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USAR RECRUITING SUCCESS FACTORS

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study attempts to identify attributes associated with successful recruiters, to evaluate ing data on recruiter performance and characteristics, and to develop a model to aid in election of personnel who are likely to become successful recruiters. Conventional multi- te statistical techniques have not proved adequate in identifying successful recruiters, ly because of the absence of reliable and valid measures of recruiter success. This applies a relatively new methodology, expert systems, to the recruiter selection problem site models were constructed using expert systems developed for 6 Active Guard and ve Army recruiters; and for 10 Regular Army recruiters. These systems evaluated the ive importance of 6 dimensions, including both biodemographic/background traits and ior/personality characteristics. Recommendations for the application, testing and vement of this prototype methodology are presented.

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USAR RECRUITING SUCCESS FACTORS

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SUMMARY

Background

Efficient and effective selection of recruiters is one of the most challenging tasks confronting the military services in the All Recruited Force era. As a declining youth population decreases the pool of potential recruits, recruiting is expected to become more difficult. Appropriate recruiter selection procedures can increase the likelihood that authorized strength levels will be met in a cost-effective manner.

The US Army Recruiting Command (USAREC) became responsible for recruiting for the US Army Reserve (USAR) in 1979 and in 1986 had nearly 1,800 Reserve recruiters. Unlike its Active Army counterpart, the USAR is a geographically limited entity and must structure its recruiting efforts in local markets to meet the diverse personnel requirements of a large number of geographically dispersed Reserve units.

Past research indicates that two categories of factors have been identified for their utility in predicting successful recruiter performance. One category includes biographical and personal history characteristics which are available in standard military personnel files while the second group of factors is comprised of measures of behavioral and personality traits. Neither set of measures have proved satisfactory in predicting recruiter success.

Purpose

The purpose of this study is to evaluate existing literature and data on recruiter performance and characteristics, to identify attributes associated with successful recruiters, and to develop a model to aid in the selection of personnel who are most likely to become successful recruiters.

Traditional methods for identifying the personnel characteristics which are

associated with recruiter success rely on the existence of reliable and valid measures of both the relevant personal attributes and of recruiter performance. Previous studies of recruiter productivity have suffered from an inability to control for differences in local market factors. The "criterion" problem, or the lack of a yardstick that objectively measures recruiter productivity has prohibited successful application of conventional multivariate statistical techniques to the problem of identifying the relative importance of factors affecting recruiter success.

Method

This study applies a relatively new methodology, expert systems, to the recruiter selection problem. This technology, a branch of artificial intelligence, has proved particularly useful in dealing with problems involving subjective judgment. Recruiter selection presents just such a decision problem. An appropriate expert systems shell can be used to develop a multiattribute utility model for evaluating recruiter candidates.

The expert systems approach addresses two major shortcomings of traditional analysis: the difficulty of specifying the relative importance of recruiter attributes, and the reliance on an objectively measured criterion for recruiter success.

Expert systems were developed for 6 Active Guard and Reserve (AGR) Army recruiters and for 10 Regular Army (RA) recruiters. In addition, composite models were constructed for Reserve and Active recruiters. The validity of these systems was evaluated by the expert systems program itself. All of the systems developed for recruiters showed high marks for all of the internal tests of validity. Twenty hypothetical recruiter applicants were then screened by each of the expert systems and a fairly consistent pattern of selection and rejection

emerged.

Results

The characteristics of a successful recruiter may be inferred from the weights assigned to individual attributes within the dimensions identified by the expert systems. Recruiter attributes were grouped into six dimensions: Communication Skills, Personality Characteristics, Behavior characteristics, Military background, Demographic Characteristics, and Specific Experience. This hierarchy of attributes is based on the findings of previous studies and also upon the opinions of experts in the recruiting field. It includes both the biodemographic factors and the personality/behavior traits identified by earlier researchers.

On the whole, Reserve recruiters judged Communication Skills, Demographic Characteristics, and Personality Characteristics to be the most important dimensions for successful recruiting, while Active recruiters felt that Communication Skills, Personality Characteristics, and Behavior Characteristics were most important.

Reserve recruiter-experts saw a potentially successful candidate as an individual who is intelligent, persuasive, self-motivated, high-ranking for his or her length-of-service, and who has some sales experience. Active recruiters have a similar ideal candidate who possesses public speaking experience rather than sales experience and has many years of service (Active Duty) rather than high rank, but with otherwise identical characteristics. A major benefit of an expert systems approach is that the derived models give a role to every attribute within an extensive hierarchy of attributes and develop an internally consistent selection tool reflecting all of the characteristics.

Recommendations

The application of expert systems technology to problems of personnel selection is in the very early stages of development. The artificial intelligence field itself is rapidly advancing and promises to provide solutions to many difficult questions. Currently, however, there are severe limitations to the usefulness of these methods in solving so complex a problem as recruiter selection. The model developed here does succeed, to a great extent, in assigning weights to personal attributes in an objective manner within the context of an unspecified criterion for recruiter success. It does not, however, simulate the intricate processes of human reasoning which are involved in the selection of essential personnel by a large organization.

There are several important areas for future work. One is the construction of expert systems shells which better suit the specific decision problem and a tailoring of the knowledge acquisition aspect of the programs to suit the recruiter experts. A second area for further work is the measurement of personality and behavior traits for recruiter candidates so that these values can be used in testing expert systems models. A third task is the continuation of research into the characteristics associated with recruiter success. The hierarchies which provide the basic structure for the expert systems model must come from knowledge of the dynamics of the recruiting process.

ACKNOWLEDGMENTS

The authors would like to thank Helen Davis for her invaluable assistance in the application of expert systems technology to the problem of recruiter selection. Joyce Zellweger provided important preliminary work in her Naval Postgraduate School masters thesis and contributed a significant research effort to the Literature Review section of this report. We are also indebted to the Reserve and Regular Army recruiters who gave us the benefit of their expertise and agreed to participate in the interview phase of the project.

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I. INTRODUCTION

A. Purpose

Recruiter selection is one of the most challenging tasks confronting the military services in the All Volunteer Force era. Recruiting is expected to become more difficult as a declining youth population decreases the pool of potential recruits. The services not only compete with each other but will continue to compete with the civilian sector for qualified personnel in a declining manpower pool. Additionally, budget constraints may severely limit the resources available to attract the necessary quantity and quality of new enlistees. As a result, the services will increasingly need to maximize the efficient selection and utilization of their recruiter manpower. Effective selection procedures increase the likelihood that enough people will be recruited to meet authorized strength levels, recruiting goals, and assigned missions.

The costs of inappropriate recruiter selection methods are considerable in terms of both monetary and human resources. Poor recruiter/job matches decrease productivity and increase turnover and related costs resulting from moving, training, and replacing recruiters who are not right for the job. Individuals are usually selected for recruiting duty from among those with high performance ratings in previous assignments and if these junior noncommissioned officers are not successful on recruiting duty, their self-confidence, attitude, and motivation are likely to suffer and may lead to poor performance in future assignments or early attrition.

The purpose of this study is to identify attributes associated with successful recruiters, to evaluate existing data on recruiter performance and characteristics, and to develop a model to aid in the selection of personnel who are most likely to become successful recruiters.

Chapter II discusses previous studies which have attempted to identify successful recruiters and points out the serious deficiencies in data, particularly performance measures, which have inhibited the development of useful recruiter selection procedures. Chapter III introduces a methodology based on expert systems technology which is used to overcome many of the problems encountered in previous attempts to establish criteria for recruiter selection using more traditional methods. Chapter IV describes the characteristics of the expert systems developed for Army Active and Reserve recruiters and, from interviews with 16 recruiting "experts", investigates methods for deriving composite models, evaluates the expert systems, and discusses in detail the dimensions and attributes embodied in the models. Chapter V presents conclusions based on the literature and data review and on the prototype expert system application as well as recommendations for future work.

B. Background

The group of Reserve recruiters investigated in the empirical portions of this report represent particularly difficult selection, assignment, and training problems for the Army Recruiting Command (USAREC). USAREC first became responsible for recruiting for the US Army Reserve (USAR) in 1979 and now has nearly 1,800 people serving as reserve recruiters. Unlike its Active Army counterpart, the USAR is a geographically limited entity and must structure its recruiting efforts in local markets to meet the diverse personnel requirements of a large number of geographically dispersed Reserve units.

USAR recruiters comprise a volunteer force chosen by USAREC from a field of solicited, qualified USAR applicants. Currently, the selection criteria for USAR recruiters are based upon administrative regulations and personal interviews or references at the recruiting battalion level. USAREC has 56 recruiting

battalions and other commands within its organization. Each battalion commander is responsible for soliciting applications and conducting interviews to fill USAR vacancies, most of which are recruiter positions. [Ref. 2] The battalion commander selects or rejects an applicant and sends the application to USAREC for administrative review. If USAREC's review is favorable the application is forwarded to the Army Reserve Personnel Center (APPERCEN) where a final decision is made. [Ref. 1; p. 25]

The interview phase is a very important part of the recruiter selection process and each recruiting battalion has the authority to conduct interviews based on its own rules and needs. The number of board members and their composition can vary widely. There are few guidelines to help board members and battalion commanders in making critical selection decisions. A better understanding of the relationship of personal characteristics and successful performance as a recruiter would make these decisions easier. In addition, a model for establishing objective criteria for recruiter selection could provide a useful structure for the decision making process.

II. LITERATURE AND DATA REVIEW

A. Forward

All of the military services have studied ways to select personnel that have the highest likelihood of becoming successful recruiters. This literature review provides an overview of research on the selection of successful recruiters. The review includes discussions of methodologies for determining factors associated with successful recruiting, consistency and validity of results, commonality of resultant factors, limitations and problems encountered, and concludes with an assessment of future research needs in this area.

While all branches of the military are represented in the literature, Air Force studies are outnumbered by a wide margin. There appear to be at least two reasons. For the first few years after the inception of the All Recruited Force, the services fielded volunteer recruiter forces. Today, however, all active services except the Air Force rely on recruiting forces comprising mainly non-volunteers. Another explanation for the Air Force's comparatively small body of research on recruiter selection is that service's historic recruiting success. The Air Force has been the number one branch choice among potential enlistees for decades, and the service has met its recruiting goals with no apparent difficulty. Thus, the Air Force may not have had as much need to examine the recruiter selection issue.

Various methods have been used to conduct research in recruiter selection. Most researchers used paper-and-pencil test batteries in their attempts to identify characteristics of successful recruiters and predict recruiter performance. Other researchers used biographical information, structured and unstructured interviews, job analysis, assessment centers, and other methods.

In general, the results of previous studies have been disappointing. In many studies, few results were statistically significant. In others, results that were significant had dubious meaning and were not cross-validated. In still others when cross-validation was attempted, original results could not be duplicated.

Several common problems in previous research help to explain their disappointing results. The most common difficulty was the "criterion problem": measuring recruiter performance in a reliable and valid manner. [Ref. 3; p. 16] Prior studies have used a variety of measures to attempt to capture recruiter performance: supervisory ratings, school performance, percent of quota achieved, and total number of recruits enlisted have been used as performance measures, among others. Supervisory ratings are often unreliable and of questionable validity. Even with the best of intentions, supervisors can be influenced by characteristics unrelated to job effectiveness ([Ref. 4; p. 1]). This can lead to evaluations based on reputation rather than performance. Recruiting school performance has limitations as a measure of recruiting performance since graduates of recruiting school may perform differently in the field than they do in training. [Ref. 5; pp. 14-16]

The greatest limitation in analyzing characteristics of successful recruiters is the inability of recruiter production concepts--such as percent of quota achieved and total number of recruits enlisted--to provide a straightforward measure of success of an individual recruiter. Recruiter production figures that do not account for market effects or "opportunity bias" (the relative ease or difficulty in obtaining enlistments in a particular market) cannot provide a basis for examining variations in productivity due to differences in individual recruiters. A recruiter's successful production might

be the result of having been assigned to a fertile recruiting territory. The studies using recruiter performance as a criterion measure and personnel characteristics as explanatory factors have universally been inadequate in their incorporation of market factors for explaining variation in recruiter performance. Such omitted variable approaches yield results that inaccurately associate variation in recruiter performance to variation in personnel characteristics. Limited information about the recruiter's job reduced the usefulness of some of the earlier research. Later studies benefitted from information collected through job analysis [Ref. 7].

Appropriate consideration of the selection environment is a necessary consideration in recruiter selection. The number of recruiters selected involuntarily varies by branch of service. The Air Force is currently the only service whose active duty recruiters are all volunteers. Selection procedures also vary within a service. For example, nearly all of the Army's Active Guard and Reserve (AGR) recruiters are volunteers, yet most recruiters who enlist people into the Regular Army are non-volunteers. Since most active duty recruiters are now selected involuntarily, recent research has attempted to identify reliable recruiter selection methods that would not be vulnerable to compromise or "faking," as are test batteries. These problems with test batteries have amplified interest in passive methods using demographic, biographical, and military experience data the services maintain routinely in various data banks. Unfortunately, the inability to determine adequately the relative importance of background and personality factors has severely limited the payoff from the use of such passive methods.

This section discusses relevant studies attempting to identify characteristics of successful recruiters. The studies are organized by the source of

information used to identify successful recruiters: interviews, test batteries, assessment centers, and personnel file data. Unless particularly relevant, older studies are discussed fairly briefly. More recent work is discussed in greater detail.

B. Interviews

1. Borman, Hough, and Dunnette

In 1976, Borman, Hough, and Dunnette, at the Naval Personnel Research and Development Center (NPRDC) attempted to develop behaviorally-based rating scales to evaluate the performance of Navy recruiters [Ref. 6]. They believed that an extensive analysis of the recruiter job would be required before any further research on recruiter selection could be accomplished. To become familiar with the recruiter job, recruiters, supervisors, and recruits were interviewed. During two days of workshops, more than 800 critical incidents (examples of recruiter performance) describing effective and ineffective recruiting performance were obtained from field recruiters from all Navy Recruiting Areas. Another 135 performance examples were solicited from Navy recruits during interviews at boot camp. NPRDC's 1976 study was the springboard for three additional studies conducted over the past ten years. These studies are discussed in the section on test batteries.

2. Borman, Toquam and Posse

Borman, Toquam and Posse's 1977 Army Research Institute study echoed the 1976 NPRDC study, hypothesizing that a reason why paper-and-pencil predictors of Army recruiter effectiveness had met with such little success was that not enough was known about the performance requirements of the recruiter job [Ref. 7]. This study focused on discovering these performance requirements by attempting to define the underlying task dimensions associated with Army

recruiter and guidance counselor jobs.

The first step was to revise an existing Department of the Army task list that described Military Occupational Specialty (MOS) designator 00E. Army recruiters and guidance counselors share this MOS because their jobs are similar. The recruiter's job is to qualify prospective applicants. The guidance counselor's task is to convince them to accept a particular entry level assignment. After a pilot test, the revised task inventory was administered to 101 field recruiters, guidance counselors, and supervisors across all five recruiting regions. These experts sorted the tasks into groups, or dimensions, according to the tasks' perceived similarity with respect to job function. Participants worked on their own, each sorting task statements into categories.

Before analyzing the data, researchers tested the extent of agreement in solutions by dividing participants into various subgroups: recruiter and guidance counselor groups, District Recruiting Command (DRC) subgroups (currently, Command Leadership Teams), etc. Once consistency in responses across subgroups was established, the data were collapsed across all subjects and analyzed. The two types of analyses performed were multidimensional scaling (MDS) and a clustering procedure.

Results indicated that people in the different DRCs agreed substantially among themselves about the pattern of similarities among tasks. Guidance counselors and recruiters agreed closely, and supervisory personnel saw much the same pattern of task similarities as those they supervised. Since no serious disagreements in responses existed, the solutions were collapsed across the entire sample, and a summary list of task dimensions was formed (Table 1). This composite list contained four broad dimensions defining general task areas associated with the recruiter's and guidance counselor's role in the Army

recruitment process.

Borman et al., believed these dimensions could be useful in developing selection procedures for potential Army recruiters. They believed the content of the dimensions would suggest the types of personal characteristics and attributes necessary for effective recruiter performance. Then, paper-and-pencil measures of these attributes could be chosen or developed as indicators of potential for top-level performance in Army recruiting work. The authors also suggested that the dimensions could serve as performance rating scales in future selection research intended to ensure that selection procedures chosen were, in fact, validly identifying persons with good potential for Army recruiting.[1]

3. **Graham, Brown, King, White, and Wood**

Graham, Brown, King, White and Wood's 1979 Army Research Institute study described structured interviews conducted with 79 Army recruiters to obtain information on the nature of recruiting duty [Ref. 8]. The sample was selected to represent recruiters with high, medium and low records of success, in terms of percentage of quota achieved. Information collected from the interviews was used to develop hypotheses on the personal characteristics and job behaviors associated with recruiter success. These hypotheses were to be evaluated more rigorously in later research.

Interviews solicited the following types of information from recruiters: background characteristics, suggestions about recruiter training, the value of various prospecting and selling techniques, workload, attitudes

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[1] This study did not identify personal characteristics and attributes of successful Army recruiters; however, Borman is currently working on a project to develop performance-based rating scales for Army recruiters similar to work he did for the Navy in 1976 (telephone discussion November 1986).

Table 1. Composite list of recruiting task dimensions

I. Prospecting activities

Identifying and contacting qualified prospects

- using existing name sources to generate lists of prospects
- contacting prospects
- dealing with centers of influence and other persons in the schools and in the community for the purpose of gathering prospect names
- obtaining referrals

II. Publicizing the Army

Building a positive Army image in the community by setting a good example and by providing favorable publicity for the Army and Army enlisted programs.

- conducting Army publicity programs in the schools or in the community
- working with the news or other media to obtain favorable publicity for the Army
- performing community services and working with community groups to enhance the Army's image
- preparing and delivering presentations about the Army to civic organizations, at career counseling sessions, or at recruiting seminars

III. Selling the Army

Getting individuals to join the Army by counseling them, explaining army benefits and opportunities to them, and presenting the advantages of Army life.

- describing aspects of Army life, benefits and opportunities to prospects
- conducting interviewing or counseling sessions with prospects to sell them on the Army
- answering questions about the Army and about enlistment; overcoming objections to joining the Army service
- sizing up individual prospects and tailoring the interview to help sell Army

IV. Administrative activities

Working with recruiting reports, records, statistics, etc., and organizing recruiting activities.

- preparing, maintaining, and reviewing enlistment reports
- planning recruiting activities: performing market research, zoning recruiting areas, etc.
- maintaining recruiting statistics and records
- maintaining recruiting publications

Source: Borman, W.C., Toquam, J.L., and Rosse, R.L., Dimensions of the Army Recruiter and Guidance Counselor Job.

toward the job, personality characteristics that might be related to recruiter effectiveness, and descriptions of successful and unsuccessful recruiters.

Responses were coded, categorized, and analyzed to determine: (1) personal characteristics and job behaviors related to recruiter production records and (2) personal characteristics and job behaviors attributed (by the respondents) to successful and unsuccessful recruiters they knew.

The criterion used as a productivity measure was the percentage of the total non-prior service (NPS) quota achieved in a six-month period. The authors realized the limitations of this measure, but felt it was the best obtainable within their time and resource constraints.

Recruiters were placed into criterion groups of high, medium and low producers based on production data. During the interviews, each recruiter was asked to think of one successful and one unsuccessful recruiter he knew and answer questions about the two recruiters' work attitudes, job skills, personality traits, etc. Interview responses were coded into broad categories. Relationships between interviewee responses and their production records were explored in two ways:

a. Comparison of high and low producers (chi square test). The authors hypothesized that high and low producers' scores could differ significantly in many categories.

b. Correlations between presence in a category and production records Each recruiter was assigned a score of 0 or 1 based on whether or not he was described by a response within that category. Category scores were correlated with the production criterion to determine relationships between response categories and the criterion.

The authors believed many recruiters' responses were actually elements

in a stereotype of the good recruiter, which they may have acquired in training or elsewhere, and not based on actual observations of the respondent. As indicated by Graham, et.al, peer nomination data should be regarded as recruiters' opinions of what it takes to be a good recruiter rather than descriptions of good and poor recruiters. The recruiters' conceptions of the successful and unsuccessful recruiter are presented in Table 2.

Few of the characteristics in the self-description data were significantly related to production records. Some of the study's results are listed here.

a. Attitudes Toward the Job - "Likes independence" correlated significantly and negatively with job success ($r = -.24$) suggesting that high producers were less likely than low producers to cite "independence" as a source of job satisfaction. Recruiters who commented on their dislike of "long hours," "the frustrating nature of the job," etc., tended to be more productive than those who did not make those comments.

b. Prospecting Techniques - According to successful recruiters, this is one of the most important components of the job. The objective is to bring the recruiter into direct personal contact with potential enlistees. Successful recruiters emphasized that they spent many hours daily in prospecting activities. Two response categories. "Uses systematic approach" and "Uses Pre-induction physical cards, mail-outs, etc." were statistically significant.

c. Selling Techniques - The ability to motivate a person to enlist is believed to be an important characteristic of the successful recruiter. Yet none of the selling techniques mentioned by recruiters interviewed were significant.

Table 2. Characteristics differentiating successful and unsuccessful recruiters: peer nomination data

Category	Nominees (in percent) Successful N = 79	Unsuccessful N = 79
Motivations for becoming a recruiter		
Dislike for present assignment	9	43
Attitudes toward the job		
Likes the work	86	20
Likes the challenge of the job	17	0
Dislikes the high pressure	19	34
Dislikes other features	3	25
Wants another type of duty	10	53
Prospecting techniques		
Uses systematic approach	52	1
Stresses person-to-person contact	62	19
Uses high school CIs	1	2
Uses other CIs	9	0
Uses PIP cards, mail-outs, etc.	24	5
Becomes involved in community	35	6
Passively waits for prospects to walk in	2	49
Emphasizes peripheral duties	1	32
Emphasizes outside interests	1	14
Selling techniques		
Uses miscellaneous effective sales techniques	24	4
Uses miscellaneous ineffective sales techniques	0	11
Communication skills		
Is able to communicate effectively	39	14
Has difficulty in communicating effectively	0	18
Industriousness		
Has high achievement motivation	18	3
Has low achievement motivation	4	47
Is very conscientious	35	3
Is careless about details	1	19
Seeks ways to improve	8	0
Keeps informed on everything related to job	18	4

Table 2. (continued)

Characteristics differentiating successful and unsuccessful recruiters: Peer nomination data

Category	Nominees (in percent) Successfull N = 79	Unsuccessful N =79
Miscellaneous Personality Traits		
Friendly, easygoing	53	4
Outgoing	44	0
Sympathetic	20	0
Stable	13	0
Happy, humorous	11	0
Light-hearted	10	0
Sincere	10	1
Withdrawn	1	17
Shy, self-conscious	1	17
Lacks self-discipline	1	14
Has family problems	1	13
Inconsistent	0	14
Hostile	0	13
Emotionally immature	0	10
Resentful, rebellious	0	10

Source: Graham, W.R., Brown, G.H., King, William L., White, L., and Wood, M.D. A Pilot Study of Army Recruiters: Their Job Behaviors and Persona Characteristics.

d. Communications Skills - A highly successful recruiter must be able to communicate effectively. One category, "has difficulty communicating effectively" correlated negatively and significantly with the production criterion. Thus, high producers admitted having communication problems less often than low producers.

e. Industriousness - The pilot study did not reveal much information in support of the idea that hard work is essential for successful recruiters. Although several recruiters described themselves as "motivated" or as "self-starters." These responses were not significantly related to high or low production. Only one response category, "keeps informed on everything relevant to job," differentiated significantly between high and low producers.

f. Miscellaneous Personality Traits - "Empathetic" correlated negatively and significantly with the production criterion. The authors suggested that empathy seemed to be a highly valuable characteristic for a recruiter, yet it correlated negatively with success. McHurry suggested that high empathy may be a handicap to a salesperson unless it is accompanied by a strong ego drive or will to win [Ref. 8; p. 21].

Some questions in the interview asked the recruiters for their opinions about selection criteria for recruiters. A summary of responses the recruiters mentioned most often and the percentage of those responding appears in Table 3.

Table 3. Recruiter's opinions regarding recruiter selection

Response	Percentage
Should be able to talk to people	49
Should have well-groomed appearance	33
Should want to do the job	30
Screen for quality of past performance	28
Should have "substantial" length of service	24
Should enjoy working with people	20
Should be stable in finances	16
Should have sales experience	13
Tell them what recruiting is really like	11
Provide two months of OJT	11
Should be outgoing	10
Should be adaptable	3

Source: Graham, W.R., Brown, G.H., King, William L., White, L., and Wood, M.D., A Pilot Study of Army Recruiters: Their Job Behaviors and Personal Characteristics.

4. Hirabayashi and Hersch

Hirabayashi and Hersch's 1985 effort at the Naval Postgraduate Schoo attempted to document characteristics of excellent Navy Recruiting District [Ref. 9]. The authors visited and interviewed key individuals assigned to thes and other Navy recruiting activities. Interviews were representative of the Nav Recruiting Command: current and previous Recruiting Command commanders commanding officers, executive officers, department heads, recruiters recruiters' supervisors, trainers, and more. Based on the results of thei interviews, the following list summarizes the characteristics of successfu recruiters.

Successful Navy Recruiters:

- are movers, shakers, and salesmen
- are hungry for success and/or promotion
- are aggressive, want responsibility, and want to excel
- possess outstanding communications skills, a fundamental knowledge o recruiting, and an inherent ability to deal with numbers, sales, an the public
- are ambitious, extroverted, and like to meet and talk to people
- are positive, cheerful, enthusiastic, and self-motivated.

C. Test Batteries

1. Wollack and Kipnis

One of the earliest developments of a test battery for recruite selections was a 1960 effort by Wollack and Kipnis at the Naval Research Fiel Activity [Ref. 10). The battery's thirteen tests and inventories measure fluency of expression, knowledge of the Navy, interest in recruiting activities and general aptitude.

The study used commanding officers' nominations of effective and ineffective recruiters as the criterion measure of performance. Items that differentiated between effective and ineffective recruiters beyond the .20 confidence level were retained for cross-validation.

Although few of the battery's items and scales cross-validated significantly, the study's results suggested that inventories showed promise as indicators of recruiter effectiveness. As suggested by Borman the poor cross-validation results may have occurred because raters made their evaluations of recruiters based on reputation instead of performance or because many of the individual differences that predict recruiter success were not included in the battery. [Ref. 3; p. 4].

2. **Massey and Mullins**

Massey and Mullins conducted an Air Force study in 1966 to design and validate the Recruiter Salesman selection test. They developed an eight inventory battery to measure qualities such as empathy, sergeancy (friendliness and sociability), and perseverance which were hypothesized to be desirable in recruiters.

Predictor variables were correlated with school success and supervisor field ratings. Results after crossvalidation indicated that the battery would be useful only marginally in predicting school performance and not at all in predicting field ratings. The authors believed the supervisor rating criterion had caused the poor results, suggesting that it was contaminated by several rater errors such as "halo" and "leniency." effects. They advocated the development of a more reliable and valid measure of recruiter effectiveness.

3. **Krug**

In Krug's 1972 study for the Navy Recruiting Command, a personality

test was developed and administered to officer and enlisted Navy recruiters t determine its usefulness in predicting sales ability [Ref. 12]. The test, 16PF m, was a variation of the 16PF, a highly regarded personality inventory widel used by business and industry in sales selection [Ref. 13; p. 22].

In addition to the 1967 version of the 16PF questionnaire, the 16PF- included a supplement designed to measure motivational distortion (a lie scale and strength of motivation to succeed as a recruiter, and seven biographica items: years of service, age, sex, marital status, number of dependents, year of formal education, and population of subject's Home of Record.

Commanding officers' nominations of recruiters from the top and botto fifty percent of those on recruiting duty at the time were used as the criteric measure of performance. Stepwise multiple regression results indicated that th typical effective Navy recruiter was married, had more years of formal education and tended to be warm, outgoing, dominant, aggressive, and self-assured, wit relatively conservative political views.

The Navy Recruiting Command used this battery to screen people fo recruiting assignments for approximately four years between 1972 and 1976 Active duty Navy personnel took the test if they were being considered for recruiting assignment. Those who scored below thirty-five were considere unqualified for recruiting duty. (A score of sixty-five was recommended by th study team and was predicted to be seventy-two percent accurate. but the Nav Recruiting Command chose to use a score of thirty-five.) Use of the test wa discontinued when Navy Recruiting Command and the Chief of Naval Personnel (Per 502) agreed it did not predict sales ability effectively [Ref. 13; p. 24].

4. Arima

In his 1976 Navy Postgraduate School study, Arima evaluated the 16PF a

having little utility in the selection process due to the absence of a reliable and valid criterion [Ref. 14]. He called for job analysis and behaviorally-anchored rating scales.

> The development of a recruiter selection procedure must be preceded by a thorough analysis of the position that will show the functions performed and the relative importance of the functions. It will also be necessary to obtain knowledge as to the types of behavior that are necessary to carry out these functions successfully and the types of behavior that are detrimental. There is nothing new in this approach to developing behaviorally anchored rating scales which could provide the desired list of behaviors. Knowledge of the job should provide the material to develop a recruiter selection procedure. [Ref. 14:p. 129].

5. **Larriva**

Larriva applied the 16PF-m to a sample of Marine Corps recruiters in a concurrent validity study in 1975 [Ref. 15]. Annual non-prior service accessions were used as the criterion measure of performance. The test did not predict well, and Larriva suspected the criterion he used had caused the problem. He experimented with several performance indices, examined predictor criterion relationships, and chose the index that resulted in the most valid multiple correlation coefficient. This index separated urban and rural recruiters and corrected for geographic differences in relative performance of recruiters. Cross-validation suggested the 16PF-m might be useful in screening for the Marine Corps recruiter job [Ref. 3; p. 8].

Borman et al. objected to Larriva's method of criteria selection, indicating that a more acceptable (and justifiable) method would have been to define a precise criterion first and then select a measure that would provide relevant and reliable measurement of the criterion without regard to the predictors [Ref. 3; p. 9].

6. **Abrahams, Neumann, and Rimland**

Abrahams, Neumann, and Rimland used the Strong Vocational Interest

Blank (SVIB) in 1973 to develop a Recruiter Interest Scale (RIS) for use i selecting Navy recruiters. Items that differentiated between the most and leas effective recruiters, based on commanding officers' nominations, comprised th RIS-1, which was used for cross-validation. The top quartile (highest RI scores) contained three times as many effective recruiters as did the botto quartile. The bottom quartile had three times as many ineffective recruiters a the top quartile. Although the authors stressed that a better criterion o recruiter effectiveness was needed and that other recruiter performance factor should be considered in future validity research, their study suggested tha vocational interests might successfully predict recruiter effectiveness. [Ref 16]

7. Graf and Brower

In 1976, Graf and Brower also had some success with a version of th Navy RIS modified for Marine Corps recruiters. Although the Marine Corp Recruiter Interest Scale (MCRIS) resulted in a higher validity coefficient tha the Navy scale for the Marine Corps sample, the MCRIS was not cross-validated which made direct comparisons impossible. Although the authors had use recruiting officers' nominations of above-average, average, and below averag recruiters as their criterion measure, they called for a more reliable method o measuring recruiter performance [Ref. 17].

8. Borman, Hough, and Dunnette

The most extensive work in this area was a test battery developed b the Navy Personnel Research and Development Center (NPRDC). This work ha evolved through four studies over the past ten years.

NPRDC's work began with the development of behaviorally-based ratin scales which attempted to identify improved performance criteria for measurin

recruiter effectiveness. The approach was based on the notion that acquiring valid information about recruiter effectiveness meant that a thorough job analysis and criterion development effort would have to be accomplished. Their first study, published in 1976, identified more than 800 critical incidents describing different facets of effective and ineffective recruiter performance. The study's suggested predictors of Navy recruiter effectiveness are shown in Table 4. [Ref. 6]

The second phase of NPRDC's research involved development and validation of an inventory battery to predict Navy and Marine Corps recruiter performance. Based partly on their literature review and the results of their rating scales study, they developed a trial predictor battery that included several personality, vocational interest, and biographical items and scales. Battery scores were correlated with performance scores developed from supervisory, peer, and self ratings and from six months of adjusted production data. They attempted to control for differences in recruiting opportunity across geographical locations (opportunity bias). Standard scores were developed for each recruiter for each month by standardizing each month's production data within each Navy Recruiting District (NRD).

NPRDC's third study was designed to expand and refine the original test battery and determine its validity in predicting recruiter performance. The revised battery was analyzed to determine the precision of new items in measuring desired constructs and whether they had improved the validity of the original test battery. Composites of the added items enhanced the validity of the old battery's constructs in about half the cases. Scales derived from the constructs validly predicted recruiter effectiveness [Ref. 18].

NPRDC's final Special Assignment Battery consisted of three parts: the

Table 4. Suggested predictions of Navy recruiter effectiveness
(continued on next page)

PERFORMANCE CATEGORIES	SDI	SCII	COGNITIVE MEASURES	PRF
A. Locating and Contacting Qualified Prospects	*Initiative *Decisiveness	*Athletics *Public Speaking *Law/Politics	*Fluency Measure	*Social Recognition *Aggression *Autonomy
B. Gaining and Maintaining Rapport	*Working Class Affinity	*Personnel Director *Social Worker *Social Service		*Affiliation *Exhibition *Nurturance *Understanding
C. Obtaining Information from Prospects and Making Good Person-Navy Fits	*Intelligence *Working Class	*Teaching *Law/Politics	*Vocabulary *General Information	*Cognitive Structure
D. Salesmanship Skills	*Power *Self-assurance *Decisiveness	*Sales Occupations *Enterprising Theme	*Vocabulary	*Achievement *Social Recognition *Dominance *Exhibition *Sentience
E. Establishing and Maintaining Good Relationships in the Community	*Maturity	*Social Service *Chamber of Commerce Executive *Social Theme *Merchandising		*Affiliation *Nurturance
F. Providing Knowledgeable and Accurate Information about the Navy	*Intelligence	*Military Activities *Counselor Jobs	*Vocabulary *General Information	
G. Administrative Skills	*Supervisory *Decisiveness	*Conventional Theme *Business-Accounting *Bus. Management *Office Practices	*Clerical Aptitudes	*Change (negative) *Endurance *Order *Play (negative) *Impulsivity (neg.)
H. Supporting Other Recruiters and the Command	*Maturity *Self actualization	*Social Theme *Social Service		*Abasement (neg.) *Affiliation *Social Recognition

Table 4, concluded

PERFORMANCE CATEGORIES	NAVY KNOWLEDGE TEST	PERFORMANCE REVIEWS	BIOGRAPHICAL INFORMATION
A. Locating and Contacting Qualified Prospects		*Innovativeness	*Clubs and Leader Jobs in School
B. Gaining and Maintaining Rapport		*Human Relations	*Boy Scout Experience *Public Contact Jobs
C. Obtaining Information from Prospects and Making Good Person-Navy Fits	X	*Using Information	*Length and Range of Navy Experience
D. Salesmanship Skills		*Persuasiveness	*Previous Selling
E. Establishing and Maintaining Good Relationships in the Community			*Match between Assignment and Type of Town Grew Up In
F. Providing Knowledgeable and Accurate Information about the Navy	X	*Honesty	
G. Administrative Skills		*Organizing *Planning *Detail Mindedness	*Courses Liked Best *Liking versus Disliking Detail and Record Keeping
H. Supporting Other Recruiters and the Command		*Cooperativeness *Friendliness	*Team Sports

Source: Borman, W.C., Hough, L.M., and Dunnette, M.D., Development of Behaviorally Based Rating Scales for Evaluating the Performance of U.S. Navy Recruiters.

Strong-Campbell Interest Inventory, a self-description inventory, and a background questionnaire. Recruiter potential was measured through a selection composite composed of four subscales: selling skills, human relations skills, organizing skills, and overall performance. Scores on each of these four "keys" were correlated with each recruiter's production data. As indicated in Table 5 each of the "keys" had low correlations with production. The correlation between production and organizing was not significantly different from zero. When the four separate scores were summed into a composite, the correlation coefficient between the composite and production was .27. Figure 1 depicts the pattern of these relationships. Sixty-six percent of the recruiters scoring in the top 20 percent were in the upper 50 percent in production, compared to 34 percent of those scoring in the lowest 20 percent.

Table 5. Validity of final keys for predicting production

(N = 194)

Predictor key	Correlation with production
Selling skills	.22*
Human relations skills	.23*
Organizing skills	.13*
Overall performance	.26*

*$p < .01$

Source: Borman, W.C., Rosse, R.L., and Toquam, J.L., Development and Validation of a Recruiter Selection Battery.

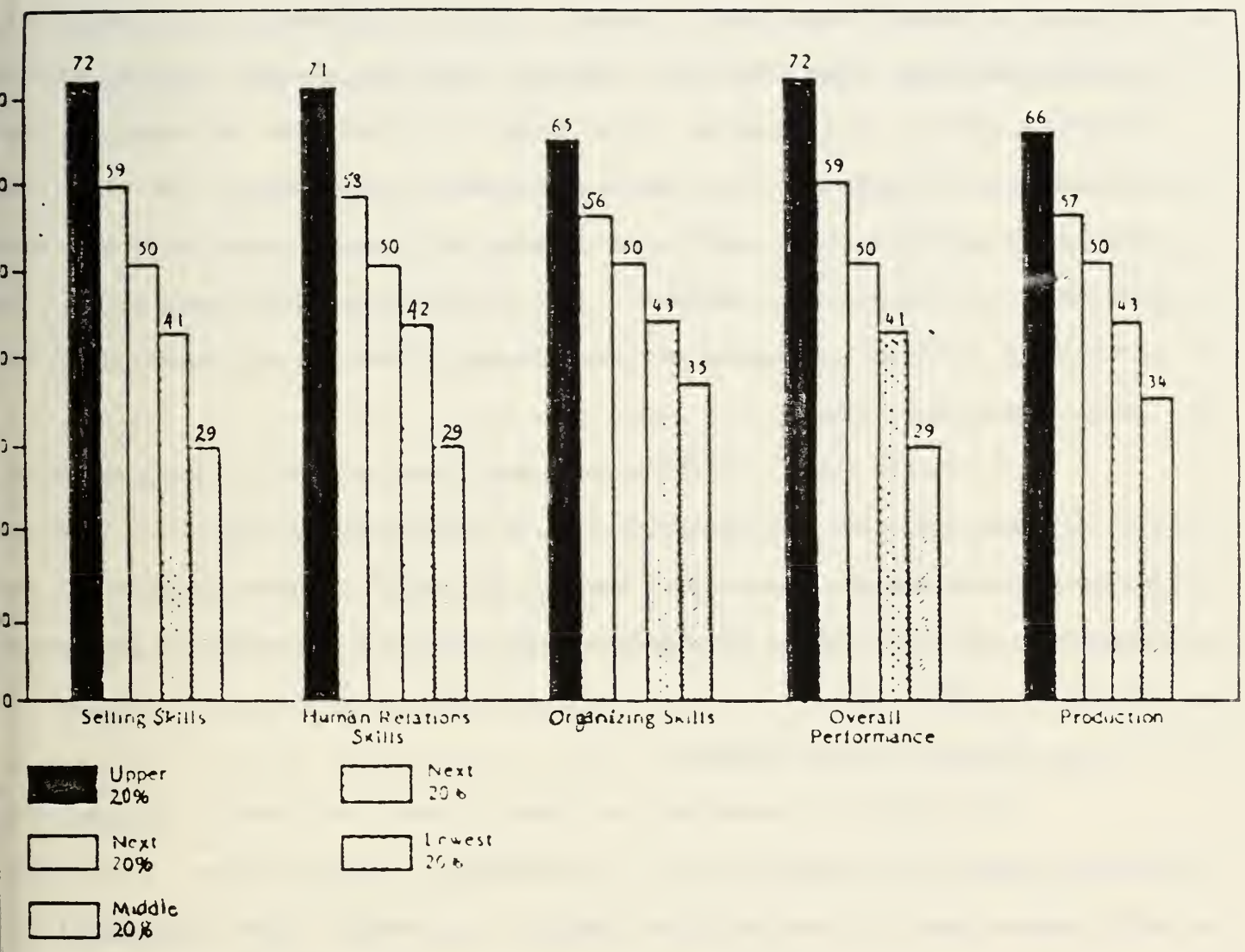


Figure 1 Percent successful recruiters expected where upper 50 percent are considered successful. Source: Borman, W.C., Rosse, R.L., and Toquam, J.L., Development and Validation of a Recruiter Selection Battery.

Several personality constructs correlated highly with various aspects of recruiter effectiveness. "Making a good impression" and "Enjoying being the center of attention" correlated highest with selling skills. "Spontaneity, impulsivity" and "Ambitious, working hard" correlated highest with the human relations skills category, while "Unhappy, lack of confidence" related negatively to human relations effectiveness. "Order, planning ahead" related well to organizing skills, and "Leading and influencing others" was the construct that correlated most highly in the overall performance category. The vocational interest constructs that correlated highly with performance criteria were interests in extroverted, dominant, social, and leadership activities and occupations, interests in sports and competitive activities, and interests in law and political activities.

The fourth phase of NPRDC's work, published in 1985, strongly confirmed the findings of the earlier studies. In concurrent and predictive studies, Marine Corps recruiters whose scores were in the top 20 percent obtained 27 and 40 percent more recruits, respectively, than recruiters who scored in the lowest 20 percent. [Ref. 19].

9. **Brown, Wood, and Harris**

The 1978 study conducted by Brown, Wood, and Harris at the Army Research Institute attempted to (1) develop a valid criterion of recruiter effectiveness and (2) develop a test battery to identify those most likely to succeed as recruiters [Ref.5]. This study explored in some depth the criterion problem of using production scores contaminated by opportunity bias caused by characteristics that influenced the fertility of a recruiting territory but were outside the recruiter's control.

This ARI study identified 15 factors that might cause opportunity bias

such as the unemployment rate in the territory, average number of enlistments per recruiter in the recruiter's District Recruiting Command (DRC), amount of recruiting experience, etc. A sample of 500 recruiters was chosen randomly, 100 from each of five Army Regional Recruiting Commands nationwide. Six months' production figures were provided for each recruiter. Measures of each of the opportunity bias factors were accumulated for the market area of each of the 500 recruiters.

Stepwise multiple regression was used to predict the theoretical yield of a recruiter's territory using 12 of the 15 territorial factors in the equation (three census variables were excluded). The three best predictors were "Average production per recruiter in subject's DRC," accounting for 48 percent of the variance in production scores; "Average market share for station zone"; and "Proportion of the zone that is suburban."

These three predictors which accounted for 51 percent of the variance in production scores, were used to predict production scores for each recruiter. Benchmark Achievement Scores (BAS) were computed by dividing total production by predicted production and multiplying by 100. The BAS were thought of as unbiased production scores, corrected for the effects of three important territorial factors.

The authors suggested that another production measure, the Simple Achievement Score (SAS), might be just as useful as the BAS. Since "Average Production Per Recruiter in Subject's DRC" explained the most variance in the regression equation, a score based on the individual's performance compared to that average would be easier to compute. (SAS correlated highly with BAS ($r = .96$). so the two scores were practically equivalent.)

The second objective of this study was to develop a recruiter selection

battery. The battery was developed based on the pilot study by Graham et al. [Ref. 8] involving interviews with 79 Army recruiters with high, medium, and low records of success. Personnel from Army Recruiting Headquarters were also consulted about traits necessary for recruiter success.

The selection battery consisted of 12 paper-and-pencil inventories and one verbal performance test. Below is a list of the measures included in the battery.

a. Verbal Fluency. Recruiters were asked to make a sales pitch to a prospective enlistee about the benefits of Army life. Presentations were scored by computing the ratio of the number of words spoken in two minutes to the number of "ahs" spoken. The authors hypothesized that an effective recruiter must be able to talk easily in a variety of social situations, and they wanted to measure verbal fluency orally, in the most realistic situation possible.

b. Sociability Measures. Four inventories were used to measure a recruiter's sociability and affiliative tendency. The authors hypothesized that sociability was important since a recruiter must spend so much time interacting with people (who often are strangers).

c. Achievement Motivation. Three inventories were used to measure the tendency to work hard to achieve self-appointed goals. This was hypothesized to be a positive characteristic of a good recruiter.

d. Empathy Measures. Four instruments were used to measure the ability to understand the point of view of others and the drive to win or complete a sale. The authors believed empathy alone is not enough. The successful recruiter goes on to close the sale.

e. Rejection Tolerance Measure. One inventory was used to measure tolerance to rejection, rebuffs, and insults. The hypothesis was that the successful recruiter has a higher tolerance for rejection than does the less successful recruiter.

f. Responsibility and Maturity Measures. Three instruments collected information about a recruiter's ability to manage his personal, financial, and official duties. Since recruiters spend the bulk of their duty time working without supervision, and since they represent their branch of service to the general public, they are expected to manage their personal, financial, and official duties with discretion.

When the time came to administer the battery, the criterion development project mentioned earlier (BAS and SAS) was not yet completed. Instead, the authors created a Composite Supervisory Rating procedure to select highly successful and very unsuccessful recruiters. Recruiters were nominated by supervisors. The best were used in the High Criterion Group, and the poorest were used in the Low Criterion Group. The battery was administered, and information on each recruiter's race, religion, and aptitude scores was obtained from Army personnel files.

None of the personality measures or aptitude scores differentiated significantly between the two groups. The verbal performance test and 22 other items differentiated significantly. These items pertained to work habits, style of handling finances and debts, educational background, and reactions to challenging or stressful situations.

The authors suggested that because recruiters are a relatively homogeneous group required to meet several minimum qualifications (age, rank, GCT scores) and because of their length of time in service (mean was 14 years) the recruiters may have had similar attitudes and opinions, which would have limited the variance in attitude, personal preference, and personality inventory scores. (The new items that did discriminate were mostly from the Background Information Form and Personnel Questionnaire, instruments dealing mainly with matters of fact rather than attitude.)

If the authors had been able to use the Simple Achievement Score (SAS) they had suggested, rather than supervisor nominations, perhaps higher validities might have resulted.

D. Assessment Centers

1. Borman, Toquam, and Rosse

The 1982 Army study conducted by Borman, Toquam, and Rosse indicated that assessment centers could successfully predict recruiter school performance even with a sample of recruiters that had been pre-screened by a selection panel. Assessment centers are believed to be particularly valuable for selection of individuals for sales positions. Assessment centers usually involve a candidate undertaking parts of an actual job under observation and are adaptable for training for these jobs. Under this approach, trained observers rate potential recruiters' performance in several different situational exercises that simulate aspects of the recruiter job. Assessors were interested in personal characteristics such as persuasiveness, sociability, flexibility, and practical judgment.

A potential problem with the assessment center concept is the assumption that people being rated want the job. As requirements for recruiters have grown, the Army has assigned most of its recruiters involuntarily. The cost and the potential gaming by the candidate reduces the feasibility of using assessment center ratings to select recruiters. In the 1980's, the Army's problem had become one of motivation and development rather than selection. So, the purpose of the assessment center shifted.

Assessment exercises were reduced dramatically. Instead of being used for selection, ratings given in a revised recruiter Development Center were designed to give recruiter trainees a realistic job preview and positive feedback to enhance their motivation.

2. Weltin, Frieman, Elig, and Johnson

Weltin, Friedman, Elig and Johnson, in a 1985 study related the ratings of the original assessment center and a subsequent development center sample to

the number of contracts the new recruiter produced in the first year on the job [Ref. 22]. The criterion measure attempted to account for geographic differences in sales potential among recruiting battalions. Previous work by Brown et al. [Ref. 5] showed that production per recruiter in the subject's battalion (district) accounted for 48 percent of the variance in production scores. Some Army recruiting battalions have better sales markets than others. To control for these geographic differences in sales potential, Weltin et al., partialed the number of contracts per recruiter achieved in his battalion of assignment from each recruiter's performance score. While Borman's work related assessment center ratings to training performance, this study evaluated the usefulness of the ratings for predicting job performance as a field recruiter.

The assessment center sample included 41 of 57 soldiers who had taken the original battery of assessment center exercises in 1981 and completed the training course. Each individual had been rated by trained assessors in exercises that included cold calls, interviews, a speech, and the in-basket (work prioritization). Other predictors included training school grades (written test scores and instructor ratings of telephone and interviewing techniques), and scores on the following: a test battery developed to select Navy recruiters, an experimental Army test battery, and the Gordon Personal Profile and Inventory.

The development center sample included 970 recruiters who were rated in the center, completed training, and had at least one contract their first year on the job. Assessors were not trained. Essentially the same exercises were used as in the assessment center. No personality or interest batteries were used. Written training grades were available, but instructor ratings on telephone and interviewing techniques were not.

Results indicated that the assessment center ratings had low

correlations with job performance; however, in the development center sample, the cold call interview and speech exercises were significantly related to job performance. Training grades were not predictive in either sample. The personality and interest test scores significantly predicted job performance. Navy test scores (human relations, selling and organizing subscales), the ARI test, as well as two scales of the Gordon Personal Profile and Inventory, showed moderate relationships with job performance.

Stepwise regression performed on the development center sample indicated that productivity of the recruiter's battalion was the single most important factor in predicting job performance. Ratings on the speech exercise and AFQT scores predicted approximately two percent additional variance.

E. Personnel Files

1. Bennett and Haber

In 1973, Bennett and Haber investigated various factors that influence the productivity of Marine Corps recruiters [Ref. 23]. They used multiple regression to analyze the relative importance of sixteen variables on gross productivity (average number of recruits enlisted per month). Variables were divided into three categories. Selection variables included General Comprehension Test scores, age, race, level of education, number of dependents, previous service as a career planner or drill instructor, method of assignment to recruiting duty (volunteer or assigned), and opinion about whether recruiting duty was a financial hardship. Deployment variables included whether recruiters were assigned to their home states, distance from home state, type of area assigned to (urban, suburban, or rural), number of times assigned, hours per week spent on recruiting, and percentage of time spent out of the office recruiting. Evaluation variables included number of months on current tour of duty and

percentile rank in Marine Corps recruiter class.

The authors noted that gross productivity was determined by regional differences as well as differences in individual recruiters. To account for regional differences, they broke their sample of recruiters into two groups: one group of recruiters from recruiting stations with high enlistment rates, and the other from stations with low rates of enlistment.

Several variables were statistically significantly related to productivity. Results from the high enlistment area group indicated that urban and suburban recruiters enlisted more people per month than rural recruiters, and recruiters in their home state enlisted more people per month than those stationed more than 500 miles outside their home state.

In the low enlistment areas, those who felt recruiting duty was a financial hardship enlisted more people per month than those who did not. Recruiters with prior service as career planners were more productive than those who had no experience as career planners. The regression equations were not cross-validated.

2. **Best and Wylie**

Best and Wylie's Naval Postgraduate School study hypothesized that recruiter characteristics could be combined to predict recruiter performance [Ref. 24]. To test their hypothesis for Navy recruiters, they used a command evaluation of each recruiter in their sample as their dependent variable. Special consideration was given to selecting independent variables that could be obtained easily for each prospective recruiter prior to a recruiting assignment.

The authors generated a cross-tabulation of the independent variables they had selected initially, and they retained for analysis those variables with the strongest relationship to the dependent variable. Those variables were: the

area where the recruiter had spent his youth (urban, suburban or rural); age; General Comprehension Test (GCT) score (part of the Armed Services Vocational Aptitude Battery (ASVAB)); years of active military service; and proximity of childhood home to a major body of water, grouped into three distance categories (less than 20 miles, 20-200 miles, and more than 200 miles).

The regression equation accounted for 34 percent of the variation in the dependent variable. Although the equation failed on cross validation, the authors believed research using this approach should continue. The only predictor in use by the Navy at this time was the 16PF-m. As discussed earlier, this test battery was a poor predictor of recruiter success and the Navy stopped using it for recruiter selection in 1976 [Ref. 13; p. 24].

3. Shupack

Shupack attempted to develop a profile of a successful recruiter comprised of a combination of objective personal characteristics easily obtainable from existing personnel records [Ref. 13]. She regressed six independent variables against a dependent variable designed to identify success, mediocrity, or failure in the recruiting assignment. The independent variables were paygrade, education, years of service, Navy enlisted entrance test scores, previous rate (occupation), and scores on the 16PF-m. Her measure of effectiveness was defined in terms of Navy Recruiting Command's Honor Roll (five enlistments per month). Successful performance was defined as completion of the twenty-month test period and some level of Honor Role performance; mediocre performance was defined as remaining in the field for the test period and failure was being transferred early.

Using multiple regression on the whole sample and on various subgroups, the explanatory factors explained a low fourteen and twenty-one percent of the

variance in the case of successful and unsuccessful recruiters, respectively. Education, paygrade, and entrance test scores explained the most variance among successful recruiters. For unsuccessful recruiters. the best predictors were rate, years of service, and entrance test scores.

4. **Elig, Gade, and Johnson**

In a 1983 working paper, Elig, Jade and Johnson described a "new approach to recruiter selection research" [Ref. 4]. They suggested that previous selection approaches (biographical information, personality assessment, and interest inventories) were vulnerable to compromise and probably would not be useful when recruiters were selected involuntarily. They also commented on the "criterion problem," acknowledging that most researchers had not found an adequate performance measure. This study had two objectives:

a. To find predictors that were readily available, stable, and secure measures of recruiter characteristics, and

b. To establish criteria that were readily available, objective performance measures which differentiated among recruit characteristics, secure and were relatively free from "opportunity bias."

The Enlisted Master File (EMF) was used as the data source for recruiter demographic characteristics and the Military Enlistment Processing Station Reporting System (MRS) to acquire information on recruit characteristics. Both types of data are maintained routinely by the Army.

The authors hypothesized that the EMF data would provide measures of recruiter characteristics that would be useful in predicting productivity as measured by recruit characteristics taken from the MRS. They related recruiter characteristics to recruit characteristics, and their criterion was adjusted for opportunity bias. Brown et al. [Ref. 5] earlier study accounted for 48 percent of an individual recruiter's total production by using average total production of all recruiters in the individual's District Recruiting Command (DRC) as a

predictor. Elig et al., adjusted their criterion by subtracting DRC averag production from the raw contract totals of each recruiter in the DRC.

The sample consisted of 552 male and 60 female recruiters on productio during FY79. Characteristics that correlated with contract production wer identified using analysis of covariance techniques.

In this study, the measures of opportunity bias (DRC Averag Production) explained 32 percent of the variance in productivity, compared to 4 percent found by Brown et al. The remaining variance was believed to hav resulted from unmeasured opportunity bias, individual recruiter differences, an measurement error. All effects listed below were significant to at least the .0 level.

a. Recruiter Education.
Recruiters with postsecondary education recruited better educated, bu lower AFQT, male recruits.

b. AFOT.
Recruiter AFQT correlated positively with recruit AFQT in its "prime market, high school diploma graduate and senior males (HSDG/SR) and ha little impact on females or non-high school graduates (NHSG).

c. Gender.
Recruiter gender had no effect on total numbers or quality of recruits

d. Age.
Older recruiters contracted more male and fewer female recruits tha younger recruiters. They did this by underproducing high AFQT an overproducing low AFQT recruits in the HSDG/SR market. In tota production younger males outproduced older males, while older female outproduced younger females. Younger male recruiters outperforme their female counterparts, while older females outperformed all others

e. Rank.
Higher ranking recruiters achieved success in the HSDG/SR market b contracting more low AFQT (category IV) recruits than lower rankin recruiters.

f. Ethnic Group.
Like recruited like. Black recruiters enlisted the most Blacks Hispanic recruiters enlisted the most Hispanics. Whites the mos whites, etc.

The results indicated that recruiter demographic characteristics may be related to recruit characteristics when opportunity bias is removed, and that demographic data may be useful for selecting recruiters from a non-volunteer pool. However several questions remained:

1. Would these findings be replicated with other samples and in other recruiting environments (e.g., where unemployment is higher)?

2. Why do tradeoffs exist between AFQT and education? Recruiters who penetrated the HSDG/SR market will so at the expense of AFQT.

3. Are these relationships likely to continue? The data in this paper were simple correlations and were not tied to a well reasoned theory. At the end of their paper, the authors mentioned that they would attempt to crossvalidate this paper's results and develop a theoretical rationale for them.

Differences in recruiting performance by race may indicate an intentional opportunity bias because of deliberate (but unofficial) stationing of minorities in areas with large minority populations.

Age related differences in performance may also reflect an inherent opportunity bias in the case of older (and higher ranking) recruiters who often have duty assignments (i.e., station commander) involving responsibilities in addition to recruiting.

F. Overview

This review has identified extensive literature on the recruiter selection problem. Although a considerable amount of relevant work has been undertaken, the results generally were disappointing. Two distinct types of factors have been examined for their utility in predicting whether or not an individual would be a successful recruiter. One class of factors includes those for which information can be found in standard military personnel files. Many studies used traditional analytical methods such as regression analysis to determine whether recruiter productivity could be predicted by various

combinations of factors. If these factors could be identified, they could b used to select for recruiting duty those individuals with the highest probabilit of success. The most frequently used personnel file type variables were age gender, rank, education, entrance test scores, etc.

The other class of factors are various personality characteristics Past studies show that many researchers understood, at least intuitively, tha successful recruiters possess some common personality characteristics. A wid variety of specific tests have been developed to measure personalit characteristics and have been used with varying amounts of success. Table summarizes the individual characteristics that prior studies have indicated a significantly related to being a successful recruiter.

Table 6. Summary of characteristics related to recruiter success:

Age (older if female, younger if male)	Self-motivated
Marital status	Ambitious
Education	Desire to excel
Paygrade	Aggressive
Length of service	Dominant
AFQT scores	Confident
Racial match	Enthusiastic, positive
Plans ahead	Mature
Uses systematic approach in prospecting	Financially stable
Knowledgeable about recruiting	Extroverted
Sales experience	Enjoys working with others
Verbal fluency	Spontaneous
Persuasiveness	Influences others
Communicates effectively	Well groomed

Most of the past research on recruiter selection suffered from one or more of th same serious flaws: poor criterion measurement, lack of knowledge of the recruiter job, and failure of results to remain significant upon cross-

validation. As a result, findings of many of these studies are of questionable value.

The criterion problem, or measuring recruiter performance in a reliable and valid manner, was probably the single most important reason why past research explained relatively little variance in recruiter productivity. Researchers use various measures of performance as their dependent variable, such as supervisory ratings, school performance, percent of quota achieved, and total number of enlistments, only to find that each measure suffered from its own set of weaknesses. For example, although recruiter production figures were easy to obtain and use, the measure was contaminated by market factors not related to individual recruiter productivity. Researchers have worked on this problem with some success, but more work on incorporating market factors into recruiter success models is needed.

Recent work has integrated lessons learned from earlier studies. Production measures have become more sophisticated, attempting to account for the powerful influence of "opportunity bias," or the effects of geographic, socio-economic and organizational variables on individual recruiter productivity. Comprehensive job analysis has provided a greater understanding of what the recruiter's job really is. Yet, despite the increased sophistication of recent work, a reliable profile of the successful recruiter is still not generally agreed upon. Statistically significant findings are scarce, and very few results remain significant after cross-validation.

Further research needs to be undertaken in the area of determining an efficient and effective set of decision criteria for selecting individuals with a high likelihood of becoming successful recruiters. The set of factors identified in table 6 are too numerous to be efficient for selection criteria. They must be

reduced to a more manageable total. These sets of individual attributes shou then be evaluated to determine how important each one is in selecting potential successful recruiters. Expert systems is one method that offers promise substantial gains in obtaining an efficient and effective set of selecti criteria for identifying potentially successful recruiters.

III. METHODOLOGY

A. Multiattribute Utility Theory

Traditional methods for identifying the personal characteristics which are associated with recruiter success rely on the existence of reliable and valid measures of both the relevant personal attributes and of recruiter performance. The literature and data review in Chapter II indicate that such information is not available from personnel data files and, in particular, that the "criterion problem", or lack of a measure to use in explaining variance in recruiter productivity based solely on individual differences, prohibits the successful application of multivariate statistical techniques.

The process used by USAREC to select its USAR recruiters is subjective and is based on the experience, knowledge, judgment and intuition of the selecting officials. (This process is described in Chapter I.) Selection board members review applications, conduct interviews and then make individual evaluations and, finally, come to a collective decision as to the probability that an applicant would be a successful recruiter. One approach to the development of a model for recruiter selection would be to incorporate the elements of this subjective process into the model-building procedure.

Some experts in the process of social decision making believe that decisions do, and should, depend on subjective quantities such as values and probabilities. Disagreements over policy decisions generally hinge on disagreements about values. Often, although those in conflict may agree about the relative dimensions of value, they disagree about the relative importance of various goals. Some aspects of value are matters of objective information, expertise, or both. [Ref. 25; p. 326].

Edwards has suggested that organizational decisions should depend on some

kind of social consensus or aggregation of individual views, rather than on an single individual's views. He proposed the use of multiattribute utilit measurement as a solution to the problems encountered in this arena. This metho can spell out explicitly the values of each group participant, show how and ho much they differ and, in the process, reduce the extent of such differences [Ref 25; p. 327].

Edwards' measurement technique could be applied to USAREC's recruite selection procedure. Its group process is affected by differing values amon group members and by taking into account objective information regardin recruiter selection as well as relevant expertise among group members or othe experts. USAREC could define a set of values for recruiter selection.

This technique is based on extensive use of simple rating procedures. Ever decision may have value on a number of different dimensions. Multiattribut utility measurement attempts to discover those values, one dimension at a time and aggregate them across dimensions using a suitable aggregation rule an weighting procedure. The procedure for obtaining group consensus has ten steps They are listed briefly below:

1. Identify the person(s) or organization(s) whose utilities are to b maximized.

2. Identify the issue(s) (decisions) to which the utilities needed ar relevant.

3. Identify the entities to be evaluated. (For the Army Recruitin Command, these might be recruiter applicants.)

4. Identify the relevant dimensions of value for evaluation of th entities. (Specify a simple list of goals that seem important for th purpose at hand.)

5. Rank the dimensions in order of importance. (This can be don individually or in groups.)

6. Rate dimensions in importance, preserving ratios. (How much mor important is one dimension than another?)

7. Sum the importance weights, and divide each by the sum. This computation converts importance weights into measures which are similar to probabilities.

8. Measure the location of each entity being evaluated on each dimension.

9. Calculate utilities for entities as follows:
$U_i = w_j u_{ij}$, and $w_j = I$. (Eqn 1)
U_i is the aggregate utility for the ith entity while w_j is the normalized importance weight of the jth dimension of value, and u_{ij} is the rescaled position of the ith entity on the jth dimension. Thus w_j is the output of step 7, and u_{ij} is the output of step 8. This equation is the formula for a weighted average.

10. Decide by maximizing U_i. If a subset of i is to be chosen, then the subset for which U_i is maximum is best. [Ref. 25; pp. 328-329].

B. Expert Systems

The application of the principles of multiattribute utility theory to a complex decision-making environment such as recruiter selection requires the use of sophisticated tools for extracting knowledge about recruiter success factors from those who have wide experience in this area. Some method must also be found for weighting the various factors identified by individual experts in recruiter selection and, finally, a synthesis of expert opinion should be obtained.

Expert systems technology provides an approach to decision making support which can incorporate multiattribute utility concepts. While there is wide diversity in the structure and computer requirements of expert or knowledge-based systems, recent developments have made some systems available for use with microcomputers and this represents an important potential source of assistance in the development of models for personnel selection [Ref. 26].

Artificial intelligence is the umbrella term used to describe a set of technologies designed to make computers imitate aspects of human thought. Expert systems (along with robotics and natural language processing) is one specific direction that this general area of research has taken [Ref. 27].

Expert systems are computer programs which use the knowledge of experts

about a specific problem to simulate the application of human expertise to solve the problem. Specific information (such as the characteristics of recruiter applicants) is combined with procedures for drawing inferences and reaching conclusions about that information (i.e., the selection decision). These programs are quite different from other computer programs in that they use rules (hueristics) to reach an acceptable solution to a problem rather than using mathematical analysis (algorithms) to find an optimal or correct solution. The expert system program itself contains a set of instructions which enable it to create these rules or procedures by querying experts in the problem area. The subjective aspects of decision making which characterize solutions to complex problems like personnel selection can thus be incorporated into the program.

The steps in the development of an expert system are as follows:

1. A 'toolbuilder' or designer constructs a general program or shell which can be used to collect knowledge and determine rules for solving many specific problems. The expert system building tool is a programming language especially suited to the construction of knowledge-based systems. LISP and PROLOG are the two languages used for this purpose. There are many versions of both languages available. The programming skills necessary for constructing an expert system shell "from scratch" are not widely distributed. The builders of particular expert systems frequently acquire these shells from others rather than building them [Ref. 28].

2. A "knowledge engineer" is someone skilled and experienced in the process of obtaining the knowledge of experts in a field. He/she interviews "domain or area experts" who are those known for producing good solu- tions to the particular type of problem under study. This is called the "knowledge acquisition" phase.

   The knowledge engineer then organizes the knowledge he or she has obtained and decides how to represent it in the expert system. Three techniques used most frequently in building expert systems are rules, semantic nets, and frames. The rule-based method uses IF (condition) and THEN (action) statements and is the most commonly utilized. The other two methods use a network of nodes connected by relations and organized into a hierarchy. Each technique suits the representation of particu- lar kinds of knowledge - causal linkages, deductive processes, relat- ional knowledge, classification, etc. [Ref. 29].

   The reasoning mechanism ("inference engine") used by the program which

controls the evaluation of a problem and evaluates the rules in the knowledge base is selected by the knowledge engineer and is usually either forward chaining or backward chaining. Forward chaining attempts to reach a goal given some initial state (it is "data driven"), while backward chaining works from a hypothesis to seek the evidence (data) that will support it.

Sometimes the users of expert systems programs acquire this part of the expert system (or some aspects of this element) from knowledge engineers who have built systems to solve problems similar to the one the user is addressing. The kinds of expertise needed for knowledge engineering are relatively rare. It is often cost-effective to purchase an "off the shelf" expert system program which has been designed so that the end-user can build a system for a particular application with only very limited understanding or knowledge of engineering techniques [Ref. 28].

3. Finally, the user of the expert system applies the computer software by giving the program specific data and asking for a choice or decision to be made. Expert systems have been used successfully to solve a variety of problems such as medical diagnosis, budget analysis, automatic speech recognition, and mechanical design specification. Problems which do not have a unique answer, which are not successfully solved using algorithms, and for which there are experts available are candidates for expert systems approaches. Personnel selection falls into this category of potential application areas but very limited work has been done as yet in this field [Ref. 26].

C. An Expert System for Recruiter Selection

The peculiar characteristics of the recruiter selection problem dictated the choice of an expert system that would support a decision when no criterion variable was available for the development of an empirical model. Mainframe artificial intelligence programs often can deal with a breadth of problems which are not encountered in the recruiter selection environment and would have made the application unnecessarily complex. The expert system selected for use in examining the USAR recruiter question, EXPERT87, provides the required ability to operate in the absence of a well defined dependent variable. It does not embody needlessly complex simulations of human reasoning and, in addition, it presents the interaction of experts with a knowledge base and the results in a way that is easily understood by experts and other users. This program can be operated with

a personal computer and thus can be used at many more locations than would be th case with a mainframe expert system.

The developer of EXPERT87 has classified his system as one of a type h calls Quasiartificial Intelligence (QAI), [Ref. 30], a less ambitious variant o artificial intelligence (AI). QAI systems avoid many of the pitfalls o traditional AI approaches because they do not attempt to simulate so many aspect of human reasoning processes.

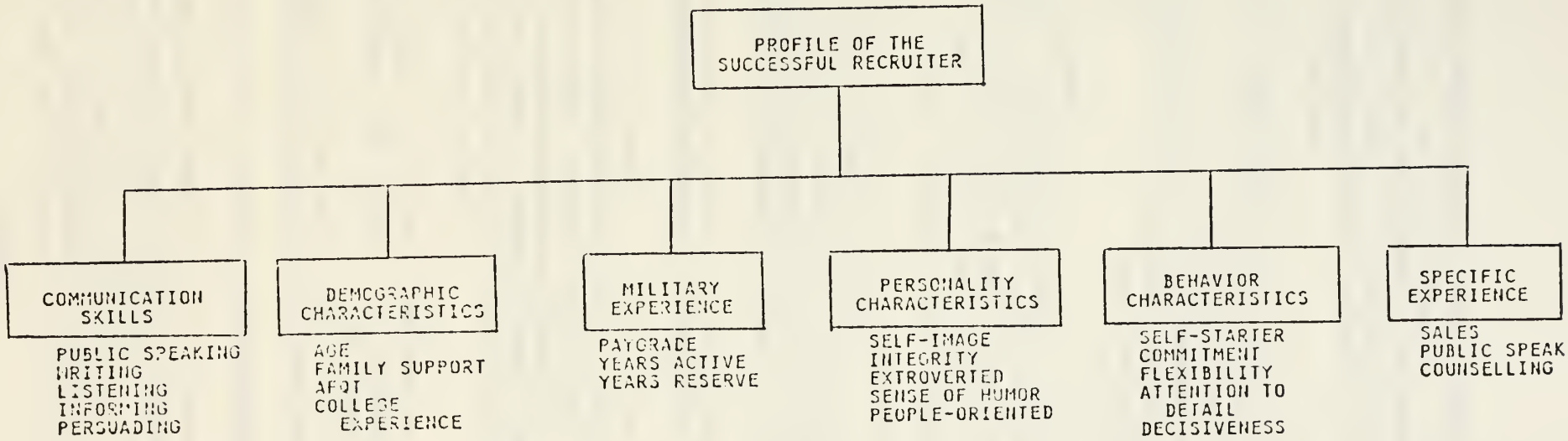
These systems build on a well-defined format for the problem space. Math ematically, a QAI problem space is hierarchical and geometric, as opposed t linguistic or symbolic, as in AI. QAI systems present the attributes of decisio alternatives by means of: (1) well-structured profiles of hypothetical cas data, rather than by descriptive phrases; (2) queries requiring either binary o probabalistic judgments on the part of the experts; or (3) by means of hypotheti cals which require the expert to rely on plausible rules. [Ref. 28, p.3].

The program selected provides a format for gathering intuitive knowledg quickly from experts and in a manner that permits verifiable estimation of th trustworthiness of the expert systems that emerge. The method generates hier archical profiles of hypothetical alternatives (in this case, recruiters). The software generates attribute values for each profile or alternative which opti mizes the probability that the expert's resulting model correctly represents th expert's intuitive knowledge. [Ref. 30; p. 4].

D. The Successful Recruiter Model

Figure 2 depicts the hierarchy developed to model the profile of a success ful recruiter. The goal of the model is to identify and weight the character istics of the successful recruiter and this goal appears as the node at the to of the hierarchy.

Figure 2. Profile of the successful recruiter: the model



Based on the literature review and on discussions with experts in the re cruiting field, characteristics believed to be related to recruiter success wer identified (see Table 6, Chapter II) and organized into logical categories These groupings included:

1. Communication skills,
2. Demographic characteristics,
3. Military background,
4. Personality characteristics,
5. Behavior characteristics,
6. Specific experience.

These "dimensions" become the largest branch nodes of the hierarchy. The charac teristics or "attributes" within each dimension appear below these nodes in Fig ure 2, and are specified as follows:

1. **Communication Skills**

Public Speaking Skills-The recruiter's ability to stand before a grou of people and convey information so as to motivate an audience i thought to be an attribute a successful recruiter possesses.

Writing Skills-Although a recruiter's job involves very little writing it is such a large part of communicating that it was included in th model.

Listening Skills-Many of the recruiters who tested this model believ that listening skills are the most important aspect of a recruiter' communication. By asking open-ended questions and carefully listenin to an applicant, the successful recruiter can provide informatio targeted specifically at the needs and desires identified by th individual.

Informing-The successful recruiter has the ability to recal information necessary to inform the applicant effectively on al aspects of military life.

Persuading-The successful recruiter must be able to close the sale.

2. **Demographic Characteristics**

Age-An older recruiter may not be able to relate to a young applicant while a very youthful recruiter does not have enough experience to hel an applicant.

Family Support-An aspect of recruiting that affects the probability that a recruiter will be successful is the issue of family support

particularly of the spouse. Recruiting duty often means living in areas away from a military community and services the family depends upon. Living away from military commissaries, exchanges, and medical facilities can create or increase financial hardship and stress for families. Recruiting also involves long hours, weekend work, and travel away from home.

Armed Forces Qualifying Test (AFQT)-The literature suggests that intelligence is directly related to recruiter success.

College Experience-Education and Armed Services Vocational Aptitude Battery (ASVAB) scores are often used as readily available measures of intelligence.

3. **Military Background**

Pay-grade-The recruiters who tested this model all felt that the most successful recruiters are E-6's. E-5's and E-7's are next, and E-8's and E-9's last. E-4's and below do not possess the necessary experience to be successful and E-8's and E-9's tend to intimidate applicants.
Years of Service (Active)-A recruiter must have experience in the service in order to have credibility.

Years of Service (Reserve)-For reserve recruiters, some experience in a reserve unit is necessary in order to sell the candidate on reserve life.

4. **Personality Characteristics**

Self-Image-The successful recruiter has a positive self-image and outstanding military bearing.

Integrity-This attribute was often selected as the most important characteristic within this dimension. A recruiter who lacks this attribute is likely to recruit fraudulent enlistments and to be removed early from recruiting duty.

Extroverted-The successful recruiter is interested in others and is outgoing.

Sense of Humor-This may help a recruiter enjoy the job, and may help keep him/her on an even keel in a very demanding job.

People-Oriented-The successful recruiter enjoys working with people.

5. **Behavior Characteristics**

Self-starter-A recruiter's job entails working alone. The recruiter must be able to motivate himself/herself to initiate the complete tasks.

Commitment-To be successful, the recruiter must like his/her job and committed to it.

Flexibility-A successful recruiter must be able to adapt to his/h environment and change plans on a moment's notice.

Attention to Detail-To be successful, the recruiter should be able plan activities over various time periods. He/she must also organized so as not to forget a single detail.

Decisiveness-The successful recruiter must be able to make a decisi on his/her own.

6. **Specific Experience**

Sales Experience-Civilian sales experience may be a substitute f recruiting experience, since recruiters are often described salespeople.

Public Speaking Experience-A person with public speaking experience h presented information to groups and has an advantage over other recruiters.

Counselling Experience-A recruiter with prior counselling experien has advised individuals and helped them to make decisions.

For each of the six dimensions described, the model will generate number of hypothetical profiles which each expert will evaluate. The softwa takes the expert through evaluations of attributes within each dimension a evaluations of the relative importance of dimensions. A specially construct set of attribute values is constructed for each attribute which defines t dimension. The larger the number of attributes within the dimension, the mo profiles the system will generate for expert assessment. This is necessary provide sufficient sample size.

Each profile is presented in graphic form for the expert to examin reflect on, and assess, as depicted in Figure 3. For each dimension, experts u their own knowledge, experience, and intuition to evaluate individual recruit candidates having profiles of attributes for that dimension. The assessment based on the scale shown at the bottom of the graph. The expert enters a score

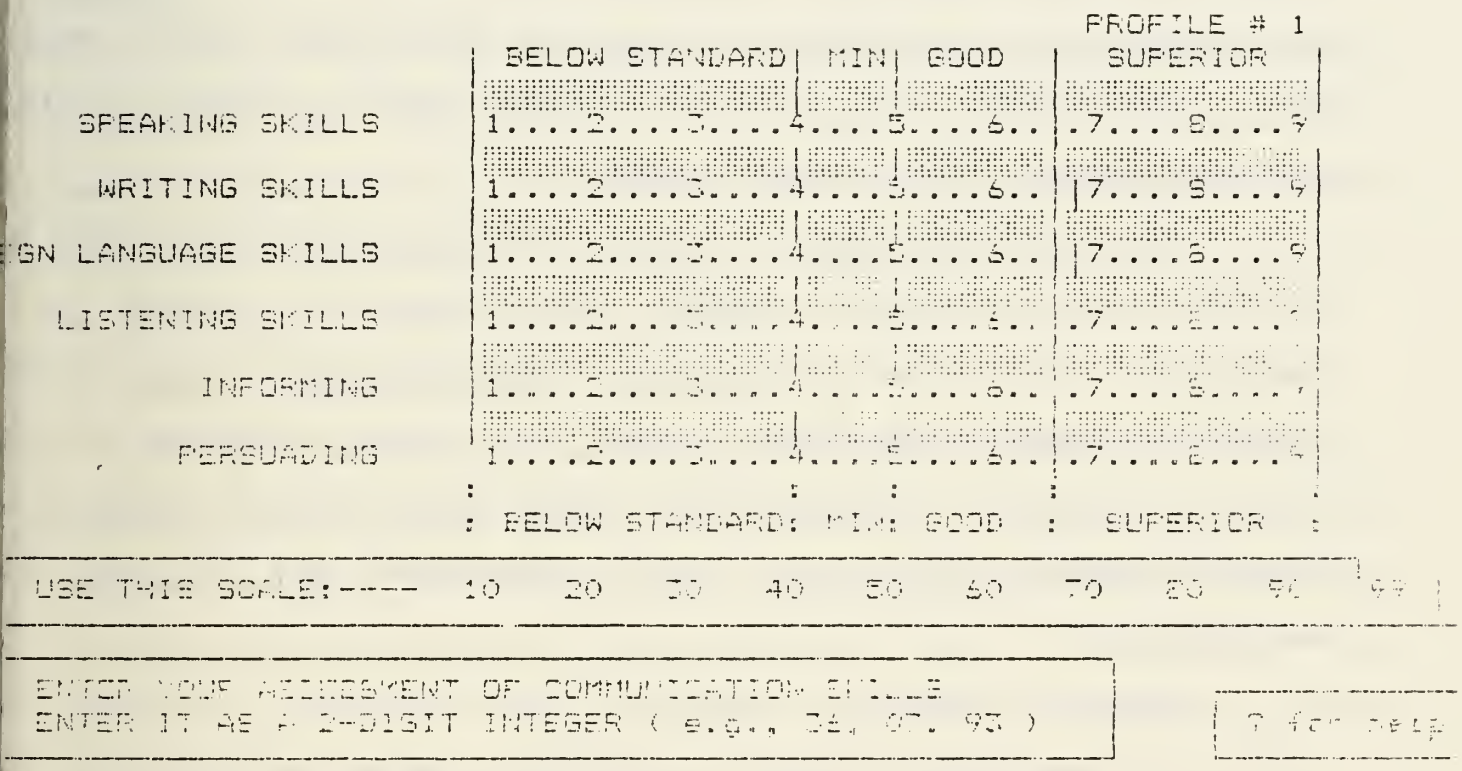


Figure 3. Profile assessment screen, communication skills dimension

from 00 to 99 depending on his/her overall evaluation of that individual. Th procedure is then repeated for each dimension in the model.

Once the last profile has been evaluated, the software completes i mathematical routines and stores functional relationships between attributes a dimensions. Now that the expert system is in place, it can evaluate real alte natives based on each expert's expertise. An additional profile is displayed a evaluated based on the expert system just created. After the expert enters his her assessment, the system displays its predicted value of that expert's assess ment. With reasonable care, the expert's response should be accurate to withi five or six percent of the system's findings.

One of the most important evaluation tools contained in the program is the Fidelity index. This index indicates how successful the program was developing an expert system that correctly models the expert's own intuitions If Fidelity is less than 80 percent, there is a strong indication that t expert's evaluations were inconsistent, which means that the intuitive c cognitive processes underlying the expert's assessments were not used in consistent way.

Relative weights are calculated for each expert, indicating t relative importance of each attribute or dimension. The software determines (fo each expert) the shape of the function relating each attribute to the dimensio or concept, whether it is positive or negative, monotonic or non-monotonic linear, convex, or concave.

This information provides the expert with a better understanding o his/her intuitive processes and personal values. The sign of the non-linea component is actually the second derivative of the concept under evaluation wit respect to the attribute. Positive signs indicate U-shaped functions, an

negative signs indicate functions which rise to a peak, accelerating at a decreasing pace, and then reversing. If an attribute has a relatively large linear component, this implies that the value of the concept increases linearly with the magnitude of the attribute. If the relative weights also contain a significant negative non-linear component, this implies a leveling off, or a reversal of this trend for the larger magnitudes of the attribute. [Ref. 28; pp. 84-85].

At no time does the program ask the expert to indicate the importance of each attribute. This information is generated by the program based on the expert's evaluation of profiles of individual candidates with specific measured quantities of each attribute. The Fidelity index is then used as an indicator of how accurately the model simulates the expert. [Ref. 28; p. 85].

E. Expert Selection and Model Application

For the recruiter selection problem, the experts selected were currently on recruiting duty and widely regarded as successful, or recruiter instructors who had been successful in the field. Six of the experts were AGR recruiters, four of them field recruiters from Indiana battalions and two instructors at the recruiter school at Fort Benjamin Harrison, Indianapolis. Ten additional Active duty recruiter instructors at the school were also included.

This test group is very small. It was not selected to be either a random or representative sample but rather, it provided a conveniently sized group for use in developing and evaluating a prototype model. Expert systems methodology usually proceeds in this way, by choosing "recognized experts," rather than by exhaustive interviewing of many subjects. Further work should involve using the format for knowledge acquisition developed here to elicit responses from individual experts chosen by those who are qualified to recognize exceptional

ability in recruiter selection.

The model was used to create an expert system for each of these 16 exper recruiters. Similarities and differences among the expert systems are analyze in Chapter IV. In addition, a composite model was constructed using the mea scores of the 16 experts and this is compared with the individual models as wel as with a "patchwork" model which represents another technique for combining th results for a group of experts.

Trends and relative weights among dimensions and attributes were also con sidered to determine if a consistent, clearly identifiable profile of a success ful recruiter emerges. Finally, an evaluation of hypothetical recruiter appli cants was examined to compare the ratings of the same applicants by all the ex pert systems.

IV. ANALYSIS AND RESULTS

A. Dimensions

Table 7 (USAR recruiters) and Table 8 (RA recruiters) present the relative weights assigned to the model's six dimensions by each of the sixteen experts. The weights in each column sum to (approximately) one and may be interpreted as the relative importance of one dimension in relation to the others. For example, Expert 1's weight for the Demographic Characteristics dimension is 0.321, which is approximately 6 times as important as the Behavior Characteristics dimension which has a relative weight of 0.05. A more detailed display for each expert is contained in Appendix A.

The weighting schemes (Tables 7 and 8) for the two types of recruiters both show the greatest relative value given to the communication skills dimension (.285 for USAR and .434 for RA). The weights for the other five dimensions do not follow the same pattern for Reserve and Active Duty recruiters.

Table 9 (USAR recruiters) and Table 10 (RA recruiters) display the expert systems' most important, second most important, and least important dimensions along with their relative weights for the two recruiter groups. Communication Skills, Demographic Characteristics, and Personality Characteristics were the most important dimensions for the USAR Recruiters. Military Background and Behavior Characteristics were next in importance, and Specific Experience was judged least important of the six dimensions. The Active recruiters judged Communication Skills, Personality Characteristics, and Behavior Characteristics as the most important dimensions. Military Background, Specific Experience, and Demographic Characteristics were all much less important. Hence, the main difference between RA and USAR recruiters lay in the Demographic dimension which was of greater importance to the Reserve recruiters.

Table 7. Relative weights of dimensions, Reserve recruiters

Expert	Dimension					
	Communication skills	Demographic characteristics	Military background	Personality characteristics	Behavior	Specific experienc
1	.305	.321	.069	.190	.050	.065
2	.299	.176	.045	.128	.123	.229
3	.245	.191	.067	.188	.127	.182
4	.267	.052	.517	.023	.086	.055
5	.140	.338	.147	.188	.096	.092
6	.277	.096	.076	.269	.228	.054
Mean	.285	.173	.147	.167	.136	.092

Table 8. Relative weights of dimensions, Regular Army recruiters

Expert	Dimension					
	Communication skills	Demographic characteristics	Military background	Personality characteristics	Behavior	Specific experience
7	.283	.098	.137	.250	.171	.061
8	.437	.048	.035	.257	.106	.118
9	.111	.172	.153	.296	.152	.116
10	.546	.054	.105	.060	.214	.021
11	.300	.120	.181	.155	.305	.020
12	.448	.087	.092	.080	.118	.175
13	.297	.007	.102	.275	.245	.075
14	.381	.089	.089	.074	.208	.159
15	.242	.167	.162	.221	.138	.071
16	.402	.272	.119	.079	.057	.071
Mean	.434	.049	.078	.194	.189	.056

Table 9. Most/least important dimensions, Reserve recruiters

Expert	Most important	Second most important	Least important
1	Demographic characteristics .321	Communication skills .305	Behavior characteristic .05
2	Communication skills .299	Specific experience .229	Military background .045
3	Communication skills .245	Demographic characteristics .191	Military background .067
4	Military background .517	Communication skills .267	Personality characteristic .023
5	Demographic characteristics .338	Personality characteristics .118	Specific experience .054
6	Communication skills .277	Personality characteristics .269	Specific experience .054
Mean	Communication skills .277	Demographic characteristics .173	Specific experience .099

Table 10. Most/least important dimensions, Regular Army recruiters

Expert	Most important	Second most important	Least important
7	Communication skills .283	Personality characteristics .250	Specific experience .061
8	Communication skills .437	Personality characteristics .257	Demographic characteristics .048
9	Personality characteristics .296	Demographic characteristics .172	Communication skills .111
10	Communication skills .546	Behavior .300	Specific experience .021
11	Behavior .305	Communication skills .300	Specific experience .020
12	Communication skills .448	Specific experience .175	Personality characteristics .080
13	Communication skills .297	Personality characteristics .275	Demographic characteristics .075
14	Communication skills .381	Behavior .208	Personality characteristics .074
15	Communication skills .242	Personality characteristics .221	Specific experience .071
16	Communication skills .402	Demographic characteristics .272	Behavior .071
Mean	Communication skills .434	Personality characteristics .194	Demographic characteristics .0498

B. **Attributes**

The importance of the attributes within each of the six dimensions is discussed below. Further detail for all attributes within dimensions contained in Appendix A.

1. **Communication Skills**

The attributes within the Communication Skills dimension are Publ Speaking Skills, Writing Skills, Listening Skills, Informing, and Persuadin Table 11 displays the Reserve experts' judgments about the attributes of t Communication Skills dimension. Three of the six USAR Recruiters judg Persuading most important, while two thought Listening was most important, a one felt Informing was the most important communication skill. Five of the s USAR Recruiters felt Writing Skills was the least important attribute in th dimension, and one indicated that Public Speaking Skills was least important.

Similarly, the Active recruiters judged Persuading as most important seven of the ten cases, as shown in Table 12. Two felt Listening was mos important and one considered Informing the most important attribute within t Communication Skills dimension. The Active recruiters also felt that Writi Skills were least important in half the cases. Public Speaking Skills we selected as least important in three cases, Persuading in one case, and Informi in one case.

2. **Personality Characteristics**

The Personality Characteristics dimension includes Self-Image Integrity, Extroverted, Sense of Humor, and People-Oriented. As shown in Table 13 and 14, both the USAR and Active recruiters consistently identified Integrit as the most important attribute within the Personality Characteristics dimensio Sense of Humor and People-Oriented were judged as the least important attribute

Table 11. Communication skills dimension, most/least important attributes, Reserve recruiters

Expert	Most important	Least important
1	Informing .291	Writing .063
2	Listening .353	Writing .028
3	Persuading .357	Writing .041
4	Persuading .467	Writing .088
5	Listening .444	Writing .051
6	Persuading .397	Public speaking .016
Mean	Persuading .313	Writing .041

Table 12. Communication skills dimension, most/least important attributes, Regular Army recruiters

Expert	Most important	Least important
7	Persuading .333	Writing .106
8	Informing .319	Persuading .083
9	Persuading .466	Public speaking .056
10	Persuading .370	Writing .061
11	Listening .318	Public speaking .092
12	Persuading .450	Informing .079
13	Persuading .440	Writing .033
14	Listening .332	Public speaking .085
15	Persuading .311	Writing .024
16	Persuading .346	Writing .024
Mean	Persuading .364	Writing .043

Table 13. Personality characteristics dimension, most/least important attributes, Reserve recruiters

Expert	Most important	Least important
1	Self-image .314	People oriented .056
2	Integrity .608	Extroverted .029
3	Integrity .449	Sense of humor .054
4	Integrity .432	Extroverted .061
5	Integrity .507	Sense of humor .020
6	Integrity .358	Extroverted .094
Mean	Integrity .540	Sense of humor .0784

Table 14. Personality characteristics dimension, most/least important attributes, Regular Army recruiters

Expert	Most important	Least important
7	Integrity .417	Sense of humo .045
8	Integrity .352	Self-image .066
9	Extroverted .339	People orient .032
10	Integrity .537	People orient .070
11	Integrity .348	Sense of humor .0784
12	Integrity .812	Sense of humor .100
13	Integrity .505	Sense of humor .032
14	Integrity .360	People orient .062
15	Integrity .583	Sense of humor .044
16	Integrity .618	Sense of humor .039
Mean	Extroverted .507	Sense of humor .064

within this dimension.

3. Behavior Characteristics

The attributes within this dimension are Self-Starter, Commitment, Flexibility, Attention to Detail, and Decisiveness. Tables 15 and 16 reveal the experts' judgments within the Behavior Characteristics dimension. USAR and Active recruiters again agree in their judgment of Self-starter and Commitment as the most important attribute within this dimension. Decisiveness and Flexibility appear most frequently as the least important attribute.

4. Military Background

Military Background attributes include Paygrade, Years of Service (Active) and Years of Service (Reserve). Among these attributes, Tables 17 and 18 indicate that both types of recruiters judged overall experience, as indicated by Paygrade, to be most important. Reserve recruiters considered Active duty experience least important, while Active Duty Recruiters gave the least weight to Reserve experience.

5. Demographic Characteristics

The attributes within the Demographic Characteristics dimension are Age, Family Support, AFQT, and College Experience. Tables 19 and 20 presens evaluations of attributes on this dimension. AFQT and Family Support were consistently judged as the most important attribute by both USAR and Active Recruiters. Almost all of the recruiters considered Age and College Experience relatively unimportant.

6. Specific Experience

Specific Experience includes Sales Experience, Public Speaking Experience, and Counselling Experience. As indicated in Table 21, Reserve recruiters emphasized the importance of Sales Experience and gave the next

Table 15. Behavior characteristics dimension, most/least important attributes, Reserve recruiters

Expert	Most important	Least important
1	Attention to detail .433	Flexibility .051
2	Commitment .402	Decisiveness .101
3	Self-starter .328	Decisiveness .041
4	Self-starter .307	Decisiveness .115
5	Self-starter .251	Flexibility .085
6	Flexibility .289	Attention to deta .093
Mean	Self-starter .301	Decisiveness .076

Table 16. Behavior characteristics dimension, most/least important attributes, Regular Army recruiters

Expert	Most important	Least important
7	Self-starter .279	Decisiveness .119
8	Flexibility .380	Decisiveness .060
9	Self-starter .345	Flexibility .034
10	Attention to detail .569	Self-starter .038
11	Self-starter .353	Attention to detail .105
12	Self-starter .541	Decisiveness .035
13	Commitment .504	Attention to detail .105
14	Flexibility .332	Flexibility .098
15	Commitment .277	Commitment .091
16	Attention to detail .458	Attention to detail .059
Mean	Self-starter .312	Decisiveness .087

Table 17. Military background dimension, most/least important attributes, Reserve recruiters

Expert	Most important	Least important
1	YOS(R)* .526	YOS(A)** .237
2	Paygrade .846	YOS(A)** .059
3	All-3 .333	-- --
4	Paygrade .472	YOS(A)** .141
5	Paygrade .466	YOS(A)** .294
6	Paygrade .561	YOS(R)* .178
Mean	Paygrade .595	YOS(A)** .097

* Years of service, Reserve
**Years of service, Active Duty

Table 18. Military background dimension, most/least important attributes, Regular Army recruiters

Expert	Most important	Least important
7	Paygrade .443	YOS(R)* .235
8	YOS(A)** .456	Paygrade .203
9	Paygrade .624	YOS(R)* .078
10	YOS(A)** .566	YOS(R)* .056
11	Paygrade .625	YOS(R)* .163
12	YOS(A)** .811	YOS(R)* .076
13	Paygrade .422	YOS(R)* .169
14	Paygrade .562	YOS(R)* .065
15	YOS(A)** .618	YOS(R)* .132
16	YOS(A)** .440	Paygrade .229
Mean	YOS(A)** .498	YOS(R)* .041

* Years of service, Reserve
** Years of service, Active Duty

Table 19. Demographic characteristics dimension, most/least important attributes, Reserve recruiters

Expert	Most important	Least important
1	AFQT .370	College experience .100
2	Family support .509	Age .052
3	AFQT .626	Age .027
4	AFQT .383	Age .131
5	AFQT .381	Age .048
6	AFQT .445	College experience .098
Mean	AFQT .510	Age .029

Table 20. Demograpic characteristics dimension, most/least important attributes, Regular Army recruiters

Expert	Most important	Least important
7	AFQT .439	Age .038
8	AFQT .414	Family support .078
9	AFQT .579	Family support .014
10	AFQT .456	Age .088
11	Family support .360	College experience .108
12	Family support .361	Age .147
13	Family support .492	College experience .090
14	AFQT .546	College experience .058
15	AFQT .432	Age .132
16	AFQT .707	Age .078
Mean	AFQT .508	Age .107

Table 21. Specific experience dimension, most/least important attributes, Reserve recruiters

Expert	Most important	Least important
1	Sales .452	Counselling .239
2	Counselling .569	Public speaking .544
3	All-3 .333	-- --
4	Sales .582	Counselling .210
5	Counselling .506	Sales .350
6	Sales .422	Public speaking .285
Mean	Sales .452	Public speaking .228

highest weight to Counselling Experience. Regular Army recruiters, on the other hand, did not distinguish among these attributes in a consistent manner. (See Table 22).

C. **Evaluation of Experts**

The expert systems developed for the sixteen recruiter experts may be evaluated and compared in terms of Fidelity, Standards, and Discrimination. These criteria are explained in detail in Chapter III. The indices which reflect these concepts range in value from zero to 100, though the expert system program does not incorporate a normalization process and the values sometimes exceed 100 or go below zero.

The Fidelity index measures how well the expert system correctly reproduces the experts' intuitive judgments, the Standards index measures the extent to which the experts maintain high standards on their assessments of profiles of recruiters, and the discrimination index measures the experts' ability to make fine distinctions among profiles of recruiters. The user of the system must determine an optimal or acceptable combination of values for these measures.

Appendix B displays the three indices, the mean squared error, and the explained variance in each of the six dimensions and the overall model for each of the sixteen expert systems. Table 23 summarizes this information.

For the overall model, the Fidelity Index was above 90 in eleven cases and above 83 in the remaining five cases. For the individual dimensions (Communication Skills, Demographic Characteristics, Military Background, Personality, Behavior, and Specific Experience), the Fidelity Index remained above 80 in all but seven cases.

For the overall model, the expert's Standards indices ranged from 17.9 to 99.3. A regular active duty recruiter (RA) Instructor/Guidance Counselor was the

Table 22. Specific experience dimension, most/least important attributes, Regular Army recruiters

Expert	Most important	Least important
7	Counselling .647	Public speaking .153
8	Public speaking .453	Sales .223
9	Sales .470	Counselling .205
10	Public speaking .448	Sales .261
11	Counselling .313	Sales .313
12	Sales .715	Counselling .093
13	Counselling .416	Public speaking .235
14	Public speaking .520	Counselling .232
15	Counselling .488	Sales .197
16	Sales .540	Counselling .115
Mean	Public speaking .390	Counselling .264

Table 23. Mean validity index scores for expert systems

Reserve recruiters (n=6)

	Fidelity index	Standards index	Discrimination index
Overall profile	91.8	73.7	60.0
Communication skills	91.7	62.5	76.3
Demographic characteristics	92.6	58.7	67.8
Military background	91.9	47.5	41.8
Personality characteristics	92.9	72.6	71.8
Behavior characteristics	91.8	64.8	57.3
Specific experience	91.7	46.7	36.7

Regular Army recruiters (n=10)

Overall profile	91.9	60.2	79.1
Communication skills	90.9	54.4	80.1
Demographic characteristics	90.8	51.4	74.2
Military background	90.0	48.3	66.5
Personality characteristics	89.1	67.5	87.9
Behavior characteristics	90.6	65.1	76.5
Specific experience	93.6	42.7	65.3

most lenient, and a USAR Recruiter Instructor had the highest Standards index. The Standards indices for the individual dimensions varied widely, but those experts whose Standards indices were high for the overall model tended to have higher indices than the other experts for the individual dimensions as well.

The experts' Discrimination indices ranged from 18.1 to 103.8. Expert 12, a RA Instructor/Guidance counselor, had the highest Discrimination index. Expert 1, a USAR field recruiter, had the lowest.

D. Composite Models

In order to obtain composite models, two different methodologies were used.

1. Models Based on Means

Two separate models were developed using mean values, one for Reserve recruiters (MAGR) and one for Active Duty (MRA) recruiters. To construct these models, all assessments from each expert were sorted by concept and response and the means of the responses were calculated. These mean values were then entered into the expert system program to create a composite expert. The overall model was constructed by weighting the individual dimensions. It is not the simple arithmitic mean of the component dimensions.

For both RA and USAR mean expert systems, the overall model Fidelity Index was 97, and was at least 96 for the individual dimensions. The Standards Index for the overall model was 60 for the Reserves, with the individual dimensions ranging from 48.3 to 67.5. The Active Duty Standards Index was 74 for the overall model, and ranged from 46.3 to 74 for the individual dimensions. Finally, the Discrimination Index for the Reserves was 62 for the overall model, and varied from 53 to 68 on the individual dimensions. The Active Duty recruiters were less discriminatory with an index of 41 for the overall model, and a range of 38 to 65 for the individual dimensions. As expected, the use of

mean input values stabilizes the disparities between individual experts by creating an "average" expert system. The mean expert is included in Tables 10 through 22 for comparison and summary purposes.

2. Patchwork Models

The expert systems program contains a feature which allows the user to create a composite model using the responses of experts who have been interviewed previously. The user can "patch" experts to concepts or dimensions based on any criteria. For this exercise the criteria have been specified with a high fidelity index (as close to 100 as possible), a normal (around 50) Standards Index, and a normal (around 50) Discrimination Index. There is no "ideal" criteria. For example, Expert 1 meets the criteria for Communication Skills, (that is, high Fidelity, normal Standards, and normal Discrimination Indices). However, Expert 1's assessment on Personality Characteristics is below the minimum criteria. Expert 2, on the other hand, meets the criteria for Personality Characteristics. The system allows the inclusion only of experts who meet the specified standard and may then be used to select recruiters based on this composite model.

E. Comparing the Expert Systems

The expert systems for the 6 Reserve experts, the 10 Active Duty experts, and the mean and patchwork models for Reserve and Active Duty recruiters, were used to evaluate a set of twenty hypothetical recruiter applicants. Subjective assessments were made to determine "realistic" measures for the attributes.

Appendix C displays the profiles of the twenty hypothetical recruiter candidates. The profiles were designed such that some of the applicants are at the top end of the rating scale (0-99) and some at the bottom on all attributes. Random assignment would not have generated "realistic" candidates, nor would it

have resulted in meaningful tests of validity for the expert systems. Thes cases illustrate how judgments are affected by the Standards index. Exper who have high standards tend to assign lower ratings than more lenie experts. The remainder of the recruiter applicants meet the minimum requiremen set by the Army:

1. At least a high school diploma graduate or GED with one year college;
2. Minimum GT score of 110 waiverable to 100;
3. Between 21 and 35 years of age;
4. In paygrades E-5, E-6, or E-7 (E-7's may have no more than 2 years ti in grade at time of selection).

The minimum acceptable rating on any scale for the program is 45.

Tables 24 and 25 summarize the results of the expert systems evaluation the hypothetical candidates. Detailed descriptions of these evaluations appe in Appendix D. Asterisks indicate the rejected applicants (below 45). expected, the results are very similar for the Reserve expert systems and t Active expert systems. In almost every case, the top five applicants are B, E, C, and O. Every system rejects A, K, and N and they appear as the last thre applicants. There are some inconsistencies in the results, however. Candidat B, for example, is rejected in some overall models, though he is superior every dimension. This reflects the very high Standards index for some of t systems which rejected more than half of the applicants.

Some interesting results may be seen in the comparisons of the mean USA models (MAGR and MRA) and the patchwork models (PAGR and PRA). The mean an patchwork models for USAR recruiter experts are quite dissimilar. Although bot Reserve composite models select Applicant E, for example, MAGR ranks E as numbe one, while PAGR ranks E as number seven. However, MAGR's rating for thi applicant is 60 as opposed to AGR1's rating of 62.8. This is an example o MAGR's high standards. MAGR rejects thirteen of the twenty applicants while PAG

rejects only four.

In contrast, MRA and PRA (the Active Duty composite models)are surprisingly similar. They both rank B and L first and second, respectively. Similarly, MRA and PRA reject applicants, U, F, G, K, N, and A in exactly the same order with similar ratings. PRA also rejects H, T, and D, however, while MRA selects them.

Table 24. Expert systems evaluations of hypothetical applicants, Reserve recruiters

Expert	1	2	3	4	5	6	MAGR	PAG
Ranking								
1	B 49.5	B 62.2	B 74.3	L 55.0	L 55.6	B 73.2	E 60.0	L 71.
2	L 49.2	E 60.3	L 68.6	S 53.6	I 51.3	L 72.1	L 49.2	B 71.
3	I 49.0	M 60.2	M 63.0	E 53.3	B 50.5	S 67.6	S 48.5	S 66.
4	E 48.6	L 59.3	J 60.5	I 53.3	C 47.0	I 66.5	J 48.5	I 65.
5	S 48.1	I 58.4	I 60.0	O 53.2	O 46.3	O 64.9	C 48.3	O 64.
6	P 47.9	O 58.3	S 58.9	B 53.1	S 44.9*	C 62.6	I 47.9	C 63.
7	M 47.9	P 56.6	O 55.3	M 52.5	E 42.7*	E 61.4	O 47.5	E 62.
8	C 47.8	C 54.7	E 54.6	C 52.4	P 41.9*	P 59.7	M 42.8*	J 62.
9	O 47.6	S 52.6	C 54.3	P 51.3	D 41.0*	J 59.3	B 41.0*	M 58.
10	T 47.0	H 48.3	P 53.9	J 49.8	H 39.9*	M 58.2	T 40.3*	P 58.
11	J 46.9	J 47.4	V 48.8	H 48.0	M 38.0*	D 57.1	P 39.3*	D 55.
12	H 46.7	V 45.3	H 44.0*	T 45.5	F 36.9*	T 53.8	H 38.4*	T 54.
13	G 46.3	F 38.8*	T 43.2*	D 45.2	J 35.9*	V 53.5	U 29.5*	H 54.
14	D 46.3	G 37.5*	D 42.1*	V 42.6*	T 34.8*	H 53.5	F 26.0*	F 49.

Table 24. (Continued)

Expert	1	2	3	4	5	6	MAGR	PAGR
Ranking								
15	V 45.8	D 35.5*	U 40.8*	U 41.6*	G 33.3*	F 48.5	D 23.5*	V 47.6
16	U 45.4	T 33.2*	F 38.2*	F 41.1*	V 29.5*	U 44.6*	V 15.0*	U 45.8
17	F 45.0	U 31.5*	G 38.3*	G 40.6*	U 41.6*	G 42.3*	G 14.1*	G 38.9*
18	K 43.3*	A 1.0*	K 13.0*	K 26.9*	K 18.7*	K 20.6*	A 1.0*	K 21.0*
19	N 42.6*	K 1.0*	N 7.5*	N 15.5*	N 10.3*	N 16.1*	K 1.0*	N 13.7*
20	A 41.0	N 1.0*	A 1.0*	A 1.0*	A 13.5*	A 1.0*	N 1.0*	A 1.0*

*Rejected by expert system; score below 45.

Table 25. Expert systems evaluations of hypothetical applicants, Regular Army recruiters

Expert	7	8	9	10	11	12	13	14	15	16	MRA	P
Choice												
1	B 62.2	B 49.5	L 55.6	L 55.0	B 74.3	E 60.0	B 74.3	E 60.0	B 73.2	B 83.1	B 73.4	B 74
2	E 60.3	L 49.2	I 51.3	S 53.6	L 68.6	L 49.2	L 68.6	L 49.2	L 72.1	P 76.6	L 69.9	L 68
3	M 60.2	I 49.0	B 50.5	E 53.3	M 63.0	S 48.5	M 63.0	S 48.5	S 67.6	L 70.1	I 66.9	M 64
4	L 59.3	E 48.6	C 47.0	I 53.3	J 60.5	J 48.5	J 60.5	J 48.5	I 66.5	I 64.3	E 64.5	I 60
5	I 58.4	S 48.1	O 46.3	O 53.2	I 60.0	C 48.3	I 60.0	C 48.3	O 64.9	O 56.3	O 63.4	S 59
6	O 58.3	P 47.9	S* 44.9	B 53.1	S 58.9	I 47.9	S 58.9	I 47.9	C 62.6	M 56.3	M 63.2	J 59
7	P 56.6	M 47.9	E* 42.7	M 52.5	O 55.3	O 47.5	O 55.3	O 47.5	E 61.4	E 53.8	J 62.5	O 56
8	C 54.7	C 47.8	P* 41.9	C 52.4	E 54.6	M* 42.8	E 54.6	M* 42.8	P 59.7	C 48.2	P 62.3	C 55
9	S 52.6	O 47.6	D* 41.0	P 51.3	C 54.3	B* 41.0	C 54.3	B* 41.0	J 59.3	T 47.9	C 61.7	E 53
10	H 48.3	T 47.0	H* 39.9	J 49.8	P 53.9	T* 40.3	P 53.9	Y* 40.3	M 58.2	F* 43.0	S 60.6	P 51
11	J 47.4	J 46.9	M* 38.0	H 48.0	V 48.8	P* 39.3	V 48.8	P* 39.3	D 57.1	H* 39.5	T 55.9	V 50
12	V 45.3	H 46.7	F* 36.9	T 45.5	H* 44.0	H* 38.4	H* 44.0	H* 38.4	T 53.8	J* 39.1	H 53.0	H* 44
13	F* 38.8	G 46.3	J* 35.9	D 45.2	T* 43.2	U* 29.5	T* 43.2	U* 29.5	V 53.5	V* 37.8	D 51.4	T* 42
14	G* 37.5	D 46.3	T* 34.8	V* 42.6	D* 42.1	F* 26.0	D* 42.1	F* 26.0	H 53.5	U* 29.9	V 46.2	D* 42
15	D* 35.5	V 45.8	G* 33.3	U* 41.6	U* 40.8	D* 23.5	U* 40.8	D* 23.5	F 48.5	S* 28.4	U* 43.2	U* 40

Table 25. (Continued)

Expert	7	8	9	10	11	12	13	14	15	16	MRA	PRA
Choice												
	T*	U	V*	F*	F*	V*	F*	V*	U*	G*	F*	F*
16	33.2	45.4	29.5	41.1	38.2	15.0	38.2	15.0	44.6	26.7	42.8	39.1
	U*	F	U*	G*	G*	G*	G*	G*	G*	D*	G*	G*
17	31.5	45.0	24.1	40.6	28.3	14.1	28.3	14.1	42.3	25.1	37.4	27.7
	A*	K*	K*	K*	K*	A*	K*	A*	K*	K*	K*	K*
18	1.0	43.3	18.7	26.9	13.0	1.0	13.0	1.0	20.6	17.2	18.5	10.5
	K*	N*	N*	N*	N*	K*	N*	K*	N*	A*	N*	N*
19	1.0	42.6	10.3	15.5	7.5	1.0	7.5	1.0	16.1	8.1	10.4	4.5
	N*	A*	A*	A*	A*	N*	A*	N*	A*	N*	A*	A*
20	1.0	41.0	8.5	9.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

*Rejected by expert system; score below 45.

V. CONCLUSIONS AND RECOMMENDATIONS

A. Past research

The literature review in Chapter II indicates that two categories of factors have been identified for their utility in predicting successful recruiter performance. One grouping includes biographical and personal history characteristics (age, education, entrance test scores, gender, marital status, etc.) which are available in standard military personnel files. The predictive utility of these factors has been found to differ widely among studies as a consequence of the specific predictors selected and the criterion predicted.

The second group of factors shown to be valuable in estimating recruiter success is comprised of measures of personality and behavioral traits. Measures of such characteristics as dominance, self-confidence, vocational interest and verbal ability are much more difficult to obtain. Likewise, this set of factors has yielded disappointing predictive results. Difficulty in conceptualizing predictor-criterion relationships and in devising objective criterion measures has limited the value of conventional approaches to the problem of predicting recruiter success.

B. Expert Systems

This study applies a relatively new methodology, expert systems, to the recruiter selection problem. This technology, a branch of artificial intelligence, has proved particularly useful in dealing with problems involving incomplete knowledge and subjective judgment. The expert system shell selected for this project is intended for moderately difficult and repetitive decision problems. It allows efficient interaction of experts with a knowledge base and can be applied to the development of models for recruiter selection. The program is described in detail in Chapter III.

The expert systems approach addresses a major shortcoming of traditional analysis - the failure to specify the relative importance of recruiter attributes. A weighting algorithm imbedded in the expert system shell produces a multi-attribute utility model from the expert's evaluation of hypothetical recruiter candidates.

A second important advantage of expert systems technology is the lack of reliance on an objectively measured criterion for recruiter success. This approach avoids the problem of poorly specified and measured performance criteria which has limited the usefulness of many previous efforts to model recruiting success.

Expert systems were developed for 6 Active Guard and Reserve (AGR) Army recruiters and for 10 Regular Army (RA) recruiters. In addition, overall models were constructed for Reserve and Active recruiters as well as two composite models. The validity of the systems was evaluated by the expert systems program itself on the basis of three indices: fidelity, standards, and discrimination. All the systems developed for recruiter experts showed high scores for these tests. Twenty hypothetical recruiter applicants were screened by each of the expert systems and a fairly consistent pattern of selection and rejection emerged, with a few exceptions. Chapter IV described these results.

C. Profile of the Successful Recruiter

The characteristics of a successful recruiter may be inferred from the weights assigned to individual attributes within the dimensions identified by the expert systems. Recruiter attributes are grouped into six dimensions: Communication Skills, Personality Characteristics, Behavior Characteristics, Military Background, Demographic Characteristics, and Specific Experience. This hierarchy of attributes is based on the findings of previous studies and also

upon the opinions of experts in the recruiting field. It includes both the biodemographic factors and the personality/behavior traits identified by earlier researchers.

On the whole, Reserve recruiters judged Communication Skills, Demographic Characteristics, and Personality Characteristics to be the most important dimensions for successful recruiting, while Active recruiters felt that Communication Skills, Personality Characteristics, and Behavior Characteristics were most important.

Within the six dimensions, Reserve recruiters judged Persuading to be the most important Communication Skill, Integrity to be the most important Personality trait, Self-starter to be the most important Behavior Characteristic, Paygrade to be the most important aspect of Military Background, AFQT to be the leading Demographic Characteristic, and Sales Experience to be the most useful type of Specific Experience.

Active recruiters made generally similar judgments as to the roles of attributes in the dimensional hierarchy: Persuading, Integrity,Self-starter, and AFQT were all considered most important within their respective dimensions, while Years of Service (Active Duty) and Public Speaking Experience had the strongest support within the Military Background and Specific Experience categories.

Reserve recruiter - experts, then, see a potentially successful candidate as an individual who is intelligent, persuasive, self-motivated, high-ranking for his or her length-of-service, and who has some sales experience. Active recruiters have a similar ideal candidate who possesses public speaking experience rather than sales experience and has many years of service (Active Duty) rather than high rank, but with otherwise identical characteristics. However, these profiles are far too limiting in that the expert systems models

give a role to every attribute in the hierarchy and develop an internally consistent selection tool reflecting all of the characteristics.

D. Measurement of Personality/Behavior Attributes

A major impediment to the implementation of expert systems methods for recruiter selection is the lack of individual data on personality and behavioral characteristics. There are a number of instruments which are designed to measure such traits and which would be accommodated readily into the recruiter screening process. Several of these widely used instruments are described below.

a. Myers-Briggs Type Indicator (MBTI)

The MBTI test measures of four dichotomous indices of personality type: Extraversion-Introversion (EI), whether perception and judgment are directed toward the environment or the world of ideas; Sensation-Intuition (SN), indicating dominant perceptual style; Thinking-Feeling (TF), which one of these two modes of judgment is relied upon; and Judgment-Perception (JP), indicating which of these is relied upon in dealing with the environment. The test consists of 166 forced-choice (usually two) items. Fifty-two items are word pairs in which respondents indicate a preference. Some of the pairs are theory-certainty, build-invent, casual-correct, who-what, sign-symbol or similar to the following:

Do you:

(1) prefer to do things at the last minute

(2) find it hard on your nerves

The test is self-administering and has no time limit, but usually takes about 50 minutes to complete. The MBTI is easy to administer and score, and the types do have the virtue of being mutually independent. A draw-back is that it measures a only two of the attributes identified (extrovert and self-image) [Ref. 18; pp. 186-189].

b. California Psychological Inventory (CPI)

The CPI groups eighteen variables under four classifications: Class I measures poise, ascendancy, and self-assurance; Class II measures socialization, maturity, and responsibility; Class III measures achievement, potential and intellectual efficiency; and Class IV measures personal orientation and attitudes toward life. This single test measures most of the attributes identified in the expert system approach to profiling the successful recruiter. It includes measures of self-starter, extroverted, people-oriented, self-image, flexibility, commitment, and indirectly, integrity. Integrity could be measured using the variables, responsibility and socialization. They are defined by the CPI as follows:

(1) responsibility--indicating seriousness of thought and manner, conscientiousness, dependability and uprightness; being the kind of person that others tend to trust and to rely upon.

(2) socialization--indicating a strong sense of probity and propriety; acceptance of rules, proper authority, and custom; a person who seldom if ever gets into trouble.

The CPI is essentially self-administering and consists of 480 statements. The 18 scales are normative and are based on over 6,000 males and 7,000 females. The raw scores are converted to profiles which provide graphic representations of standard scores.

Convincing evidence exists to validate each of the 18 scales. Even attributes such as self-acceptance revealed significant differentiation between high school students rated as high and low on self-acceptance by staff assessment ratings [Ref. 18; pp. 37-40].

c. The 16 PF

The 16 PF is a personality test designed to measure an individual's personality in terms of sixteen basic factors. It was used successfully in a

predictor battery for a Marine Corps Study conducted by Larriva [Ref. 15]. Several of the factors measured by the 16 PF have been associated with recruiter success. These include dominance, aggressiveness, self-confidence, and spontaneity.

E. Testing the model

The expert systems approach is very flexible. An appropriate expert system may be developed and tested based on any criteria set forth by the Recruiting Command. The nature and structure of the hierarchy of attributes within dimensions can be modified easily. An expert or a set of experts could be selected and the program used to extract the knowledge necessary for use in building a system to narrow a field of potential recruiters.

Initial testing might involve applying the model to recruiter trainees at entry to recruiter training school and then tracking the performance of these students. The model could be refined and modified on the basis of such tests. Finally, the model would then be useful as a decision support element at the selection board level or at the Recruiting Command level. Modification of the dimensional hierarchy or the expansion of the knowledge base through the inclusion of alternative or additional experts are both easily accomplished with the expert system shell.

F. Work remaining

The application of expert systems technology to problems of personnel selection is in the very early stages of development. The artificial intelligence field itself is rapidly advancing and promises to provide solutions to many difficult questions. Currently, however, there are severe limitations to the usefulness of these methods in solving so complex a problem as recruiter selection. The model developed here does succeed, to a great extent, in

assigning weights to personal attributes in an objective manner within the context of an unspecified criterion for recruiter success. It does not, however, simulate the intricate processes of human reasoning which are involved in the selection of essential personnel by a large organization.

The work presented here is preliminary and cannot advance without the development of expert systems techniques to accommodate the complex nature of such decisions. Expert systems is, however, a very promising tool, and even at this early point of development, it can provide assistance in structuring the difficult recruiter selection decision.

There are several areas for future work. One is the construction of expert systems shells which better suit the specific decision problem and a tailoring of the knowledge acquisition aspect of the programs to suit the recruiter experts. A second area for further work is the measurement of personality and behavior traits for recruiter candidates so that these values can be used in testing expert systems models. A third task is the continuation of research into the characteristics associated with recruiter success. The hierarchies which provide the basic structure for the expert systems model must come from knowledge of the dynamics of the recruiting process.

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APPENDIX A

The Expert Systems: Profiles of the Successful Recruiter by Expert

Expert #1

Communication Skills 30.49	
Public Speaking Skills	28.19
Writing Skills	6.25
Listening Skills	25.03
Informing	29.13
Persuading	11.39

Demographic Characteristics 32.09	
Age	19.17
Family Support	33.82
AFQT	37.01
College Experience	10.00

Military Background 6.93	
Paygrade	23.72
Years of Svc. (Act.)	23.72
Years of Svc. (Res.)	52.55

Personality Characteristics 19.01	
Self-Image	31.38
Integrity	29.43
Extroverted	17.27
Sense of Humor	16.36
People-Oriented	5.56

Behavior Characteristics 4.95	
Self-Starter	19.50
Commitment	17.45
Flexibility	5.13
Attention to Detail	43.33
Decisiveness	14.58

Specific Experience 6.53	
Sales Experience	45.18
Public Speaking Exp.	30.90
Counselling Exp.	23.92

Profile of the Successful Recruiter

Expert #2.

Communication Skills
29.90

Public Speaking Skills	8.34
Writing Skills	2.84
Listening Skills	35.34
Informing	25.84
Persuading	27.64

Demographic Characteristics
17.63

Age	5.24
Family Support	50.89
AFQT	38.22
College Experience	5.65

Military Background
4.52

Paygrade	84.57
Years of Svc. (Act.)	5.86
Years of Svc. (Res.)	9.57

Personality Characteristics
12.82

Self-Image	17.95
Integrity	60.84
Extroverted	2.90
Sense of Humor	10.66
People-Oriented	7.65

Behavior Characteristics
12.27

Self-Starter	21.82
Commitment	40.21
Flexibility	16.49
Attention to Detail	11.43
Decisiveness	10.06

Specific Experience
22.87

Sales Experience	37.65
Public Speaking Exp.	5.44
Counselling Exp.	56.91

Profile of the Successful Recruiter

Expert #3.

Communication Skills
24.52

Public Speaking Skills	9.93
Writing Skills	4.09
Listening Skills	23.58
Informing	26.74
Persuading	35.66

Demographic Characteristics
19.09

Age	2.70
Family Support	27.32
AFQT	62.61
College Experience	7.36

Military Background
6.71

Paygrade	33.33
Years of Svc. (Act.)	33.33
Years of Svc. (Res.)	33.33

Personality Characteristics
18.75

Self-Image	24.16
Integrity	44.91
Extroverted	14.20
Sense of Humor	5.43
People-Oriented	11.30

Behavior Characteristics
12.69

Self-Starter	32.82
Commitment	12.27
Flexibility	20.76
Attention to Detail	30.01
Decisiveness	4.14

Specific Experience
18.23

Sales Experience	33.33
Public Speaking Exp.	33.33
Counselling Exp.	33.33

Profile of the Successful Recruiter

Expert #4.

Communication Skills
26.68

Public Speaking Skills	10.26
Writing Skills	8.78
Listening Skills	13.21
Informing	21.08
Persuading	46.67

Demographic Characteristics
5.18

Age	13.08
Family Support	22.69
AFQT	38.33
College Experience	25.90

Military Background
51.73

Paygrade	38.70
Years of Svc. (Act.)	14.08
Years of Svc. (Res.)	47.22

Personality Characteristics
2.30

Self-Image	14.48
Integrity	43.22
Extroverted	6.07
Sense of Humor	16.19
People-Oriented	20.03

Behavior Characteristics
8.62

Self-Starter	30.67
Commitment	13.89
Flexibility	28.54
Attention to Detail	15.41
Decisiveness	11.48

Specific Experience
5.49

Sales Experience	58.17
Public Speaking Exp.	20.99
Counselling Exp.	20.84

Profile of the Successful Recruiter

Expert #5.

Communication Skills
14.01

Public Speaking Skills	17.82
Writing Skills	5.12
Listening Skills	44.44
Informing	25.06
Persuading	7.57

Demographic Characteristics
33.78

Age	4.75
Family Support	33.33
AFQT	38.08
College Experience	23.83

Military Background
14.71

Paygrade	46.63
Years of Svc. (Act.)	23.96
Years of Svc. (Res.)	29.41

Personality Characteristics
18.76

Self-Image	14.01
Integrity	50.69
Extroverted	16.43
Sense of Humor	1.99
People-Oriented	16.88

Behavior Characteristics
9.57

Self-Starter	25.09
Commitment	23.92
Flexibility	8.52
Attention to Detail	18.04
Decisiveness	24.43

Specific Experience
9.18

Sales Experience	14.41
Public Speaking Exp.	35.01
Counselling Exp.	50.58

Profile of the Successful Recruiter

Expert #6.

Communication Skills
27.69

Public Speaking Skills	1.63
Writing Skills	8.33
Listening Skills	32.37
Informing	17.96
Persuading	39.71

Demographic Characteristics
9.62

Age	10.99
Family Support	34.70
AFQT	44.51
College Experience	9.80

Military Background
7.60

Paygrade	56.07
Years of Svc. (Act.)	26.09
Years of Svc. (Res.)	17.84

Personality Characteristics
26.90

Self-Image	17.42
Integrity	35.81
Extroverted	9.40
Sense of Humor	10.25
People-Oriented	27.13

Behavior Characteristics
22.79

Self-Starter	28.39
Commitment	16.34
Flexibility	28.85
Attention to Detail	9.28
Decisiveness	17.13

Specific Experience
5.40

Sales Experience	42.18
Public Speaking Exp.	28.45
Counselling Exp.	29.38

Profile of the Successful Recruiter

Expert MAGR

Communication Skills
27.71

Public Speaking Skills	8.16
Writing Skills	4.14
Listening Skills	30.50
Informing	25.90
Persuading	31.29

Demographic Characteristics
17.33

Age	2.90
Family Support	34.25
AFQT	50.97
College Experience	11.88

Military Background
14.66

Paygrade	59.52
Years of Svc. (Act.)	9.67
Years of Svc. (Res.)	30.81

Personality Characteristics
16.73

Self-Image	17.04
Integrity	53.95
Extroverted	11.57
Sense of Humor	7.37
People-Oriented	10.07

Behavior Characteristics
13.63

Self-Starter	30.06
Commitment	27.01
Flexibility	23.01
Attention to Detail	12.04
Decisiveness	7.61

Specific Experience
9.94

Sales Experience	45.15
Public Speaking Exp.	22.82
Counselling Exp.	32.03

Profile of the Successful Recruiter

Expert #7.

Communciation Skills 28.28	
Public Speaking Skills	18.34
Writing Skills	10.57
Listening Skills	23.66
Informing	14.12
Persuading	33.31

Demographic Characteristics 9.77	
Age	3.78
Family Support	33.82
AFQT	43.87
College Experience	18.54

Military Background 13.70	
Paygrade	44.32
Years of Svc. (Act.)	32.15
Years of Svc. (Res.)	23.52

Personality Characteristics 24.99	
Self-Image	29.50
Integrity	41.66
Extroverted	17.53
Sense of Humor	4.46
People-Oriented	6.85

Behavior Characteristics 17.12	
Self-Starter	27.94
Commitment	19.23
Flexibility	15.98
Attention to Detail	24.94
Decisiveness	11.90

Specific Experience 6.13	
Sales Experience	20.04
Public Speaking Exp.	15.27
Counselling Exp.	64.69

Profile of the Successful Recruiter

Expert #8.

Communication Skills
43.65

Public Speaking Skills	20.13
Writing Skills	10.45
Listening Skills	29.27
Informing	31.91
Persuading	8.25

Demographic Characteristics
4.75

Age	32.56
Family Support	7.78
AFQT	41.38
College Experience	18.29

Military Background
3.53

Paygrade	20.33
Years of Svc. (Act.)	45.58
Years of Svc. (Res.)	34.10

Personality Characteristics
25.65

Self-Image	6.58
Integrity	35.18
Extroverted	12.21
Sense of Humor	11.59
People-Oriented	34.45

Behavior Characteristics
10.60

Self-Starter	9.44
Commitment	35.56
Flexibility	37.95
Attention to Detail	11.02
Decisiveness	6.03

Specific Experience
11.81

Sales Experience	22.27
Public Speaking Exp.	45.32
Counselling Exp.	32.41

Profile of the Successful Recruiter

Expert #9.

Communication Skills 11.11

Public Speaking Skills	5.56
Writing Skills	3.52
Listening Skills	27.17
Informing	11.02
Persuading	46.63

Demographic Characteristics 17.16

Age	11.92
Family Support	1.41
AFQT	57.94
College Experience	28.73

Military Background 15.30

Paygrade	62.44
Years of Svc. (Act.)	29.73
Years of Svc. (Res.)	7.83

Personality Characteristics 29.62

Self-Image	15.52
Integrity	26.41
Extroverted	33.88
Sense of Humor	20.96
People-Oriented	3.23

Behavior Characteristics 15.20

Self-Starter	34.45
Commitment	32.48
Flexibility	3.36
Attention to Detail	15.64
Decisiveness	14.08

Specific Experience 11.60

Sales Experience	46.95
Public Speaking Exp.	32.54
Counselling Exp.	20.50

Profile of the Successful Recruiter

Expert #10.

Communication Skills
54.61

Public Speaking Skills	15.66
Writing Skills	6.11
Listening Skills	12.82
Informing	27.42
Persuading	36.99

Demographic Characteristics
5.41

Age	8.84
Family Support	26.04
AFQT	45.58
College Experience	19.54

Military Background
10.50

Paygrade	37.81
Years of Svc. (Act.)	56.61
Years of Svc. (Res.)	5.58

Personality Characteristics
5.96

Self-Image	14.50
Integrity	52.63
Extroverted	10.54
Sense of Humor	14.27
People-Oriented	7.02

Behavior Characteristics
21.44

Self-Starter	3.76
Commitment	9.70
Flexibility	11.51
Attention to Detail	56.86
Decisiveness	13.18

Specific Experience
2.08

Sales Experience	26.06
Public Speaking Exp.	44.73
Counselling Exp.	29.16

Profile of the Successful Recruiter

Expert #11.

Communication Skills
29.95

Public Speaking Skills	9.24
Writing Skills	12.86
Listening Skills	31.77
Informing	21.06
Persuading	25.06

Demographic Characteristics
12.02

Age	21.09
Family Support	35.97
AFQT	32.12
College Experience	10.82

Military Background
13.07

Paygrade	62.46
Years of Svc. (Act.)	21.24
Years of Svc. (Res.)	16.29

Personality Characteristics
15.47

Self-Image	16.88
Integrity	34.75
Extroverted	27.39
Sense of Humor	9.30
People-Oriented	11.68

Behavior Characteristics
30.53

Self-Starter	35.32
Commitment	14.26
Flexibility	16.68
Attention to Detail	10.53
Decisiveness	23.21

Specific Experience
1.95

Sales Experience	31.25
Public Speaking Exp.	31.25
Counselling Exp.	37.50

Profile of the Successful Recruiter

Expert #12.

Communication Skills
44.76

Public Speaking Skills	23.50
Writing Skills	11.29
Listening Skills	12.35
Informing	7.32
Persuading	44.95

Demographic Characteristics
8.74

Age	14.69
Family Support	36.13
AFQT	16.00
College Experience	33.18

Military Background
9.18

Paygrade	11.40
Years of Svc. (Act.)	81.05
Years of Svc. (Res.)	7.55

Personality Characteristics
8.04

Self-Image	1.88
Integrity	81.21
Extroverted	8.84
Sense of Humor	1.00
People-Oriented	7.07

Behavior Characteristics
11.82

Self-Starter	54.12
Commitment	12.35
Flexibility	9.12
Attention to Detail	20.95
Decisiveness	3.46

Specific Experience
17.45

Sales Experience	71.47
Public Speaking Exp.	19.24
Counselling Exp.	9.29

Profile of the Successful Recruiter

Expert #13.

Communication Skills
29.68

Public Speaking Skills	12.13
Writing Skills	3.30
Listening Skills	22.47
Informing	17.78
Persuading	44.02

Demographic Characteristics
0.63

Age	11.74
Family Support	49.23
AFQT	30.05
College Experience	8.97

Military Background
10.17

Paygrade	42.21
Years of Svc. (Act.)	40.88
Years of Svc. (Res.)	16.92

Personality Characteristics
27.47

Self-Image	5.66
Integrity	50.49
Extroverted	27.26
Sense of Humor	3.19
People-Oriented	13.41

Behavior Characteristics
24.53

Self-Starter	12.45
Commitment	50.38
Flexibility	13.61
Attention to Detail	10.52
Decisiveness	13.03

Specific Experience
7.46

Sales Experience	34.91
Public Speaking Exp.	23.54
Counselling Exp.	41.55

Profile of the Successful Recruiter

Expert #14.

Communication Skills
38.11

Public Speaking Skills	8.45
Writing Skills	13.44
Listening Skills	33.13
Informing	11.11
Persuading	28.82

Demographic Characteristics
8.90

Age	14.97
Family Support	24.67
AFQT	54.59
College Experience	5.77

Military Background
8.38

Paygrade	56.15
Years of Svc. (Act.)	37.35
Years of Svc. (Res.)	6.49

Personality Characteristics
7.43

Self-Image	8.45
Integrity	35.98
Extroverted	32.69
Sense of Humor	16.72
People-Oriented	6.17

Behavior Characteristics
20.81

Self-Starter	25.10
Commitment	33.18
Flexibility	9.79
Attention to Detail	21.09
Decisiveness	10.84

Specific Experience
15.88

Sales Experience	24.76
Public Speaking Exp.	52.02
Counselling Exp.	23.22

Profile of the Successful Recruiter

Expert #15.

Communication Skills
24.16

Public Speaking Skills	18.30
Writing Skills	6.82
Listening Skills	20.68
Informing	22.56
Persuading	31.14

Demographic Characteristics
16.70

Age	13.23
Family Support	24.16
AFQT	43.19
College Experience	19.12

Military Background
16.19

Paygrade	24.97
Years of Svc. (Act.)	61.83
Years of Svc. (Res.)	13.20

Personality Characteristics
22.08

Self-Image	13.63
Integrity	58.32
Extroverted	7.85
Sense of Humor	4.39
People-Oriented	15.82

Behavior Characteristics
13.81

Self-Starter	26.66
Commitment	9.05
Flexibility	27.70
Attention to Detail	17.83
Decisiveness	18.70

Specific Experience
7.06

Sales Experience	19.68
Public Speaking Exp.	31.57
Counselling Exp.	43.75

Profile of the Successful Recruiter

Expert #16.

Communication Skills
40.19

Public Speaking Skills	20.82
Writing Skills	2.36
Listening Skills	34.42
Informing	7.73
Persuading	34.62

Demographic Characteristics
27.24

Age	7.75
Family Support	11.73
AFQT	70.74
College Experience	9.73

Military Background
11.38

Paygrade	22.86
Years of Svc. (Act.)	44.04
Years of Svc. (Res.)	33.10

Personality Characteristics
7.94

Self-Image	15.81
Integrity	11.89
Extroverted	61.78
Sense of Humor	3.93
People-Oriented	6.60

Behavior Characteristics
5.66

Self-Starter	45.80
Commitment	18.02
Flexibility	12.17
Attention to Detail	5.89
Decisiveness	18.11

Specific Experience
7.09

Sales Experience	53.96
Public Speaking Exp.	34.59
Counselling Exp.	11.46

Profile of the Successful Recruiter

Expert MRA

Communication Skills
43.44

Public Speaking Skills	14.72
Writing Skills	4.29
Listening Skills	27.14
Informing	17.42
Persuading	36.43

Demographic Characteristics
4.88

Age	10.71
Family Support	26.95
AFQT	50.75
College Experience	11.60

Military Background
7.80

Paygrade	46.15
Years of Svc. (Act.)	49.76
Years of Svc. (Res.)	4.10

Personality Characteristics
13.37

Self-Image	9.70
Integrity	50.67
Extroverted	25.04
Sense of Humor	6.37
People-Oriented	8.21

Behavior Characteristics
18.86

Self-Starter	31.24
Commitment	26.84
Flexibility	16.32
Attention to Detail	16.92
Decisiveness	8.67

Specific Experience
5.54

Sales Experience	34.58
Public Speaking Exp.	38.99
Counselling Exp.	26.43

APPENDIX B

The Expert Systems: Indices, Variance, and Mean Squared Error

Expert #1.

	Fidelity Index	Standards Index	Discrim. Index	Variance Explained	Mean-Sq.Err
Overall Profile	90.3	65.5	18.1	81.54	1.95
Comm. Skills	88.2	66.5	41.8	77.86	4.92
Demog. Charac.	97.8	72.7	23.7	95.82	1.21
Military Backg.	89.6	72.7	22.6	80.37	2.50
Person. Charac.	87.1	74.0	25.2	75.96	3.10
Behavior Charac.	81.7	73.0	20.9	66.79	3.01
Specific Exp.	77.8	70.3	13.9	60.65	2.18

The Expert Systems:
Indices, Variance, and Mean-Squared Error

Expert #2.

	Fidelity Index	Standards Index	Discrim. Index	Variance Explained	Mean-Sq.Err
Overall Profile	86.1	80.0	78.6	74.18	9.98
Comm. Skills	88.2	56.0	96.0	77.89	11.67
Demog. Charac.	97.5	50.0	79.4	95.16	4.37
Military Backg.	97.7	34.4	111.9	95.59	5.87
Person. Charac.	92.0	78.3	99.8	84.71	9.75
Behavior Charac.	92.0	67.5	102.7	84.65	10.06
Specific Exp.	96.1	33.8	70.4	92.39	4.85

The Expert Systems:
Indices, Variance, and Mean-Squared Error

Expert #3.

	Fidelity Index	Standards Index	Discrim. Index	Variance Explained	Mean-Sq.Err
Overall Profile	89.4	99.3	55.9	80.03	6.25
Comm. Skills	94.5	43.5	82.0	89.43	6.66
Demog. Charac.	95.0	49.2	92.1	90.40	7.13
Military Backg.	91.1	59.4	31.2	83.08	3.21
Person. Charac.	95.4	67.0	85.2	91.18	6.33
Behavior Charac.	93.9	65.0	53.7	88.18	4.61
Specific Exp.	89.4	56.3	17.3	80.00	1.94

The Expert Systems:
Indices, Variance, and Mean-Squared Error

Expert #4.

	Fidelity Index	Standards Index	Discrim. Index	Variance Explained	Mean-Sq.Err
Overall Profile	92.8	59.2	79.2	86.19	7.36
Comm. Skills	90.1	49.0	88.0	81.35	9.50
Demog. Charac.	75.4	48.6	70.3	56.86	11.54
Military Backg.	87.0	28.1	69.1	75.81	8.50
Person. Charac.	85.7	80.0	86.9	73.60	11.16
Behavior Charac.	89.5	59.0	50.4	80.20	5.61
Specific Exp.	96.6	37.8	61.8	93.48	3.95

The Expert Systems:
Indices, Variance, and Mean-Squared Error

Expert #5.

	Fidelity Index	Standards Index	Discrim. Index	Variance Explained	Mean-Sq.Err
Overall Profile	94.5	80.0	47.7	89.39	3.88
Comm. Skills	93.4	66.0	73.2	87.26	6.53
Demog. Charac.	93.6	50.0	70.7	87.70	6.20
Military Backg.	96.7	50.0	66.3	93.64	4.18
Person. Charac.	94.3	79.0	75.4	88.97	6.26
Behavior Charac.	96.9	64.0	60.5	93.95	3.72
Specific Exp.	96.5	52.3	56.2	93.19	3.67

The Expert Systems:
Indices, Variance, and Mean-Squared Error

Expert #6.

	Fidelity Index	Standards Index	Discrim. Index	Variance Explained	Mean-Sq.Err
Overall Profile	97.9	58.0	62.2	96.02	3.10
Comm. Skills	96.0	42.4	76.5	92.17	5.35
Demog. Charac.	96.4	51.6	64.4	93.00	4.26
Military Backg.	89.2	40.6	61.4	79.74	6.92
Person. Charac.	95.6	57.0	58.5	91.50	4.27
Behavior Charac.	96.9	60.5	55.6	93.91	3.43
Specific Exp.	93.5	29.7	62.4	87.51	5.51

The Expert Systems:
Indices, Variance, and Mean-Squared Error

Expert #7.

	Fidelity Index	Standards Index	Discrim. Index	Variance Explained	Mean-Sq.Err
Overall Profile	95.9	51.4	43.7	92.08	3.08
Comm. Skills	87.5	42.6	68.8	76.73	8.29
Demog. Charac.	93.6	45.0	59.5	87.77	5.20
Military Backg.	86.6	35.6	55.9	75.04	6.99
Person. Charac.	90.8	56.9	57.6	82.48	6.03
Behavior Charac.	92.8	55.0	39.7	86.24	3.68
Specific Exp.	93.4	48.9	23.7	87.39	2.10

The Expert Systems:
Indices, Variance, and Mean-Squared Error

Expert #8.

	Fidelity Index	Standards Index	Discrim. Index	Variance Explained	Mean-Sq.Err
Overall Profile	91.2	77.0	83.8	83.27	8.57
Comm. Skills	87.7	45.0	74.2	76.93	8.91
Demog. Charac.	93.6	42.2	57.8	87.63	5.09
Military Backg.	91.5	35.9	52.9	83.85	5.31
Person. Charac.	78.3	67.0	81.4	61.33	12.65
Behavior Charac.	82.4	81.6	92.4	67.90	13.09
Specific Exp.	92.2	67.2	56.1	85.01	5.43

The Expert Systems:
Indices, Variance, and Mean-Squared Error

Expert #9.

	Fidelity Index	Standards Index	Discrim. Index	Variance Explained	Mean-Sq.Err
Overall Profile	83.3	62.0	69.9	69.43	9.66
Comm. Skills	88.0	58.0	86.0	77.52	10.19
Demog. Charac.	78.1	53.1	102.8	61.04	16.05
Military Backg.	90.4	35.9	94.8	81.86	10.10
Person. Charac.	75.4	63.0	92.7	56.90	15.21
Behavior Charac.	83.3	71.1	93.4	69.47	12.10
Specific Exp.	92.7	29.8	84.9	86.07	7.92

The Expert Systems:
Indices, Variance, and Mean-Squared Error

Expert #10.

	Fidelity Index	Standards Index	Discrim. Index	Variance Explained	Mean-Sq.Err
Overall Profile	95.4	61.0	89.1	91.13	6.63
Comm. Skills	94.6	64.0	79.9	89.49	6.47
Demog. Charac.	96.5	54.7	66.7	93.16	4.36
Military Backg.	91.0	52.3	68.6	82.96	7.08
Person. Charac.	94.1	79.1	100.8	88.61	8.50
Behavior Charac.	96.0	66.5	84.4	92.22	5.89
Specific Exp.	96.5	48.4	71.0	93.28	4.60

The Expert Systems:
Indices, Variance, and Mean-Squared Error

Expert #11.

	Fidelity Index	Standards Index	Discrim. Index	Variance Explained	Mean-Sq.Err
Overall Profile	86.7	70.0	76.0	75.34	9.44
Comm. Skills	81.7	38.3	124.2	66.88	17.87
Demog. Charac.	95.8	32.8	74.5	91.82	5.33
Military Backg.	96.3	48.4	78.1	92.76	5.25
Person. Charac.	85.0	87.1	95.0	72.40	12.47
Behavior Charac.	95.1	63.0	79.3	90.57	6.09
Specific Exp.	97.0	31.3	85.4	94.25	5.12

The Expert Systems:
Indices, Variance, and Mean-Squared Error

Expert #12.

	Fidelity Index	Standards Index	Discrim. Index	Variance Explained	Mean-Sq.Err
Overall Profile	95.0	17.8	103.8	90.38	8.05
Comm. Skills	96.6	6.9	90.3	93.37	5.81
Demog. Charac.	92.7	5.5	58.9	86.00	5.51
Military Backg.	98.6	28.0	70.5	97.32	2.89
Person. Charac.	98.0	30.9	121.9	96.13	6.00
Behavior Charac.	96.0	20.1	101.4	92.34	7.02
Specific Exp.	94.3	11.9	74.3	88.99	6.16

The Expert Systems:
Indices, Variance, and Mean-Squared Error

Expert #13.

	Fidelity Index	Standards Index	Discrim. Index	Variance Explained	Mean-Sq.Err
Overall Profile	96.0	55.5	62.2	92.16	4.36
Comm. Skills	96.7	64.0	62.1	93.59	3.93
Demog. Charac.	98.2	62.5	46.9	96.48	2.20
Military Backg.	89.4	57.8	46.3	80.00	5.18
Person. Charac.	97.3	73.5	66.0	94.83	3.75
Behavior Charac.	95.9	68.0	62.0	92.11	4.41
Specific Exp.	95.2	49.2	53.1	90.78	4.03

The Expert Systems:
Indices, Variance, and Mean-Squared Error

Expert #14.

	Fidelity Index	Standards Index	Discrim. Index	Variance Explained	Mean-Sq.Err
Overall Profile	88.7	84.7	82.3	78.82	9.50
Comm. Skills	85.9	92.7	64.5	73.85	8.39
Demog. Charac.	96.0	82.0	114.8	92.29	8.02
Military Backg.	69.1	41.6	49.5	47.83	8.94
Person. Charac.	85.6	100.3	85.0	73.41	11.16
Behavior Charac.	79.6	109.7	67.2	63.45	10.20
Specific Exp.	86.2	31.3	62.4	74.36	7.91

The Expert Systems:
Indices, Variance, and Mean-Squared Error

Expert #15.

	Fidelity Index	Standards Index	Discrim. Index	Variance Explained	Mean-Sq.Err
Overall Profile	94.1	62.0	88.1	88.62	7.95
Comm. Skills	90.7	60.6	80.7	82.32	8.48
Demog. Charac.	93.4	76.6	59.5	87.30	5.29
Military Backg.	97.5	69.5	83.7	95.14	5.28
Person. Charac.	93.0	69.3	78.7	86.66	7.25
Behavior Charac.	92.9	58.5	61.1	86.44	5.63
Specific Exp.	93.4	68.8	67.8	87.28	6.05

The Expert Systems:
Indices, Variance, and Mean-Squared Error

Expert #16.

	Fidelity Index	Standards Index	Discrim. Index	Variance Explained	Mean-Sq.Err
Overall Profile	92.6	60.7	92.4	85.83	8.65
Comm. Skills	90.2	71.8	76.3	81.38	8.21
Demog. Charac.	97.1	59.7	100.2	94.31	6.08
Military Backg.	92.4	78.1	64.3	85.44	6.14
Person. Charac.	93.5	47.4	98.8	87.59	8.70
Behavior Charac.	92.3	57.4	84.3	85.33	7.89
Specific Exp.	95.1	39.8	74.1	90.47	5.72

The Expert Systems:
Indices, Variance, and Mean-Squared Error

Expert MAGR

	Fidelity Index	Standards Index	Discrim. Index	Variance Explained	Mean-Sq.Err
Overall Profile	97.3	73.5	40.9	94.78	2.78
Comm. Skills	98.2	53.5	64.8	96.55	2.82
Demog. Charac.	96.6	53.4	58.3	93.47	3.73
Military Backg.	96.7	46.4	45.7	93.61	2.89
Person. Charac.	96.2	74.0	60.9	92.62	4.14
Behavior Charac.	97.5	46.3	48.4	95.21	2.65
Specific Exp.	96.7	46.3	38.3	93.70	2.40

The Expert Systems:
Indices, Variance, and Mean-Squared Error

Expert MRA

	Fidelity Index	Standards Index	Discrim. Index	Variance Explained	Mean-Sq.Err
Overall Profile	97.0	59.9	62.1	94.17	3.73
Comm. Skills	96.5	54.8	68.1	93.21	4.31
Demog. Charac.	98.0	51.4	60.6	96.07	3.01
Military Backg.	96.9	48.3	53.0	94.01	3.24
Person. Charac.	97.1	67.5	66.8	94.35	3.94
Behavior Charac.	96.4	65.2	53.4	92.97	3.35
Specific Exp.	97.9	42.7	51.8	95.97	2.60

APPENDIX C

Attribute Ratings of Hypothetical Recruiter Applicants

Applicant	A	B	C	D	E	F	G	H	I	J
Attribute										
Public speaking	1	9	5	2	7	2	3	4	6	8
Writing	1	9	5	8	3	6	7	4	2	3
Listening	1	9	5	3	8	4	2	4	6	2
Informing	1	9	5	4	5	3	6	4	7	8
Persuading	1	9	5	4	6	3	2	4	8	7
Age	1	9	5	7	5	5	6	5	8	6
Family support	1	9	5	2	6	3	8	4	7	2
AFQT	1	9	5	5	5	8	7	5	6	5
College exp.	1	9	5	9	2	6	3	4	7	2
Paygrade	1	9	5	7	5	6	8	5	9	6
YOS (A)	1	9	5	4	3	2	6	4	1	3
YOS (R)	1	9	5	4	2	6	1	4	3	4
Self-image	1	9	5	8	6	2	4	4	7	3
Integrity	1	9	5	4	7	3	2	4	6	5
Extroverted	1	9	5	8	5	4	3	4	2	6
Sense of humor	1	9	5	2	1	8	6	4	3	7
People-oriented	1	9	5	8	5	3	2	4	6	7
Self-starter	1	9	5	7	6	2	8	4	3	5
Commitment	1	9	5	1	4	3	2	4	6	7
Flexibility	1	9	5	4	2	6	7	4	8	3
Attention to Detail	1	9	5	4	2	7	3	4	6	8

Applicant	A	B	C	D	E	F	G	H	I	J
Attribute										
Decisiveness	1	9	5	8	2	6	3	4	7	5
Sales exp.	1	9	5	4	6	2	3	4	7	2
Public speaking exp.	1	9	5	2	1	3	4	4	8	2
Counselling exp.	1	9	5	8	1	4	6	4	2	9

Applicant	K	L	M	N	O	P	S	T	U	V
Attribute										
Public speaking	2	7	1	8	6	9	3	5	4	2
Writing	2	7	1	8	4	3	7	2	9	9
Listening	2	7	8	1	6	2	9	4	3	2
Informing	2	7	8	1	4	4	5	5	2	9
Persuading	2	7	8	1	6	9	4	7	3	2
Age	5	7	5	5	6	7	8	9	5	9
Family support	2	7	8	1	4	5	8	3	2	2
AFQT	5	7	8	1	6	8	6	5	7	9
College exp.	2	7	1	8	4	2	3	5	1	2
Paygrade	5	7	8	5	6	6	8	7	9	9
YOS (A)	2	7	8	1	4	3	9	5	6	2
YOS (R)	2	7	1	8	6	8	1	2	4	9
Self-image	2	7	1	8	4	9	5	5	3	2
Integrity	2	7	8	1	6	5	9	2	2	9

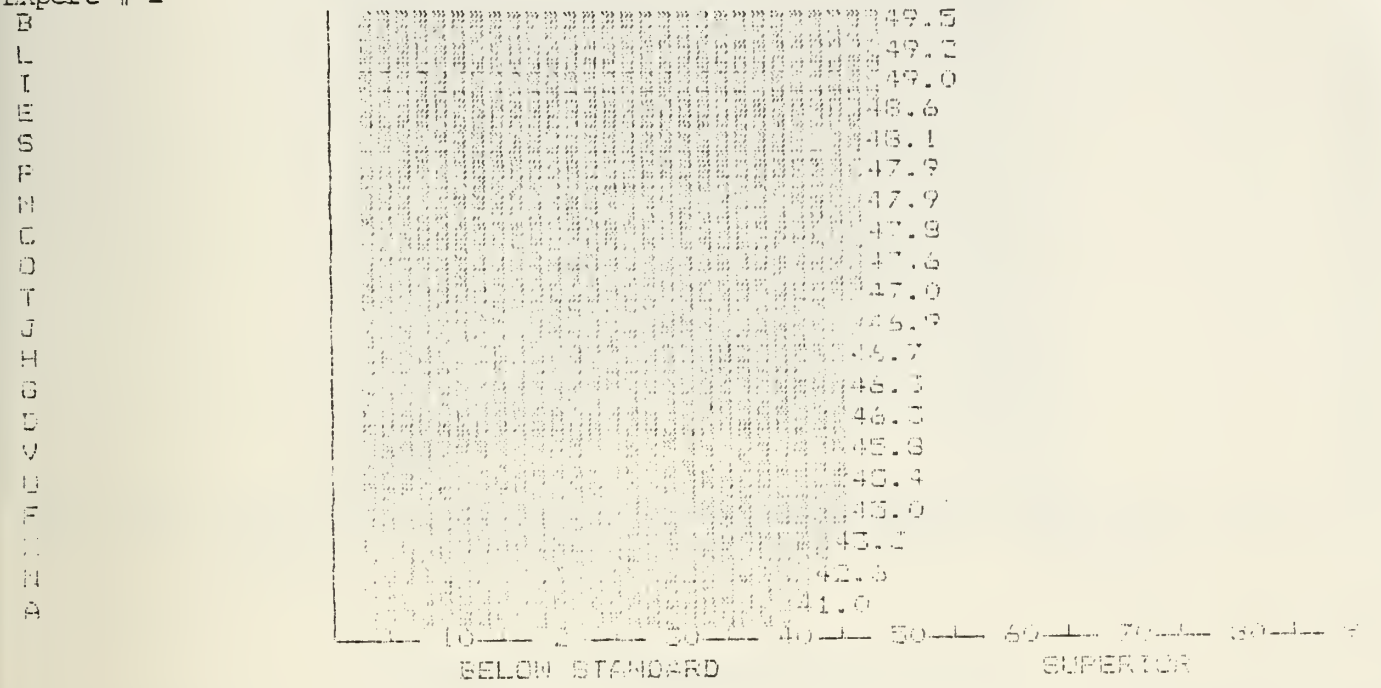
Applicant	K	L	M	N	O	P	S	T	U	V
Attribute										
Extroverted	2	7	8	1	4	9	4	4	6	2
Sense of humor	2	7	1	8	6	4	2	8	3	9
People-oriented	2	7	8	1	4	5	6	3	7	2
Self-starter	2	7	8	1	6	6	8	7	2	9
Commitment	2	7	8	1	4	3	9	2	6	2
Flexibility	2	7	1	8	6	2	5	3	4	9
Attention to Detail	2	7	1	8	4	5	6	9	2	2
Decisiveness	2	7	1	8	6	8	3	7	3	9
Sales exp.	2	7	8	1	4	9	1	8	2	2
Public speaking exp.	2	7	1	8	6	9	3	7	1	9
Counselling exp.	2	7	1	8	4	1	9	2	2	2

Appendix D

The Expert Systems: Evaluations of Hypothetical Recruiter Applicants

Candidate Rankings Based on Expert Systems

Expert # 1



EVALUATION OF CONCEPTS

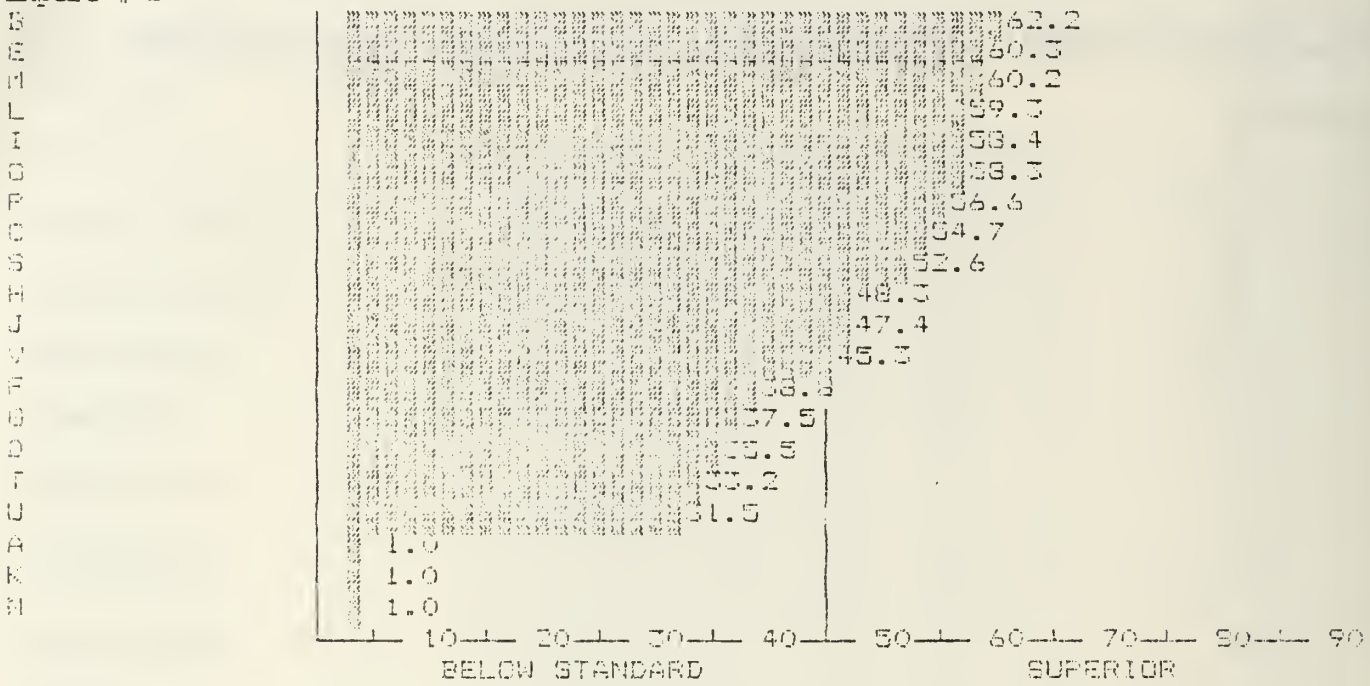
TASK = RECRUIT

EXPERTS:----	#1						
CONCEPTS:----	COMMUNI	DEMOGRA	MILITAR	PERSONA	BEHAVIO	SPECIFI	OVERALL
A	18.9	32.7	36.0	27.1	28.7	44.5	41.0
B	64.5	51.2	34.2	47.9	47.5	49.5	49.5
C	45.1	41.7	43.7	43.3	43.5	39.5	47.8
D	33.4	38.1	40.3	48.6	41.8	42.4	46.3
E	54.0	42.8	36.7	49.6	36.0	49.5	48.1
F	30.6	39.1	46.1	37.6	42.6	38.4	45.0
G	38.0	46.7	26.1	34.0	39.1	37.9	46.3
H	39.2	39.5	42.5	40.3	40.8	39.4	46.7
I	50.5	47.3	36.2	44.4	44.3	46.1	49.0
J	46.6	34.5	42.1	40.8	46.5	41.2	46.9
K	26.1	35.0	37.2	32.2	33.4	41.9	43.3
L	55.7	47.1	41.1	47.0	46.9	42.7	43.2
M	49.0	46.7	23.6	43.1	34.3	51.5	47.9
N	30.2	23.2	47.7	31.8	41.9	38.6	42.6
O	46.8	40.1	44.8	41.3	42.3	39.1	47.6
P	42.5	41.5	45.8	47.5	42.7	51.5	47.9
S	50.0	47.0	20.2	45.9	46.5	38.5	48.1
T	46.7	38.8	32.9	36.7	45.0	45.7	47.0
U	35.1	36.4	35.6	37.9	35.2	44.2	45.4
V	39.1	35.5	41.3	35.2	36.8	48.2	45.8

* * * CONCEPTUAL LEVEL * * *

CONCEPT = PROFILE OF THE SUCCESSFUL RECRUITER EXPERT SYSTEM

Expert # 2



EVALUATION OF CONCEPTS

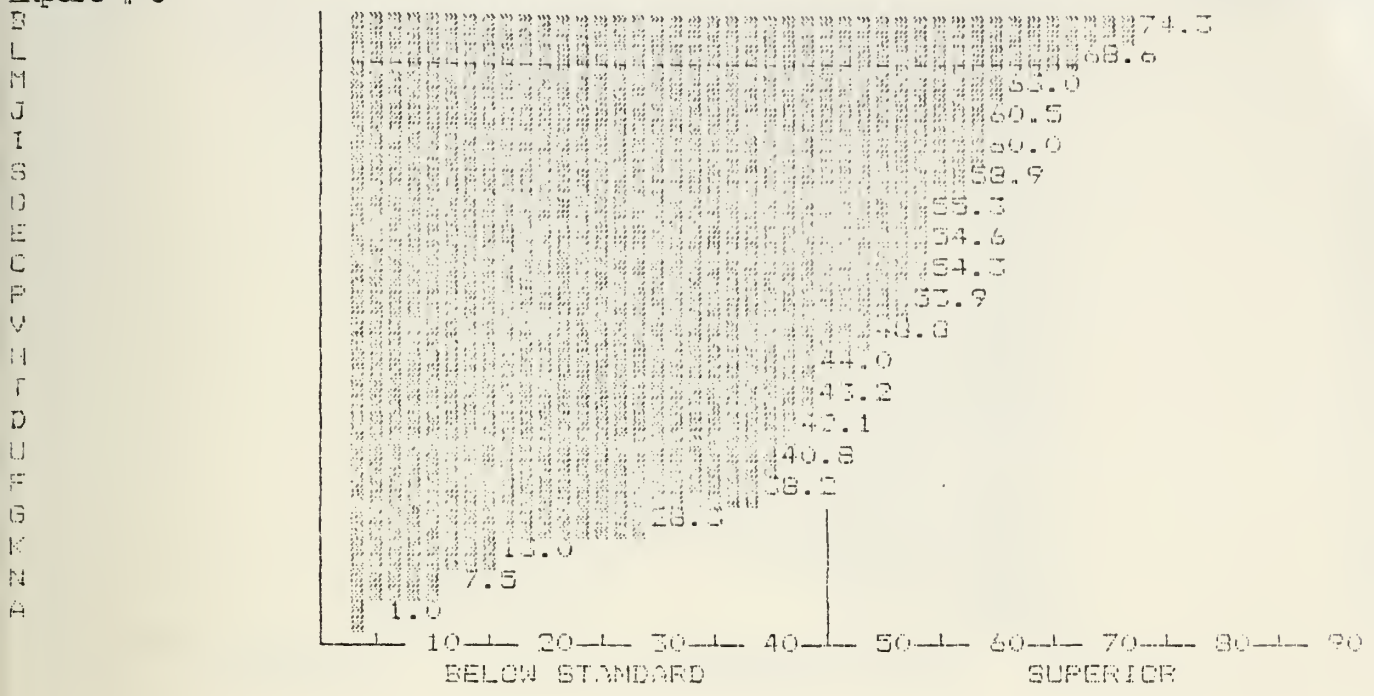
TASK = RECRUIT

EXPERTS:----	#2						
CONCEPTS:----	COMMUNI	DEMOGRA	MILITAR	PERSONA	BEHAVIO	SPECIFI	OVERALL
A	1.0	24.1	66.5	1.0	1.0	19.9	1.0
B	94.3	75.6	77.3	67.5	68.4	99.0	62.2
C	54.5	58.6	70.3	48.2	56.6	53.7	54.7
D	36.0	29.4	80.8	38.5	29.6	70.8	35.5
E	72.2	67.8	64.8	53.3	47.8	44.2	60.3
F	31.6	30.9	75.8	25.5	23.8	32.7	38.8
G	24.2	80.7	77.8	17.4	44.1	50.1	37.5
H	40.2	51.8	68.3	37.4	45.2	43.6	48.3
I	74.6	68.5	64.4	54.7	48.2	52.1	58.4
J	51.3	34.1	75.3	42.7	52.4	72.6	47.4
K	6.5	34.6	62.3	8.7	12.1	26.7	1.0
L	77.8	74.0	85.1	62.6	69.3	77.3	59.3
M	80.5	86.2	74.6	46.1	68.7	53.0	60.2
N	1.0	1.0	67.7	11.0	1.0	57.7	1.0
O	60.5	55.7	80.0	53.7	54.3	44.2	58.3
P	54.0	69.4	82.6	58.3	37.3	59.7	56.6
S	63.9	73.8	71.6	58.9	82.4	68.9	52.6
T	56.5	34.3	79.7	17.9	21.7	57.3	33.2
U	21.2	43.8	73.8	10.7	49.1	24.8	31.5
V	25.4	37.1	78.8	57.5	41.0	99.0	45.3

* * * CONCEPTUAL LEVEL * * *

CONCEPT = PROFILE OF THE SUCCESSFUL RECRUITER EXPERT SYSTEM =

Expert # 3



EVALUATION OF CONCEPTS

TASK = RECRUIT

EXPERTS:---- #3

CONCEPTS:----	COMMUNI	DEMOGRA	MILITAR	PERSONA	BEHAVIO	SPECIFI	OVERALL
A	2.2	21.5	43.8	1.5	1.0	8.3	1.0
B	79.4	60.5	83.8	67.1	74.6	83.8	74.3
C	48.0	50.5	39.8	46.9	48.2	52.3	54.3
D	34.7	31.4	46.7	48.4	23.5	51.6	42.1
E	58.4	50.8	42.2	53.6	33.8	28.5	51.6
F	30.1	47.7	38.4	33.2	37.0	30.9	32.1
G	24.2	60.7	67.4	18.5	31.1	46.7	28.5
H	37.9	45.1	38.5	37.9	38.2	42.4	44.0
I	62.8	55.4	58.7	41.1	57.6	51.0	60.0
J	56.6	29.7	40.5	53.9	54.7	50.3	60.5
K	15.0	30.6	41.5	15.2	14.2	20.4	13.0
L	65.5	59.8	56.2	60.1	64.1	69.6	68.6
M	63.4	60.5	77.2	67.0	45.3	31.6	63.0
N	11.8	13.4	37.3	1.0	24.9	53.8	7.5
O	52.8	46.8	40.6	47.8	46.0	47.1	55.3
P	53.8	51.5	41.3	48.3	39.1	50.3	53.9
S	47.5	54.7	83.4	55.7	57.4	47.3	58.9
T	51.1	32.8	54.4	23.7	34.6	50.0	43.2
U	27.5	33.8	64.5	33.9	40.1	17.6	40.8
V	30.7	31.6	59.6	46.5	42.3	66.1	48.8

* * * CONCEPTUAL LEVEL * * *

CONCEPT = PROFILE OF THE SUCCESSFUL RECRUITER EXPERT SYSTEM

Expert # 4

EVALUATION OF CONCEPTS

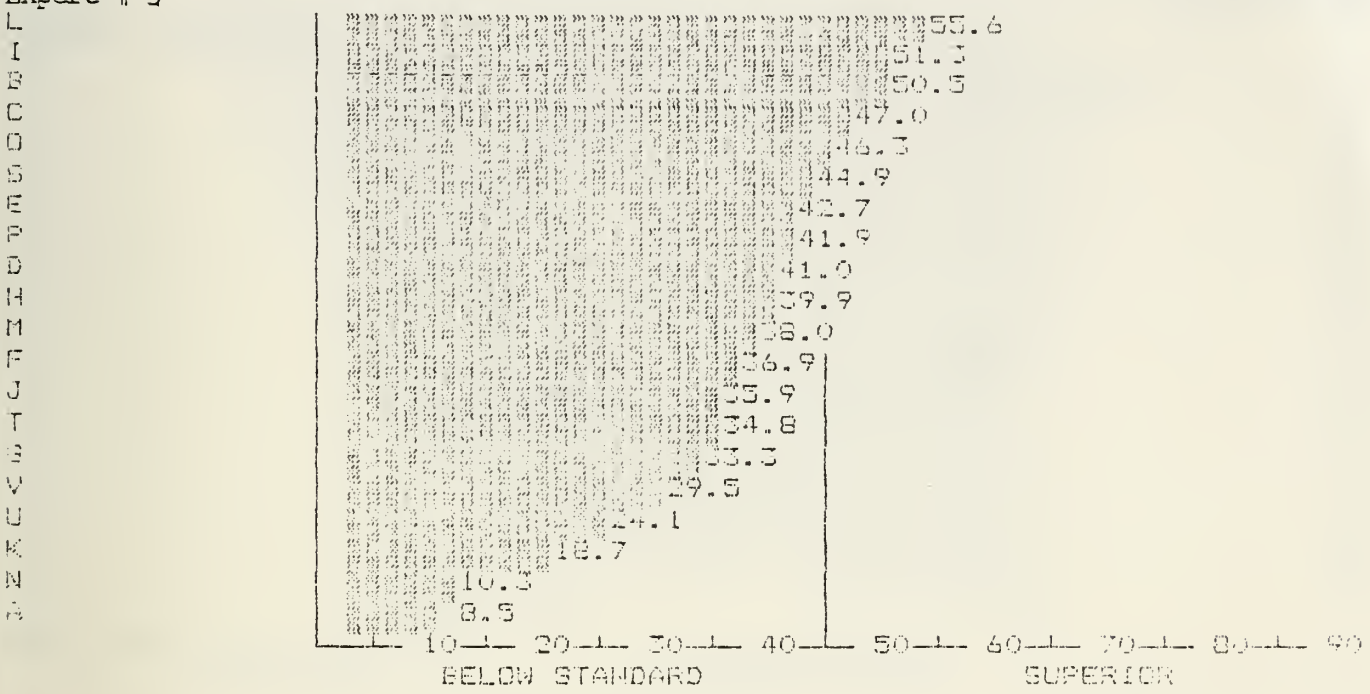
TASK = RECRUIT

EXPERTS:---- CONCEPTS:----	#4 COMMUNI	DEMOGRA	MILITAR	PERSONA	BEHAVIO	SPECIFI	OVERALL
A	1.0	33.7	47.2	4.1	5.3	28.2	9.1
B	83.7	40.2	67.7	59.7	66.1	83.0	53.1
C	55.5	57.8	56.4	48.9	53.5	49.6	52.4
D	39.9	35.0	60.0	50.0	44.3	49.4	45.2
E	68.0	64.2	46.0	58.7	39.3	40.0	53.3
F	34.6	41.2	58.6	26.9	40.7	37.0	41.1
G	31.0	57.7	52.7	22.3	49.7	45.0	40.6
H	44.1	54.9	53.3	40.9	44.7	43.2	48.0
I	70.2	56.2	54.6	53.5	50.1	56.4	53.3
J	55.9	43.0	55.9	44.5	52.5	48.9	49.8
K	16.2	43.9	44.1	18.5	20.7	32.5	26.9
L	73.0	54.5	65.9	58.5	64.2	64.8	55.0
M	71.1	58.9	50.5	51.2	42.9	48.2	52.5
N	7.9	14.6	55.1	13.1	28.7	53.6	15.5
O	59.4	53.7	61.7	48.7	54.2	46.4	53.2
P	51.4	55.5	63.3	55.1	43.8	66.0	51.3
S	59.7	59.0	48.5	59.0	64.7	49.6	53.6
T	57.2	46.7	54.5	35.2	46.2	59.6	45.5
U	30.7	43.6	63.6	28.7	38.6	30.2	41.6
V	34.7	33.2	68.3	41.5	49.6	72.3	42.6

* * * CONCEPTUAL LEVEL * * *

CONCEPT = PROFILE OF THE SUCCESSFUL RECRUITER EXPERT SYSTEM =

Expert # 5



EVALUATION OF CONCEPTS

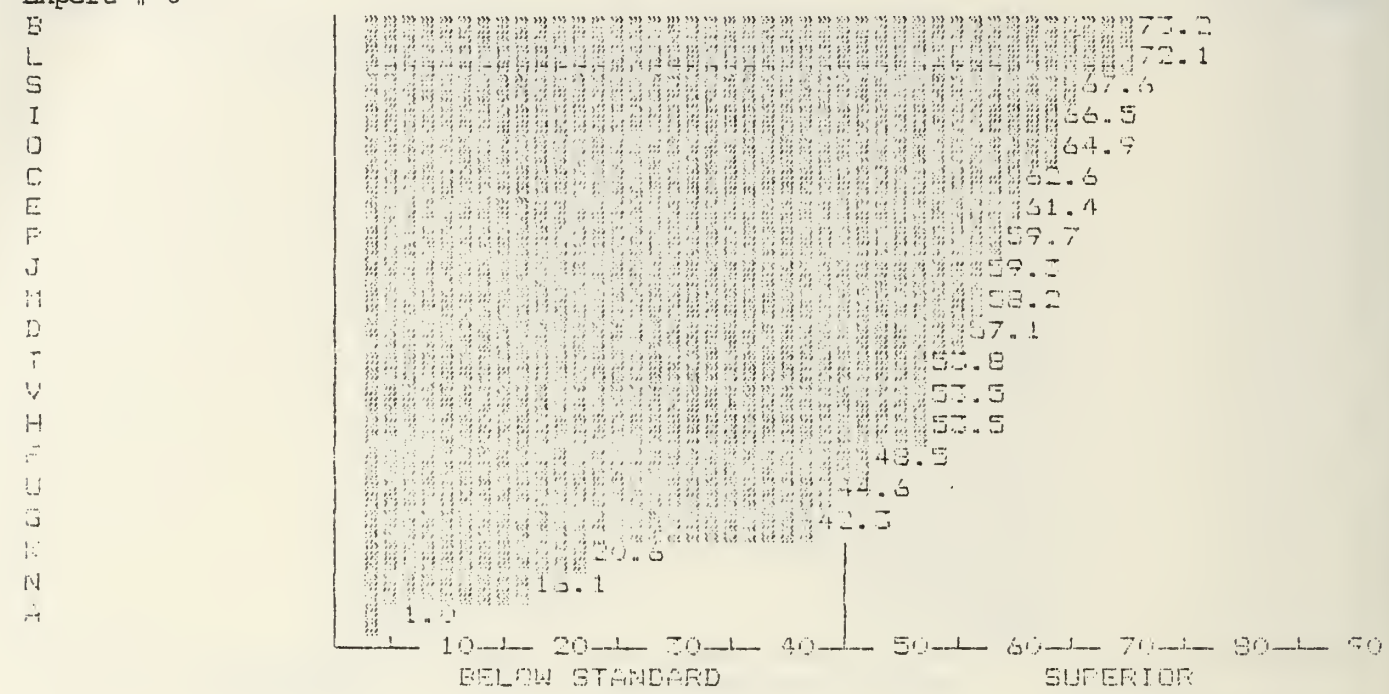
TASK = RECRUIT

EXPERTS:----	#5						
CONCEPTS:----	COMMUNI	DEMOGRA	MILITAR	PERSONA	BEHAVIO	SPECIFI	OVERALL
A	1.0	14.1	46.7	1.0	1.0	17.3	8.5
B	70.5	65.1	51.4	63.0	72.7	92.8	50.5
C	54.7	64.1	39.4	49.8	55.1	46.3	47.0
D	33.9	50.9	64.9	51.5	43.7	52.1	41.0
E	65.8	53.3	48.8	60.5	33.1	24.0	42.7
F	33.3	57.0	72.5	26.1	42.9	30.3	36.9
G	30.3	62.3	40.4	13.5	45.5	45.0	33.3
H	43.8	55.3	38.2	38.9	44.0	37.4	39.9
I	63.0	73.5	63.4	52.1	53.2	51.0	51.3
J	42.0	29.8	64.6	49.2	59.8	60.0	35.9
K	13.7	30.3	50.2	8.5	13.8	22.9	18.7
L	68.2	75.8	62.9	63.1	69.3	67.4	55.6
M	56.7	50.1	31.9	55.7	37.2	27.7	38.0
N	8.5	3.8	70.5	1.0	29.8	69.2	10.3
O	57.0	57.8	69.0	49.1	54.8	44.3	46.3
P	29.4	50.5	72.6	55.4	46.9	57.3	41.9
S	59.8	58.8	26.7	59.1	68.9	64.4	44.9
T	49.7	46.3	50.8	21.1	51.4	51.5	34.8
U	32.3	28.1	58.2	27.1	34.0	16.8	24.1
V	33.3	21.3	74.6	39.2	45.6	71.5	29.5

* * * CONCEPTUAL LEVEL * * *

CONCEPT = PROFILE OF THE SUCCESSFUL RECRUITER EXPERT SYSTEM

Expert # 6



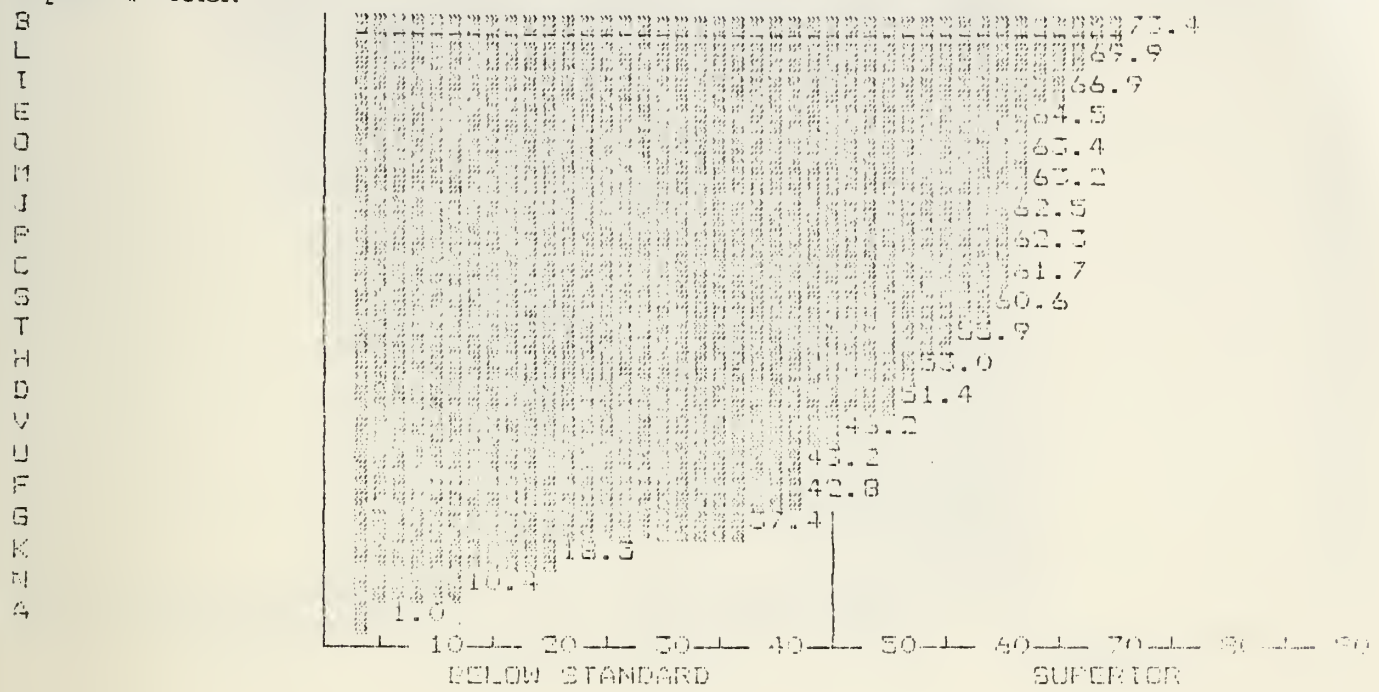
EVALUATION OF CONCEPTS

TASK = RECRUIT

EXPERTS:----	#6						
CONCEPTS:----	COMMUNI	DEMOGRA	MILITAR	PERSONA	BEHAVIO	SPECIFI	OVERALL
A	1.0	34.9	47.8	2.1	1.0	30.1	1.0
B	90.1	84.4	87.3	71.7	75.3	99.0	73.2
C	60.6	50.9	55.3	57.5	53.7	51.1	62.6
D	44.0	43.1	62.3	58.3	51.9	53.6	57.1
E	75.2	53.8	44.8	63.0	34.3	39.6	61.4
F	41.0	57.2	53.9	38.1	43.9	37.1	48.5
G	32.0	71.8	66.5	28.9	52.4	46.5	42.3
H	48.5	46.0	51.3	47.5	43.3	41.6	53.5
I	73.3	62.2	60.8	58.7	57.8	68.0	66.5
J	56.3	36.8	53.8	60.3	48.0	56.9	59.3
K	18.6	38.0	41.3	19.8	16.8	31.1	20.6
L	79.2	68.9	72.6	69.7	68.4	78.5	72.1
M	78.5	76.5	68.0	56.3	33.2	54.4	58.2
N	7.8	14.8	47.6	17.8	40.2	72.1	16.1
O	66.1	49.8	60.3	55.7	58.3	48.1	64.9
P	55.2	59.3	60.8	54.2	48.0	90.1	59.7
S	71.8	63.2	67.8	63.1	58.8	59.8	67.6
T	59.7	34.6	61.1	39.5	47.4	71.3	53.8
U	32.1	47.3	77.3	42.4	33.8	30.1	44.6
V	31.6	45.5	75.5	46.3	65.8	92.2	53.5

* * * CONCEPTUAL LEVEL * * *

CONCEPT = PROFILE OF THE SUCCESSFUL RECRUITER EXPERT SYSTEM =



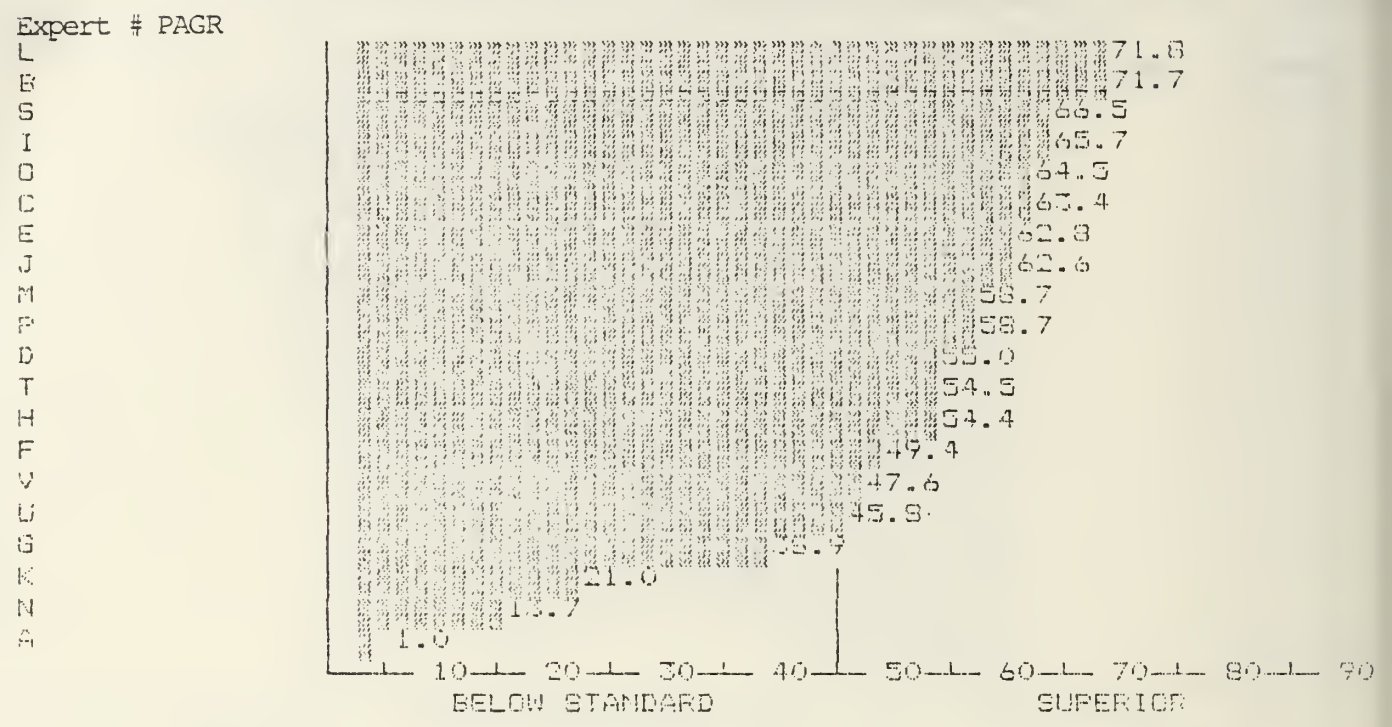
EVALUATION OF CONCEPTS

TASK = RECRUIT

EXPERTS:---- CONCEPTS:----	#MAGR COMMUNI	DEMOGRA	MILITAR	PERSONA	BEHAVIO	SPECIFI	OVERALL
A	1.0	33.7	50.5	1.2	1.0	9.0	1.0
B	86.5	73.0	74.6	65.0	68.5	86.3	73.4
C	54.4	57.6	53.7	52.9	54.0	55.4	61.7
D	36.4	51.6	55.9	59.4	40.5	44.9	51.4
E	66.2	56.4	45.4	62.9	38.2	27.3	64.5
F	31.6	61.7	41.6	30.7	40.7	33.3	42.8
G	27.5	66.2	67.8	20.5	45.7	46.7	37.4
H	42.4	53.1	49.6	43.7	44.1	45.2	53.0
I	70.8	67.2	42.9	51.0	51.3	60.9	66.9
J	57.8	41.5	48.0	52.5	57.8	39.4	62.5
K	13.7	41.1	39.7	17.8	16.6	22.0	18.5
L	73.6	71.8	66.6	63.9	66.3	72.7	69.9
M	65.7	66.3	73.9	63.8	40.6	34.4	63.2
N	12.1	8.4	31.2	3.1	27.3	34.6	10.4
O	59.6	58.3	52.4	51.0	53.4	52.1	63.4
P	55.2	64.6	46.7	63.4	44.1	65.6	62.3
S	54.9	61.2	76.0	57.4	63.8	40.9	60.6
T	57.1	46.8	61.3	24.9	50.5	62.8	55.9
U	31.7	48.8	68.0	34.6	35.0	16.0	43.2
V	31.4	48.6	47.2	37.6	43.7	64.5	46.2

* * * CONCEPTUAL LEVEL * * *

CONCEPT = PROFILE OF THE SUCCESSFUL RECRUITER EXPERT SYSTEM



EVALUATION OF CONCEPTS

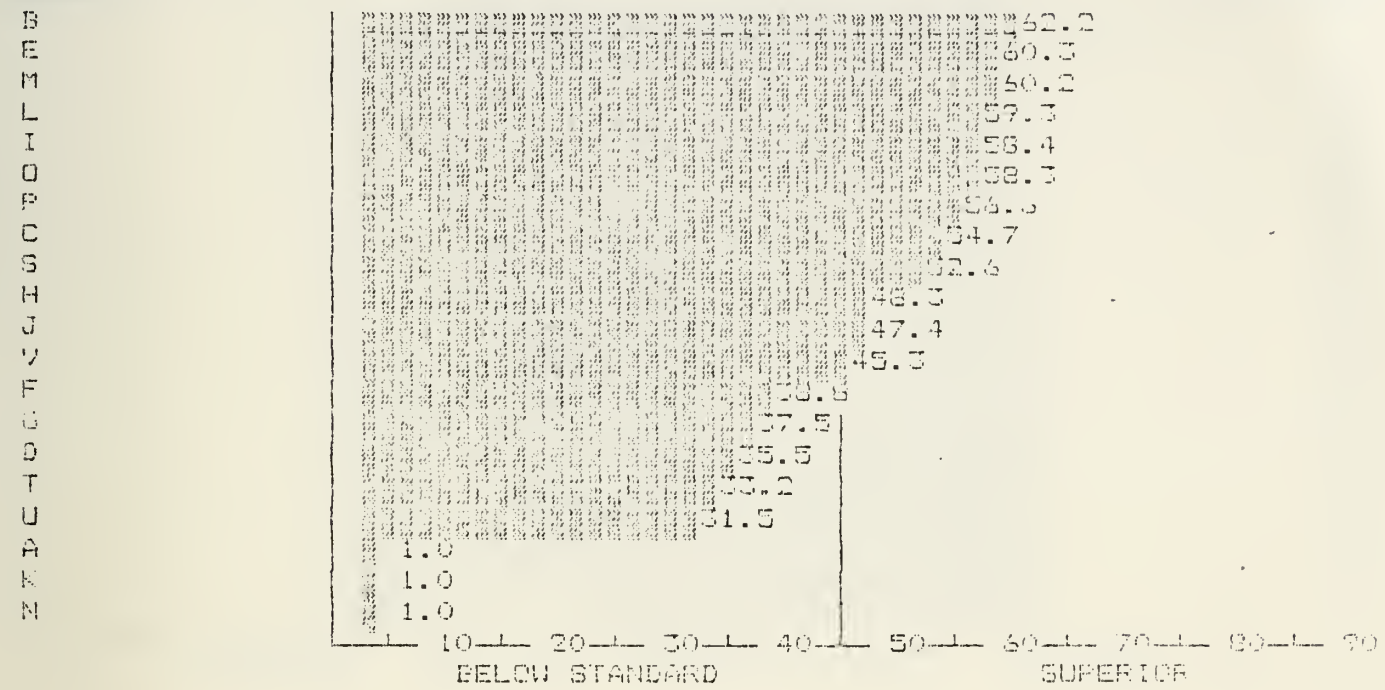
TASK = RECRUIT

EXPERTS:---- / CONCEPTS:----	#PAGR COMMUNI	DEMOGRA	MILITAR	PERSONA	BEHAVIO	SPECIFI	OVERALL
A	1.0	34.9	46.7	2.1	1.0	17.3	1.0
B	90.1	84.4	51.4	71.7	72.7	92.8	71.7
C	60.6	50.9	59.4	57.5	55.1	46.3	63.4
D	44.0	43.1	64.9	58.3	43.7	52.1	55.0
E	75.2	53.8	48.8	63.0	33.1	24.0	62.8
F	41.0	57.2	72.5	38.1	42.9	30.3	49.4
G	32.0	71.8	40.4	28.9	45.5	45.0	38.9
H	48.5	46.0	58.2	47.5	44.0	37.1	54.4
I	73.3	62.2	63.4	58.7	53.2	51.0	65.7
J	56.5	36.8	64.6	60.3	59.8	60.0	62.6
K	18.6	38.0	50.2	19.8	13.8	22.9	21.0
L	79.2	66.9	62.9	69.7	69.3	67.4	71.8
M	78.5	76.5	31.9	56.3	37.2	27.7	58.7
N	7.8	14.8	70.5	17.8	29.8	69.2	13.7
O	66.1	49.8	69.0	55.7	54.8	44.3	64.5
P	55.2	59.3	72.6	54.2	46.9	57.3	58.7
S	71.8	63.2	26.7	63.1	68.9	64.4	66.5
T	59.7	34.6	50.8	39.5	51.4	51.5	54.5
U	32.1	47.3	58.2	42.4	34.0	16.8	45.8
V	31.6	45.5	74.6	46.3	45.6	71.5	47.6

* * * CONCEPTUAL LEVEL * * *

CONCEPT = PROFILE OF THE SUCCESSFUL RECRUITER EXPERT SYSTEM =

Expert # 7



EVALUATION OF CONCEPTS

TASK = RECRUIT

EXPERTS:---- / CONCEPTS:----	#7 COMMUNI	DEMOGRA	MILITAR	PERSONA	BEHAVIO	SPECIFI	OVERALL
A	1.0	24.1	66.5	1.0	1.0	19.9	1.0
B	94.3	75.6	77.3	67.5	68.4	99.0	62.2
C	54.5	58.6	70.3	48.2	56.6	53.7	54.7
D	36.0	29.4	80.8	38.5	29.6	70.8	35.5
E	72.2	67.8	64.8	53.3	47.8	44.2	60.3
F	31.6	50.9	75.8	25.5	23.8	32.7	38.8
G	24.2	80.7	77.8	17.4	44.1	50.1	37.5
H	40.2	51.8	68.3	37.4	45.2	43.6	48.3
I	74.6	68.5	64.4	54.7	48.2	52.1	58.4
J	51.3	34.1	75.3	42.7	52.4	72.6	47.4
K	6.5	34.6	62.3	8.7	12.1	26.7	1.0
L	77.8	74.0	85.1	62.6	69.3	77.3	59.3
M	80.5	86.2	74.6	46.1	68.7	53.0	60.2
N	1.0	1.0	67.7	11.0	1.0	57.7	1.0
O	60.5	55.7	80.0	53.7	54.3	44.2	58.3
P	54.0	69.4	82.6	58.3	37.3	59.7	56.6
S	63.9	73.8	71.6	58.9	82.4	68.9	52.6
T	56.5	34.5	79.7	17.9	21.7	57.3	33.2
U	21.2	43.8	73.8	10.7	49.1	24.8	31.5
V	25.4	37.1	78.8	57.5	41.0	99.0	45.3

* * * CONCEPTUAL LEVEL * * *

CONCEPT = PROFILE OF THE SUCCESSFUL RECRUITER EXPERT SYSTEM

Expert # 8

EVALUATION OF CONCEPTS

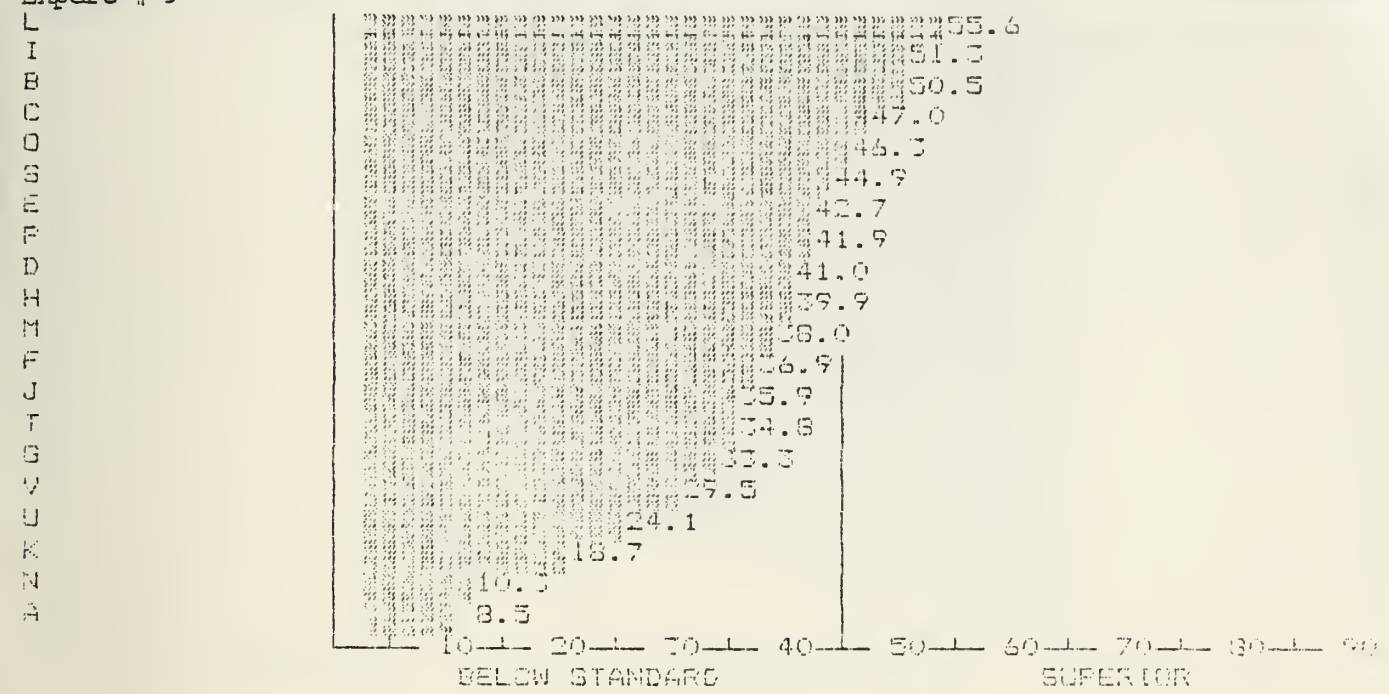
TASK = RECRUIT

EXPERTS:----	#8						
CONCEPTS:----	COMMUNI	DEMOGRA	MILITAR	PERSONA	BEHAVIO	SPECIFI	OVERALL
A	18.9	32.7	36.0	27.1	28.7	44.5	41.0
B	64.5	51.2	34.2	47.9	47.5	49.5	49.5
C	45.1	41.7	43.7	43.3	43.5	39.5	47.8
D	33.4	38.1	40.3	48.6	41.8	42.4	46.3
E	54.0	42.8	36.7	49.6	36.0	49.5	48.6
F	30.6	39.1	46.1	33.6	42.6	38.4	45.0
G	38.0	46.7	26.1	34.0	39.1	37.9	46.3
H	39.2	39.5	42.5	40.3	40.8	39.4	46.7
I	55.5	47.3	36.2	44.4	44.3	46.1	49.0
J	46.6	34.5	42.1	40.8	46.5	41.2	46.9
K	26.1	35.0	37.2	32.2	33.4	41.9	43.3
L	55.7	47.1	41.1	47.0	46.9	42.7	49.2
M	49.0	46.7	23.6	43.1	34.3	51.5	47.9
N	30.2	23.2	47.7	31.8	41.9	38.6	42.6
O	46.8	40.1	44.8	41.3	42.3	39.1	47.6
P	42.5	41.5	45.8	47.5	42.7	51.5	47.9
S	50.0	47.0	22.2	45.9	46.5	38.5	48.1
T	46.7	38.8	32.9	36.7	45.0	45.7	47.0
U	35.1	36.4	35.6	37.9	35.2	44.2	45.4
V	39.1	35.5	41.3	35.2	36.8	48.2	45.8

* * * CONCEPTUAL LEVEL * * *

CONCEPT = PROFILE OF THE SUCCESSFUL RECRUITER EXPERT SYSTEM =

Expert # 9



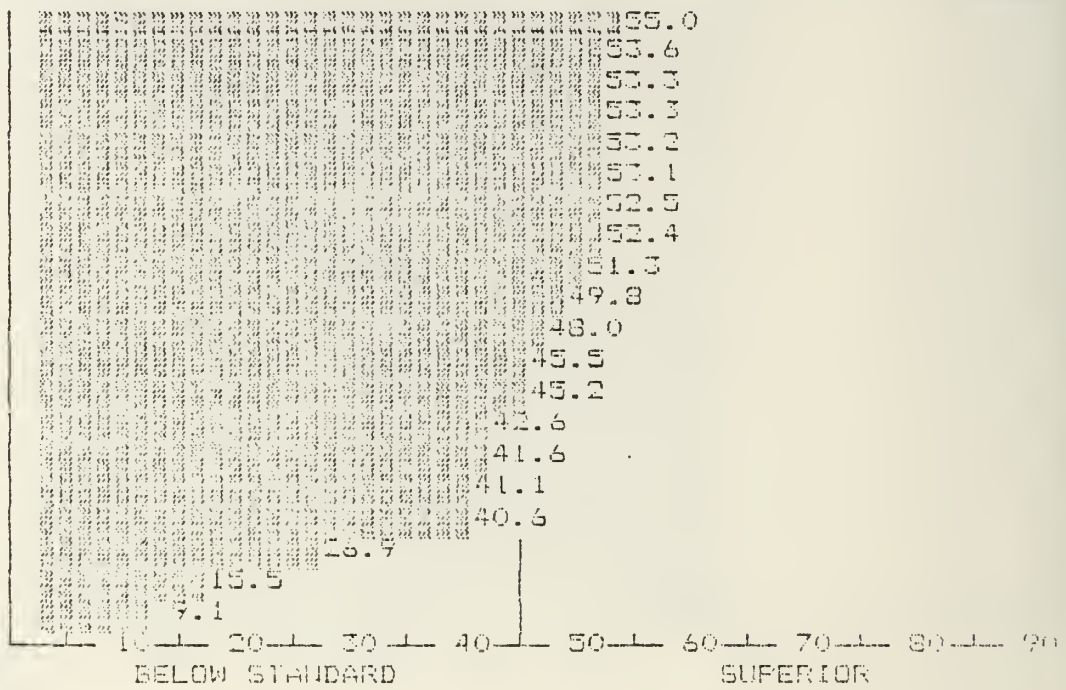
EVALUATION OF CONCEPTS

TASK = RECRUIT

EXPERTS:----	#9						
CONCEPTS:----	COMMUNI	DEMOGRA	MILITAR	PERSONA	BEHAVIO	SPECIFI	OVERALL
A	1.0	14.1	46.7	1.0	1.0	17.3	8.5
B	70.5	65.1	51.4	65.0	72.7	92.8	50.5
C	54.7	64.1	59.4	49.8	55.1	46.3	47.0
D	33.9	50.9	64.9	51.5	43.7	52.1	41.0
E	65.8	53.8	48.8	60.5	33.1	24.0	42.7
F	33.3	57.0	72.5	26.1	42.9	30.3	36.9
G	30.3	62.3	40.4	13.5	45.5	45.0	33.3
H	43.8	55.3	58.2	38.9	44.0	37.4	39.9
I	63.0	73.5	63.4	52.1	53.2	51.0	51.3
J	42.0	29.8	64.6	49.2	59.8	60.0	35.9
K	13.7	30.3	50.2	8.5	13.8	22.9	18.7
L	68.2	75.8	62.9	63.1	69.3	67.4	55.6
M	56.7	50.1	31.9	55.7	37.2	27.7	38.0
N	8.5	3.8	70.5	1.0	29.8	69.2	10.3
O	57.0	57.8	69.0	49.1	54.8	44.3	46.3
P	29.4	50.5	72.6	55.4	46.9	57.3	41.9
S	59.8	58.8	26.7	59.1	58.9	64.4	44.9
T	49.7	46.3	50.8	21.1	51.4	51.5	34.8
U	32.3	28.1	58.2	27.1	34.0	16.8	24.1
V	33.3	21.3	74.6	39.2	45.6	71.5	29.5

* * * CONCEPTUAL LEVEL * * *
CONCEPT = PROFILE OF THE SUCCESSFUL RECRUITER EXPERT SYSTEM

Expert #10



EVALUATION OF CONCEPTS

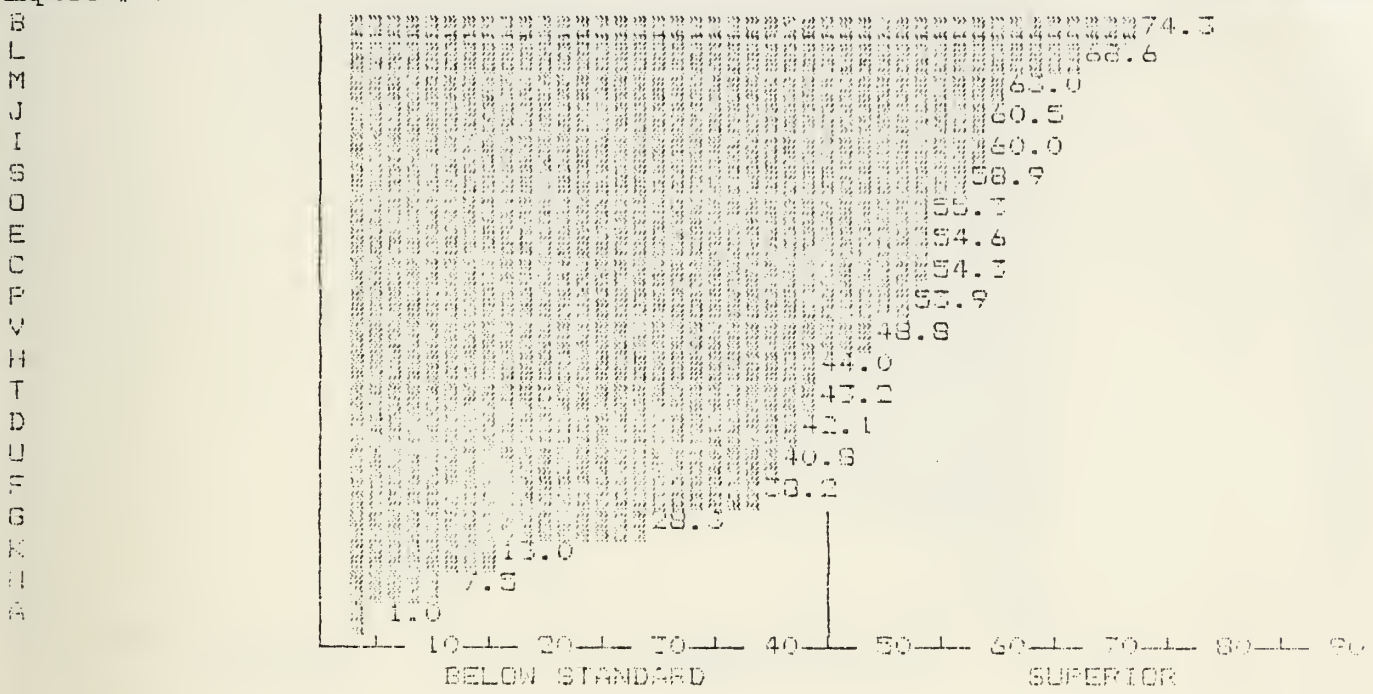
TASK = RECRUIT

EXPERTS:----	#10						
CONCEPTS:----	COMMUNI	DEMOGRA	MILITAR	PERSONA	BEHAVIO	SPECIFI	OVERALL
A	1.0	35.7	47.2	4.1	5.3	28.2	9.1
B	83.7	40.2	67.7	59.7	66.1	83.0	53.1
C	55.5	57.8	56.4	48.9	53.5	49.6	52.4
D	39.9	35.0	60.0	50.0	44.3	49.4	45.2
E	68.0	64.2	46.0	58.7	39.3	40.0	53.3
F	34.6	41.2	58.6	26.9	40.7	37.0	41.1
G	31.0	57.7	52.7	22.3	49.7	45.0	40.6
H	44.1	54.9	53.3	40.9	44.7	43.2	48.0
I	70.2	56.2	54.6	53.5	50.1	56.4	53.3
J	55.9	43.0	55.9	44.5	52.5	48.9	49.8
K	16.2	43.9	44.1	18.5	20.7	32.5	26.9
L	73.0	54.5	65.9	58.5	64.2	64.8	55.0
M	71.1	58.9	50.5	51.2	42.9	48.2	52.5
N	7.9	14.6	55.1	13.1	28.7	53.6	15.5
O	59.4	53.7	61.7	48.7	54.2	46.4	53.2
P	51.4	55.5	63.3	55.1	43.8	66.0	51.3
S	59.7	59.0	48.5	57.0	64.7	49.6	53.6
T	57.2	46.7	54.5	25.2	46.2	59.6	45.5
U	30.7	43.6	63.6	28.7	38.6	30.2	41.6
V	34.7	33.2	68.3	41.5	49.6	72.3	42.6

* * * CONCEPTUAL LEVEL * * *

CONCEPT = PROFILE OF THE SUCCESSFUL RECRUITER EXPERT SYSTEM =

Expert #11



EVALUATION OF CONCEPTS

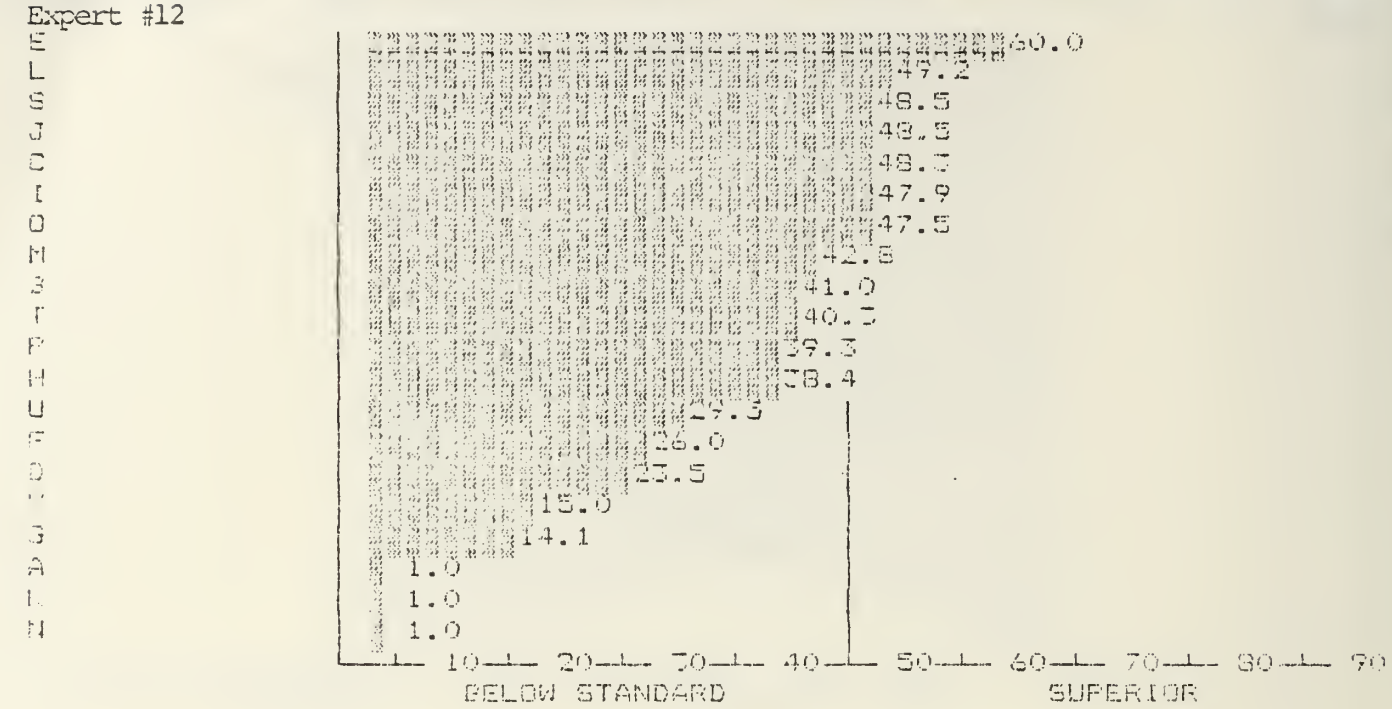
TASK = RECRUIT

EXPERTS:----	#11						
CONCEPTS:----	COMMUNI	DEMOGRA	MILITAR	PERSONA	BEHAVIO	SPECIFI	OVERALL
A	2.2	21.5	43.8	1.5	1.0	8.3	1.0
B	79.4	60.5	83.8	67.1	74.6	83.8	74.3
C	48.0	50.5	39.8	46.9	48.2	52.3	54.3
D	34.7	31.4	46.7	48.4	23.5	51.6	42.1
E	58.4	50.8	42.2	53.6	33.8	23.8	54.6
F	30.1	47.7	38.4	33.2	37.0	30.9	38.2
G	24.2	60.7	67.4	18.5	31.1	46.7	28.3
H	37.9	45.1	38.5	37.9	38.2	42.4	44.0
I	62.8	55.4	58.7	41.1	57.6	51.0	60.0
J	56.6	29.7	40.5	53.9	54.7	50.3	60.5
K	15.0	30.6	41.5	15.2	14.2	20.4	13.0
L	65.5	59.8	56.2	60.1	64.1	69.6	68.6
M	63.4	60.5	77.2	67.0	45.3	31.6	63.0
N	11.8	13.4	37.3	1.0	24.9	53.8	7.5
O	52.8	46.8	40.6	47.8	46.0	47.1	55.3
P	53.8	51.5	41.3	48.3	39.1	50.3	52.9
S	47.5	54.7	83.4	55.7	57.4	47.3	58.9
T	51.1	32.8	54.4	23.7	34.6	50.0	43.2
U	27.5	33.8	64.5	33.9	40.1	17.6	40.8
V	30.7	31.6	59.6	46.5	42.3	68.1	48.8

* * * CONCEPTUAL LEVEL * * *

CONCEPT = PROFILE OF THE SUCCESSFUL RECRUITER EXPERT SYSTEM

Expert #12



EVALUATION OF CONCEPTS

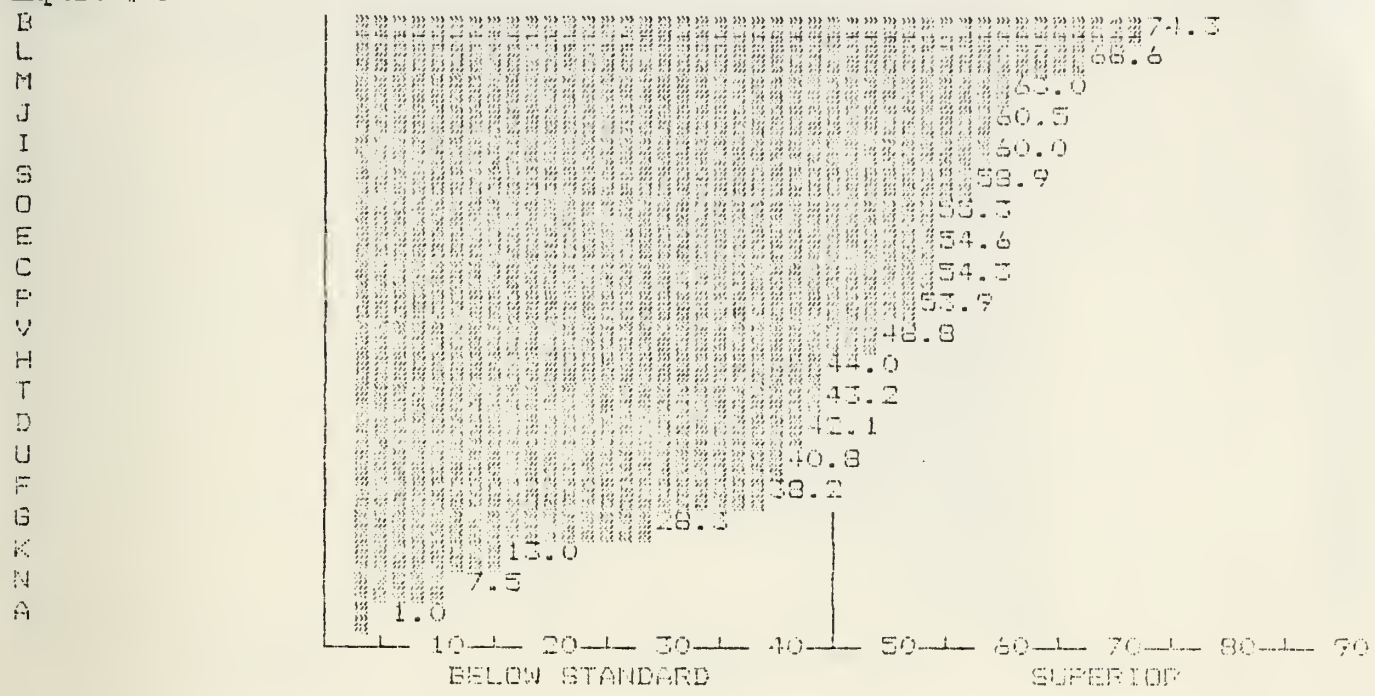
TASK = RECRUIT

EXPERTS:----	#12						
CONCEPTS:----	COMMUNI	DEMOGRA	MILITAR	PERSONA	BEHAVIO	SPECIFI	OVERALL
A	1.0	24.1	66.5	1.0	1.0	7.8	1.0
B	94.3	75.6	77.3	67.5	27.5	79.8	41.0
C	54.5	58.6	70.3	48.2	44.1	63.8	48.3
D	36.0	29.4	80.9	38.5	18.7	38.5	23.5
E	72.2	67.8	64.6	53.3	33.2	15.6	60.0
F	31.6	50.9	75.8	25.5	27.5	43.4	26.0
G	24.2	80.7	77.8	17.4	32.2	55.4	14.1
H	40.2	51.8	68.3	37.4	37.0	53.5	38.4
I	74.6	68.5	64.4	54.7	33.6	64.9	47.9
J	51.3	34.1	75.3	42.7	41.1	33.4	48.5
K	6.5	34.6	62.3	8.7	9.3	25.5	1.0
L	77.8	74.0	85.1	62.6	44.8	76.8	49.2
M	80.5	86.2	74.6	46.1	26.4	23.1	42.8
N	1.0	1.0	67.7	11.0	1.0	64.2	1.0
O	60.5	55.7	80.0	53.7	40.9	63.0	47.5
P	54.0	69.4	82.6	58.3	30.9	65.8	39.3
S	63.9	73.8	71.6	58.9	41.2	42.5	48.5
T	56.5	34.3	79.7	17.9	29.6	68.9	40.3
U	21.2	43.8	73.8	10.7	27.3	14.2	29.5
V	25.4	37.1	78.8	57.5	17.9	53.1	15.0

* * * CONCEPTUAL LEVEL * * *

CONCEPT = PROFILE OF THE SUCCESSFUL RECRUITER EXPERT SYSTEM =

Expert #13



EVALUATION OF CONCEPTS

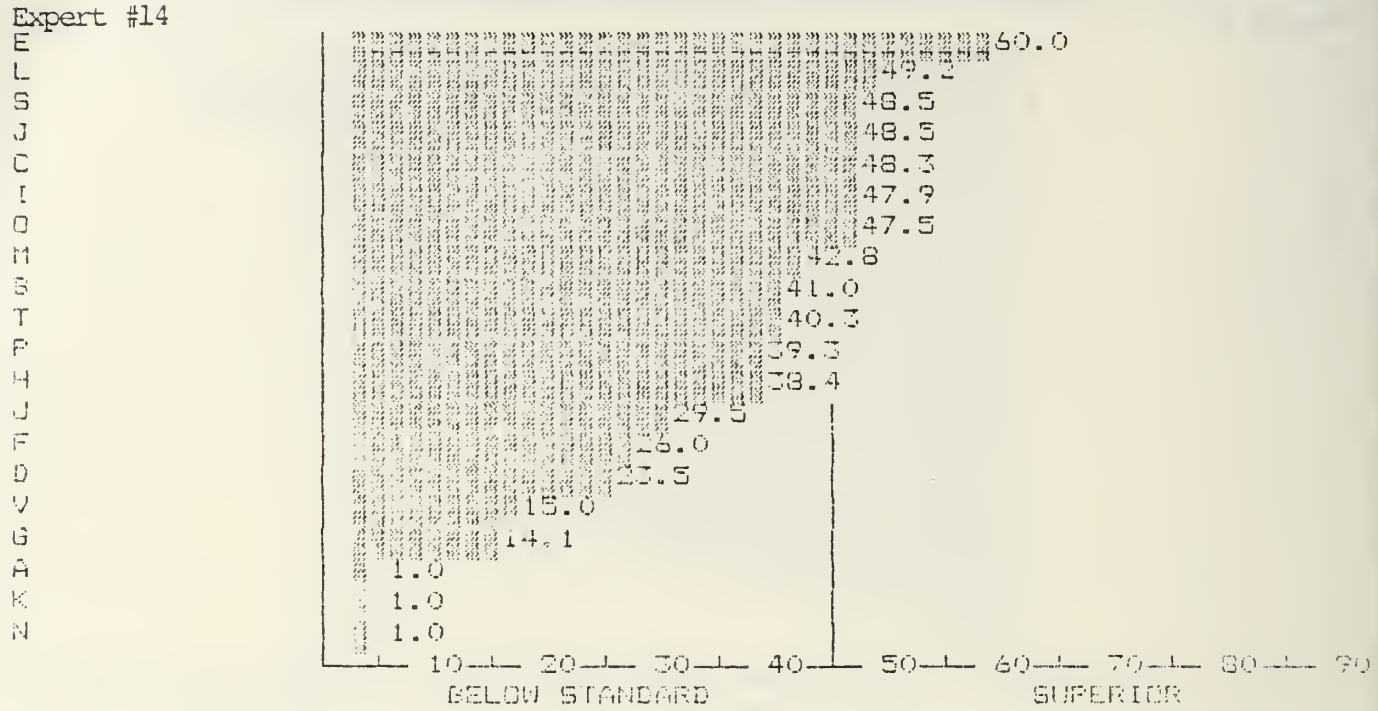
TASK = RECRUIT

EXPERTS:----	#13						
CONCEPTS:----	COMMUNI	DEMOGRA	MILITAR	PERSONA	BEHAVIO	SPECIFI	OVERALL
A	2.2	21.5	43.8	1.5	1.0	8.3	1.0
B	79.4	60.5	83.8	67.1	74.6	83.8	74.3
C	48.0	50.5	39.8	46.9	48.2	52.3	54.3
D	34.7	31.4	46.7	48.4	23.5	54.6	42.1
E	58.4	50.8	42.2	53.6	33.8	28.8	54.6
F	30.1	47.7	38.4	33.2	37.0	30.9	38.2
G	24.2	60.7	67.4	18.5	31.1	46.7	28.3
H	37.9	45.1	38.5	37.9	38.2	42.4	44.0
I	62.8	55.4	58.7	41.1	57.6	51.0	60.0
J	56.6	29.7	40.5	53.9	54.7	50.3	60.5
K	15.0	30.6	41.5	15.2	14.2	20.4	15.0
L	65.5	59.8	56.2	60.1	64.1	69.6	68.6
M	63.4	60.5	77.2	67.0	45.3	31.6	63.0
N	11.8	13.4	37.3	1.0	24.9	53.8	7.5
O	52.8	46.8	40.6	47.8	46.0	47.1	55.3
P	53.8	51.5	41.3	48.3	39.1	50.3	53.9
S	47.5	54.7	83.4	55.7	57.4	47.3	58.9
T	51.1	32.8	54.4	23.7	34.6	50.0	43.2
U	27.5	33.8	64.5	33.9	40.1	17.6	40.8
V	30.7	31.6	59.6	46.5	42.3	68.1	48.8

* * * CONCEPTUAL LEVEL * * *

CONCEPT = PROFILE OF THE SUCCESSFUL RECRUITER EXPERT SYSTEM

Expert #14



EVALUATION OF CONCEPTS

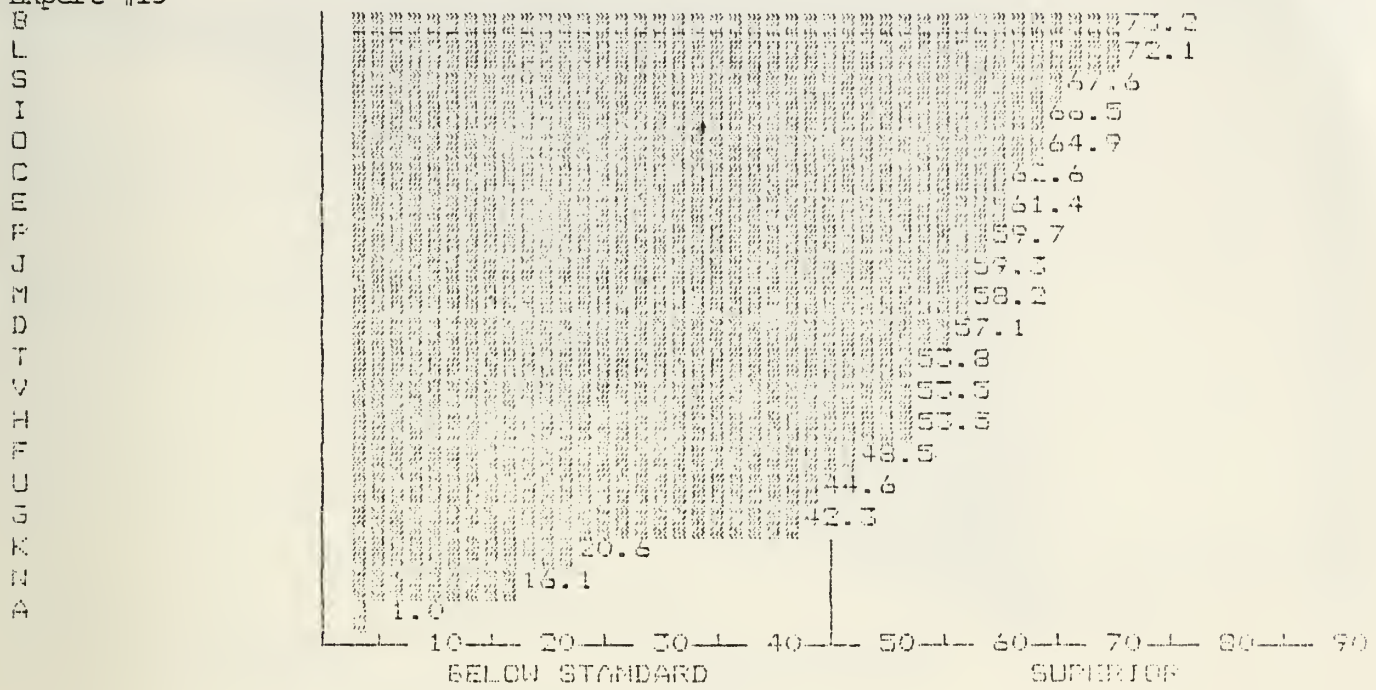
TASK = RECRUIT

EXPERTS:----	#14						
CONCEPTS:----	COMMUNI	DEMOGRA	MILITAR	PERSONA	BEHAVIO	SPECIFI	OVERALL
A	1.0	24.1	66.5	1.0	1.0	7.5	1.0
B	94.3	75.6	77.3	67.5	27.5	79.3	41.0
C	54.5	58.6	70.3	48.2	44.1	63.6	48.3
D	36.0	29.4	80.9	38.5	18.7	30.5	23.5
E	72.2	67.8	64.8	53.3	33.2	15.6	60.0
F	31.6	50.9	75.8	25.5	27.5	43.4	26.0
G	24.2	80.7	77.8	17.4	32.2	55.4	14.1
H	40.2	51.8	68.3	37.4	37.0	53.5	38.4
I	74.6	68.5	64.4	54.7	33.6	64.9	47.9
J	51.3	34.1	75.3	42.7	41.1	33.4	48.5
K	6.5	34.6	62.3	8.7	9.3	25.5	1.0
L	77.8	74.0	85.1	62.6	44.8	76.8	49.2
M	80.5	86.2	74.6	46.1	26.4	23.1	42.8
N	1.0	1.0	67.7	11.0	1.0	64.2	1.0
O	60.5	55.7	80.0	53.7	40.9	63.0	47.5
P	54.0	69.4	82.6	58.3	30.9	65.8	39.3
S	63.9	73.8	71.6	58.9	41.2	42.5	48.5
T	56.5	34.5	79.7	17.9	29.6	68.9	40.3
U	21.2	43.8	73.8	10.7	27.3	14.2	29.5
V	25.4	37.1	78.8	57.5	17.9	53.1	15.0

* * * CONCEPTUAL LEVEL * * *

CONCEPT = PROFILE OF THE SUCCESSFUL RECRUITER EXPERT SYSTEM =

Expert #15



EVALUATION OF CONCEPTS

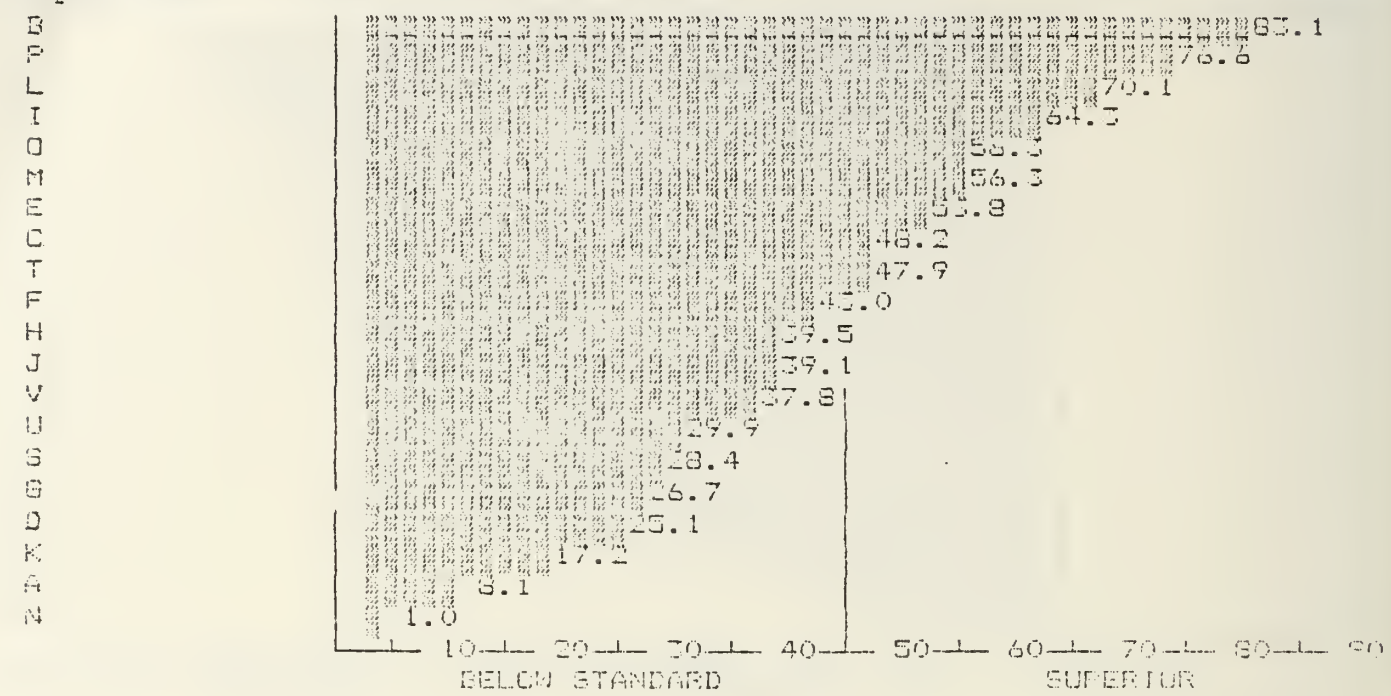
TASK = RECRUIT

EXPERTS:----	#15						
CONCEPTS:----	COMMUNI	DEMOGRA	MILITAR	PERSONA	BEHAVIO	SPECIFI	OVERALL
A	1.0	34.7	47.8	2.1	1.0	30.1	1.0
B	90.1	84.4	87.3	71.7	75.3	99.0	73.2
C	60.6	50.9	55.3	57.5	53.7	51.1	62.6
D	44.0	43.1	62.3	58.3	51.9	53.6	57.1
E	75.2	53.8	44.8	63.0	34.3	39.6	61.4
F	41.0	57.2	53.8	38.1	43.9	37.1	48.5
G	32.0	71.8	66.5	28.9	52.4	46.5	42.3
H	48.5	46.0	51.3	47.5	43.3	41.6	53.5
I	73.3	62.2	60.8	58.7	57.8	68.0	66.5
J	56.3	36.8	53.8	60.3	48.0	56.9	59.3
K	18.6	38.0	41.3	19.8	16.8	31.1	20.6
L	79.2	68.9	72.6	69.7	68.4	78.5	72.1
M	78.5	76.5	68.0	56.3	33.2	54.4	58.2
N	7.8	14.8	47.6	17.8	40.2	70.1	16.1
O	66.1	49.8	60.3	55.7	58.3	48.1	64.9
P	55.2	59.3	60.8	54.2	48.0	90.1	59.7
S	71.8	63.2	67.8	63.1	58.8	59.8	67.6
T	59.7	34.6	61.1	39.5	47.4	71.3	53.8
U	32.1	47.3	77.3	42.4	33.8	30.1	44.6
V	31.6	45.5	75.5	46.3	65.8	92.2	53.5

* * * CONCEPTUAL LEVEL * * *

CONCEPT = PROFILE OF THE SUCCESSFUL RECRUITER EXPERT SYSTEM

Expert #16



EVALUATION OF CONCEPTS

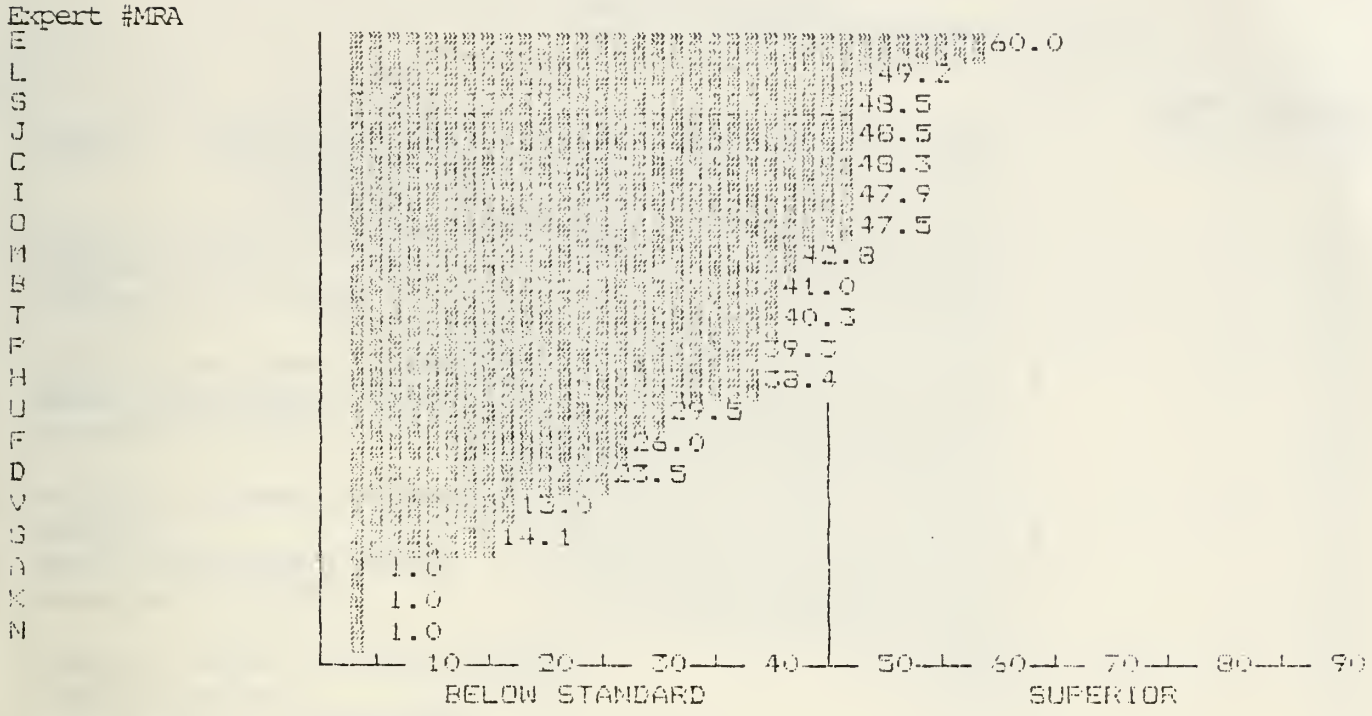
TASK = RECRUIT

EXPERTS:----	#16						
CONCEPTS:----	COMMUNI	DEMOGRA	MILITAR	PERSONA	BEHAVIO	SPECIFI	OVERALL
A	1.0	25.1	44.8	6.0	1.0	13.9	8.1
B	80.0	85.0	75.0	96.1	94.9	89.8	83.1
C	45.1	51.1	31.6	51.0	52.4	55.1	48.2
D	22.0	32.7	35.2	77.1	60.1	32.1	25.1
E	60.1	43.9	41.6	53.2	43.9	49.4	53.8
F	22.9	84.6	22.8	34.1	29.0	26.2	43.0
G	14.8	69.1	70.9	28.2	57.8	35.9	26.7
H	34.0	48.6	30.8	39.7	41.0	45.4	39.5
I	66.7	58.2	37.4	35.5	45.9	83.3	64.3
J	48.6	35.8	30.1	53.9	52.9	17.3	39.1
K	8.9	35.6	39.5	17.2	13.9	24.8	17.2
L	64.5	72.1	47.5	73.6	71.4	73.2	70.1
M	56.5	73.6	85.7	69.5	56.7	61.2	56.3
N	11.2	1.2	23.1	21.4	20.5	34.4	1.0
O	53.9	60.1	28.1	43.4	59.4	53.6	56.3
P	57.1	81.3	29.4	96.3	52.9	99.0	76.6
S	41.2	54.7	94.8	47.7	71.4	14.5	28.4
T	50.8	43.4	53.6	37.4	55.6	85.7	47.9
U	21.8	54.1	47.7	48.1	29.4	19.5	29.9
V	13.2	65.5	35.8	29.1	71.9	62.2	37.8

* * * CONCEPTUAL LEVEL * * *

CONCEPT = PROFILE OF THE SUCCESSFUL RECRUITER EXPERT SYSTEM =

Expert #MRA



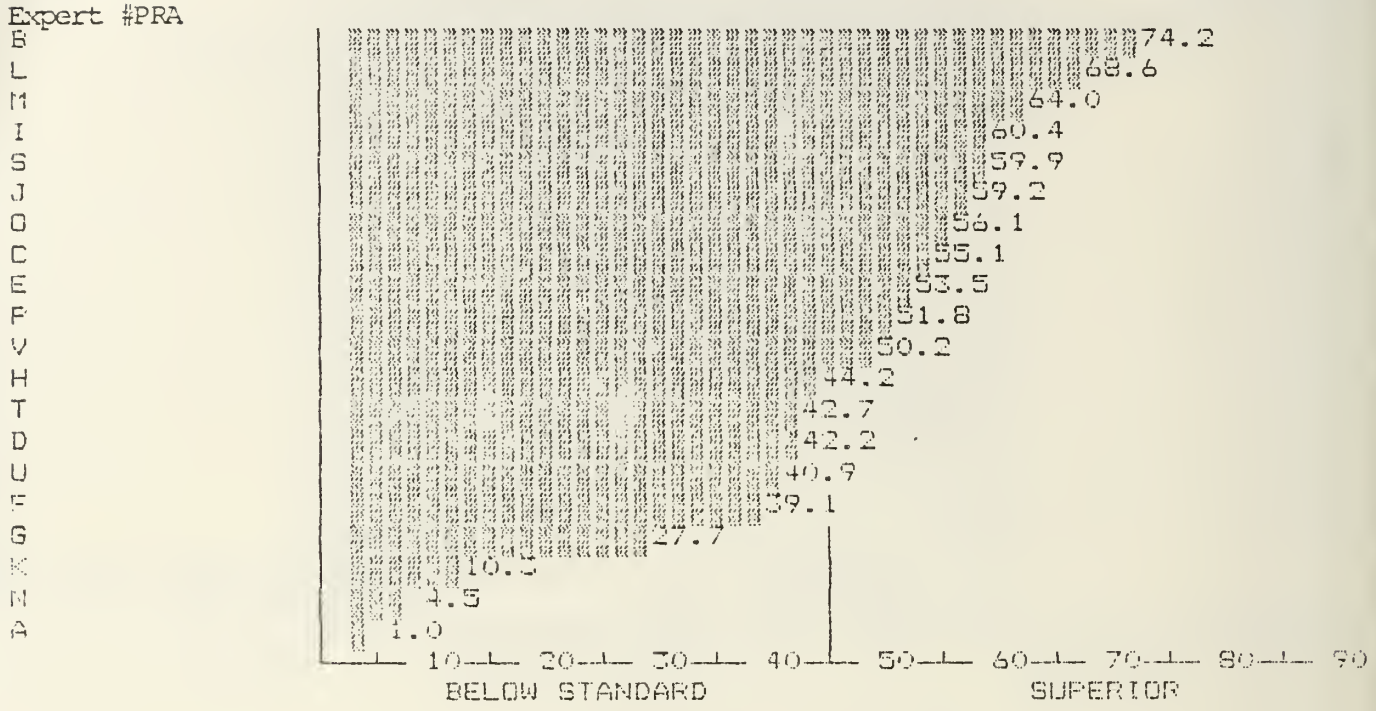
EVALUATION OF CONCEPTS

TASK = RECRUIT

EXPERTS:----	#MRA						
CONCEPTS:----	COMMUNI	DEMOGRA	MILITAR	PERSONA	BEHAVIO	SPECIFI	OVERALL
A	1.0	24.1	66.5	1.0	1.0	7.8	1.0
B	94.3	75.6	77.3	67.5	27.5	79.8	41.0
C	54.5	58.6	70.3	48.2	44.1	63.8	48.3
D	36.0	29.4	80.8	38.5	18.7	38.5	23.5
E	72.2	67.8	64.8	53.3	33.2	15.6	60.0
F	31.6	50.9	75.8	25.5	27.5	43.4	26.0
G	24.2	80.7	77.8	17.4	32.2	55.4	14.1
H	40.2	51.8	68.3	37.4	37.0	53.5	38.4
I	74.6	68.5	64.4	54.7	33.6	64.9	47.9
J	51.3	34.1	75.3	42.7	41.1	33.4	48.5
K	6.5	34.6	62.3	8.7	9.3	25.5	1.0
L	77.8	74.0	85.1	62.6	44.8	76.8	49.2
M	80.5	86.2	74.6	46.1	26.4	23.1	42.8
N	1.0	1.0	67.7	11.0	1.0	54.2	1.0
O	60.5	55.7	80.0	53.7	40.9	63.0	47.5
P	54.0	69.4	82.6	58.3	30.9	65.8	39.3
S	63.9	73.8	71.6	58.9	41.2	42.5	48.5
T	56.5	34.5	79.7	17.9	29.6	68.9	40.3
U	21.2	43.8	73.8	10.7	27.3	14.2	29.5
V	25.4	37.1	78.8	57.5	17.9	53.1	15.0

* * * CONCEPTUAL LEVEL * * *

CONCEPT = PROFILE OF THE SUCCESSFUL RECRUITER EXPERT SYSTEM



EVALUATION OF CONCEPTS

TASK = RECRUIT

EXPERTS:---- CONCEPTS:----	#PRA COMMUNI	DEMOGRA	MILITAR	PERSONA	BEHAVID	SPECIFI	OVERALL
A	1.0	35.7	47.8	1.5	1.0	8.3	1.0
B	81.0	40.2	87.3	67.1	75.6	63.8	74.2
C	46.4	57.8	55.3	46.9	48.4	52.3	53.1
D	32.7	35.0	62.3	48.4	23.8	54.6	42.2
E	54.0	64.2	44.8	53.6	33.4	28.8	53.5
F	28.7	41.2	53.8	33.2	37.0	30.9	39.1
G	22.6	57.7	66.5	18.5	31.9	46.7	27.7
H	35.5	54.9	51.3	37.9	38.3	42.4	44.2
I	64.7	56.2	60.8	41.1	57.6	51.0	60.4
J	48.4	43.0	53.8	53.9	54.7	50.3	59.2
K	11.0	43.9	41.3	15.2	13.8	20.4	10.3
L	65.5	54.5	72.6	60.1	64.7	69.6	68.6
M	66.0	58.9	68.0	67.0	45.6	31.6	64.0
N	5.2	14.6	47.6	1.0	24.8	53.8	4.5
O	50.4	53.7	60.3	47.8	46.3	47.1	56.1
P	43.6	55.5	60.8	48.3	38.7	50.3	51.8
S	46.7	59.0	67.8	55.7	59.1	47.3	59.9
T	49.6	46.7	61.1	23.7	34.3	50.0	42.7
U	28.8	43.6	77.3	33.9	40.1	17.6	40.9
V	34.3	33.2	75.5	46.5	42.6	68.1	50.2

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