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PRELIMINARY ANALYSIS OF THE U.S. ARMY SECURITY SCREENING QUESTIONNAIRE

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BDM International, Inc.

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**PRELIMINARY ANALYSIS OF THE U.S. ARMY
SECURITY SCREENING QUESTIONNAIRE**

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PREFACE

The improvement of procedures for screening personnel into sensitive military occupations is one of PERSEREC's key research undertakings. The need to ensure that only the most reliable personnel are chosen for high security military occupations will become even more critical as the military reduces its size and budget. Consequently, the process by which individuals are screened must be made more effective and more efficient.

PERSEREC has been involved in screening research since 1987. To date, we have published technical reports on screening of enlisted personnel (Crawford & Trent, 1987; Crawford & Wiskoff, 1988; McDaniel, 1988; Parker, Wiskoff, McDaniel, Zimmerman, & Sherman, 1989; Wiskoff, Parker, Zimmerman, & Sherman, 1989), screening of officer personnel (Rosenthal, 1989), and the granting of moral waivers for personnel entering sensitive occupations (Fitz and McDaniel, 1988; Wiskoff and Dunipace, 1988). These efforts have focused on the evaluation of current screening procedures and the development of improved instruments where warranted.

This study examines one service instrument, the Army's Form 169-R, which is used for prescreening applicants prior to the initiation of a formal Personnel Security Investigation. In this report the authors examine the relationship of items contained in the 169-R to operational decisions in the security screening process and to a measure of behavioral reliability.

Roger P. Denk
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Prepared by
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SUMMARY

Problem

Crawford and Wiskoff (1988) reviewed the procedures used by the military services in screening enlisted accessions for sensitive military occupations. One important finding was that, despite the intensive prescreening performed prior to the initiation of a Personnel Security Investigation, the unsuitability discharge rate for high-security occupations was not much lower than for other occupations. This finding was particularly significant in that many of the categories of unsuitable discharge are directly related to the adjudicative factors listed in DCID 1/14 and DoD Regulation 5200.2-R.

Background

Each of the military services uses prescreening procedures for sensitive enlisted occupations, i.e., those that require a Top Secret clearance, access to Sensitive, Compartmented Information (SCI), or are included in the Nuclear Weapons Personnel Reliability Program (PRP). These procedures are employed prior to the initiation of the Personnel Security Investigation (PSI) and are designed to (a) reduce the probability of assigning unreliable individuals to sensitive positions and (b) cull out individuals who are likely to be denied a security clearance. To the extent that the prescreening procedures are effective in identifying such individuals, the costs associated with conducting PSIs are reduced.

The security interview at the Military Entrance Processing Station (MEPS) is the first step in the screening process for enlisted Army applicants desiring a sensitive occupation. The Army Security Screening Questionnaire (DAPC-EPMD FORM 169-R) is completed by applicants for these occupations at the MEPS. Responses to the questionnaire are examined by a security interviewer and explored further during the security interview at the MEPS. For individuals who enter the Delayed Entry Program (DEP), the questionnaire is completed a second time and a second security interview is conducted after leaving the DEP, just prior to going on active duty.

The 169-R consists of a series of 45 "yes" or "no" questions relating to: (a) Prior Military and Federal Service, (b) Foreign Connections, (c) Drug Use, (d) Alcohol Use, (e) Emotional Stability, (f) Sexual Misconduct, (g) Financial Problems, (h) Employment Problems, (i) Delinquency, and (j) Legal Offenses. For each affirmative response, the applicant must elaborate as to specific incidents or experiences. In addition, applicants must provide detailed information about current financial obligations and any previous arrests or citations.

Purpose

This study was a preliminary investigation to explore the effectiveness of the 169-R as a security prescreening instrument, in terms of: (a) the degree to which it is able to predict two operational screening decisions and a measure of behavioral reliability and (b) the utility or impact of using the information it provides, along with other applicant data. The study was preliminary in that only a small data sample was analyzed to determine whether it would be profitable to obtain more definitive results from a large sample.

Approach

Questionnaires for 281 non-prior service males were sampled from a total pool of 2,870 applicants who completed the 169-R during 1984 and whose questionnaires had been sent to PERSEREC from the MEPS. Selected subsamples were composed of 54 individuals who completed the 169-R once and 227 individuals who completed two separate administrations of the questionnaire.

Three classes of predictor variables were available from the 169-R. These were: (a) yes/no items, (b) detailed information that was transformed into coded items, and (c) discrepancies between first and second administrations of the questionnaire. Specifically, for the third class of predictors, the number of negative discrepancies¹ was examined as a possible indication of dishonest responding on the part of the applicant. Additional predictors that were examined included Armed Forces Qualification Test² (AFQT) category, age at entry into the Army, and level of education. These variables are frequently employed in military manpower studies and were included in this study to try to improve the prediction of behavioral reliability.

¹A negative discrepancy is a change from a yes answer the first time the questionnaire is administered to a no answer the second time.

²AFQT is a general aptitude measure derived from the Armed Services Vocational Aptitude Battery.

Three criteria were used in this study: (a) the prescreening adjudication decision, (b) issue case status, and (c) type of discharge. The first two measures were used because they often indicate that there may be adverse personal history information that reflects on an individual's trustworthiness or reliability. The third measure, type of discharge, is perhaps the best available measure of behavioral reliability for enlisted personnel.

Results and Conclusions

The number of negative discrepancies per person was not found to be correlated with any of the criteria. Thus, there is no reason to consider its use as an operational measure for prescreening. However, the fact that there were several individuals with discrepancies in areas of foreign obligations and mental health, evidences the need for careful probing by security interviewers to obtain accurate responses.

None of the individual items from the 169-R were very powerful in predicting the criteria. Empirical scoring keys, developed against the three criterion measures, each showed moderate to strong correlations with one or more criteria. As one would expect, each key was the best predictor of the criterion measure for which it was developed. Although the key for type of discharge did not show the highest correlations, it was the only one that showed at least a moderate correlation with all three criteria.

A linear probability model, which included the key for type of discharge, AFQT category, and age at entry into the Army, displayed stronger evidence for validity than the type of discharge key alone. It also evidenced greater utility, in that it would substantially reduce the unsuitability attrition rate. Of the 568 non-prior service males who entered sensitive occupations in 1984 and were eventually discharged from the Army for unsuitability, it is estimated that 130 could have been screened out, simply by using the linear probability model and its cutoff.

The empirical keys and the linear probability model provide a useful actuarial approach for predicting behavioral reliability, based on an individual's pattern of responses on the 169-R and other information available at the time of the security interview.

Recommendations

Based on the findings of this preliminary study, the following recommendations are offered:

1. Further analyses should be conducted on a large sample of 169-R data to provide more definitive results and better reliability for the empirical scoring keys.
2. Further research should be conducted to develop a new instrument for prescreening using the 169-R as a foundation. Other prescreening forms and interview protocols should be examined to provide more thorough coverage of the content areas.

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INTRODUCTION

Background

Each of the military services uses prescreening procedures for enlisted occupations that require a Top Secret clearance, access to Sensitive, Compartmented Information (SCI), or are included in the Nuclear Weapons Personnel Reliability Program (PRP). These procedures are employed prior to the initiation of the Personnel Security Investigation (PSI) and are designed to (a) reduce the probability of assigning unreliable individuals to sensitive positions and (b) cull out individuals who are likely to be denied a security clearance. To the extent that the prescreening procedures are effective in identifying such individuals, the costs associated with conducting PSIs are reduced.

Although the need for prescreening is well accepted, there is great variability in the procedures used by the various services (Crawford and Wiskoff, 1988). That is, each of the services follows different procedures and employs different screening forms and interview protocols.

As Crawford and Wiskoff (1988) note, much of this variability may be traced to differences in the recruiting and training environments for the services. For instance, the Army follows a policy of providing job guarantees to the majority of individuals at the time of enlistment at the Military Entrance Processing Station (MEPS), in order to compete successfully with the other services for high quality applicants. A negative side effect of this policy is that, when recruits become disqualified for sensitive occupations while they are in basic training, it is difficult to replace them with other qualified individuals. This may result in a loss of training seats and, eventually, a personnel shortage in sensitive occupations. Therefore, the Army must necessarily rely on an intensive prescreening process conducted at the MEPS. This process includes: (a) the completion of the Security Screening Questionnaire (DAPC-EPMD FORM 169-R), (b) an in-depth security interview, and (c) adjudication (via telephone) by either the Personnel Security Screening Program (PSSP) Detachment Commander or an adjudicator at the Army's Central Personnel Security Screening Clearance Facility (CCF), or both¹.

In contrast, the other services have not seen the necessity of conducting a thorough security prescreening at the MEPS, since they offer job guarantees to a much smaller percentage of individuals. For certain occupations, a more intensive prescreening is conducted during recruit training which may include the administration of a background questionnaire, as well as intensive interviews conducted by a security interviewer.

¹The Security Interviewer Standing Operating Procedures (U.S. Army Military Personnel Center, 1987, Annex B) provides guidance as to who is required to make a determination for a given type of negative information.

Crawford and Wiskoff (1988) found that, while the different services have employed their particular prescreening procedures for some time, there had been no systematic research related to the effectiveness of these procedures. They also found significant first-term unsuitability attrition for individuals assigned to high security occupations, despite prescreening. They concluded that, "Personnel security screening procedures for enlisted accessions could be enhanced through the development of more systematic data-gathering forms and structured interview protocols that directly follow from these forms." A first step in this development is analysis of existing service prescreening forms. The present study evaluates one of the service prescreening instruments, the Army Security Screening Questionnaire (hereafter referred to as the 169-R). It was selected because it contains: (a) broad coverage of the issues deemed to be relevant to adjudication, as listed in the Director of Central Intelligence Directive (DCID) No. 1/14, Annex A (Director of Central Intelligence, 1986) and DoD Regulation 5200.2-R, Appendix I (Department of Defense, 1987) and (b) detailed descriptions, given by applicants, relating to negative information that could provide a potentially useful source of qualitative data.

Purpose

This study consists of a set of preliminary analyses of data from the 169-R, plus other information available at time of enlistment. The analyses focused on the effectiveness of the questionnaire as a security prescreening instrument, in terms of: (a) the degree to which it is able to predict various measures of behavioral reliability and (b) the utility² or impact of using the information it provides, along with other applicant data.

The study was preliminary in that only a small data sample was analyzed to determine whether it would be fruitful to conduct a large scale study.

²For the purposes of this study, the term utility does not have the precise meaning that it is given in statistical decision theory. Rather, it refers to the net benefit to the organization of employing a particular decision rule.

APPROACH

Sample

Army Security Screening Questionnaires, completed by Army applicants from 1981 through 1986, were collected from MEPS throughout the country. Only the questionnaires completed during 1984 were selected for this study, for two reasons: (a) the questionnaire had been revised several times during the years prior to 1984 and (b) individuals completing questionnaires after 1984 would not have had the opportunity to complete their first term of service. Although each MEPS was requested to provide completed questionnaires, not all of them complied with the request. Of the approximately 5,000 - 6,000 applicants³ who filled out the questionnaire during 1984, completed questionnaires were received for 2,870. Questionnaires for 281 non-prior service males were then randomly sampled from this pool of applicants. It cannot be determined whether regional or other bias may be present in the sample as a result of differences in the response rates of the various MEPS.

All applicants for Army enlisted occupations that are in the Nuclear Weapons PRP or that require a Top Secret clearance or SCI access fill out the 169-R at the MEPS. Those who enlist through the DEP are required to complete the questionnaire a second time, just prior to going on active duty. Applicants who go directly to active duty and those who are not allowed into a sensitive occupation (based on the initial security interview at the MEPS) have only one set of responses. In order to insure that these two applicant groups would be represented, the sample was stratified on the basis of whether individuals had filled out the questionnaire once or twice. In order to estimate the proportion of applicants with only one set of responses and the proportion with two sets, questionnaires for 100 individuals were randomly sampled from the pool of 2,870. Based on these observed proportions, 54 individuals were selected at random from those who had completed the questionnaire once and 227 were selected from those who had completed it twice. While this sampling strategy did provide for some representation of the different applicant groups, it did not insure that the stratification in the sample would match that of the actual population. However, as shown in Table 1, the sample appears to match the population of 1984 applicants to high security occupations fairly well in terms of Armed Forces Qualification Test⁴ (AFQT) scores and several important demographic variables. A chi-square test for goodness of fit was performed for each of the variables shown in Table 1. Chi-square values of 2.83, 2.41, 2.84, and 1.01 were obtained for race-ethnic group, age at entry, education, and AFQT. None of these statistics were significant at $p < .05$.

³This estimate includes those who enter the Delayed Entry Program as well as those who go directly to active duty.

⁴AFQT is a general aptitude measure derived from the Armed Services Vocational Aptitude Battery.

Table 1
Percentage of Population and Sample
with Specified Characteristics

<u>Race-Ethnic Group</u>	<u>Population</u>	<u>Sample</u>
White	86.2	88.3
Black	9.8	6.4
Hispanic	2.4	2.5
American Indian	.1	.4
Asian	.9	1.4
Other	.6	1.1
 <u>Age at Entry</u>		
17	7.5	8.5
18	33.1	26.0
19	15.5	16.0
20	10.8	11.7
21 or older	33.1	37.8
 <u>Education</u>		
Non-High School Graduate	1.1	1.1
GED	1.5	0.0
High School Diploma	70.2	66.2
Attended College	27.2	32.7
 <u>AFQT</u>		
I	23.9	27.0
II	50.3	45.6
IIIA	13.4	14.9
IIIB or Below	12.4	12.4

The Army Security Screening Questionnaire

The 169-R is a fundamental part of the Army's PSSP, which was established in 1979. The 169-R is not employed as a stand-alone prescreening questionnaire. Rather, it provides the basis for the security interview at the MEPS. The questionnaire consists of a series of 45 questions, which can be answered "yes" or "no," relating to: (a) Prior Military and Federal Service, (b) Foreign Connections, (c) Drug Use, (d) Alcohol Use, (e) Emotional Stability, (f) Sexual Misconduct, (g) Financial Problems, (h) Employment Problems, (i) Delinquency, and (j) Legal Offenses. For each affirmative response, the applicant must provide details of the specific incidents or experiences. In addition, applicants must provide detailed information about current financial obligations and any previous arrests, citations, or other types of contact with the legal system. Most applicants can complete the 169-R in approximately one-half hour.

For this study, three classes of predictors were taken from the 169-R. These were: (a) yes/no items, (b) detailed information (that was transformed into coded items), and (c) discrepancies between first and second administrations of the questionnaire.

Yes/No Items. The yes/no items provided a total of 45 dichotomous predictor variables (see Appendix A). Table 2 shows the number of yes/no items by content area.

Table 2
Breakdown of Yes/No Items and
Coded Items by Content Area

Content Areas	Number of Yes/No Items	Number of Coded Items	Total Number of Items
Military/Federal Service	7	0	7
Foreign Connections	6	9	15
Drug Use	14	4	18
Alcohol Use	3	2	5
Emotional Stability	3	3	6
Sexual Misconduct	4	2	6
Financial Problems	1	8	9
Employment Problems	2	6	8
Delinquency	2	1	3
Legal Offenses	0	14	14
Other	3	1	4
Total	45	50	95

Coded Items. Coded predictors were extracted from the questionnaire in four ways. First, short answer questions⁵ were coded into standardized yes/no or multiple choice answers. Second, the questionnaire requires a written explanation for all "yes" answers. For some items, these explanations were coded into standardized yes/no or multiple choice answers. Third, some yes/no items which included a variety of acts, offenses, or biographical facts were broken into separate and discrete items. For example, the yes/no item, "Have you ever had problems with employers or co-workers?" was broken into two distinct items based on the written explanation. Fourth, some distinct yes/no items were combined to form a single coded item. For example, the discrete items inquiring about use of cocaine, heroine, barbiturates, and hallucinogens were combined into a single coded item to reflect use of hard drugs.

There were 50 coded items from the questionnaire which were analyzed as predictors (see Appendix B). Table 2 shows the number of coded items by content area.

Discrepancies. Two kinds of discrepancies may be observed between responses given in the first and second administrations of the questionnaire. A positive discrepancy is a change from a no answer the first time the questionnaire is administered to a yes answer the second time. Positive discrepancies may result from legitimate changes in personal history which have occurred during the time elapsed between the two interviews, from a decision to report negative items more honestly, or from simple errors in responding. A negative discrepancy is a change from a yes answer to a no. Negative discrepancies may also result from simple errors in responding or they may indicate duplicity or dishonesty on the part of the applicant. Thus, negative discrepancies were examined to determine whether they were predictive of behavioral unreliability.

Other Predictors

Other applicant data that are available at the time of the security interview were examined in conjunction with 169-R responses in order to improve the prediction of behavioral reliability. These additional predictors included AFQT category (I-III A, IIIB and below), age at entry into the Army (17, 18-20, 21 and older), and level of education (high school graduate, alternative credential, nongraduate). The data were obtained from the Defense Manpower Data Center (DMDC).

Criterion Measures

Methodological Issues. Traditional test validation studies use measures of job performance to validate selection instruments, since the objective is to select individuals who would be expected to perform better than other applicants on the job. Personnel

⁵For legal offense and financial history, the short answer format takes the form of two tables which applicants must complete.

security research, however, focuses on a different type of criterion, as noted by Crawford and Trent (1987, p. 4):

Clearly, the key personnel security criterion is whether or not an individual demonstrates reliability, trustworthiness, good judgment, and loyalty in the actual handling and use of classified information. Failure to do so could be manifested at one level in excessive security violations and at the extreme in the deliberate compromise of classified information, including espionage.

Crawford and Trent go on to say that:

From a test validation perspective, neither of these criteria are useful. Espionage has such a low base rate that no existing behavioral science test could demonstrate significant prediction. With regard to security violations, the base rate is somewhat higher but still very low for reliable prediction; also, historical security violation data are not systematically maintained on centralized data bases and therefore cannot be accessed for large scale validation studies.

Although espionage and security violations may not be available for validation studies, there are several alternatives. The three surrogate measures utilized in this study were: (a) prescreening adjudication decision, (b) issue case status, and (c) type of discharge.

Prescreening Adjudication Decision. Prescreening adjudication occurs at the MEPS after the applicant has completed the 169-R and the security interview. The security interviewer telephones either the PSSP Detachment Commander or a CCF adjudicator⁶ and describes the derogatory information and any mitigating circumstances. The PSSP Detachment Commander or CCF adjudicator then determines whether the applicant should be allowed to continue processing for a sensitive occupation. The PSI, which provides the basis for the later, final adjudication relating to the granting or denial of a Top Secret clearance or SCI access, is not conducted for applicants who are rejected during prescreening. Many of these applicants, however, do receive lower level (i.e., Secret) security clearances.

There are at least two advantages to the use of this criterion in a validation study of this type. Since the criterion is an operational one, it is inherently important to the Army. Also, it does not have a severely restricted variance resulting from a low base rate, since, historically, approximately 33 to 47 percent of the applicants are rejected (Crawford and Wiskoff, 1988, p.20).

⁶As noted above, the Security Interviewer SOP (U.S. Army Military Personnel Center, 1987, Annex B) specifies whether the PSSP Detachment Commander or a CCF adjudicator should be contacted, depending on the type of negative information revealed by the applicant.

Issue Case Status. If derogatory information is discovered during the course of the PSI, the investigation is expanded and designated as an "issue case." The role of issue case designation in the investigatory process is not to pass judgment on individuals, but rather to gather as much relevant information as possible. The review of information and the resulting decision to grant or deny clearances occur during a later adjudicative phase.

Being designated as an issue case indicates, in most instances, that there is some evidence of a blemish in an individual's behavior, associations, etc., that may be cause to question his or her qualifications to handle classified material. Data concerning issue case status were obtained from the Defense Central Index of Investigations (DCII), a copy of which is maintained, for research purposes, at DMDC.

Issue case status has been employed as an operational measure in previous studies. For instance, Crawford and Trent (1987) used issue case status as a criterion in a validation study of the Armed Services Applicant Profile (ASAP), as did Wiskoff and Dunipace (1988) in research on moral waivers.

Type of Discharge. Type of discharge refers to whether or not the individual was discharged from the Army for reasons of unsuitability. Unsuitability attrition is operationally defined as those accessions listed on the DMDC Cohort File having inter-service separation codes 60 through 87 (see Appendix C), for failure to meet minimum behavioral or performance standards.

Type of discharge is an important criterion for the validation of prescreening measures, since it is probably the best available measure of behavioral reliability for enlisted personnel and has been employed in other studies (e.g., Fitz and McDaniel, 1988; Wiskoff and Dunipace, 1988). Moreover, an unsuitability discharge, in many cases, indicates a failure of the screening process. That is, individuals who are discharged for unsuitability reasons were either poor risks prior to enlistment, or became poor risks while on active duty. Cases which fall into the former category indicate: (a) a failure of prescreening or in the PSI to uncover relevant negative information or (b) erroneous judgments by adjudicators.

Analyses

The first set of analyses focused on the number of negative discrepancies (i.e., the number of responses that were changed from yes to no) for each individual who completed the questionnaire twice. Correlation coefficients were computed between the number of negative discrepancies and each of the criterion measures.

Only the data from the second administration of the questionnaire were used in the remaining analyses for individuals who had completed the form twice. The rationale has to do with the prescreening adjudication criterion measure. For individuals with two sets of responses, this measure represents a decision that is based on information from

the second set of responses. If the first set of responses had been used in the analyses, and an applicant had been rejected after the second security interview, it would not be possible to determine what negative information from the second interview had led to the negative adjudication. Thus, if the first set of responses had been used, the magnitude of the observed relationships between 169-R items and this criterion would be spuriously low.

The second set of analyses focused on the validity of the instrument. First, a series of correlational analyses was conducted to examine the relationship between each of the yes/no and coded items and the criterion measures. Next, a series of factor analyses was performed to identify a set of underlying dimensions that could be used as scales. It was hoped that these analyses could not only yield a better understanding of the classes of background information collected on the 169-R, but also provide a set of useful predictors of behavioral reliability. The horizontal percent method (Guion, 1965) was then used to develop empirical scoring keys for predicting the three criterion measures (see Appendix D). The total score for each key was subsequently correlated with each criterion measure. In addition, AFQT category, age at entry into the Army, and level of education were examined for their incremental validity in predicting issue case status and type of discharge.

The final set of analyses examined the utility of decisions based on cutoff scores for the empirical scoring keys. In this study, utility was assessed by examining the percentage of individuals that can be identified and screened out using the empirical scoring keys and their associated cutoff scores, for different combinations of other applicant data.

RESULTS

It is important, in examining the findings of this study, to note that the data for the three criterion measures (prescreening adjudication, issue case status, and type of discharge) do not represent the progression of a single cohort through the screening process. That is, each individual's predictor data were matched to his or her criterion data without regard for how the person fared on the other criteria. For instance, it is possible for an individual to have been screened out during the prescreening adjudication and still have criterion data on type of discharge, as long as the individual did enlist in the Army (in a nonsensitive occupation). However, that individual would not have criterion data on issue case status.

Figure 1 tracks the individuals in the sample from the prescreening adjudication decision to the type of discharge. The figure displays how the sample breaks out as a result of (a) prescreening adjudication, (b) the enlistment decision, (c) request for a PSI, (d) whether or not individuals become classified as issue cases (for those who entered sensitive occupations), and (e) the type of discharge (for those who enlisted). It is important to note that, in this study, the only data source for sex of the individuals is the DMDC cohort file. Since this file consists solely of individuals who enlisted, it was not possible to determine how many male non-prior service applicants did not enlist.

Discrepancies

Table 3 displays, for each yes/no item, the percentage of individuals with negative discrepancies between their first and second set of responses, based on the subsample of individuals who had completed the questionnaire twice ($n = 227$). As the table shows, negative discrepancies were observed for only a small percentage of the sample. The total number of negative discrepancies per individual ranged from 0 to 4, with a mean of 0.33 and a standard deviation of 0.63.

One hypothesis, related to the trustworthiness of applicants for sensitive occupations, is that a higher number of negative discrepancies may indicate dishonesty. However, none of the correlations between the number of negative discrepancies and the criterion measures were statistically significant ($r = .12, .04$, and $.05$ for prescreening adjudication, issue case status, and type of discharge, respectively). Despite the lack of significant correlation, there are a number of negative discrepancies in critical adjudication areas, such as obligation to anyone of foreign birth (2d) and mental health issues (5a).

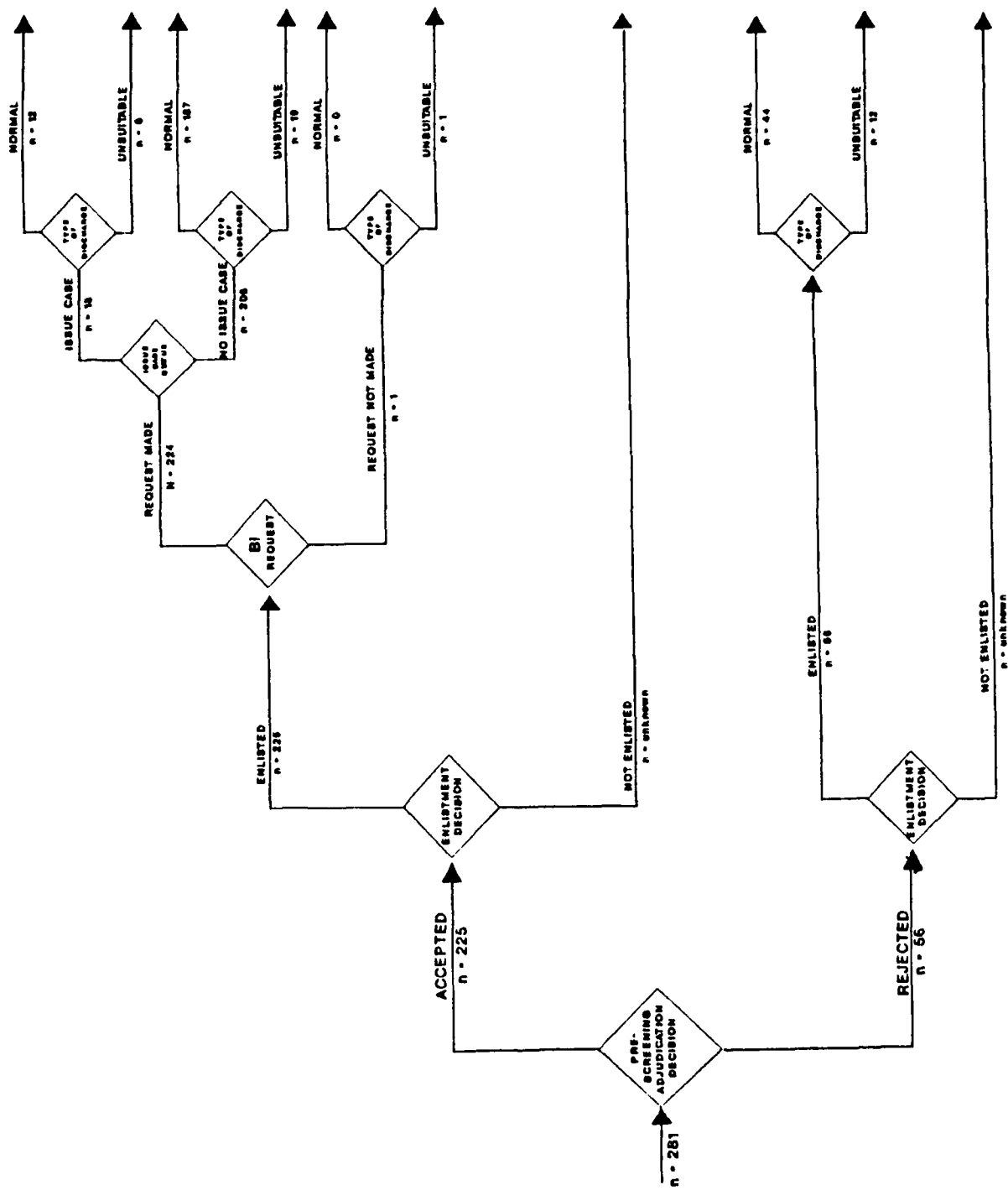


Figure 1. Breakdown of Sample Across Criterion Groups and Decision Points

Table 3

**Percent of Subsample with Negative Discrepancies
Between First and Second Administration Responses**

<u>Item</u>	<u>Description</u>	<u>n</u>	<u>Percent</u>
1a	Applied for Federal Government job	6	2.6
1b	Previously held security clearance	0	-
1c	Security clearance denied/revoked/suspended	0	-
1d	Disciplined under Uniform Code of Mil. Justice	0	-
1e	Denied enlistment or discharged from military	0	-
1f	Peace Corps	0	-
1g	Conscientious objector	0	-
2a	Self/family citizenship in other country	1	.4
2b	Self/family naturalized US citizen	1	.4
2c	Self/family had relatives residing outside U.S.	5	2.2
2d	Self/family obligation to anyone of foreign birth	9	3.9
2e	Self/family financial interests in foreign country	0	-
2f	Self/family ever traveled outside U.S.	2	.9
3	Drug use:		
	Marijuana	0	-
	Hashish	0	-
	THC	0	-
	Amphetamines	0	-
	Hallucinogens (LSD, STP, PSP)	0	-
	Barbiturates	0	-
	Cocaine	0	-
	Opium	0	-
	Heroin	0	-
3a	Synthetic or cure-type drugs (Methadone)	0	-
3b	Used narcotic sedative, stimulant, tranquilizer anti-depressant, glue, gas, solvent, etc.	1	.4
3d	Possessed/transported/grown/produced/bought or sold drugs	5	2.2
3e	Medical treatment/counseling, or employment, education or legal problems from drug use	0	-
4a	Have used alcoholic beverages	0	-
4b	Medical treatment/counseling, or employment, education or legal problems from alcohol use	2	.9
4c	Illegally manufactured, purchased or sold alcohol	3	1.3
5a	Have seen psychiatrist, or other mental health worker for nervous/mental/emotional problems	10	4.4

Table 3 (continued)

**Percent of Subsample with Negative Discrepancies
Between First and Second Administration Responses**

Item	Description	<u>n</u>	<u>Percent</u>
5b	Attempted suicide	0	-
5c	Involved in/accused of child molesting, statutory rape, window peeping, etc.	0	-
5d	Involved in homosexual act since age 15	0	-
5e	Involved in/accused of adultery, prostitution, etc.	2	.9
5f	Been/caused pregnancy out of wedlock	2	.9
5g	Ran away from home	4	1.8
6	Financial problems	8	3.5
7a	Fired from job, quit w/o notice, quit under investigation or suspicion	0	-
7b	Problems w/employers or coworkers	3	1.3
8a	Advocated violent overthrow of U.S. government	0	-
8b	Advocated violence to deny others' civil rights	0	-
9b1	Participation in illegal or violent demonstrations	0	-
9b2	Membership in street gang	1	.4
9b3	Suspended/expelled from school	2	.9
10	Other derogatory information	4	1.8
11	Advised to falsify response	4	1.8

Predictive Validity

Yes/No Items and Coded Remarks. Tables 4 through 12 show Cramer's V⁷ statistics demonstrating the relationship between 169-R items (both yes/no items and coded remarks) and the three criteria. The contingency tables corresponding to the V statistics are presented in Appendix E. Items 1a (previously applied for federal job), 1b (previous security clearance), 1f (Peace Corps), and 1g (conscientious objector) were excluded from this analysis because they are administrative in nature and provide no negative information about the applicant. Also, V statistics are not presented for items

⁷Cramer's V is a measure of association for contingency tables with any number of rows and columns. For contingency tables with two rows and two columns, V is identical to the phi coefficient. Unlike the contingency coefficient, which is sometimes used for the same purpose, Cramer's V has an upper limit of 1.00, regardless of the number of rows or columns in the contingency table.

1c, 1d, 1e, and items in the "other" category, due to small cell sizes in the contingency tables.

Table 4
Cramer's V Statistics Showing the
Relationship Between Responses to Foreign Connection
Items and Three Criterion Measures

<u>Item</u>	<u>Description</u>	<u>Prescreening</u> <u>Adjudication</u>	<u>Issue Case</u> <u>Status</u>	<u>Type of</u> <u>Discharge</u>
2a	Self/family citizenship in other country	.10	---	-.01
2b	Self/family naturalized U.S. citizen	.07	---	-.05
2c	Self/family had relatives residing outside U.S.	.12	---	-.04
2d	Self/family obligation to anyone of foreign birth	.11	---	-.01
2e	Self/family financial interests in foreign country	.06	---	.03
2f	Self/family ever traveled outside U.S.	---	---	---
2.1	Foreign citizenship (self/immediate/ other family member)	---	---	---
2.2	Foreign citizenship (Soviet/Non- Soviet aligned nation)	---	---	---
2.3	Living abroad (immediate/ other family member)	---	---	---
2.4	Living abroad (Soviet/Non-Soviet aligned nation)	---	---	---
2.5	Living abroad (circumstance: student, resident, etc.)	---	---	---
2.6	Foreign ties (Soviet/Non-Soviet aligned nation)	---	---	---
2.7	Foreign travel (Soviet/Non-Soviet aligned nation)	---	---	---
2.8	Foreign travel (recency)	---	---	---

* $p < .05$

** $p < .01$

Note: V statistics are omitted for contingency tables where the cell sizes are too small.

Table 5

**Cramer's V Statistics Showing the
Relationship Between Responses to Drug Use Items
and Three Criterion Measures**

<u>Item</u>	<u>Description</u>	<u>Prescreening Adjudication</u>	<u>Issue Case Status</u>	<u>Type of Discharge</u>
3	Drug use:			
	Marijuana	.15 *	.06	-.04
	Hashish	.14 *	---	---
	THC	---	---	---
	Amphetamines	.16 *	---	---
	Hallucinogens	---	---	---
	Barbiturates	---	---	---
	Cocaine	---	---	---
	Opium	---	---	---
	Heroin	---	---	---
3a	Used synthetic or cure-type drugs, such as Metnadone	---	---	---
3b	Used narcotic sedative, stimulant, tranquilizer, anti-depressant, glue, gas, solvent, etc.	---	---	---
3d	Possessed, transported, grown, produced, bought or sold drugs	.20 **	.14	-.03
3e	Medical treatment/counseling, or employment, education or legal problems from drug use	---	---	---
3.1	Drug use (marijuana, hashish, or THC)	.12	.06	-.03
3.2	Marijuana (total times used)	.16 *	.11	.15 *
3.3	Marijuana (frequency of use)	.14 *	.12	.06
3.4	Hard drugs	.14 *	---	---

* $p < .05$

** $p < .01$

Note: V statistics are omitted for contingency tables where the cell sizes are too small.

Table 6

**Cramer's V Statistics Showing the
Relationship Between Responses to Alcohol Use
Items and Three Criterion Measures**

<u>Item</u>	<u>Description</u>	<u>Prescreening Adjudication</u>	<u>Issue Case Status</u>	<u>Type of Discharge</u>
4a	Have used alcoholic beverages	---	---	---
4b	Medical treatment/counseling, or employment, education or legal problems from alcohol use	.05	---	---
4c	Illegally manufactured, purchased or sold alcoholic beverages	.07	---	---
4.1	Alcohol (frequency of use)	.03	.06	.05
4.2	Alcohol (total times intoxicated)	.15	.08	.10

* $p < .05$

** $p < .01$

Note: V statistics are omitted for contingency tables where the cell sizes are too small.

Table 7

**Cramer's V Statistics Showing the
Relationship Between Responses to Emotional Stability
Items and Three Criterion Measures**

<u>Item</u>	<u>Description</u>	<u>Prescreening Adjudication</u>	<u>Issue Case Status</u>	<u>Type of Discharge</u>
5a	Have seen psychiatrist, or other mental health worker for nervous/mental/emotional problems	.08	.12	.07
5b	Attempted suicide	---	---	---
5g	Ran away from home	-.05	---	.13
5.1	Psychological examination (medical authority)	---	---	---
5.2	Psychological counseling (social worker, etc.)	---	---	---
5.3	School counseling (for emotional/behavioral stability)	---	---	---

* $p < .05$

** $p < .01$

Note: V statistics are omitted for contingency tables where the cell sizes are too small.

Table 8

**Cramer's V Statistics Showing the
Relationship Between Responses to Sexual Misconduct
Items and Three Criterion Measures**

<u>Item</u>	<u>Description</u>	<u>Prescreening Adjudication</u>	<u>Issue Case Status</u>	<u>Type of Discharge</u>
5c	Involved in/accused of child molesting, statutory rape, window peeping, etc.	.23 **	---	---
5d	Involved in homosexual act since age 15	---	---	---
5e	Involved in/accused of adultery, prostitution, etc.	---	---	---
5f	Been/caused pregnancy out of wedlock	.12	.03	.07
5.4	Child molestation	---	---	---
5.5	Rape	---	---	---

* $p < .05$

** $p < .01$

Note: V statistics are omitted for contingency tables where the cell sizes are too small.

Table 9

**Cramer's V Statistics Showing the
Relationship Between Responses to Delinquency
Items and Three Criterion Measures**

<u>Item</u>	<u>Description</u>	<u>Prescreening Adjudication</u>	<u>Issue Case Status</u>	<u>Type of Discharge</u>
5.6	Mooning, indecent exposure, etc.	.22 **	---	---
9b(2)	Membership in street gang	---	---	---
9b(3)	Suspended/expelled from school	.02	.09	.05

* $p < .05$

** $p < .01$

Note: V statistics are omitted for contingency tables where the cell sizes are too small.

Table 10

**Cramer's V Statistics Showing the
Relationship Between Responses to Financial
Items and Three Criterion Measures**

<u>Item</u>	<u>Description</u>	<u>Prescreening Adjudication</u>	<u>Issue Case Status</u>	<u>Type of Discharge</u>
6	Financial problems	.15 *	.18 *	-.05
6.1	Bankruptcy	---	---	---
6.2	Repossessions, garnishments, etc.	---	---	---
6.3	Other outstanding debt problems	---	---	---
6.4	Bad checks	.12	.15 *	.02
6.5	Delinquent payments	.27 **	.24 **	-.08
6.6	Refused credit	---	---	---
6.7	Eviction from residence	---	---	---
6.8	Pending litigation	---	---	---

* $p < .05$

** $p < .01$

Note: V statistics are omitted for contingency tables where the cell sizes are too small.

Table 11

**Cramer's V Statistics Showing the
Relationship Between Responses to Employment Items
and Three Criterion Measures**

<u>Item</u>	<u>Description</u>	<u>Prescreening Adjudication</u>	<u>Issue Case Status</u>	<u>Type of Discharge</u>
7a	Fired from job, quit w/o notice, quit under investigation or suspicion	.05	.11	-.12
7b	Problems w/employers or coworkers	---	---	---
7.1	Employment problems (fired)	---	---	---
7.2	Employment problems (quit without notice)	---	---	---
7.3	Employment problems (quit while under investigation)	---	---	---
7.4	Problems with employers	---	---	---
7.5	Problems with co-workers	---	---	---
7.6	Employment problems (items 7.1 - 7.5)	-.02	.01	-.10

* $p < .05$

** $p < .01$

Note: V statistics are omitted for contingency tables where the cell sizes are too small.

Table 12

**Cramer's V Statistics Showing the
Relationship Between Responses to Legal Offense
Items and Three Criterion Measures**

<u>Item</u>	<u>Description</u>	<u>Prescreening Adjudication</u>	<u>Issue Case Status</u>	<u>Type of Discharge</u>
9.1	Traffic tickets(moving violations)	.11	.06	.05
9.2	Traffic tickets (unsafe vehicle/ licensing violations)	.00	.09	.02
9.3	Parking tickets	---	---	---
9.4	DWI, open container violations, etc.	---	---	---
9.5	Public drunkenness, etc.	---	---	---
9.6	Drug related offenses	---	---	---
9.7	Sex related offenses	---	---	---
9.8	Battery, assault, child/spouse abuse, etc.	---	---	---
9.9	Failure to pay alimony/child support	---	---	---
9.10	Probation violations	---	---	---
9.11	Other misdemeanors	.02	-.04	-.03
9.12	Other felonies	---	---	---

* $p < .05$

** $p < .01$

Note: V statistics are omitted for contingency tables where the cell sizes are too small.

Overall, 11 items showed statistically significant relationships with prescreening adjudication, three with issue case status, and only one with type of discharge. In examining these relationships, it should be remembered that some types of negative behavior are relatively rare or are not often admitted. This low base rate for an item serves to restrict the variance of the variable and attenuate its correlation with the criterion.

If we examine the yes/no and coded items by content area, we can make some generalizations about their relationship with the criteria. None of the 14 items concerning foreign connections (Table 4) had a significant correlation with any of the criteria. Items concerning marijuana, hashish, amphetamine and other hard drug use

(Table 5) had significant correlations with prescreening adjudication. The item regarding total number of times that marijuana was used was the only item significantly correlated with type of discharge. Of the five items concerning the use of alcohol (Table 6) none had significant correlations with any criterion measure. Similarly, no significant correlations were obtained for any of the six emotional stability items (Table 7). One of the six items concerning sexual misconduct (Table 8), the item concerning child molestation, rape or statutory rape, window peeping, streaking, mooning, indecent exposure, etc., had a significant correlation with prescreening adjudication. One of the three delinquency items (Table 9) had a significant correlation with prescreening adjudication. Some of the items concerning financial problems (Table 10) had significant correlations with prescreening adjudication and issue case status. Item 6, concerning all financial problems, had significant correlations with both of these criteria. Item 6.4, concerning bad checks, was significantly correlated with issue case status. Item 6.5, concerning delinquent payments, had the highest correlation of any item with prescreening adjudication and with issue case status. None of the items regarding employment problems (Table 11) or legal offenses/violations (Table 12) were significantly correlated with any of the criteria.

Underlying Structure. A series of principal component factor analyses was performed on the yes/no items and coded remarks (combined) to determine the nature of the underlying structure of the instrument. A scree plot of the eigenvalues of the correlation matrix seemed to indicate that solutions should be examined for five, eight, 11, and 14 factors. These solutions accounted for 38, 52, 65, and 75 percent of the variance among the variables, respectively. For each of these analyses, a Promax rotation was employed, based on a value of $k = 4$ (Rummel, 1970, pp. 419-420).

Only two interpretable factors were obtained for the five- and eight-factor solutions. One factor contained most of the drug-related items. The other was made up of items relating to alcohol use and abuse and treatment for alcohol abuse. The remaining factors were combinations of items from very different content areas. For the 11- and 14-factor solutions, the drug use factor was replicated and the remaining factors were, again, uninterpretable.

On the whole, the results of the factor analyses were disappointing, since only two usable factors emerged and these factors did not reflect the content of the majority of items on the 169-R. It appears, then, that empirical scales cannot be developed for the 169-R by means of factor analytic procedures. Thus, rather than developing and using scales for predicting behavioral reliability, the authors focused on the development of empirical scoring keys.

Empirical Scoring Keys. The next step in the analyses was to develop an empirical scoring key for each criterion measure, using the horizontal percent method. Each key assigned weights to selected items to produce a total score that would predict the given criterion. Items were excluded from scoring keys on the basis of three rules:

(a) the horizontal percent method provided no weights for that item; (b) the weighted values were counterintuitive (an example of this was the weighted score for traffic violations which scored those with one or more violations as less likely to receive unsuitability discharges than those with no violations); and (c) the redundancy of several items would have caused the double scoring of a single biographical event. Where there were several redundant items, those with the greatest variance in their scores were retained. The items and scores for each of the three scoring keys are listed in Appendices F, G, and H. For each of the scales, a lower score indicates that more derogatory information was revealed and a higher score means that less derogatory information was revealed. The range of scores differs for the three keys, since each key contains a unique set of items and weights. The scores ranged from 0 - 42, 0 - 40, and 0 - 12, for the prescreening adjudication, issue case status, and type of discharge scoring keys, respectively.

Table 13 contains the validity coefficients for the empirical scoring key against the three criteria and for the linear probability models described below. Each key shows a significant correlation with the criterion it was designed to predict. Both the prescreening adjudication key and the issue case status key had fairly strong correlations with prescreening adjudication and issue case status. Only the type of discharge scoring key was significantly correlated with all three criteria, although the correlations only ranged from .12 to .15.

Table 13

**Validity Coefficients for Empirical Scoring Keys
and Linear Probability Models**

<u>Empirical Scoring Key</u>	<u>Prescreening Adjudication</u>	<u>Issue Case Status</u>	<u>Type of Discharge</u>
Prescreening Adjudication	.38**	.21**	-.02
Issue Case Status	.25**	.27**	-.02
Type of Discharge	.12*	.15*	.15*
<u>Linear Probability Model</u>			
Issue Case Status key, AFQT, and Age		.27**	
Type of Discharge key, AFQT, and Age			.22**

* $p < .05$

** $p < .01$

Having examined the validity of the empirical scoring keys, regression analyses were performed to examine the incremental validity of other applicant data. The intent of the analyses was to determine whether the prediction of issue case status and type of discharge could be improved by the addition of AFQT category, age at service entry, and level of education. Unfortunately, level of education could not be included in the regression analyses, as there were too few individuals in the sample who did not have a high school diploma. AFQT category was collapsed into high (I - IIIA) and low (IIIB or below) categories and a dummy variable was created for the high category. Age was collapsed into three categories: (a) 17 year olds, (b) 18-20 year olds, and (c) 21 years old or older. Dummy variables were created for the 17 and 18-20 year old categories.

Since issue case status and type of discharge are dichotomous criteria, the prediction equation yields an estimate, for each individual, of the probability of becoming an issue case (or of being discharged for unsuitability). If a standard linear function is fit to the data, the model is termed a linear probability model (LPM). Although the LPM violates the assumption of homoscedasticity, linear models are known to be very robust with regard to violations of assumptions of normality and homoscedasticity.

Validity coefficients for the LPMs are shown in Table 13. For issue case status, there is no evidence of incremental validity gained from including AFQT category or age at entry. However, for type of discharge, the validity coefficient increases from .15 to .22 with the addition of these variables.

Utility

The term utility, in this study, is used in a somewhat different manner than it is used in statistical decision theory. Rather than being a rigorously defined concept in the context of a formal mathematical model, it is used here to refer to the benefit to the organization of employing a particular decision rule. Specifically, the benefit to the organization is defined as a reduced risk of (a) having a security clearance denied to an individual who has been assigned to a sensitive duty position and (b) assigning unreliable individuals to sensitive duty positions.

The utility of the scoring keys was evaluated by first establishing cutoff scores and then determining what the impact would have been if the empirical keys and cutoff scores had been used in prescreening.

The goal, in setting the cutoff scores, was to screen out individuals with low scores on the empirical keys and yet fulfill existing manpower requirements. In this sample, 19% of the non-prior service male applicants were rejected in the prescreening adjudication phase. It is reasonable to assume, therefore, that a rejection rate of 19% is acceptable. Thus, cutoff scores were established for the three scoring keys at the point closest to a 19%/81% split. The cutoff (or minimum acceptable) scores for the

prescreening adjudication, issue case status, and type of discharge scoring keys were 25, 21, and 7, respectively.

Table 14 shows the impact of using the three keys in terms of reducing the issue case and unsuitability discharge rates. The utility of a key, in terms of reduced risk of individuals assigned to high security occupations being denied a clearance, is determined by comparing the percentage of applicants who score above the cutoff and are later classified as issue cases to the percentage who are classified as issue cases if the key is not used (i.e., the base rate). If the use of the cutoff reduces this percentage, in comparison to the base rate, then the key and its associated cutoff are judged to have utility.

Table 14

**Impact of Using Cutoff Scores on the
Issue Case and Unsuitability Discharge Rates**

<u>Empirical Scoring Key</u>	<u>Score</u>	<u>Issue Case Status</u>		<u>Type of Discharge</u>	
		<u>Percent Issue</u>	<u>Percent No Issue</u>	<u>Percent Unsuitable</u>	<u>Percent Normal</u>
Prescreening Adjudication	Below cutoff	25.9	74.1	11.5	88.5
	Above cutoff	5.6	94.4	14.0	86.0
Issue Case Status	Below cutoff	22.2	77.8	9.4	90.6
	Above cutoff	5.3	94.7	14.5	85.5
Type of Discharge	Below cutoff	16.1	83.9	24.4	75.6
	Above cutoff	6.7	93.3	11.7	88.3
Linear Probability Model including Type of Discharge	Below cutoff			28.0	72.0
	Above cutoff			10.4	89.6
Base Rate		8.0	92.0	13.5	86.5

The base rate for issue cases in this sample was 8.0%. The percentages of issue cases above the cutoff was lower than the base rate for all three keys, with the issue case status key showing the lowest percentage (5.3%). Thus, the issue case rate could be reduced by approximately three percentage points by using this key. In order to determine the significance of this reduction, it is necessary to convert this change in percentages into the decrease in the number of individuals being classified as issue cases. Analysis of DCII data revealed that 289 of the non-prior service males who entered high security occupations in the Army in 1984 became classified as issue cases. Thus, approximately 98 of these individuals would not have been allowed into high security occupations if the issue case status scoring key and its cutoff had been used for prescreening.

The second way of viewing the issue of utility is to determine the reduced risk of assigning unreliable individuals to sensitive duty positions. In this case, the utility of a key and a set cutoff is determined by comparing the percentage of applicants who score above the cutoff and are later discharged for unsuitability to the base rate for unsuitability discharges. If the use of the cutoff reduces this percentage, in comparison to the base rate, then the key and its associated cutoff have utility for prescreening purposes.

The base rate for applicants who received unsuitability discharges was 13.5%. The percentages of unsuitability discharges above the cutoff was lower for the type of discharge key, but higher for the prescreening adjudication and issue case status keys. Thus, use of the issue case key would have a desirable effect on the issue case rate, but an undesirable effect on the number of unsuitability discharges. On the other hand, the type of discharge key has a desirable effect on both the issue case and unsuitability discharge rates. For this key, the percentage of unsuitability discharges above the cutoff was 11.7%, roughly two percentage points below the base rate. In addition to the reduction in the unsuitability discharge rate, it is important to determine the number of individuals with unsuitability discharges who would have been screened out by using this scoring key. Analysis of DMDC cohort data revealed that 429 of the non-prior service males who entered high security occupations in FY 1984 were eventually discharged from the Army for unsuitability. Thus, approximately 57 of these unreliable individuals would not have been allowed into high security occupations if the type of discharge scoring key and its cutoff had been used for prescreening.

Finally, a cutoff score was established for the LPM that included the type of discharge scoring key, AFQT category, and age at service entry. The chosen cutoff score was the point on the distribution of predicted values that was closest to a 19%/81% split. As Table 14 shows, using this model and its cutoff could have reduced the percentage of unsuitability discharges to 10.4%, slightly more than three percentage points below the base rate. This translates into 99 unreliable individuals who would have been screened out by using this model and its cutoff score.

DISCUSSION

Special Considerations

Certain caveats must be considered in drawing conclusions from the findings of this study. The following discussion addresses three caveats related to the criteria and one concerning the impact of low base rates on the findings.

Criterion Issues. Of the three criterion measures used in this study, only one--type of discharge--gives any indication of actual problems with behavioral reliability on the job. Prescreening adjudication decision and issue case status, on the other hand, represent expert judgments concerning the likelihood of such problems occurring in a given case. Thus, using 169-R data to predict these two measures is, in a sense, more of a policy capturing study than a validation study. Clearly, those measures that predict type of discharge are the only ones with demonstrated evidence of validity.

Second, an important weakness of issue case status as a criterion measure in personnel security research is that of false negatives (i.e., individuals in the negative criterion group who should have been in the positive criterion group). This occurs because issue case status does not represent the final outcome of a PSI; rather, the issue case designation simply targets the case for an expanded investigation and is not used in adjudication. In fact, many issue cases may be favorably resolved because: (a) the expanded investigation failed to unearth any serious, damaging information or (b) the adjudicator decided that the negative information that was uncovered was relatively insignificant. On the other hand, since issue case investigations are more costly to conduct and cause a longer time period between the request for security clearance and final adjudication, it is desirable to reduce their number, if possible.

Conversely, both issue case status and type of discharge suffer from the problem of false positives (i.e., individuals in the positive criterion group who should have been in the negative criterion group). For the former, it is sometimes the case that a routine PSI reveals derogatory information and yet the individual is never classified as an issue case. Regarding the latter, it must be recognized that unsuitability discharges tend to be given only in relatively extreme cases. Thus, there are likely to be a substantial number of unreliable individuals who receive other types of discharges and are, therefore, misclassified with respect to the criterion. In addition, it is sometimes the case that unreliable individuals receive another type of discharge, simply because it is a more expedient way to process them out of the service.

Impact of Low Base Rates. The validity of selection procedures is usually determined by a criterion-related validation strategy (i.e., by examining the magnitude of the correlation between predictor and criterion). While the criterion-related validation strategy was employed in this study, it does suffer from an important weakness which

should be considered in interpreting the results. That is, reduced variability in either the predictor, the criterion, or both, will result in an observed validity coefficient which seriously underestimates the true relationship between predictor and criterion.

Since the criteria and most of the predictors in this study are dichotomous, this problem of reduced variability translates into low base rates. Two of the three criteria used in this study evidence a low base rate. Furthermore, the problem is magnified by the fact that most of the predictors also have low base rates. Thus, it is likely that the observed correlations are lower than would otherwise be expected.

An example of the effect of a low base rate is the relationship between child molestation (coded item 5.4) and prescreening adjudication. Although the correlation was not significant, all three individuals who answered affirmatively to the item concerning involvement in child molestation were negatively adjudicated. Thus, the relationship between child molestation and prescreening adjudication is attenuated by a low base rate.

Conclusions

The number of negative discrepancies (i.e., "yes" answers changed to "no" answers), as a potential indicator of dishonest responding, was not found to be correlated with any of the criteria. While there is no reason to consider its use as an operational measure for prescreening, the fact that there were several individuals with discrepancies in areas of foreign obligations and mental health evidences the need for careful probing by security interviewers to obtain accurate responses.

The pattern of relationships between the 169-R items and the three criteria is noteworthy. While a number of items were good predictors of prescreening adjudication, very few were even moderately correlated with issue case status or type of discharge. Since the 169-R provides the data for the prescreening adjudication decision, one expects items to be more highly correlated with this criterion. Issue case status is also a policy capturing criterion in that it is only an indication of past behaviors based on the same content areas covered in the 169-R. Both the 169-R and the guidelines regulating issue case status are grounded in DCID 1/14 and DoD Regulation 5200.2-R.

Type of discharge, as a behavioral criterion, is more difficult to predict, but it was surprising to find that only one item had a significant correlation with this criterion. However, it must be noted that the 169-R was designed to measure security-related issues rather than suitability for military service. It seems likely that more favorable results might have been obtained with higher base rates and a larger sample. This speculation is based on the fact that the empirical key for type of discharge, which is composed of five items, shows a moderate correlation with the criterion.

Each of the empirical scoring keys shows a moderate to strong correlation with one or more criteria. As one would expect, each key was the best predictor of the criterion measure on which it was developed. Although the key for type of discharge did not show the highest correlations, it was the only one that showed at least a moderate correlation to all three criteria.

Clearly, since the empirical keys provide better prediction than individual items, it is best to consider a whole pattern of responses in predicting behavioral reliability. The empirical keys provide an actuarial approach for examining an individual's pattern of responses.

The issue of utility focuses on the impact of using the prescreening device or procedure, as compared to not using it. Ultimately, utility is a far more important consideration than validity. In order to evaluate the utility of an instrument, we must first consider the relative importance of different types of correct and erroneous decisions and evaluate the net effect of using various alternative decision rules. In matters of national security, the primary goal of any decision rule must be to minimize the number of false positives. However, the problem is not an unconstrained one. It is also necessary to try to satisfy manpower requirements and minimize costs associated with screening out individuals, while attempting to minimize the number of false positives.

The utility of the empirical scoring keys and the LPM, which included the type of discharge key, AFQT category, and age at entry, was assessed by examining a cutoff score for each key. Use of the issue case key and its cutoff would produce a substantial decrease in the issue case rate but would increase the unsuitability discharge rate. Use of the type of discharge key would reduce both rates. The cutoff for the LPM results in the greatest reduction in the number of unsuitability discharges.

Figure 2 demonstrates how the LPM could be employed. It is provided only as an example and not as a recommendation for operational use. Security interviewers would score the five items which make up the type of discharge key score. Then, based on the applicant's age, the interviewer would refer to one of the three pages, select the appropriate column for AFQT category, then look down the column to the row corresponding to the discharge key score. The estimated probability of an unsuitability discharge could be especially useful as a deciding factor in borderline cases.

Probability of an Unsuitability Discharge

Non-Prior Service Males
Age 17

Discharge Key Score	AFQT Category			
	I	II	IIIA	IIIB or Below
0	.28	.28	.28	.43
1	.28	.28	.28	.43
2	.28	.28	.28	.43
3	.28	.28	.28	.43
4	.28	.28	.28	.43
5	.28	.28	.28	.43
6	.20	.20	.20	.36
7	.18	.18	.18	.33
8	.16	.16	.16	.31
9	.12	.12	.12	.28
10	.12	.12	.12	.28
11	.08	.08	.08	.24
12	.08	.08	.08	.24

Caution: This table is not intended for operational use. The estimates for probability of an unsuitability discharge are based on preliminary analyses from a small data sample.

Figure 2. Example of a Decision Aid for Adjudication

Probability of an Unsuitability Discharge

Non-Prior Service Males Ages 18 - 20

Discharge Key Score	AFQT Category			
	I	II	IIIA	IIIB or Below
0	.25	.25	.25	.40
1	.25	.25	.25	.40
2	.25	.25	.25	.40
3	.25	.25	.25	.40
4	.25	.25	.25	.40
5	.25	.25	.25	.40
6	.17	.17	.17	.33
7	.15	.15	.15	.31
8	.13	.13	.13	.28
9	.10	.10	.10	.25
10	.10	.10	.10	.25
11	.05	.05	.05	.21
12	.05	.05	.05	.21

Caution: This table is not intended for operational use. The estimates for probability of an unsuitability discharge are based on preliminary analyses from a small data sample.

Figure 2 (continued). Example of a Decision Aid for Adjudication

Probability of an Unsuitability Discharge

Non-Prior Service Males Ages 21 and Older

Discharge Key Score	AFQT Category			
	I	II	IIIA	IIIB or Below
0	.27	.27	.27	.43
1	.27	.27	.27	.43
2	.27	.27	.27	.43
3	.27	.27	.27	.43
4	.27	.27	.27	.43
5	.27	.27	.27	.43
6	.19	.19	.19	.35
7	.17	.17	.17	.33
8	.15	.15	.15	.31
9	.12	.12	.12	.27
10	.12	.12	.12	.27
11	.08	.08	.08	.23
12	.08	.08	.08	.23

Caution: This table is not intended for operational use. The estimates for probability of an unsuitability discharge are based on preliminary analyses from a small data sample.

Figure 2 (continued). Example of a Decision Aid for Adjudication

Recommendations

Further research on the 169-R, using a large data sample, seems to be warranted, for two reasons. First, for many predictor variables from the 169-R, cell sizes were too small to compute a valid measure of association. If all available data from an entire year were analyzed, more definitive results could be obtained. Second, the findings of this report clearly indicate the utility or benefit of using empirical scoring keys to supplement existing prescreening procedures based on the 169-R. However, for an empirical scoring key to provide reliable measurement, it must be developed on a large sample.

In addition to analyzing a large data sample, a potentially fruitful avenue for further research is the revision of the 169-R to increase its validity. Using the 169-R as a foundation, the research effort should examine other existing prescreening forms and interview protocols, and develop more thorough coverage of the content domain.

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APPENDIX A

Yes/No Items from the 169-R Analyzed as Predictors

APPENDIX A

Yes/No Items from the 169-R Analyzed as Predictors

Military/Federal Service

- 1a Have you ever been processed for employment to include military service with or investigated by a Federal Government Agency or civilian contractor?
- 1b Have you ever held a security clearance with the Federal Government or civilian contractor?
- 1c Have you ever been denied or had a security clearance revoked/suspended?
- 1d Have you ever received disciplinary action under the Uniform Code of Military Justice, to include Article 15, Captain's Mast or Courts Martial?
- 1e Have you ever been denied enlistment in, rejected by, or discharged from any branch of the Armed Forces?
- 1f Have you ever been a member of the Peace Corps?
- 1g Have you ever been a conscientious objector?

Foreign Connections

- 2a Have you or any member of your family held citizenship in any country other than the US?
- 2b Have you or any member of your family had US citizenship by other than birth (been naturalized)?
- 2c Have you or any member of your family had relatives residing outside the United States? (Exclude travel under US Government orders)
- 2d Have you or any member of your family maintained any ties of affection, obligation or kinship to any individual of foreign birth or who is not a US citizen?
- 2e Have you or any member of your family had any financial interests, holdings or dealings with a foreign-based business; own property or bank account in a foreign country?

- 2f Have you or any member of your family ever travelled outside the United States, excluding short duration (less than one month) visits to Canada or Mexico?
(Exclude travel under US Government orders)

Drug Use

- 3 Have you ever experimented with, even one time, used on an infrequent or regular basis, any of the following type drugs or substances?
- Marijuana
 - Hashish
 - THC
 - Amphetamines (Speed)
 - Hallucinogens (LSD, S1P, PCP, etc.)
 - Barbiturates
 - Cocaine
 - Opium
 - Heroin
- 3a Have you ever experimented with, even one time, used on an infrequent or regular basis, any synthetic cure-type drugs, such as Methadone, or any other habit forming, dangerous or illegal drug/substance?
- 3b Have you ever experimented with, even one time, used on an infrequent or regular basis, any narcotic sedative, stimulant, tranquilizer, anti-depressant, glue, gas, solvent, etc.?
- 3d Have you ever, even one time, possessed, transported, grown, produced, bought or sold (whether for profit or not) any of the drugs/substances mentioned in questions above?
- 3e Have you ever required medical treatment or counseling, had employment or education problems, or been questioned/detained by law enforcement officials as a result of the use of cannabis (marijuana, hashish, etc.), narcotic substances or dangerous drugs?

Alcohol Use

- 4a Have you ever used alcoholic beverages?
- 4b Have you ever required medical treatment or counseling, had employment/education problems, or been questioned/detained by law enforcement officials as a result of the use of alcoholic beverages?

- 4c Have you ever illegally manufactured, transported, purchased or sold alcoholic beverages (to include transfer or sale to minors)?

Emotional Stability

- 5a Have you ever been referred to, visited with, consulted with or been examined by any medical authority, psychiatrist, psychologist, social worker, professional or school counselor for any nervous, mental, emotional, behavior, personal or stability problems?
- 5b Have you ever attempted suicide whether as a gesture or on purpose?
- 5g Have you ever run away from home or considered same?

Sexual Misconduct

- 5c Have you ever been involved in or accused of child molesting, statutory rape, window peeping, streaking, mooning, indecent exposure, etc.?
- 5d Have you ever been involved in any homosexual act since age 15?
- 5e Have you ever been involved in or accused of adultery, cohabitation, prostitution, etc.?
- 5f Have you ever, out of wedlock, been pregnant or caused someone to become pregnant?

Financial Problems

- 6 Have you ever experienced financial problems (bankruptcy, repossessions, garnishments, collections, judgements, bad checks, delinquent payments or been refused credit, etc.)?

Employment Problems

- 7a Have you ever left any employment under less than favorable conditions or while under investigation or suspicion (i.e. fired, quit without notice, quit while under investigation/suspicion, etc.)?
- 7b Have you ever had problems with employers or co-workers?

Delinquency

- 9b2 Have you ever been a member of a street gang or other type of gang?
- 9b3 Have you ever been suspended or expelled from school for any reason?

Other Areas

- 8a Have you ever advocated the use of force or violence to overthrow the Government of the United States or alter the form of Government of the United States by unconstitutional means; been a member of any group or closely associated with any individual(s) whose aims are in opposition to those of the United States?
- 8b Have you ever advocated the use of force or violence to prevent others from exercising their rights under the Constitution or laws of the United States or any subdivision thereof?
- 9b1 Have you ever participated in any illegal or violent demonstrations?
- 10 Are there any other instances in your life which would adversely reflect upon your responsibility, reliability, or maturity or which you feel should be brought out at this time?
- 11 Have you received any advice from any person, either direct or implied, to withhold any information?

APPENDIX B

Coded Items from the 169-R Analyzed as Predictors

APPENDIX B

Coded Items from the 169-R Analyzed as Predictors

Foreign Connections

If yes for question 2a (Have you or any member of your family held citizenship in any country other than the US?), which of the following statements apply?

- 2.1
 - a. applicant held citizenship abroad
 - b. applicant did not hold citizenship abroad, but a member of applicant's immediate family did.
 - c. Neither applicant nor any member of applicant's immediate family held citizenship abroad, but some other member of applicant's family did.
- 2.2 The country or countries in which foreign citizenship was held were:
 - a. Soviet aligned nations.
 - b. Non-Soviet aligned nations.
 - c. Both a and b.

If yes for question 2c (Have you or any member of your family had relatives residing outside the United States, excluding travel under US Government orders?), which of the following statements apply?

- 2.3
 - a. A member of applicant's immediate family lived abroad.
 - b. No member of applicant's immediate family lived abroad, but some other member of applicant's family did.
- 2.4 The country or countries in which family members lived abroad were:
 - a. Soviet aligned nations.
 - b. Non-Soviet aligned nations.
 - c. Both a and b.
- 2.5 Under what circumstances did they live abroad?
 - a. as missionaries
 - b. in the Peace Corps
 - c. as native residents
 - d. as students
 - e. other

If yes for question 2d (Have you or any member of your family had maintained any ties of affection, obligation or kinship to any individual of foreign birth or who is not a US citizen?), which of the following statements apply?

- 2.6 The country or countries in which applicant or a member of applicant's family live or lived were:
- a. Soviet aligned nations.
 - b. Non-Soviet aligned nations.
 - c. Both a and b.

If yes for question 2e (Have you or any member of your family ever travelled outside the United States, excluding short duration (less than one month) visits to Canada or Mexico and travel under US Government orders?), which of the following statements apply?

- 2.7 The country or countries in which applicant or applicant's family members travelled were:
- a. Soviet aligned nations.
 - b. Non-Soviet aligned nations.
 - c. Both a and b.
- 2.8 The most recent trip occurred in:
- a. 1982-84.
 - b. 1978-81.
 - c. prior to 1978.

Drug Use

- 3.1 Used marijuana, hashish, or THC
- 3.2 How many times marijuana was used
- a. never
 - b. once
 - c. more than once, less than 6
 - d. more than 5, less than 11
 - e. more than 10
- 3.3 How often marijuana was used
- a. never
 - b. 6 times a year or less
 - c. once a month
 - d. once a week
 - e. more than once a week, but less than daily
 - f. once or more daily

3.4 Used amphetamines, hallucinogens, barbiturates, cocaine, opium, or heroin

Alcohol Use

- 4.1 Frequency of alcohol use
- a. once a month or less
 - b. more than once a month
- 4.2 Number of times intoxicated
- a. never
 - b. one to 5 times
 - c. more than 5 times

Emotional Stability

- 5.1 Was referred to, visited with, consulted with or been examined by any medical authority, psychiatrist, or psychologist for any nervous, mental, emotional, behavior, personal or stability problems
- 5.2 Was referred to, visited with, consulted with or been examined by any social worker, professional counselor, or church counselor for any nervous, mental, emotional, behavior, personal or stability problems
- 5.3 Was referred to, visited with, consulted with or been examined by any school counselor for any nervous, mental, emotional, behavior, personal or stability problems

Sexual Misconduct

- 5.4 Had been involved in or accused of child molesting
- 5.5 Had been involved in or accused of rape or statutory rape

Delinquency

- 5.6 Had been involved in or accused of mooning, streaking, indecent exposure, or window peeping
- 0.1 Had been a member of a street or other type gang

or

Had been involved in or accused of any of the following offenses:
 mooning, streaking or indecent exposure
 alcohol-related offenses (not involving a vehicle)
 DWI or open container offenses
 non-support (alimony/child support)
 felonies

Financial Problems

- 6.1 Filed for bankruptcy
- 6.2 Had something repossessed, garnishments withheld from pay, or debt collection judgments made against him/her.
- 6.3 Filed for debt consolidation loans or sought financial counseling to solve problems resulting from mismanagement of finances
- 6.4 Had written bad checks
- 6.5 Had let payments become delinquent
- 6.6 Had been refused credit
- 6.7 Had been evicted from place of residence
- 6.8 Any pending litigation concerning any of the above mentioned financial problems?

Employment Problems

- 7.1 Had been fired from a job
- 7.2 Quit a job without notice
- 7.3 Quit a job while under investigation
- 7.4 Had problems with employers
- 7.5 Had problems with co-workers
- 7.6 Had experienced one or more of the employment problems listed above

Legal Offense/Violations

Applicant had been detained, arrested, cited, held, questioned, or convicted for any of the offenses listed below (to include juvenile offenses, whether guilty or not)

- 9.1 Number of traffic tickets received for moving violations
 - a. none
 - b. one
 - c. two
 - d. three or more
- 9.2 Unsafe vehicle/licensing violations (i.e., citations for mechanically unsafe vehicles, driving without a license or without proper registration, etc.)?
- 9.3 Number of parking tickets received
 - a. none
 - b. one
 - c. two
 - d. three or more
- 9.4 Alcohol/drug-related violation involving a vehicle (i.e., driving while intoxicated, open container violations etc.)
- 9.5 Alcohol incident not involving a vehicle (i.e., drunk and disorderly, drinking in public, minor in possession, etc.)
- 9.6 Drug-related incident (i.e., intent to use, intent to buy, intent to sell, possession, sale, etc.)
- 9.7 Sex related offenses (i.e., voyeurism, rape, statutory rape, indecent exposure, prostitution, soliciting a prostitute)
- 9.8 Physical abuse (i.e., battery, assault, child/spouse abuse)
- 9.9 Non-support (i.e., failure to pay or delinquent in paying alimony/child support, accusations and or convictions in paternity suits)
- 9.10 Probation violations
- 9.11 Misdemeanors which do not fit into any of the above categories, such as petty theft (under \$300.00), trespassing, malicious mischief, poaching, shoplifting, etc.)
- 9.12 Felonies which do not fit into any of the above categories, such as grand theft, murder, manslaughter, arson, breaking and entering, etc.)

APPENDIX C

Inter-Service Separation Codes for Failure to Meet Minimum Behavioral or Performance Criteria

APPENDIX C

Inter-Service Separation Codes for Failure to Meet Minimum Behavioral or Performance Criteria

- 60 Character or behavior disorder
- 61 Motivational problems (apathy)
- 62 Enuresis
- 63 Inaptitude
- 64 Alcoholism
- 65 Discreditable incidents - civilian or military
- 66 Shirking
- 67 Drugs
- 68 Financial irresponsibility
- 69 Lack of dependent support
- 70 Unsanitary habits
- 71 Civil court conviction
- 72 Security
- 73 Court martial
- 74 Fraudulent entry
- 75 AWOL, desertion
- 76 Homosexuality
- 77 Sexual perversion
- 78 Good of the service (in lieu of court martial)
- 79 Juvenile offender
- 80 Misconduct (reason unknown)
- 81 Unfitness (reason unknown)
- 82 Unsuitability (reason unknown)
- 83 Pattern of minor disciplinary infractions
- 84 Commission of a serious offense
- 85 Failure to meet minimum qualifications for retention
- 86 Expeditious discharge/unsatisfactory performance
- 87 Trainee discharge/entry level performance and conduct

APPENDIX D

Procedure for Developing Empirical Scoring Keys Using the Horizontal Percent Method

APPENDIX D

Procedure for Developing Empirical Scoring Keys Using the Horizontal Percent Method

For a given response category on the predictor, the percentage difference between the criterion groups was computed. That is, the percentage of individuals who fell into the negative criterion group was subtracted from the percentage of individuals who fell into the positive criterion group. The decision rules shown below were then used to assign the appropriate weight to that response category on the predictor.

	<u>Decision Rule</u>	<u>Weight</u>
	% Difference \leq -25	-5
-25	< % Difference \leq -20	-4
-20	< % Difference \leq -15	-3
-15	< % Difference \leq -10	-2
-10	< % Difference \leq -5	-1
-5	< % Difference < 5	0
5	\leq % Difference < 10	1
10	\leq % Difference < 15	2
15	\leq % Difference < 20	3
20	\leq % Difference < 25	4
25	\leq % Difference	5

APPENDIX E

Crosstabulations of Responses with Criterion Measures

APPENDIX E

Crosstabulations of Responses with Criterion Measures

Table E-1

Crosstabulations of Responses to Prior Military Service Items Across Three Criterion Measures

<u>Item</u>	<u>Description</u>	<u>Prescreening Adjudication</u>		<u>Issue Case Status</u>		<u>Type of Discharge</u>	
		<u>Accepted</u>	<u>Rejected</u>	<u>No Issue</u>	<u>Issue</u>	<u>Normal</u>	<u>Unsuitable</u>
1c	Security clearance denied/ revoked/suspended						
	yes	0	0	0	0	0	0
	no	224	53	205	18	239	38
1d	Disciplined under Uniform Code of Military Justice						
	yes	0	0	0	0	0	0
	no	223	53	204	18	238	38
1e	Denied enlistment or discharged from military						
	yes	11	2	10	1	10	3
	no	213	51	195	17	229	35

Table E-2

**Crosstabulations of Responses to Foreign Connection
Items Across Three Criterion Measures**

<u>Item</u>	<u>Description</u>	<u>Prescreening Adjudication</u>		<u>Issue Case Status</u>		<u>Type of Discharge</u>	
		<u>Accepted</u>	<u>Rejected</u>	<u>No Issue</u>	<u>Issue</u>	<u>Normal</u>	<u>Unsuitable</u>
2a	Self/family citizenship in other country						
	yes	33	13	32	1	40	6
	no	191	40	173	17	199	32
2b	Self/family naturalized U.S. citizen						
	yes	24	9	24	0	30	3
	no	200	43	181	18	208	35
2c	Self/family had relatives residing outside U.S.						
	yes	44	17	43	1	54	7
	no	180	35	162	17	184	31
2d	Self/family obligation to anyone of foreign birth						
	yes	32	13	31	1	39	6
	no	192	39	174	17	199	32
2e	Self/family financial interests in foreign country						
	yes	8	3	8	0	9	2
	no	216	50	197	18	230	36
2f	Self/family ever traveled outside U.S.						
	yes	39	12	35	4	44	7
	no	183	40	168	14	193	30
2.1	Foreign citizenship						
	self	1	1	2	0	1	1
	immediate family	28	12	27	0	35	2
	other family member	2	0	3	0	16	4
2.2	Foreign citizenship						
	Soviet aligned nation	2	1	1	0	1	1
	Non-Soviet aligned nation	27	11	28	0	35	5
	Both	3	0	2	0	2	0

Table E-2 (Continued)

<u>Item</u>	<u>Description</u>	<u>Prescreening Adjudication</u>		<u>Issue Case Status</u>		<u>Type of Discharge</u>	
		<u>Accepted</u>	<u>Rejected</u>	<u>No Issue</u>	<u>Issue</u>	<u>Normal</u>	<u>Unsuitable</u>
2.3	Living abroad						
	self	1	1	1	0	1	1
	immediate family	27	10	27	0	35	2
	other family member	11	6	14	0	16	4
2.4	Living abroad						
	Soviet aligned nation	7	3	6	1	10	0
	Non-Soviet aligned nation	36	14	36	0	43	7
	both	1	0	1	0	1	0
2.5	Living abroad (circumstance)						
	missionary	2	1	1	0	2	0
	Peace Corps	0	1	0	0	0	0
	native	36	10	36	0	40	6
	student	1	0	1	0	1	0
	other	0	1	0	0	1	0
2.6	Foreign ties						
	Soviet aligned nation	0	0	0	0	0	0
	Non-Soviet aligned nation	30	13	29	1	37	6
	both	0	0	0	0	0	0
2.7	Foreign travel						
	Soviet aligned nation	0	0	0	0	0	0
	Non-Soviet aligned nation	30	13	29	1	37	6
	both	1	0	1	0	1	0
2.8	Foreign travel (recency)						
	1982-84	12	5	12	0	15	2
	1978-81	7	0	6	1	6	1
	prior to 1978	7	2	4	3	7	2

Table E-3

**Crosstabulations of Responses to Drug Use Items
Across Three Criterion Measures**

<u>Item</u>	<u>Description</u>	<u>Prescreening Adjudication</u>		<u>Issue Case Status</u>		<u>Type of Discharge</u>	
		<u>Accepted</u>	<u>Rejected</u>	<u>No Issue</u>	<u>Issue</u>	<u>Normal</u>	<u>Unsuitable</u>
3	Drug use:						
	Marijuana						
	yes	91	31	82	9	107	15
	no	133	21	123	9	131	23
	Hashish						
	yes	8	6	7	1	14	0
	no	216	46	198	17	224	38
	THC						
	yes	1	0	1	0	1	0
	no	223	52	204	18	237	38
	Amphetamines						
	yes	7	6	6	1	13	0
	no	217	46	199	17	225	38
	Hallucinogens						
	yes	0	1	0	0	1	0
	no	223	51	204	18	236	38
	Barbiturates						
	yes	2	0	2	0	2	0
	no	221	52	202	18	125	38
	Cocaine						
	yes	1	3	1	0	3	1
	no	222	49	203	18	234	37
	Opium						
	yes	0	0	0	0	0	0
	no	223	52	204	18	237	38
	Heroin						
	yes	0	0	0	0	0	0
	no	224	52	205	18	238	38

Table E-3 (Continued)

<u>Item</u>	<u>Description</u>	<u>Prescreening Adjudication</u>		<u>Issue Case Status</u>		<u>Type of Discharge</u>	
		<u>Accepted</u>	<u>Rejected</u>	<u>No Issue</u>	<u>Issue</u>	<u>Normal</u>	<u>Unsuitable</u>
3a	Used synthetic or cure-type drugs, such as Methadone						
	yes	0	0	0	0	0	0
	no	223	52	204	18	222	38
3b	Used narcotic sedative, stimulant, tranquilizer, anti-depressant, glue, gas, solvent, etc.						
	yes	3	1	3	0	4	0
	no	219	51	200	18	232	38
3d	Possessed, transported, grown, produced, bought or sold drugs						
	yes	28	16	23	5	39	5
	no	196	36	182	13	199	33
3e	Medical treatment/counseling, or employment, education or legal problems from drug use						
	yes	1	0	1	0	0	1
	no	222	52	203	18	237	37
3.1	Drug use (marijuana, hashish, or THC)						
	yes	87	31	82	9	107	15
	no	135	25	124	9	136	23
3.2	Marijuana (total times used)						
	never	134	25	124	9	136	23
	once	28	5	27	1	33	0
	more than once	63	26	55	8	74	15
3.3	Marijuana (frequency of use)						
	never	135	25	125	9	137	23
	6 times year or less	65	20	60	5	76	9
	once/month or more	22	10	18	4	27	5
3.4	Hard drugs						
	yes	10	7	9	1	16	1
	no	215	49	197	17	227	37

Table E-4

**Crosstabulations of Responses to Alcohol Use Items
Across Three Criterion Measures**

<u>Item</u>	<u>Description</u>	<u>Prescreening Adjudication</u>		<u>Issue Case Status</u>		<u>Type of Discharge</u>	
		<u>Accepted</u>	<u>Rejected</u>	<u>No Issue</u>	<u>Issue</u>	<u>Normal</u>	<u>Unsuitable</u>
4a	Have used alcoholic beverages						
	yes	207	48	189	17	221	34
	no	17	4	16	1	17	4
4b	Medical treatment/counseling, or employment, education or legal problems from alcohol use						
	yes	14	5	13	1	16	3
	no	209	46	191	17	220	35
4c	Illegally manufactured, purchased or sold alcoholic beverages						
	yes	19	7	18	1	24	2
	no	205	45	187	17	214	36
4.1	Alcohol (frequency of use)						
	once/month or less	144	31	117	9	154	24
	more than once/month	78	19	70	8	85	12
4.2	Alcohol (total times intoxicated)						
	never	78	12	73	5	80	10
	1-5 times	96	19	88	7	101	14
	more than 5 times	49	19	43	6	55	13

Table E-5

**Crosstabulations of Responses to Emotional Stability
Items Across Three Criterion Measures**

<u>Item</u>	<u>Description</u>	<u>Prescreening Adjudication</u>		<u>Issue Case Status</u>		<u>Type of Discharge</u>	
		<u>Accepted</u>	<u>Rejected</u>	<u>No Issue</u>	<u>Issue</u>	<u>Normal</u>	<u>Unsuitable</u>
5a	Have seen psychiatrist, or other mental health worker for nervous/mental /emotional problems						
	yes	31	11	26	5	34	8
	no	193	41	174	13	204	30
5b	Attempted suicide						
	yes	2	0	0	2	2	0
	no	222	51	205	16	235	38
5g	Ran away from home						
	yes	32	5	28	4	28	9
	no	191	47	176	14	210	28
5.1	Psychological examination (medical authority)						
	yes	16	2	14	2	17	1
	no	207	49	190	16	220	36
5.2	Psychological counseling (social worker, etc.)						
	yes	10	3	7	3	9	4
	no	213	48	197	15	228	33
5.3	School counseling (for emotional behavioral stability)						
	yes	4	5	4	0	7	2
	no	219	46	200	18	230	35

Table E-6

**Crosstabulations of Responses to Sexual Misconduct
Items Across Three Criterion Measures**

<u>Item</u>	<u>Description</u>	<u>Prescreening Adjudication</u>		<u>Issue Case Status</u>		<u>Type of Discharge</u>	
		<u>Accepted</u>	<u>Rejected</u>	<u>No Issue</u>	<u>Issue</u>	<u>Normal</u>	<u>Unsuitable</u>
5c	Involved in/accused of child molesting, statutory rape, window peeping, etc.						
	yes	6	8	5	1	11	3
	no	218	44	200	17	227	35
5d	Involved in homosexual act since age 15						
	yes	0	1	0	0	1	0
	no	224	50	205	18	236	38
5e	Involved in/accused of adultery, prostitution, etc.						
	yes	10	3	7	3	11	2
	no	214	47	198	15	225	36
5f	Been/caused pregnancy out of wedlock						
	yes	19	9	17	2	22	6
	no	205	41	188	16	214	32
5.4	Child molestation						
	yes	0	1	0	0	1	0
	no	223	51	204	18	236	38
5.5	Rape						
	yes	0	0	0	0	0	0
	no	223	52	204	18	237	38

Table E-7

**Crosstabulations of Responses to Delinquency
Items Across Three Criterion Measures**

<u>Item</u>	<u>Description</u>	<u>Prescreening Adjudication</u>		<u>Issue Case Status</u>		<u>Type of Discharge</u>	
		<u>Accepted</u>	<u>Rejected</u>	<u>No Issue</u>	<u>Issue</u>	<u>Normal</u>	<u>Unsuitable</u>
5.6	Mooning, indecent exposure, etc.						
	yes	5	7	4	1	9	3
	no	218	45	200	17	228	35
9b(2)	Membership in street gang						
	yes	0	1	0	0	1	0
	no	223	50	204	18	236	37
9b(3)	Suspended/expelled from school						
	yes	48	12	42	6	50	10
	no	175	38	162	12	186	27

Table E-8

**Crosstabulations of Responses to Financial
Items Across Three Criterion Measures**

<u>Item</u>	<u>Description</u>	<u>Prescreening Adjudication</u>		<u>Issue Case Status</u>		<u>Type of Discharge</u>	
		<u>Accepted</u>	<u>Rejected</u>	<u>No Issue</u>	<u>Issue</u>	<u>Normal</u>	<u>Unsuitable</u>
6	Financial problems						
	yes	53	20	44	9	65	8
	no	170	29	160	9	170	29
6.1	Bankruptcy						
	yes	0	1	0	0	1	0
	no	222	48	203	18	233	37
6.2	Repossessions, garnishments, etc						
	yes	6	2	6	0	8	0
	no	216	47	197	18	226	37
6.3	Other outstanding debt problems						
	yes	0	0	0	0	0	0
	no	222	49	203	18	234	37
6.4	Bad checks						
	yes	33	13	27	6	39	7
	no	189	36	176	12	195	30
6.5	Delinquent payments						
	yes	11	12	7	4	22	1
	no	211	37	196	14	212	36
6.6	Refused credit						
	yes	6	2	5	0	6	2
	no	215	47	198	18	225	35
6.7	Eviction from residence						
	yes	0	0	0	0	0	0
	no	222	49	203	18	234	37
6.8	Pending litigation						
	yes	1	2	1	0	3	0
	no	221	47	202	18	231	37

Table E-9

**Crosstabulations of Responses to Employment Items
Across Three Criterion Measures**

<u>Item</u>	<u>Description</u>	<u>Prescreening Adjudication</u>		<u>Issue Case Status</u>		<u>Type of Discharge</u>	
		<u>Accepted</u>	<u>Rejected</u>	<u>No Issue</u>	<u>Issue</u>	<u>Normal</u>	<u>Unsuitable</u>
7a	Fired from job, quit w/o notice, quit under investigation or suspicion						
	yes	41	12	35	6	50	3
	no	183	40	170	12	188	35
7b	Problems w/employers or coworkers						
	yes	21	4	19	2	23	2
	no	203	47	186	16	214	36
7.1	Employment problems (fired)						
	yes	19	5	15	4	24	0
	no	200	43	185	14	206	37
7.2	Employment problems (quit without notice)						
	yes	16	3	14	2	17	2
	no	203	45	186	16	213	35
7.3	Employment problems (quit while under investigation)						
	yes	4	1	4	0	4	0
	no	206	45	196	18	226	35
7.4	Problems with employers						
	yes	20	3	7	2	16	1
	no	203	48	196	14	223	35
7.5	Problems with co-workers						
	yes	21	4	0	0	18	3
	no	203	47	203	18	203	38
7.6	Employment problems (items 7.1 - 7.5)						
	yes	46	12	40	6	54	4
	no	178	40	165	12	184	34

Table E-10

**Crosstabulations of Responses to Legal Offense
Items Across Three Criterion Measures**

<u>Item</u>	<u>Description</u>	<u>Prescreening Adjudication</u>		<u>Issue Case Status</u>		<u>Type of Discharge</u>	
		<u>Accepted</u>	<u>Rejected</u>	<u>No Issue</u>	<u>Issue</u>	<u>Normal</u>	<u>Unsuitable</u>
9.1	Traffic tickets (moving violations)						
	none	83	28	78	5	94	17
	1	63	11	57	6	65	9
	2	35	7	32	3	36	6
	3 or more	44	10	39	4	48	6
9.2	Traffic tickets (unsafe vehicle/licensing violations)						
	yes	48	12	41	6	51	9
	no	177	44	165	12	192	29
9.3	Parking tickets						
	none	168	47	155	12	185	30
	1	29	7	26	3	32	4
	2	17	2	14	3	18	1
	3 or more	11	0	11	0	8	3
9.4	DWI, open container violations, etc.						
	yes	4	7	3	0	9	2
	no	221	49	203	18	234	36
9.5	Public drunkenness, etc.						
	yes	13	2	11	1	13	2
	no	212	54	195	17	230	36
9.6	Drug related offenses						
	yes	4	1	5	0	3	2
	no	212	50	204	18	233	36
9.7	Sex related offenses						
	yes	0	0	0	0	0	0
	no	223	50	203	18	237	38
9.8	Battery, assault, child/spouse abuse, etc.						
	yes	0	0	0	0	0	0
	no	223	50	203	18	237	38

Table E-10 (Continued)

<u>Item</u>	<u>Description</u>	<u>Prescreening Adjudication</u>		<u>Issue Case Status</u>		<u>Type of Discharge</u>	
		<u>Accepted</u>	<u>Rejected</u>	<u>No Issue</u>	<u>Issue</u>	<u>Normal</u>	<u>Unsuitable</u>
9.9	Failure to pay alimony/child support						
	yes	0	1	1	0	0	1
	no	223	51	202	18	233	33
9.10	Probation violations						
	yes	0	0	0	0	0	0
	no	223	50	203	18	223	38
9.11	Other misdemeanors						
	yes	36	10	34	2	41	5
	no	189	46	172	16	202	33
9.12	Other felonies						
	yes	5	1	5	1	5	2
	no	212	50	204	16	231	36

Table E-11

**Crosstabulations of Responses to "Other" Items
Across Three Criterion Measures**

<u>Item</u>	<u>Description</u>	<u>Prescreening Adjudication</u>		<u>Issue Case Status</u>		<u>Type of Discharge</u>	
		<u>Accepted</u>	<u>Rejected</u>	<u>No Issue</u>	<u>Issue</u>	<u>Normal</u>	<u>Unsuitable</u>
8a	Advocated violent overthrow of U.S. government						
	yes	0	0	0	0	0	0
	no	223	51	204	18	237	37
8b	Advocated violence to deny others' civil rights						
	yes	0	0	0	0	0	0
	no	223	51	204	18	237	37
9b(1)	Participation in illegal or violent demonstrations						
	yes	1	0	1	0	1	1
	no	223	51	203	18	236	37
10	Other derogatory information						
	yes	7	4	5	2	9	2
	no	215	46	198	16	227	34
11	Advised to falsify response						
	yes	6	4	4	2	9	1
	no	217	46	200	16	228	35

APPENDIX F

Item Response Weights for the Prescreening Adjudication Empirical Scoring Key

APPENDIX F

Item Response Weights for the Prescreening Adjudication Empirical Scoring Key

The items listed below with their corresponding response weights were used for the empirical scoring key designed to predict prescreening adjudication.

3.2 How many times marijuana was used

SCORE	RESPONSE
2	a. never
0	b. once
-3	c. more than once, less than 6
-3	d. more than 5, less than 11
-3	e. more than 10

3.3 How often marijuana was used

SCORE	RESPONSE
2	a. never
0	b. 6 times a year or less
-1	c. once a month
-1	d. once a week
-1	e. more than once a week, but less than daily
-1	d. once or more daily

3.4 Used amphetamines, hallucinogens, barbiturates, cocaine, opium, or heroin

SCORE	RESPONSE
-1	yes.
1	no.

3d Have you ever, even one time, possessed, transported, grown, produced, bought or sold (whether for profit or not) any of the drugs/substances mentioned in questions above?

SCORE	RESPONSE
-3	yes.
4	no.

4c Have you ever illegally manufactured, transported, purchased or sold alcoholic beverages (to include transfer or sale to minors)?

SCORE	RESPONSE
0	yes.
2	no.

4.2 Number of times intoxicated

SCORE	RESPONSE
2	a. never
1	b. one to 5 times
-2	c. more than 5 times

5a Have you ever been referred to, visited with, consulted with or been examined by any medical authority, psychiatrist, psychologist, social worker, professional or school counselor for any nervous, mental, emotional, behavior, personal or stability problems?

SCORE	RESPONSE
-1	yes.
2	no.

5f Have you ever, out of wedlock, been pregnant or caused someone to become pregnant?

SCORE	RESPONSE
-1	yes.
3	no.

6.4 Had written bad checks

SCORE	RESPONSE
-1	yes
3	no

6.5 Had let payments become delinquent

SCORE	RESPONSE
-3	yes.
5	no.

7a Have you ever left any employment under less than favorable conditions or while under investigation or suspicion (i.e. fired, quit without notice, quit without notice, quit while under investigation/suspicion, etc.)?

SCORE	RESPONSE
0	yes.
1	no.

9b3. Have you ever been suspended or expelled from school for any reason?

SCORE	RESPONSE
0	yes.
1	no

The response weights for the prescreening adjudication key were summed for each individual, and ranged from -13 to 29 for the entire sample. These sum scores were converted to total scores with a range of 0 to 42 by adding 13 to each sum score.

APPENDIX G

Item Response Weights for the Issue Case Status Empirical Scoring Key

APPENDIX G

Item Response Weights for the Issue Case Status Empirical Scoring Key

The items listed below with their corresponding response weights were used for the empirical scoring key designed to predict issue case status.

3.2 How many times marijuana was used

SCORE	RESPONSE
2	a. never
1	b. once
-3	c. more than once, less than 6
-3	d. more than 5, less than 11
-3	e. more than 10

3.3 How often marijuana was used

SCORE	RESPONSE
2	a. never
0	b. 6 times a year or less
-2	c. once a month
-2	d. once a week
-2	e. more than once a week, but less than daily
-2	d. once or more daily

3d Have you ever, even one time, possessed, transported, grown, produced, bought or sold (whether for profit or not) any of the drugs/substances mentioned in questions above?

SCORE	RESPONSE
-3	yes
3	no

4.1 Frequency of alcohol use

SCORE	RESPONSE
0	a. never
1	b. once a month or less
-2	c. more than once a month

4.2 Number of times intoxicated

SCORE	RESPONSE
1	a. never
0	b. one to 5 times
-2	c. more than 5 times

5a Have you ever been referred to, visited with, consulted with or been examined by any medical authority, psychiatrist, psychologist, social worker, professional or school counselor for any nervous, mental, emotional, behavior, personal or stability problems?

SCORE	RESPONSE
-------	----------

-3	yes
----	-----

2	no
---	----

6 Have you ever experienced financial problems (bankruptcy, repossessions, garnishments, collections, judgements, bad checks, delinquent payments or been refused credit, etc.)?

SCORE	RESPONSE
-------	----------

-5	yes
----	-----

5	no
---	----

7a Have you ever left any employment under less than favorable conditions or while under investigation or suspicion (i.e. fired, quit without notice, quit while under investigation/suspicion, etc.)?

SCORE	RESPONSE
-------	----------

-3	yes
----	-----

3	no
---	----

9b3 Have you ever been suspended or expelled from school for any reason?

SCORE	RESPONSE
-------	----------

-2	yes
----	-----

2	no
---	----

9.2 Unsafe vehicle/licensing violations (i.e., citations for mechanically unsafe vehicles, driving without a license or without proper registration, etc.)?

SCORE	RESPONSE
-------	----------

-2	yes.
----	------

2	no.
---	-----

The response weights for the issue case status key were summed for each individual, and ranged from -17 to 23 for the entire sample. These sum scores were converted to total scores with a range of 0 to 40 by adding 17 to each sum score.

APPENDIX H

Item Response Weights for the Type of Discharge Empirical Scoring Key

APPENDIX H

Item Response Weights for the Type of Discharge Empirical Scoring Key

The items listed below with their corresponding response weights were used for the empirical scoring key designed to predict Type of Discharge.

3.2 How many times marijuana was used

SCORE	RESPONSE
0	a. never
0	b. once
-1	c. more than once, less than 6
-1	d. more than 5, less than 11
-1	e. more than 10

4.2 Number of times intoxicated

SCORE	RESPONSE
1	a. never
0	b. one to 5 times
-2	c. more than 5 times

5a Have you ever been referred to, visited with, consulted with or been examined by any medical authority, psychiatrist, psychologist, social worker, professional or school counselor for any nervous, mental, emotional, behavior, personal or stability problems?

SCORE	RESPONSE
-1	yes
1	no

5g Have you ever run away from home or considered same?

SCORE	RESPONSE
-2	yes
2	no

9b3 Have you ever been suspended or expelled from school for any reason?

SCORE	RESPONSE
-1	yes
1	no

The response weights for the type of discharge key were summed for each individual, and ranged from -7 to 5 for the entire sample. These sum scores were converted to total scores with a range of 0 to 12 by adding 7 to each sum score.