*	.0014	.0039	-.0109*	.0005	-.0096
S6	.0028	-.0087*	-.0069*	.0005	.0014	-.0030	.0018	-.0003	-.0000[b]
S7	.0040	.0020	.0024	-.0005	.0014	.0012	.0025	.0007	-.0035
T7	-.0453	.0918*	.1663*	-.0136	.0014	.0739	-.0646	-.0068	--[a]
DCS	.0094	-.0032	-.0079*	.0020*	.0014	-.0059*	.0028	-.0017	.0037
S8	-.0177*	.0012	-.0104	.0003	.0014	.0038	.0036	--[a]	-.0006
S9	.0009	.0070*	.0048*	-.0004	.0014	-.0004	.0019	-.0003	.0008
Step 11									
Constant	1.9475	-.0542	.0048*	-.0004	.0014	1.25	.43	-.0003	2.1243
GCT	.0001	-.0036	.0048*	-.0004	.0014	-.0038	-.0073	-.0003	-.0185*
ARI	-.0027	.0015	.0048*	-.0004	.0014	-.0013	.0050	-.0003	-.0004
MECH	-0014	.0070*	.0048*	-.0004	.0014	-.0023	.0094	-.0003	-.0002
SHOP	-.0023	-.0002	.0048*	-.0004	.0014	-.0038	-.0082	-.0003	.0026
ETST	.0140	.0001	.0048*	-.0004	.0014	-.0080*	.0002	-.0003	-.0082
PMTS	-.0058	-.0007	.0048*	-.0004	.0014	.0048*	.0006	-.0003	.0031
S1	-.0059	-.0046	.0048*	-.0004	.0014	-.0032	.0010	-.0003	.0042
S2	-.0071	.0030	.0048*	-.0004	.0014	.0011	-.0012	-.0003	.0056*
S3	.0041	.0057*	.0048*	-.0004	.0014	-.0058	.0025	-.0003	-.0006
S4	.0043	-.0031	.0048*	-.0004	.0014	.0008	-.0004	-.0003	-.0031
S5	-.0182*	-.0026	.0048*	-.0004	.0014	.0045	-.0100*	-.0003	-.0106*
S6	.0026	-.0087*	.0048*	-.0004	.0014	-.0028	.0023	-.0003	.0007
S7	.0039	.0022	.0048*	-.0004	.0014	.0012	.0031	-.0003	-.0046*
T7	-.0314	.0915*	.0048*	-.0004	.0014	.0687	-.0664	-.0003	--[a]
DCS	.0108	.0032	.0048*	-.0004	.0014	-.0056	.0027	-.0003	.0031
S8	-.0179*	.0012	.0048*	-.0004	.0014	.0042	.0039	-.0003	-.0010
S9	.0001	.0068*	.0048*	-.0004	.0014	-.0002	.0020	-.0003	.0010
S10	.0026	-.0025	.0048*	-.0004	.0014	-.0022	-.0031	-.0003	.0065
Step 12									
Constant	1.9435	-.1990	1.1780	.0988	-2.0480	1.23	-.0031	.2664	2.8490
GCT	.0002	-.0044	.0057	-.0011	.0024	-.0033	-.0031	.0006	-.0180*
ARI	-.0031	.0019	.0040	.0029*	.0015	-.0008	-.0031	-.0011	.0012
MECH	-.0015	.0068*	-.0046	-.0024*	.0019	.0010	-.0031	-.0008	.0030

[a]The variable did not appear in the regression equation at this step.

[b]The variable was used at this step in the regression, but the coefficient was not significant to two decimal places.

*p < .05

Table A-2 (Continued)

	AE	AV	EM/GL	EM/SD	EW	FT	GM	IC	ST
				Attrition (Continued)					
Step 12 (Continued)									
SHOP	-.0026	-.0000[b]	-.0031	.0034*	.0035	-.0034	-.0031	.0009	-.0008
ETST	.0137	-.0009	.0024	-.0034*	.0053	-.0072	-.0031	.0009	-.0086
PMTS	-.0060	.0011	-.0008	.0004	.0078	.0047*	-.0031	.0001	.0027
S1	-.0064	-.0045	-.0108*	.0011	-.0266*	-.0036	-.0031	-.0004	-.0066
S2	-.0068	.0034	.0077*	.0006	.0015	.0017	-.0031	.0001	.0050
S3	.0043	.0057*	.0020	.0014	.0014	-.0058*	-.0031	-.0002	-.0026
S4	.0046	-.0027	-.0056*	.0002	-.0001	.0007	-.0031	-.0021*	-.0041
S5	-.0189*	-.0009	.0011	-.0038*	-.0017	.0047	-.0031	.0006	-.0099*
S6	.0025	-.0083*	-.0073*	.0007	.0114*	-.0029	-.0031	-.0003	.0002
S7	.0041	.0020	.0023	-.0004	-.0012	.0012	-.0031	-.0007	-.0047*
T7	-.0307	.0812	.1660*	-.0133	-.2247	.0251	-.0031	-.0648	--[a]
DCS	.0115	-.0020	-.0079*	.0021*	-.0002	-.0059*	-.0031	-.0017	.0016
S8	-.0183*	.0024	-.0101	.0006	-.0022	.0042	-.0031	--[a]	-.0016
S9	-.0002	.0067*	.0046*	-.0001	.0043	-.0001	-.0031	-.0001	.0007
S10	.0022	-.0022	--[a]	--[a]	--[a]	-.0022	-.0031	--[a]	.0040
S11	.0017	-.0041	.0016	-.0023*	.0034	-.0007	-.0031	--[a]	.0046
T11	--[a]	.0303	--[a]	--[a]	.6429*	.0388	-.0031	.0634	-.0488

[a]The variable did not appear in the regression equation at this step.

[b]The variable was used at this step in the regression, but the coefficient was not significant to two decimal places.

*$p < .05$

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