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DESIGN OF A RECRUITER
EXPERT SYSTEM

by

Nanette M. Lorry

March 1989

Thesis Advisor: Tung Bui

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Design of a Recruiter Selection Expert System

by

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Lieutenant, United States Navy
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ABSTRACT

This study attempts to identify the attributes associated with the successful recruiters. Using past research and interviews with 13 recruiting experts eight attributes were identified: conscientiousness, initiative, aggressive, outgoing, self-discipline, maturity, stability, and adaptability. An expert system was designed using these characteristics and the minimum requirements for assignment to recruiting duty given in the Navy's Enlisted Transfer Manual. A recommended Commanding Officer's Screening Form was designed that will have all the data needed to be placed into the expert system. Recommendations for improvements of the prototype and follow-on study are presented.

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I. INTRODUCTION

A. PURPOSE

On 1 July 1973, the United States military force moved
from the draft to the all volunteer force. This brought
about the challenge of how to man the armed forces with the
quality personnel needed to support and defend this nation.
One of the most important resources in meeting this
challenge is the recruiter.

Some people are born salesman and others have an
extremely hard time making blind phone calls, encouraging
strangers in selecting the Navy as a career choice. What
makes a good, effective recruiter? This thesis looks at the
attributes needed to be successful in recruiting and uses
this knowledge to develop a recruiter selection expert
system.

A heuristic approach to decision making appears best
suited to the decisions needed for selection of recruiters.
Heuristics are rules-of-thumb that limit the search for a
solution [Ref. 1:p. G-8]. This rule-based approach to
solving problems makes the use of an expert system most
appropriate. The recruiter selection expert system will be
designed using M.1, a rule-based expert system shell. The
knowledge base will be developed using previous research and
interviews obtained from experts in the recruiting field.

In this thesis heuristics concerning the attributes of a successful recruiter are the knowledge base of the expert system. The individual's personnel characteristics will be the input for the system. This input will come from the Commanding Officer's Screening Form. This form is a requirement that is to be completed by the individual's command prior to his transfer to recruiting. Using the answers from the screening form the detailer can input responses into the expert system to determine if the individual is best suited for recruiting duty.

With the need for recruiters in the field the response on the screening form receives little attention. All that is required is for the individual to the minimum require-ments given in the U.S Navy's Enlisted Transfer Manual (NAVPERS 15909D). This results in many individuals being sent to recruiting who should not have been. This system will help to pinpoint these people before transfer.

Whenever a recruiter proves ineffective, whether for personal or professional reasons, the individual is removed from the recruiting station. The individual must transfer to another command creating an additional expense for the Navy. This is an unplanned rotation. In addition there is a time gap in waiting for a replacement to complete school and check aboard. This leaves the recruiting district short-handed.

By increasing the likelihood of the individual being a successful recruiter, the money budgeted for these transfers could be used in other needed areas. Also more effective recruiters would be assigned increasing production levels. Upper recruiting management would have less people problems to deal with and could focus their attentions on production.

B. ORGANIZATION

The breakdown of the chapters will be as follows. First, it will give a background review of the research done in this area. It is important to note that recruiting has been and still is a major area of concern of the military. Much research has been done to make it as productive as possible. This past research and interviews with recruiting experts form the knowledge base of the system. This will be discussed in greater detail.

Second, the thesis will look the present system for detailing of recruiters. It will evaluate the system, looking at the strengths and weaknesses. It will show how to correct the weaknesses using an expert system, giving a brief introduction into expert system theory. The past research and interviews with recruiting experts form the knowledge base of the system.

Third, the thesis will look at the design of the prototype named The Recruiter Selection Expert System. It will discuss the potential of the expert system and evaluate the limitations of the system.

Finally, it will conclude with a summary of the use and need for the system. It will discuss recommendations and look at possible follow-on study.

II.   LITERATURE REVIEW

A.   FORWARD

For many years the military has been interested in the attributes that make someone likely to succeed in recruiting. Each of the services has completed extensive study in this area. With the declining population of 17-21 year old males, the low unemployment and the increased competition with the civilian sector the need for top recruiters becomes critical. This literature review will provide an overview of the research conducted in this area. It includes a discussion of the methodologies for determining attributes related to the success of a recruiter. It includes commonality of resultant factors, and problems encountered. [Ref. 2:p. 4]

Most of the research conducted in this area of study used a test battery. The test battery endeavored to identify the attributes that led to success in recruiting. Other research pursued involved the use of biographical information, job analysis, assessment centers and interviewing techniques.

The results of the research led to many interesting conclusions, but many of the results were not statistically significant. However, in those conclusions that the findings were meaningful could not be cross-validated or

when cross-validation was tried the original results could not be duplicated. [Ref. 3:p. 18]

A large problem in studying the success of a recruiter is the use of production data as a measure of the success. The recruiter's success might be the fact that he is assigned to a "walk-in" station. That is, the station's location is in a fertile area and there is a high propensity for individuals to enlist. Research conducted using performance as a criterion measure has proven ineffective in combining market data into the analysis.

This section reviews several studies done to identify characteristics of the successful recruiter.

B. RESEARCH

1. Krug

In this study conducted in 1972 for the Navy Recruiting Command, Krug used a personality test. The test, the 16PF-m, was a variation of the 16PF, a highly-regarded "personality inventory" which was widely used in sales selection procedures in business and industry. He administered it to officers and enlisted Navy recruiters to test its usefulness in predicting sales ability. [Ref. 4:p. 22]

The test differed from the 16PF in that it included a supplement designed to measure motivational distortion and strength of motivation to succeed as a recruiter, and seven

biographical items: years of service, age, sex, marital
status, number of dependents, years of formal education, and
population of person's home of record [Ref. 2:p. 18]. Its
objective was use the commanding officer's evaluation of an
individual's performance to determine a weighting for
psychological tests and demographic variables that best
predicted success in recruiting. The results indicated that
a successful recruiter was married, warm, outgoing,
dominant, aggressive and self-assured, with fairly
conservative political views.

From 1972 until 1976 the Recruiting Command did use
this test to screen out individuals not suited to recruiting
duty. However, they used a score of 35 as the cutoff point,
that is, if a person scored below 35 then they would not be
assigned to recruiting duty. Sixty-five was the suggested
minimum score which was predicted to give an accuracy rate
of 72 percent. The acceptance of lower scores greatly
reduced the usefulness of the test. The use of the test was
discontinued when the Navy Recruiting Command and the Chief
of Naval Personnel (Pers 502) agreed that the test was not
an effective predictor of sales ability. [Ref. 4:p. 24]

2. Abrahams, Neumann, and Rimland

In 1973, Abraham, Neumann and Rimland investigated
the use of the Strong Vocational Interest Battery for
improvement in recruiter selection. From the responses of
the most and least effective recruiters from 36 recruiting

stations they composed the Recruiter Interest Scale-1 (RIS-1). When cross-validated the RIS-1 discriminated well. The top quartile (highest RIS-1 scores) contained three times as many effective recruiters as the bottom quartile while the bottom quartile had three times as many ineffective recruiters as the top. The authors believed that a better criterion must be developed to measure recruiter effectiveness. However, they felt that the RIS-1 was effective enough for use. [Ref. 5]

3. <u>Best and Wylie</u>

Best and Wylie conducted another study in 1974 to determine what characterized a successful recruiter. They surveyed individuals at the field level using a command evaluation of each recruiter as the dependent variable. In addition the questionnaire design provided information on the attitudes of the recruiters towards recruiting duty. They chose independent variables that were logical and could easily be ascertained for each recruiter prior to assignment to recruiting duty.

Upon cross-tabulation the authors retained the variables that demonstrated a strong relationship to the dependent variable. These were: the area where the recruiter spent his youth, age, General Comprehensive Test (GCT), years active military service, and the proximity of home area to a body of water.

The authors derived a regression equation that accounted for the highest proportion of the variance in the dependent variable. However, it failed upon cross-validation. The authors still believed that this research should be continued. They felt that other characteristics not addressed in this study should be studied. [Ref. 6]

4. Borman, Hough, and Dunette

In 1976, Borman, Hough, and Dunette working for the Naval Personnel Research and Development Center (NPRDC), issued a report on the development of behaviorally-based rating scales for evaluating the performance of Navy recruiters.

First they felt it was important to become familiar with the Navy recruiter job. To accomplish this they held a two-day workshop with various personnel in recruiting. They solicited from field recruiters over 800 critical incidents that described different attributes of effective and ineffective recruiting performance. In addition workshops were held in bootcamp where another 135 performance examples were collected. The results of this study are shown on Table 1. [Ref. 7]

A follow-up study to this report was conducted at NPRDC. In a report conducted by Borman, Rosse, Toquam, and Abrahams in 1981 the development and validation of a test for selection of successful recruiters was discussed. The test battery contained self-description inventories,

TABLE 1

SUGGESTED PREDICTIONS OF NAVY RECRUITER EFFECTIVENESS

PERFORMANCE CATEGORIES	PRF	BIOGRAPHICAL INFORMATION	PERFORMANCE REVIEWS
LOCATING AND CONTACT-ING QUALIFIED PROSPECTS	SOCIAL RECOGNITION AGGRESSION AUTONOMY	CLUBS AND LEADER JOBS IN SCHOOL	INNOVATIVENESS
GAINING AND MAINTAIN-ING RAPPORT	AFFILIATION EXHIBITION NURTURANCE UNDERSTANDING	BOY SCOUTS EXPERIENCE PUBLIC CONTACT JOBS	HUMAN RELATIONS
OBTAINING INFORMATION FROM PROSPECTS AND GOOD PERSON-NAVY FITS	COGNITIVE STRUCTURE	LENTH AND RANGE OF NAVY EXPERIENCE	USING INFORMATION
SALESMANSHIP SKILLS	ACHIEVEMENT SOCIAL RECOGNITION DOMINANCE EXHIBITION SENTIENCE	PREVIOUS SELLING	PERSUASIVENESS
ESTABLISHING AND MAIN-TAINING GOOD RELATION-SHIPS IN THE COMMUNITY	AFFILIATION NURTURANCE	MATCH BETWEEN ASSIGNMENT AND TYPE OF TOWN GREW UP IN	
PROVIDING KNOWLEDGE-ABLE AND ACCURATE INFORMATION ABOUT THE			HONESTY
ADMINISTRATIVE SKILLS	CHANGE (NEGATIVE) ENDURANCE ORDER PLAY (NEGATIVE) IMPULSIVITY (NEGATIVE)	COURSES LIKED BEST LIKING VERSUS DISLIKING DETAIL AND RECORD KEEPING	ORGANIZING PLANNING DETAIL MINDEDNESS
SUPPORT OTHER RECRUITERS AND THE COMMAND	ABASEMENT (NEGATIVE) AFFILIATION SOCIAL RECOGNITION	TEAM SPORTS	COOPERATIVENESS FRIENDLINESS

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TABLE 1 (CONTINUED)

PERFORMANCE CATEGORIES	SDI	SCII	COGNITIVE MEASURES
LOCATING AND CONTACT-ING QUALIFIED PROSPECTS	INITIATIVE DECISIVENESS	ATHLETICS PUBLIC SPEAKING LAW/ POLITICS	FLUENCY MEASURE
GAINING AND MAINTAIN-ING RAPPORT	WORKING CLASS AFFINITY	PERSONNEL DIR. SOCIAL WORKER SOCIAL SERVICE	
OBTAINING INFORMATION FROM PROSPECTS AND MAKING GOOD PERSON-NAVY FITS	INTELLIGENCE WORKING CLASS	TEACHERS LAW/POLITICS	VOCABULARY GENERAL INFORMATION
SALESMANSHIP SKILLS	POWER SELF-ASSURANCE DECISIVENESS	SALES OCCUPATIONS ENTERPRISING THEME	VOCABULARY
ESTABLISHING AND MAIN-TAINING GOOD RELATION-SHIPS IN THE COMMUNITY	MATURITY	SOCIAL SERVICE CHAMBER OF COM-MERCE EXECUTIVE SOCIAL THEME MERCHANDISING	
PROVIDING KNOWLEDGE-ABLE AND ACCURATE INFORMATION ABOUT THE	INTELLIGENCE	MILITARY AC-TIVITIES COUNSELOR JOBS	VOCABULARY GENERAL INFORMATIONS
ADMINISTRATIVE SKILLS	SUPERVISORY DECISIVENESS	CONVENTIONAL THEME BUSINESS ACCT BUSINESS MGMT OFFICE PRACTICES	CLERICAL APTITUDE
SUPPORT OTHER RECRUITERS AND THE COMMAND	MATURITY SELF ACTUAL-IZATION	SOCIAL THEME SOCIAL SERVICE	

Source: [Ref. 7]

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biographical data, and vocational interest measures. [Ref. 8]

The updated Special Assignment Battery consisted of three parts: The Strong-Campbell Interest Inventory, a self-description, and a background questionnaire. Performance ratings were analyzed to determine if they related to the following four performance categories: selling skills, human relation skills, organizing skills and overall performance (Table 2). The recruiter's potential was measured through the use of these categories. [Ref. 8]

The results revealed that personality constructs most highly correlated with recruiter effectiveness. "Making a good impression" and "Enjoying being the center of attention" correlated the highest with selling skills. "Spontaneity, impulsivity" and "Ambitious, working hard" had the highest positive correlations with human relation skills; while "Unhappy, lack of confidence" related negatively. [Ref. 8]

The vocational interest constructs that correlated highly with performance criteria are: interests in extroverted, dominant, social, and leadership activities and occupations; interests in sports and competitive activities; to a lesser degree, interests in law and politics. [Ref. 8]

5. <u>Arima</u>

In Arima's 1976 study, he assessed the 16PF as having little or doubtful utility in predicting performance

TABLE 2

FACTORS IDENTIFIED FOR EACH PERFORMANCE CATEGORY

PERFORMANCE
CATEGORIES   FACTOR/CONSTRUCT

PERSONALITY ITEMS

SELLING SKILLS   1. GOOD IMPRESSION.
                      2. IMPULSIVE, CAREFREE VS. ORDER,
                          PLANNING AHEAD, SYSTEMATIC,
                          LEVEL-HEADED.
                      3. ENJOYING BEING CENTER OF ATTENTION,
                          LEADING, SHOWING OFF, AND SPEAKING
                          BEFORE A GROUP.
                      4. WORKING HARD AND WITH CONFIDENCE,
                          BEING HAPPY VS. BEING UNHAPPY, GIVING
                          UP EASILY, DISGRUNTLED ABOUT LIFE.

HUMAN RELATIONS   1. PREFERENCE FOR WORKING WITH AND
SKILLS   BEING WITH PEOPLE.
                      2. SPONTANEITY, IMPULSIVITY, "FAST AND
                          CARELESS," REBELLIOUS, TENDENCY TO
                          HAVE BAD MOODS.
                      3. UNHAPPY, LACK OF CONFIDENCE,
                          DISGRUNTLED ABOUT LIFE.
                      4. AMBITIOUS, WORKING HARD, PUSHING
                          SELF.

ORGANIZING   1. ORDER, PLANNING AHEAD, WELL ORGANIZED
SKILLS   VS. IMPULSIVE, ACTING WITHOUT
                          THINKING, "FAST AND CARELESS."
                      2. LEADING AND INFLUENCING OTHERS,
                          GIVING ORDERS, DEMANDING OF SELF,
                          AMBITIOUS, DOMINANT.
                      3. UNHAPPY, DISCOURAGED, DOING LITTLE IN
                          LIFE, GIVING UP HOPE, FEELING
                          USELESS.
                      4. "BAD ACTOR," WAS UNRULY AND
                          REBELLIOUS IN SCHOOL, UNSOCIALIZED.

OVERALL   1. DOING MORE THAN EXPECTED VS. GIVING
PERFORMANCE   WORKING JUST HARD ENOUGH.
                      2. IMPULSIVE, "FAST AND CARELESS," VS.
                          ORDER, METHODOLOGICAL, PLANNING
                          AHEAD.
                      3. LEADING AND INFLUENCING OTHERS.
                          DOMINANT, STRONG PERSONALITY.
                      4. PEOPLE ORIENTED, LIKING TO BE AROUND
                          OTHERS AND CLOSE TO OTHERS, OPEN TO
                          OTHER PEOPLE.

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TABLE 2   (CONTINUED)

VOCATIONAL INTEREST ITEMS

SELLING SKILLS
1. INTEREST IN EXTROVERTED, DOMINANT, LEADERSHIP ACTIVITIES AND OCCUPATIONS.
2. INTEREST IN OCCUPATIONS INVOLVING ATTENTION TO DETAIL.
3. INTEREST IN LAW AND POLITICS.
4. INTEREST IN SPORTS AND COMPETITIVE ACTIVITIES.

HUMAN RELATIONS SKILLS
1. INTEREST IN DOMINANT, EXTROVERTED, SOCIAL ACTIVITIES.
2. INTEREST IN TEACHING AND COUNSELING.
3. INTEREST IN "FEMININE" OCCUPATIONS AND ACTIVITIES.
4. INTEREST IN NEWSPAPER REPORTING AND FOREIGN SERVICE.
5. INTEREST IN SPORTS AND COMPETITIVE ACTIVITIES.
6. INTEREST IN RELIGION AND IN BEING AROUND THE SICKLY.

ORGANIZING SKILLS
1. INTEREST IN POLITICS AND HIGH LEVEL MANAGEMENT JOBS.
2. INTEREST IN BOOKKEEPING, STATISTICAL, AND DETAIL WORK.
3. INTEREST IN "FEMININE" OCCUPAITONS AND OCCUPATIONS AND ACTIVITIES.
4. INTEREST IN LEADERSHIP AND RESPONSIBILITY.

OVERALL PERFORMANCE
1. INTEREST IN LAW AND POLITICS, AND AND MANAGEMENT OCCUPATIONS AND ACTIVITIES.
2. INTEREST IN ACTIVITIES AND OCCUPATIONS THAT REQUIRE EXTROVERSION, DOMINANCE, RESPONSIBILITY, AND LEADERSHIP.
3. INTEREST IN SPORTS AND COMPETITIVE ACTIVITIES.
4. INTEREST IN TEACHING AND COUNSELING.
5. INTEREST IN "FEMININE" OCCUPATIONS.

Soruce: [Ref. 8]

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ratings given recruiters. His reasons were that the
reliability of the ratings was low, the unknown policies of
the raters in making their judgments, and the low efficiency
of the prediction. He recommended better analysis of the
recruiter's job and the use of behaviorally-anchored rating
scales. [Ref. 9] He stated:

> The development of a recruiter selection procedure must
> preceded by a thorough analysis of the position that will
> show the functions performed and the relative frequency
> and importance of the functions. It will also be
> necessary to carry out these functions successfully and
> the types of behavior that are detrimental....The method
> of developing behaviorally anchored rating scales could
> provide the desired list of behaviors. Knowledge of the
> job content and behavior necessary to carry them out
> should provide the material to develop a recruiter
> selection procedure. [Ref. 9:p. 129]

6.   Hirabayashi and Hersch

The study completed by Hirabayashi and Hersch
focused on the attributes associated with excellent Navy
Recruiting Districts. They interviewed key recruiting
personnel including commanding officers, executive officers,
department heads, field recruiter, recruiters-in-charge
(Rinc), zone supervisors and trainers. They found the
following characteristics important to an excellent
recruiter:

- are go getters, ambitious,
- desire to be the best, to be number one,
- aggressive, looking for responsibility,
- inherent skill to deal with numbers, sales and people,
- communication skills, fundamental knowledge of
  recruiting,

- positive mental attitude (PMA), cheerful, self-motivated,

- extroverted, enjoy dealing with people. [Ref. 10]

    7. Kocher and Gondolfo

        This study written by Kocher and Gondolfo applied expert system methodology to the recruiter selection problem. A model was developed using six reserve Army recruiters and ten active duty Army recruiters. It measured the importance of six dimensions: communication skills, demographic characteristics, military experience, personality characteristics, behavior characteristics and specific experience.

    Within the six dimensions it was established that persuasion was the most important communication skill, integrity the most important personality trait, self-starter the most important behavior characteristic, paygrade the most important facet of military background, AFQT the major demographic characteristic, and sales experience the most useful type of specific experience. [Ref. 2]

C. CONCLUDING REMARKS

    There has been extensive research done on the topic of recruiter selection. However, the results have often been disappointing. It is intuitively felt that successful recruiters possess similar personality attributes. Through the use of tests and interviews a device to measure these

characteristics has achieved varying amounts of success.
Table 3 lists those attributes that related most
significantly in the various studies.

TABLE 3

SUMMARY OF CHARACTERISTICS RELATED
TO RECRUITER SUCCESS

Self-motivated	Age
Ambitious	Paygrade
Aggressive	Length of service
Mature	Marital Status
Enthusiastic, positive	Financially Stable
Dominant	Communicates
Confident	Effectively
Spontaneous	Well groomed
Desire to excel	Education
Extroverted	Sales Experience

Source: [Ref. 2]

Most of the past research suffered from one or more
serious defects: poor criterion measurement, lack of
knowledge of the recruiter job, and failure of results to
remain significant upon cross-validation. Therefore, people
question the results of these studies.

Lessons learned from these studies have been incorpo-
rated into recent work. Improvements have been made in
production measures. They can better account for
"opportunity bias," or geographical, socio-economic and
organizational varying effects. Through extensive job
analysis researchers are more aware of what is entailed of a
recruiter. Nonetheless, a true reliable profile of the

successful recruiter has not been agreed upon. [Ref. 2:pp. 38-39]

III. A KNOWLEDGE-BASED APPROACH TO SUPPORT
THE RECRUITER SELECTION

A. EVALUATION OF THE CURRENT SYSTEM

With the advent of the 600 ship Navy there has been increasing pressure put upon the "recruiters in the trenches." The old saying "Make mission go fishin" is no longer the case. With the increasing goals and decreasing budget, more and more recruiters and recruiting districts are missing their assigned goal. This forces those that are successful and achieve goal to have to pick up the slack of the others.

In Fiscal Year 1988 the Navy Recruiting Command missed its new contract goal by 4428 contracts [Ref. 11]. In Fiscal Year 1989 the accessions goal (Butts on the bus) is 94,803. This number is broken down as follows:

Males	79,953
Upper Mental groups (high quality)	45,973
High School Diploma Graduates	71,558
Females	9750
Prior Service	5100
Total	94,803 [Ref. 12]

This goal is divided by a projected 4939 recruiters up from 4436 recruiters in 1988. This substantial increase in the number of recruiters should help to take the burden off

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somewhat. However, a recruiter must still average 19.19
accessions per year or 1.6 contracts per month. Although
this appears to be a very attainable goal, since 1982 the
average monthly production per recruiter (PPR) has decreased
from 2.53 contracts to 1.73 contracts. [Ref. 13] It is
important to note that 4939 is just a projected figure and
the additional 500 recruiters will transfer throughout the
year. Therefore a higher production level than the average
1.6 must be met to attain goal, while waiting for the
increased manning.

Besides the quality restrictions, the new contract goals
emphasize the effective placement of individuals in order to
meet the accession goals. Therefore recruiters must write a
certain percentage of their contracts from the work force
market. With low unemployment rates there is increased
competition with the civilian community in this market. In
addition, there is the extensive gap between the military
and civilian pay gap. But probably the biggest aspect in
the struggle to reach goals is the projected decline in the
17-21 year old male population by 24.4% from 1980 to 1994.

To add to the stress of recruiting, the individual must
leave his regular work environment and work in an area with
which he is not familiar. Most recruiters are assigned to a
recruiting station that is not near a military facility and
does not have the support group that he is accustomed to.
Or a person may be attached to a command in a high cost area

where there is no available base housing. This can cause a tremendous financial burden on a second or first class petty officer with a family to support.

When first assigned to recruiting, many recruiters as well as their families believe that this is "shore duty." They have done their time at sea and now is their time to spend at a nine to five job. They are sadly mistaken. A recruiter's day begins as early as 4:00 a.m. if there is an applicant processing for the Navy. And the day usually ends around 7-8:00 p.m. when he finishes the planned prospecting for the day. The work week is Monday through Saturday with an occasional Sunday (if the end of the month is near and goal has not been attained). These long hours and long work weeks add considerable strain to the recruiter and the family.

Another concern for individuals on recruiting is being taken away from their technical ratings. It requires a lot of self-discipline on the part of the individual to be able to keep current with his rating. There is no time set aside for training in his rate. If not done on his own, when he returns to his rating after three years, he can be well behind his peers.

Presently the selection of recruiters uses very few automated resources. The rating detailers are responsible for filling a quota of recruiter billets given by the

special programs detailing shop. The rating detailers must fill these quotas.

Recruiting, not being known as career enhancing, only receives roughly 20% volunteers. With approximately 10% of these being individuals that have applied for Guard III; that is they have agreed to reenlist in the Navy with the promise of being stationed at a particular location. [Ref. 15] Other incentive programs have been installed in order for recruiting to become more appetizing to an individual. Examples of these programs are recruiter incentive pay and the issuance of sea duty credit for recruiting tours. An individual receives credit for three to 18 months sea duty depending on the area he is stationed. In addition anyone reporting to recruiting after 19 April 1985 receives a guarantee as to their choice of assignment upon completing the full three year tour. [Ref. 15:p. 11-2]

Once the rating detailer submits an individual's name to the special programs shop the person must meet the qualifications for recruiting duty according to the Enlisted Transfer Manual (NAVPERS 15909D). If the individual meets all requirements a screening form is sent to his/her present command. The form asks questions about the individual's medical and dental history, financial history, communication skills, and if there has been any history of drug or alcohol abuse and judicial record. (See Appendix A.)

Now with the desperate need for recruiters in the field, the only disqualifying remarks are those that deal with medical or dental problems or if an individual is experiencing serious family problems. Remarks on the screening form that suggest that the individual will not be successful are disregarded. The detailers hope that the Enlisted Navy Recruiter Orientation (ENRO) will be able to overcome any of the problems that the individual has.

The detailers examine the form and then pass it on to the special programs shop. The special program detailers contact the potential applicant and talk to them about the benefits of recruiting. After these interviews the number of people who are enthusiastic about their orders to recruiting increases from 20% to about 50%. [Ref. 14]

Upon transfer the individual reports to ENRO. Here he enrolls in a five week school where he receives extensive sales training. The drop rate from this school is a meager 6%. However, this low rate is not because of the capability of the people chosen for recruiting. It is attributable to the motivation, support and constant training that they receive while there. If the five weeks is not enough time for them to pass the course, then they stay back until they can successfully complete it. Of those that attrite from the school, very few are attributable to academic reasons. Most attrites are because of financial problems, drug or alcohol problems and serious family problems. [Ref. 16]

The problem with this way of doing business is that
people transfer to recruiting duty who never should have.
They should have been weeded out either by the command
screening form or by ENRO. The results of this are shown in
the number of Freeman Transfers (transfers due an inadequate
production level) completed each month. Freeman Transfers
number roughly 25 people per month. [Ref. 14]

B. WEAKNESSES CORRECTED BY THE HEURISTICS APPROACH

The first time an individual interviews with an expert
in the recruiting field occurs when he checks aboard ENRO.
By this time the money has already been spent to send the
individual from his last command to the school. Once at
school, if he appears not to have the motivation or
capability to be a success in recruiting, it proves more
costly to the recruiting command to transfer the individual
back to the fleet. They must replace him with someone else
who might not become a success. It is easier and more cost
efficient to send him to the recruiting command and pray he
can hold his own.

What does it mean to use a heuristic approach to
decision making? Heuristics are any nonnumerical advice
about which direction to follow in search for a decision
[Ref. 17:p. 199]. They are an aid toward discovery of an
answer or decision. They help lead the decision making
process down the right path while eliminating the other
(wrong) paths. Heuristics are just rule-of-thumb methods

which do not guarantee help in the solution of a problem,
but have a reasonable record of helpfulness of previous
problems that have something in common with the problem.
[Ref. 18:pp, 15-16] Heuristics are rules about rules.
However, heuristics can be wrong. It is important to
remember that they represent reasonable advice on the best
way to proceed.

Using a heuristics approach to decision making, rules
defining the attributes needed to be successful are used.
Those people who are unsuited to the rigors and stress of
recruiting are flagged. The knowledge base is formed from
the expertise of those associated with recruiting. By
reformatting the Commanding Officer's Screening Form, the
detailer can use the information on the form as the input
into expert system. This takes the recommendation process
away from the Commanding Officer who may not have any
experience in recruiting. The system and the user control
the decision process.

The system will use these data to analyze the person's
potential to be successful in recruiting. The system will
ask the detailer (the user) a variety of questions based on
attributes that make up the profile of a successful
recruiter. Based on the responses and the rules used to
formulate the decision the expert system advises the
detailer whether the individual will be productive in
recruiting.

The expert system will also reduce the manhours required to detail a person to recruiting. The detailer will no longer have to make many phone calls to determine the individual's qualifications because he will have the data on the Commanding Officer's screening form. They will not have to worry about the criticality of the billet. The system will take that into account and look at different attributes based on the need for this individual to fill the billet. In addition this program operates on a micro computer, thereby allowing easy access to the data.

C. A BRIEF SUMMARY OF THE THEORY OF EXPERT SYSTEMS AND KNOWLEDGE REPRESENTATIONS

The use of an expert system will help decrease the amount of Freeman transfers. It is an applicable tool that the detailer can use that will help him decide if the individual is best suited for recruiting duty.

What is an expert system? According to Michael Chadwick and John Hannah it is the following:

> An expert system is a computer program that simulates the reasoning of a human expert in a certain domain. To do this, it used a knowledge base containing facts and heuristics, and some inference procedure for utilizing its knowledge. [Ref. 19:p. 3]

It is also known as a knowledge system. The knowledge base of the expert system consists of rules and data that represents the expert knowledge in the expert system domain. The rules of the knowledge base should be modular so that they can be replaced or modified without affecting other

rules. By having this type of knowledge base the system is
more flexible and adaptable.

An expert system should encompass the following
features. It should offer a narrow domain of expertise.
That is it should have a small finite number of goals or
solution approaches so as not to add confusion to the user
or developer. As the system gives "advice" rather than a
definitive answer it needs to be able to deal with
uncertainty. It needs to be able to flow through its line
of reasoning in a sound understandable manner. It should
have growth potential. Its basis are the rules, heuristics
that express the expert's thinking processes. Most
importantly is the base of knowledge. [Ref. 20:p. 187]

But what is knowledge? According to the New Webster's
Dictionary of 1984 the definition of knowledge is the
acquaintance of facts, truths or principles, as from an
investigation; acquaintance with a thing, place, person;
the state of being cognizant or aware; the basis for human
decisions. With knowledge processing a person uses data
processing and information processing to arrive at a
decision and the individual can apply these results to the
specific task.

The basic structure of and expert system is the
knowledge base--the heuristics, an inference engine--the
control structure for using the knowledge base--the rule
interpreter, and a global data base--tracks the problem

status and the history of the problem thus far. [Ref. 21:p. 71]

M.1 is an expert system shell. It is an expert system with the knowledge base left blank. Expert system shells are advantageous in that they offer a quick, low cost solution to a problem. However, there is the chance that as the use of the system grows that the shell may no longer encompass all the needs of the user. Therefore the system design needs to provide for that growth.

Expert systems use as the inference mechanism either a process called forward chaining or a process called backward chaining in searching for a decision. Forward chaining starts with known information and provides users with an answer based on heuristics. It is a data-driven technique. Backward chaining begins with a goal or expectation of an outcome and works backward to support or contradict the expected outcome. This is a goal-driven technique. [Ref. 22]

When constructing an expert system one must meet these following requirements. At least one human expert should be involved in the development. The basis of the expertise of the individual should be special knowledge, judgment, and experience. The expert must be able to explain this expertise and the method needed to apply it to particular problems. Lastly the problem must have a well-bounded domain.

The knowledge representation is an important part of the system. Its purpose is to organize the knowledge into a form that the expert system can access for the decision making process. There are two basic representation schemes. The first is declarative or object oriented schemes and the second is a procedural scheme (referring to action or what to do). It is important that the following elements are represented:

- Domain terms: jargon of the experts in the field,
- Structural relationships: interconnection of components entities,
- Causal relationships: cause-effect relations between components. [Ref. 20:pp. 188-189]

Procedural representations are composed of procedures that are modular in nature. This allows the system to be easily expanded and modified. The method used in this expert system is the If-Then format. That is a conclusion is drawn from a condition that specifies a pattern. It is also very important to be sure that the knowledge representations match that of the human expert as closely as possible. The human expert does not always express himself as precisely or as consistently as he means. The success of the system depends on how well the knowledge engineer can articulate the special knowledge of the expert in the system.

D. EXPERT SYSTEMS AND KNOWLEDGE REPRESENTATIONS FOR THE
    RECRUITER SELECTION EXPERT SYSTEM

The Recruiter Selection Expert System uses the forward
chaining technique with procedural representations. It
begins with the attributes of an individual and through the
matching of rules to these facts it will deduce whether the
individual is best suited to recruiting.

When deciding on how to build the system it was first
necessary to build the model of the successful recruiter.
Past studies were used as a base to identify the personal
attributes needed. In addition the minimum requirements
from the Navy's Enlisted Transfer Manual had to be
incorporated. The minimum requirements are given in Table
4.

The listing of personality characteristics shown in
Table 3 was used as material in interviews of 13 Recruiting
experts. Characteristics such as well-groomed,
communicates effectively, self-motivated, and financially
stable were not presented because they are included in the
minimum personnel attribute requirements of the Navy.

The results of the interviews found the most important
attributes needed to be successful were conscientiousness,
initiative, maturity, stability, aggressiveness, adaptabili-
ty and self-discipline. Other characteristics such as
attention to detail, confidence, enthsusiasm, friendliness,
and innovation were also mentioned. However, these were not
felt to be as crucial.

TABLE 4

MINIMUM REQUIREMENTS FOR ASSIGNMENT TO RECRUITING

Must be at least E-5

Must not have been treated for alcohol or drug abuse

Must have a record clear of NJP and civil involvement;
    members of his family also

Must not be in need of special medical or extensive
    dental treatment; members of his family included

Must not have serious financial problems

Must be able to communicate effectively

Must present a neat, well-groomed appearance

Must have a satisfactory performance record

Must have a satisfactory self-motivation level

Must meet minimum height, weight, and body fat
    standards

        Source: [Ref. 15]

In the area of military experience most characteristics
with the exception of length of service were not felt
important.   Paygrade could be critical when assigning E-5s.
Several of the experts noted that E-5s that were stationed
in a high-cost area although productive, developed financial
hardships.   Length of service was deemed significant.   Many
individuals after serving 16 or more years in the service
"retire on active duty."   Experts believed to be successful
an individual should have between six and 12 years active
service.

In Navy recruiting there is an incentive program called the Freeman Advancement. This program awards an individual to the next higher paygrade for exceptional performance. It is only offered to paygrades E-5 through E-7. Those individuals that respond to this incentive are the people who have been unable to pass the test to make rate and who have under 15 years of service.

Experts felt that sales experience was nice to have, however, felt it was not essential. They felt if an individual had the needed personality characteristics he could overcome the lack of sales experience.

The design of the program used the eight most desirable traits chosen by the experts. The entire set of characteristics is too numerous to be efficient for the selection model. The minimum requirements are also incorporated into the program.

Lastly, when interviewing the special program detailer it became apparent that they were not always able to be selective in the assignment of recruiters. Therefore, the system has an added feature referred to as criticality. The criticality factor is used to determine the importance of filling the billet. The range is from 100 (extremely important) to 0 (no billet available, but someone has volunteered).

Because the determination of what attributes needed to be successful in recruiting involves intangibles and

uncertainty, the system design includes weighting features called confidence factors. These weightings allow the system to cope with the uncertainty consistently. As more and more information accumulates, the level of certainty increases and the decision should have more validity.

The use of the expert system offers the user a more efficient and effective means to determining eligibility of an individual. It should also provide the Navy with more productive recruiters and at a cost savings.

IV. AN EXPERT SYSTEM PROTOTYPE FOR RECRUITER SELECTION

A. DESIGN OF THE PROTOTYPE

The knowledge base is modularized into four sections: criticality, minimum requirements, personality attributes and military experience. Each section has the rules and questions that pertain to it in the module. The program is given in Appendix B.

In the design of the prototype the first criterion was the priority of the questions which the user would be asked. In interviewing the users the most important feature was the need of recruiters to fill a billet. Therefore, the criticality factor became the beginning feature in the search for a successful recruiter.

The selections for criticality are: 100, 70, 50, 30, and 0. If the need to fill the billet is crucial then a criticality factor of 100 is given. As the need for recruiter diminishes the criticality factor decreases. A factor of 0 is given in the case where an individual volunteers for recruiting, however there are no available assignments. If the volunteer is an excellent choice then the program will recommend him for recruiting.

The next criterion is the minimum requirements (min_req). As noted in the Enlisted Transfer Manual, an individual cannot be assigned to recruiting if he does not

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meet the requirements listed in Table 4. When the criticality factor is equal to 100 the program will only consider min_req to determine if a person is eligible. For the other criticality factors, min_req must be met in addition to other personality attributes. If any of the min_req are not met then the program does not recommend the person for recruiting.

Personality attributes are taken into consideration next. They are referenced only if the criticality factor is not equal to 0. Eight personality characteristics were used. Each attribute was broken down into three to five choices. It is felt that people possess varying degrees of each trait. Table 5 lists each characteristic with its options.

However, responses are categorized as either high attribute (person will be successful) or low attribute (person will not be successful). The division of each attribute is given in Table 6. Stability is considered a critical characteristic in recruiting. That is, without it one fails. Therefore a negative response to stability induces a not recommended decision from the program.

The other seven characteristics were equally weighted in their importance to the recruiter. In addition, the military experience characteristic, years in service, is treated as a personality attribute. As the program is written, if an individual lacks one of these attributes he

TABLE 5

SELECTIONS FOR PERSONALITY ATTRIBUTES

Conscientiousness: very high, high, normal, low, very low

Outgoing: very outgoing, outgoing, quiet--
                      reserved

Stability: very stable, stable, unstable

Maturity: very mature, mature, slightly
                      immature, very immature

Self-discipline: high degree, normal, low degree, none

Adaptability: very adaptable, adaptable, hard time
                      adjusting to change

Initiative: great initiative, some initiative,
                      little initiative, no initiative

Aggressiveness: very high, high, normal, low, very low

has a 90% chance of being successful in recruiting. If the individual is missing two traits a confidence factor of 75% is given. If he lacks three attributes then he has a 50% chance of being successful in recruiting. If he is missing four of the characteristics he is not recommended for recruiting.

The last feature the program checks is the paygrade of the individual. Again, although this is not usually a detriment to performance, it can be if an E-5's assignment is to a high-cost area. If an E-5 qualifies in all other respects the program suggest that the individual's assignment not be to a high-cost area.

TABLE 6

HIGH/LOW DIVISION OF THE PERSONALITY ATTRIBUTES

High conscientiousness:	very high, high, normal
Low conscientiousness:	low, very low
High outgoing:	very outgoing, outgoing
Low outgoing:	quiet--reserved
High stability:	very stable, stable
Low stability:	unstable
High maturity:	very mature, mature, slightly immature
Low maturity:	very immature
High adaptability:	very adaptable, adaptable
Low adaptability:	hard time adjusting to change
High aggressiveness:	very high, high, normal
Low aggressiveness:	low, very low

B. DESIGN REQUIREMENTS

According to Peter Keen, to improve the chances that a computer system will be used by the decision maker, it is important that it has at least the following features: ease-of-use, modularity for easy maintenance, flexible, and communicative [Ref. 23:p. 52]. Thus we would like our prototype to follow these design requirements.

This program offers the user a quick and easy look at the individual's potential for recruiting. It steps the user through the questions, deciding on eligibility based on

the responses.   The input for the system comes from the revised Commanding Officer Screening Form.   (See Appendix C.)   The user needs only to pull the information off the form as he steps through the program.   It also prevents the user from inadvertently assigning a person who does not meet the minimum requirements.

Other advantages besides the ease of use, are the availability and portability of the program.   The program runs on a microcomputer and needs only the M.1 expert system shell software to execute.   This enables the user to utilize the application on the road if he desires.

The modularity of the expert system allows for easy expansion.   There is room for growth in the system if eligibility requirements change or for the addition of personality characteristics.   A programmer or even the end user can easily update the questions and the rules that are applicable to the change.   The logic of the program is simple to understand and follow.

There is no computer jargon used in this program.   The wording is based on every day English phrases.   There is no large technical manual to follow.   The program asks simple questions for the user to answer.

The user has his choice of how he wishes to view the questions.   By pressing the F9 key the view mode changes. One view offers the user selections using a numeric menu. The other extends a cursor-based selection view.   That is

the user positions the cursor on the choice and presses enter for the selection. This eliminates the need to type anything into the program.

Using M.1, the program needs only to be in ascii format for it to execute. Therefore it permits editing of the program using most word processing applications. Common word processing applications such as Word Perfect and Word Star offer an ascii save feature.

As to the actual performance of the program the E-5 recommendation brings to the attention of the user that assignment to a high-cost area could result in financial hardship for the individual.

Also if the individual is recommended for recruiting duty the system gives a confidence factor for the recruiter to be successful. These confidence factors provide the user another aspect to consider when determining if it is in the best interest of both the Navy and the individual to send him to recruiting.

Appendix D leads the user step-by-step through the program. It illustrates the ease of use and the simplicity of the application.

C. WEAKNESSES OF THE PROTOTYPE

Although this prototype has many advantages there are several weaknesses. Probably the primary weakness is the limited knowledge base. Initially 13 personality character-istics were to compose the knowledge base. However, this

would have led to nearly 13 factorial rules. By eliminating
five attributes the scope of the recruiter profile was
dramatically reduced. In addition, combining differing
degrees of the attribute into either a high or low category
diminished the scope. It was necessary to incorporate these
modifications in order for the program to be a manageable
tool.

When the program executes, depending on the criticality
factor, it asks the questions in a different order than on
the Commanding Officer's Screening Form. When criticality =
70, it asks the questions in search for a negative response.
This may lead to the question on aggressiveness being asked
before the question on initiative, for example. When
criticality = 30, the system searches for two low
attributes. If it succeeds in finding them it ceases asking
personality attribute questions. This is because the
aggregate personality attribute is equal to "no"; therefore
the individual is not recommended for recruiting duty. The
inconsistency of the order in which the questions are asked
can be confusing to an individual. However, with only eight
traits it is easy for the user to learn and adapt.

As the data for this system come from the Commanding
Officer's Screening Form the "halo effect" is a problem.
This bias defeats the purpose of the system and sends
individuals who are not qualified to recruiting duty. It is
important that the Commanding Officer has a clear

understanding of the recruiter's job to ensure that an accurate description of the person is portrayed on the form.

The confidence factors were listed as an advantage to the expert system. However, the assignment of these factors was subjective. Again it must be emphasized that expert systems do not give a definitive answer. They generate a decision based on the knowledge they possess and the decision is only a recommendation.

D.   EARLY EVALUATION OF THE PROTOTYPE: RESULTS AND
     DISCUSSION

A sample test of 29 recruiters was conducted in Navy Recruiting District Los Angeles. The screening of the recruiters was completed by their zone supervisors. It was assumed that the recruiters met the minimum qualifications with the exception of the ability to communicate effectively. The attribute, communicate effectively, was included in the screening process in addition to the personality attribute questions and the military experience questions. The results are shown in Tables 7-21.

When analyzing the data, only the criticality factors 70 and 50 were taken into account. This was attributable to the fact that criticality = 100 simply takes the minimum requirements into account. Also with the crucial need for recruiters in the field the criticalities factors 30 and 0 are not realistic at this time. Also a production per

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recruiter (PPR) of fewer than 2.00 was considered unsuitable as that is the PPR used for Freeman transfers.

Of the 29 test cases, when comparing the recommendation by the system with the PPR of the recruiter, the program gave an accurate recommendation on 21. Of these 21, five were recruiters who should not have been assigned to recruiting duty.

One case, Recruiter18, was recommended for criticality = 70. However, with a confidence factor of 50% he was not recommended. This individual is a very productive recruiter. In seven cases the recommendation differed from the productivity. Four of these cases were recruiters with a PPR below 2.00 but had the traits needed to be successful. The other three had PPRs greater than 2.00, but were unable to communicate effectively.

Although the program contradicted the PPR for Recruiter15 and Recruiter27, it should be noted that both recruiters are the recruiters-in-charge (RINCs) for a multi-man station. Therefore, besides their production they are also responsible for the overall management of the station.

Recruiter10 and Recruiter13 both were disqualified because of the inability to communicate effectively. Had this not been a consideration, they both had the personality attributes to be successful. Recruiter28 was the only case where in addition to communication problems, the individual lacked the personality attributes to be successful.

The program proved to be 72.4% effective in this
environment. With the inclusion of Recruiter15 and
Recruiter27 the accuracy is increased to 79.3%. This
inclusion is valid because RINCs are dependable, hardworking
recruiters with the experience needed to manage the station.
Out of the 20% erroneously predicted, only two people who
were given a prediction for success were poor producers.

TABLE 7

RESULTS OF TESTING RECRUITER 1 AND 2

Attribute	Recruiter1	Recruiter2
Communicates Effectively	Yes	Yes
Conscientious	Very high	Very high
Outgoing	Very outgoing	Outgoing
Stability	Very stable	Very stable
Maturity	Mature	Very mature
Self-discipline	Normal	High degree
Adaptability	Very adaptable	Adaptable
Initiative	Great initiative	Great initiative
Aggressive	Very high	Very high
Paygrade	E-5	E-6
Time in Service	10.5 years	17 years
Production/Recruiter	2.84	3.31

Determination of Success Chances by Program

Criticality = 70	100%	90%
Criticality = 50	100%	90%
Criticality = 30	100%	90%
Criticality = 0	100%	Not recommended

TABLE 8

RESULTS OF TESTING RECRUITER 3 AND 4

Attribute	Recruiter3	Recruiter4
Communicates Effectively	Yes	Yes
Conscientious	Normal	Very high
Outgoing	Outgoing	Quiet--reserved
Stability	Stable	Stable
Maturity	Mature	Mature
Self-discipline	Normal	Normal
Adaptability	Adaptable	Adaptable
Initiative	Some Initiative	Some initiative
Aggressive	High	Low
Paygrade	E-6	E-6
Time in Service	6 years	7 years
Production/Recruiter	1.84	2.27

Determination of Success Chances by Program

Criticality = 70	100%	75%
Criticality = 50	100%	75%
Criticality = 30	100%	Not recommended
Criticality = 0	100%	Not recommended

TABLE 9

RESULTS OF TESTING RECRUITER 5 AND 6

Attribute	Recruiter5	Recruiter6
Communicates Effectively	Yes	Yes
Conscientious	Normal	Normal
Outgoing	Outgoing	Quiet--reserved
Stability	Stable	Stable
Maturity	Slightly immature	Mature
Self-discipline	Normal	Normal
Adaptability	Hard time adjusting to change	Hard time adjusting to change
Initiative	Little initiative	Some initiative
Aggressive	Normal	Low
Paygrade	E-6	E-6
Time in Service	11 years	24.5 years
Production/Recruiter	2.27	1.43

Determination of Success Chances by Program

Criticality = 70	75%	Not recommended
Criticality = 50	75%	Not recommended
Criticality = 30	Not recommended	Not recommended
Criticality = 0	Not recommended	Not recommended

TABLE 10

RESULTS OF TESTING RECRUITER 7 AND 8

Attribute	Recruiter7	Recruiter8
Communicates Effectively	Yes	Yes
Conscientious	High	High
Outgoing	Outgoing	Outgoing
Stability	Very stable	Very stable
Maturity	Mature	Mature
Self-discipline	High degree	High degree
Adaptability	Very adaptable	Very adaptable
Initiative	Great initiative	Great initiative
Aggressive	Very high	High
Paygrade	E-5	E-5
Time in Service	10 years	6.5 years
Production/Recruiter	3.75	3.33

Determination of Success Chances by Program

Criticality = 70	100%	100%
Criticality = 50	100%	100%
Criticality = 30	100%	100%
Criticality = 0	100%	100%

TABLE 11

RESULTS OF TESTING RECRUITER 9 AND 10

Attribute	Recruiter9	Reruiter10
Communicates Effectively	Yes	No
Conscientious	Very high	Normal
Outgoing	Outgoing	Quiet--reserved
Stability	Stable	Stable
Maturity	Mature	Slightly immature
Self-discipline	Normal	Normal
Adaptability	Very adaptable	Hard time adjusting to change
Initiative	Great initiative	Some initiative
Aggressive	High	Normal
Paygrade	E-6	E-5
Time in Service	11 years	14 years
Production/Recruiter	3.33	2.48

Determination of Success Chances by Program

Criticality = 70	100%	Not recommended
Criticality = 50	100%	Not recommended
Criticality = 30	100%	Not recommended
Criticality = 0	100%	Not recommended

TABLE 12

RESULTS OF TESTING RECRUITER 11 AND 12

Attribute	Recruiter11	Recruiter12
Communicates Effectively	Yes	Yes
Conscientious	High	Normal
Outgoing	Very outgoing	Quiet--reserved
Stability	Very stable	Stable
Maturity	Very mature	Very mature
Self-discipline	Low degree	Low degree
Adaptability	Very adaptable	Adaptable
Initiative	Great initiative	Some initiative
Aggressive	High	Low
Paygrade	E-5	E-5
Time in Service	9 years	6 years
Production/Recruiter	2.93	2.07

Determination of Success Chances by Program

Criticality = 70	100%	75%
Criticality = 50	100%	75%
Criticality = 30	100%	Not recommended
Criticality = 0	100%	Not recommended

TABLE 13

RESULTS OF TESTING RECRUITER 13 AND 14

Attribute	Recruiter13	Recruiter14
Communicates Effectively	No	Yes
Conscientious	Normal	Normal
Outgoing	Outgoing	Outgoing
Stability	Stable	Stable
Maturity	Very mature	Mature
Self-discipline	High degree	Normal
Adaptability	Adaptable	Adaptable
Initiative	Great initiative	Some initiative
Aggressive	Average	Average
Paygrade	E-5	E-6
Time in Service	7 years	7 years
Production/Recruiter	2.25	2.00

Determination of Success Chances by Program

Criticality = 70	Not recommended	90%
Criticality = 50	Not recommended	90%
Criticality = 30	Not recommended	90%
Criticality = 0	Not recommended	Not recommended

TABLE 14

RESULTS OF TESTING RECRUITER 15 AND 16

Attribute	Recruiter15	Recruiter16
Communicates Effectively	Yes	No
Conscientious	Normal	Very low
Outgoing	Outgoing	Quiet--reserved
Stability	Stable	Stable
Maturity	Mature	Slightly immature
Self-discipline	Normal	Low degree
Adaptability	Adaptable	Hard time adjusting to change
Initiative	Great initiative	No initiative
Aggressive	Average	Very low
Paygrade	E-7	E-5
Time in Service	10 years	7 years
Production/Recruiter	1.66	1.37

Determination of Success Chances by Program

Criticality = 70	100%	Not recommended
Criticality = 50	100%	Not recommended
Criticality = 30	100%	Not recommended
Criticality = 0	100%	Not Recommended

TABLE 15

RESULTS OF TESTING RECRUITER 17 AND 18

Attribute	Recruiter17	Recruiter18
Communicates Effectively	Yes	Yes
Conscientious	Very high	Very high
Outgoing	Very outgoing	Very outgoing
Stability	Stable	Stable
Maturity	Very mature	Mature
Self-discipline	High degree	Low degree
Adaptability	Very adaptable	Hard time adjusting to change
Initiative	Great initiative	Great initiative
Aggressive	Very high	Low
Paygrade	E-6	E-6
Time in Service	9 years	8 years
Production/Recruiter	4.50	3.76

Determination of Success Chances by Program

Criticality = 70	100%	50%
Criticality = 50	100%	Not recommended
Criticality = 30	100%	Not recommended
Criticality = 0	100%	Not recommended

TABLE 16

RESULTS OF TESTING RECRUITER 19 AND 20

Attribute	Recruiter19	Recruiter20
Communicates Effectively	Yes	Yes
Conscientious	Low	Normal
Outgoing	Outgoing	Outgoing
Stability	Stable	Very stable
Maturity	Slightly immature	Mature
Self-discipline	Low degree	Normal
Adaptability	Adaptable	Adaptable
Initiative	Some initiative	Some initiative
Aggressive	High	High
Paygrade	E-6	E-6
Time in Service	14 years	6 years
Production/Recruiter	3.39	3.00

Determination of Success Chances by Program

Criticality = 70	75%	100%
Criticality = 50	75%	100%
Criticality = 30	Not recommended	100%
Criticality = 0	Not recommended	100%

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TABLE 17

RESULTS OF TESTING RECRUITER 21 AND 22

Attribute	Recruiter21	Recruiter22
Communicates Effectively	No	Yes
Conscientious	Normal	Very low
Outgoing	Quiet--reserved	Outgoing
Stability	Stable	Stable
Maturity	Mature	Mature
Self-discipline	Normal	Low degree
Adaptability	Adaptable	Hard time adjusting to change
Initiative	Some initiative	No initiative
Aggressive	Normal	Very low
Paygrade	E-7	E-8
Time in Service	27 years	28 years
Production/Recruiter	1.92	1.8

Determination of Success Chances by Program

Criticality = 70	Not recommeded	Not recommended
Criticality = 50	Not recommeded	Not recommended
Criticality = 30	Not recommeded	Not recommended
Criticality = 0	Not recommeded	Not recommended

TABLE 18

RESULTS OF TESTING RECRUITER 23 AND 24

Attribute	Recruiter23	Recruiter24
Communicates Effectively	No	Yes
Conscientious	Very low	Very high
Outgoing	Quiet--reserved	Very outgoing
Stability	Unstable	Stable
Maturity	Slightly immature	Very mature
Self-discipline	Normal	High degree
Adaptability	Adaptable	Adaptable
Initiative	No initiative	Great initiative
Aggressive	Low	Very high
Paygrade	E-5	E-7
Time in Service	5 years	13 years

Determination of Success Chances by Program

Criticality = 70	Not recommended	100%
Criticality = 50	Not recommended	100%
Criticality = 30	Not recommended	100%
Criticality = 0	Not recommended	100%

TABLE 19

RESULTS OF TESTING RECRUITER 25 AND 26

Attribute	Recruiter25	Recruiter26
Communicates Effectively	Yes	Yes
Conscientious	Very high	Very high
Outgoing	Very outgoing	Very outgoing
Stability	Very stable	Very stable
Maturity	Very mature	Very mature
Self-discipline	High degree	High degree
Adaptability	Very adaptable	Very adaptable
Initiative	Great initiative	Great initiative
Aggressive	Very high	Very high
Paygrade	E-6	E-6
Time in Service	11 years	10 years
Production/Recruiter	2.72	3.31

Determination of Success by Chances Program

Criticality = 70	100%	100%
Criticality = 50	100%	100%
Criticality = 30	100%	100%
Criticality = 0	100%	100%

TABLE 20

RESULTS OF TESTING RECRUITER 27 AND 28

Attribute	Recruiter27	Recruiter28
Communicates Effectively	Yes	No
Conscientious	High	Very low
Outgoing	Outgoing	Quiet--reserved
Stability	Stable	Unstable
Maturity	Mature	Mature
Self-discipline	Normal	Low degree
Adaptability	Adaptable	Hard time adjusting to change
Initiative	Some Initiative	No initiative
Aggressive	Normal	Very low
Paygrade	E-6	E-7
Time in Service	14 years	7 years
Production/Recruiter	1.13	2.27

Determination of Success Chances by Program

Criticality = 70	100%	Not recommended
Criticality = 50	100%	Not recommended
Criticality = 30	100%	Not recommended
Criticality = 0	100%	Not recommended

TABLE 21

RESULTS OF TESTING RECRUITER 29

Attribute	Recruiter29
Communicates Effectively	Yes
Conscientious	Normal
Outgoing	Outgoing
Stability	Stable
Maturity	Mature
Self-discipline	Normal
Adaptability	Adaptable
Initiative	Great initiative
Aggressive	High
Paygrade	E-6
Time in Service	6 years
Production/Recruiter	1.83

Determination of Success Chances by Program

Criticality = 70	100%
Criticality = 50	100%
Criticality = 30	100%
Criticality = 0	100%

V. CONCLUSIONS AND RECOMMENDATIONS

A. CONCLUSIONS

Everyone wants to be successful. The high quality personnel sent to recruiting have never known failure in their careers. They usually are hard chargers who want to be successful. However, for those that do not have the attributes needed to be successful, the stress, long working hours and lack of support often become too burdensome and lead to failure.

Typically, the failure is not for lack of trying. They spend more and more time at the recruiting station which reduces the time they can enjoy with their families. This leads to family problems which adds to the recruiter's stress.

The result is the recruiter receives a Freeman transfer. Everybody loses; the individual by having just failed for the first time in his career, the Navy Recruiting District in manhours devoted to train him and his replacement, and the Navy in dollars required to transfer the individual and his replacement.

The Recruiter Selection Expert System with an accuracy level of 79.3% has the potential to save the government substantial time and money. Roughly one out of every five individuals is effectively placed by the program. The

program did discover five individuals who should never have been assigned to recruiting duty. Again, the money spent on these individuals could have for training could have been used for the training of more productive recruiters.

It is believed that the "halo effect" was not a consideration in the test case rating because the supervisors screening the individuals were professional recruiters who knew exactly what to expect from a recruiter. The accuracy level would probably drop slightly when used in the normal environment, where the ratings are inflated.

Emphasis needs to be put on the Commanding Officer Screening Form. Commanding Officer's do not realize the importance of this document. Many are not interviewing the individual as stated in the Enlisted Transfer Manual because they do understand the implications if they recommend someone who is not qualified. Or it may be that they do not comprehend the stressful nature of recruiting.

Although the Commanding Officer Screening Form is signed by the commanding officer, a more legitimate assessment can probably be obtained from the subordinate's immediate supervisor. The chief petty officer in charge has a closer relationship with the individual and can determine more accurately the personality make-up of the subordinate.

If a more accurate assessment comes from the command then it will be taken more seriously by the detailing shop. Using the Recruiter Selection Expert System the command is

no longer given the opportunity to recommend or not recommend the person for recruiting. By removing this judgment call it is believed that the command will furnish a more perceptive representation of the individual's personality profile.

By sending people to ENRO who have a better chance for success the instructors will not have to spend as much time on one-on-one training. This can result in sending more people through the school or increase the scope of the school if additional courses want to be added.

The criticality feature in the system could be more of a detriment than an advantage. It offers an escape from the personality profile when equal to 100. Although the need for recruiters may be high is it more important to just fill the billet or to man the recruiting force with the best possible people? By not using the personality traits the problems addressed will not be corrected. People will be sent whose chances for success are minimal.

Use of the expert system is efficient however, it still requires time for screening form to be completed and sent to NMPC. If the individual is unsuited for recruiting, the billet is gapped until an eligible replacement is found. This time delay occurs in the present system also. Therefore, there is nothing lost by using the expert system and everything to gain.

The bottom line is that the urgent need for recruiters is forcing the detailers to send individuals, no matter their qualifications. With more and more recruiting districts missing their assigned goals something has to be done if CNRC is going to achieve its goals. The expert system is one answer to the problem. The advantages far outweigh the negatives. The use of the expert system establishes a more productive recruiting force composed of happier sailors improving the quality of life.

B. RECOMMENDATIONS

The Recruiter Selection Expert System needs refining. In its present design it offers the user a quick look at the qualifications of a person. However, the accuracy of the system can be improved.

The knowledge base composed of the minimum requirements and eight personality characteristics is the composite model of 13 experts. Other experts may have differing views as to what constitutes a successful recruiter. More data included in the knowledge base will result in a more accurate decision.

The expert system is designed for easy expansion. Therefore, as more research is compiled on the attributes for success, they can be incorporated into the system with little problems.

Before implementation, further research should be conducted on the testing of the system. The testing in this

study used recruiters as the subjects. To validate the results of these case tests, the system should be verified using the entire recruiter selection expert system process. That is, start with the revised Commanding Officer's Screening Form, input the responses into the expert system and follow the progress of the individual for several months on recruiting.

There is a need for individuals to become more aware of the opportunities that recruiting has to offer. Many sailors do not know of the sea-duty credit, recruiter incentive pay, and the chance for meritorious advancement. It is important for the career counselors to help change the perception of recruiting. If recruiting were seen as a career enhancing billet more individuals would volunteer. More volunteers would help reduce the need for recruiters in the field allowing for the detailer to be more selective.

The Recruiter Selection Expert System is a promising tool. It assists the Navy with one of its most difficult problems: recruiting. Recruiting is vital to meeting the ultimate goals of the Navy. Therefore, it is necessary to assign the best people possible to generate the most productive recruiting force possible. This expert system is a step toward fulfilling this demand.

APPENDIX A

PROSPECTIVE RECRUITER INTERVIEW DOCUMENT

The Commanding Officer, Medical Officer and Dental Officer <u>must</u> interview and evaluate prospective recruiters in each category as indicated. Upon completion, forward this document to COMNAVMILPERSCOM (NMPC-4010) with member's request for recruiting duty or as directed by NMPC transfer directive.

SERVICE MEMBER'S NAME_____SSN_____
                        (Last, First, MI)

RATE:_____

A. MEDICAL OFFICER'S SCREENING

The purpose of the medical screening is to determine whether the member or dependents have medical history or problems which would prevent assignment to high stress duty or to an area where military medical facilities are not available. Assignment to such area, would require use of CHAMPUS for dependent medical treatment.

1. Member's height_____   weight_____   % body fat_____

    Is the member overweight?   YES/NO

    Is member on weight control?   YES/NO

    Should member be on weight control?   YES/NO

    Does the member's weight fluctuate frequently?   YES/NO

2. Is the member presently being treated for or in the past for high blood pressure, heart problems, ulcers or other stress related illnesses?_____ If yes, provide details:_____

3. Has the member been treated at an ARS, ARC, CAAC for alcohol or drug abuse?_____Date(s):_____ Prognosis:_____

4. If married, are all members of the family free from health problems which require special medical attention?_____

country recommended for assignment and/or location of
medical facilities able to care for dependents:
_____

5. I recommend/do not recommend member for independent
    recruiting duty, based on medical screening.

                            _____
                            Medical Officer signature, rank
                            Autovon No:_____

B.   DENTAL OFFICER'S SCREENING

     The dental screen is to determine whether the member has
dental conditions which require ongoing treatment and for
which treatment cannot be completed prior to transfer. Such
conditions are disqualifying for recruiting duty for reasons
similar to those above for the medical screening.

1. Has the member completed a TYPE II dental examination in
    the past six months. Has an entry been made on the
    Dental Standard Form 63 that the member does not require
    dental treatment or dental prosthetic restorations?

    _____

2. If the member requires dental treatment or dental
    prosthetic restorations, give estimated length of time
    needed to complete treatment and month/year member will
    be fit for
    transfer._____

3. I recommend/do not recommend member for independent
    recruiting duty, based on dental screening.

                            _____
                            Dental Officer Signature, rank
                            Autovon phone no._____

C.   COMMANDING OFFICER'S COMMENTS

     The Commanding Officer and interviewing officer must be
thoroughly familiar with Articles 11.03 through 11.033.
This interview must be conducted by an officer and certified
personally by the Commanding Officer.

1. Is the individual able to speak clearly without speech
    impediment?_____ If not, provide a
    brief explanation:_____

2. Is the individual's record clear of court-martial or Commanding Officer's NJP or civil authorities involvement by the member or dependents for the past three years?_____
If not , provide details. Give specific recommendations for waiver consideration if appropriate:_____

3. Does the individual have the ability to discharge responsibilities in an independent duty assignment? _____
If not, provide explanation: _____

4. Does a review of the members overall evals show 3.6 marks and above with an upward trend?_____
Does the individual present a neat, well-groomed appearance?_____
Does the member meet height and weight or body fat standards?_____
Bodyfat percentage_____ Height_____
Weight_____

5. Is the individual free from financial difficulty based on service record review and interview?_____
If appropriate, attach summary of financial status.

6. Does the member hold a valid state motor vehicle operator's license?_____
If not, member must obtain one prior to transfer. If member is unable to obtain one give specific reasons:_____

7. Has the member had alcohol/drug related problems in the past?_____

8. Is the member a volunteer for recruiter duty?_____

9. Other information considered pertinent by the interviewing officer or the Commanding Officer:_____

10. Are any negative comments in items reflected in members evals. N/A_____ YES_____ NO_____

                              Commanding Officer, signature, rank
                              Autovon phone no:_____

       Source: [Ref. 15]

66

APPENDIX B

RECRUITER SELECTION EXPERT SYSTEM

```
/*                    RECRUITER SELECTION EXPERT SYSTEM
                                  VERSION 1

     This system is designed to assist Navy detailers in
determining if individuals are best-suited to recruiting
duty.  It will ask a series of question as to the minimum
requirements and personality attributes needed to be a
success in recruiting.

                      designed by Nanette Lorry
                             March 1989

                 This knowledge system has been built using
                           M.1 version 2.1

*/
/* The goal for the knowledge system is recruiter.  It will
run through the program until a answer can be found for this
goal.*/

goal = recruiter.

begin_message = [
nl,
nl,
nl,'                        RECRUITER SELECTION          ',
nl,'                          EXPERT SYSTEM              ',
nl,
nl,'   This expert system will ask you simple questions',
nl,'   about the attributes a prospective recruiter',
nl,'   possesses.   It will use its knowledge about the',
nl,'   characteristics a recruiter should have and determine',
nl,'   if the prospective recruiter should be assigned.',
nl,
nl,nl].

nocache(begin_message).

/*The first question and rule is to begin the consultation
and display the first message.*/

question-1: question(begin_signal) = 'Are you ready to begin
the consultation?'.

legalvals(begin_signal) = [yes,no].
```

```
rule-1: if begin_message = M and
        display(M̄) and
        begin_signal
        then start.

rule-2: if not begin_signal and
        display("Press the alternate key and letter g key
        together when you are ready to begin.If you wish to
        terminate the program press the alternate key with
        the letter q.")
        and do(abort)
        then start.

/*_____Criticality of Recruiters _____*/

/* The initialdata is the path of sub-goals in which the
program searches in finding the goal.*/

initialdata = [start, note1, criticality, note2, min_req,
note3,person_attribute, rate, done].


/* Start of message 2.*/

rule-3: if begin_note = TEXT and
          display(TEXT) and
          criticality = X
          then note1.

begin_note = [
n1,
n1,
n1,' Criticality deals with the urgency which the billet',
n1,' needs to be filled. If the billet has been gapped and',
n1,' it must be filled then the choice would be 100.  The',
n1,' system will only look at the minimum requirements. If',
n1,' the choice is 70 it means the billet needs to filled',
n1,' asap.  Now personality attributes will be taken into',
n1,' consideration.  The lower the criticality the more',
n1,' stringent the requirements to be used for determining',
n1,' whether best suited for recruiting.',
n1,
n1,n1].

nocache(begin_note).


/* Below are questions to be answered to determine if the
individual meets the minimum requirements for recruiting.*/
```

```
automaticmenu(ALL).

enumeratedanswers(ALL).

question-2: question(criticality) = 'What is the criticality
of filling this recruiter billet:  100(must fill ASAP), 70
(important) , 50 (important but can be somewhat selective),
30 (not vital can be selective), 0 (individual requested
recruiter duty)?'.

legalvals(criticality) = [100,70,50,30,zero].


/*_____Minimum Requirements_____*/

begin_min = [
nl,
nl,
nl,
nl,' The next series of questions are the minimum require-',
nl', ments needed to be assigned to recruiting duty.  If ',
nl,' any of these questions are answered negatively then ',
nl,' the individual is ineligible.                      ',
nl,
nl,
nl,nl].

nocache(begin_min).

/* Start of message 3.*/

rule-4: if begin_min = N
          and display(N) and
          med_problems = ANS
          then note2.

/* Determine if individual meets the minimum requirements.*/

rule-5:   if med_problems = no
          and dental_problems = no
          and drugs = no
          and alcohol = no
          and performance = satisfactory
          and motivation = satisfactory
          and discipline = yes
          and body_fat = yes
          and appearance = yes
          and communication = yes
          and financial = no
          then min_req.
```

```
rule-6:   if med_problems = yes
          or  dental_problems = yes
          or  alcohol = yes
          or  drugs = yes
          or  performance = marginal
          or  performance = unsatisfactory
          or  motivation = marginal
          or  motivation = unsatisfactory
          or  discipline = yes
          or  body_fat = no
          or  appearance = no
          or  communication = no
          or  financial = yes
          then not min_req.
```

question-3: question(med_problems) = 'Is the individual or a member of his family in need specialized medical treatment?'.

legalvals(med_problems) = [yes,no].

question-4: question(dental_problems) = 'Does the individual or a member of his family require extensive dental or periodontal work?'.

legalvals(dental_problems) = [yes,no].

question-5: question(drugs) = 'Has the individual ever been treated for drug abuse?'.

legalvals(drugs) = [yes,no].

question-6: question(alcohol) = 'Has the individual ever been treated for alcohol abuse?'.

legalvals(alcohol) = [yes,no].

question-7: question(performance) = 'Rate the past performance of the individual: satisfactory, marginal, unsatisfactory.'.

legalvals(performance) = [satisfactory, marginal, unsatisfactory].

question-8: question(motivation) = 'Rate the motivation of the individual on the job.'.

legalvals(motivation) = [satisfactory, marginal, unsatisfactory].

```
question-9: question(discipline) = 'Is the record of the
individual clear of court martial or NJP or civil involvement
by the member or dependents for the past three years?'.

legalvals(discipline) = [yes, no].

question-10: question(body_fat) = 'Does the individual meet
standard height, weight and body fat requirements?'.

legalvals(body_fat) = [yes,no].

question-11: question(appearance) = 'Does the individual
present a neat well-groomed appearance?'.

legalvals(appearance) = [yes,no].

question-12: question(communication) = 'Is the individual
able to communicate effectively?'.

legalvals(communication) = [yes, no].

question-13: question(financial) = 'Does the individual have
any serious financial problems?'.

legalvals(financial) = [yes, no].


  /*_____Personality Attributes_____*/

begin_person = [
nl,'  The next series of questions asks to rate the ,'
nl,'  individual on these personality characteristics:',
nl,'              conscientiousness',
nl,'              outgoing',
nl,'              stability',
nl,'              maturity',
nl,'              self-discipline',
nl,'              adaptability',
nl,'              initiative',
nl,'              aggressiveness',
nl,' In addition it will ask number of years of service  ',
nl,' the individual has.',
nl].

nocache(begin_person).

/* Start of message 4. */
```

```
rule-7: if begin_person = WORDS and
           display(WORDS) and
           conscientious = CHOICE
           then note3.

/* Ratings of attributes were grouped together to allow more
generality. */

rule-8:   if conscientious = very_hi or
             conscientious = hi or
             conscientious = normal
             then high_conscientious.

rule-9: if out_going = very_outgoing or
           out_going = outgoing
           then high_outgoing.

rule-10:   if stability = very_stable or
             stability = stable
             then high_stability.

rule-11:   if maturity = very_mature or
             maturity = mature or
             maturity = slightly_immature
             then high_maturity.

rule-12: if self_discipline = hi_degree or
           self_discipline = normal
           then high_self_discipline.

rule-13:   if adaptability = very_adaptable or
             adaptability = adaptable
             then high_adaptability.

rule-14: if initiative = great_initiative or
           initiative = some_initiative
           then high_initiative.

rule-15: if aggressive = very_hi or
           aggressive = hi or
           aggressive = normal
           then high_aggressive.

rule-16: if initiative = little_initiative or
           initiative = no_initiative
           then low_initiative.

rule-17: if self_discipline = low_degree or
           self_discipline = none
           then low_self_discipline.
```

```
rule-18:  if conscientious = low or
             conscientious = very_low
             then low_conscientious.

rule-19:  if aggressive = low or
             aggressive = very_low
             then low_aggressive.

/* Attributes collectively given new variable name: all
attributes high -p1_attribute, 1 attribute low -
p2_attribute, 2 attributes low - p3_attribute, 3 attributes
low - p4_attribute, and 4 or more attributes low -
p5_attribute.*/

rule-20:  if high_conscientious and
             high_outgoing and
             high_stability and
             high_maturity and
             high_self_discipline and
             high_adaptability and
             high_initiative and
             high_aggressive
             then p1_attribute = yes.

rule-21:  if high_conscientious and
             high_outgoing and
             high_stability and
             high_maturity and
             high_self_discipline and
             high_adaptability and
             low_initiative and
             high_aggressive
             then p2_attribute.

rule-22:  if high_conscientious and
             high_outgoing and
             high_stability and
             high_maturity and
             high_self_discipline and
             adaptability = hard_time_adjusting_to_change and
             high_aggressive and
             high_initiative
             then p2_attribute.

rule-23:  if high_conscientious and
             high_outgoing and
             high_stability and
             high_maturity and
             low_self_discipline and
             high_aggressive and
             high_adaptability and
```

```
            high_initiative
            then p2_attribute.

rule-24:  if high_conscientious and
            high_aggressive and
            high_outgoing and
            high_stability and
            maturity = very_immature and
            high_self_discipline and
            high_adaptability and
            high_initiative
            then p2_attribute.

rule-25:  if high_conscientious and
            high_aggressive and
            high_outgoing and
            stability = unstable and
            maturity = very_mature or
            maturity = mature or
            maturity = slightly_immature and
            high_self_discipline and
            high_adaptability and
            high_initiative
            then p5_attribute.

rule-26:  if high_conscientious and
            high_aggressive and
            out_going = quiet_reserved and
            high_stability and
            high_maturity and
            high_self_discipline and
            high_adaptability and
            high_initiative
            then p2_attribute.

rule-27:  if low_conscientious and
            high_aggressive and
            high_outgoing and
            high_stability and
            high_maturity and
            high_self_discipline and
            high_adaptability and
            high_initiative
            then p2_attribute.

rule-28:  if high_conscientious and
            low_aggressive and
            high_outgoing and
            high_stability and
            high_maturity and
            high_self_discipline and
            high_adaptability and
```

```
                high_initiative
            then p2_attribute.

rule-29:    if high_conscientious and
               high_outgoing and
               high_stability and
               high_maturity and
               high_self_discipline and
               high_adaptability and
               low_initiative and
               low_aggressive
            then p3_attribute.

rule-30:    if high_conscientious and
               high_outgoing and
               high_stability and
               high_maturity and
               high_self_discipline and
               adaptability = hard_time_adjusting_to_change and
               high_aggressive and
               low_initiative
            then p3_attribute.

rule-31:    if high_conscientious and
               high_outgoing and
               high_stability and
               high_maturity and
               low_self_discipline and
               high_adaptability and
               low_initiative and
               high_aggressive
            then p3_attribute.

rule-32:    if high_conscientious and
               high_outgoing and
               high_stability and
               maturity = very_immature and
               high_self_discipline and
               high_adaptability and
               low_initiative and
               high_aggressive
            then p3_attribute.

rule-33:    if high_conscientious and
               out_going = quiet_reserved and
               high_stability and
               high_maturity and
               high_self_discipline and
               high_adaptability and
               low_initiative and
               high_aggressive
            then p3_attribute.
```

```
rule-34:  if low_conscientious and
             high_outgoing and
             high_stability and
             high_maturity and
             high_self_discipline and
             high_adaptability and
             low_initiative and
             high_aggressive
          then p3_attribute.

rule-35:  if high_conscientious and
             high_outgoing and
             high_stability and
             high_maturity and
             high_self_discipline and
             adaptability = hard_time_adjusting_to_change and
             high_initiative and
             low_aggressive
          then p3_attribute.

rule-36:  if high_conscientious and
             high_outgoing and
             high_stability and
             high_maturity and
             low_self_discipline and
             high_adaptability and
             high_initiative and
             low_aggressive
          then p3_attribute.

rule-37:  if high_conscientious and
             high_outgoing and
             high_stability and
             maturity = very_immature and
             high_self_discipline and
             high_adaptability and
             high_initiative and
             low_aggressive
          then p3_attribute.

rule-38:  if high_conscientious and
             out_going = quiet_reserved and
             high_stability and
             high_maturity and
             high_self_discipline and
             high_adaptability and
             high_initiative and
             low_aggressive
          then p3_attribute.
```

```
rule-39:  if low_conscientious and
             high_outgoing and
             high_stability and
             high_maturity and
             high_self_discipline and
             high_adaptability and
             high_initiative and
             low_aggressive
          then p3_attribute.

rule-40:  if high_conscientious and
             high_outgoing and
             high_stability and
             high_maturity and
             low_self_discipline and
             adaptability = hard_time_adjusting_to_change and
             high_initiative and
             high_aggressive
          then p3_attribute.

rule-41:  if high_conscientious and
             high_outgoing and
             high_stability and
             maturity = very_immature and
             high_self_discipline and
             adaptability = hard_time_adjusting_to_change and
             high_initiative and
             high_aggressive
          then p3_attribute.

rule-42:  if high_conscientious and
             out_going = quiet_reserved and
             high_stability and
             high_maturity and
             high_self_discipline and
             adaptability = hard_time_adjusting_to_change and
             high_initiative and
             high_aggressive
          then p3_attribute.

rule-43:  if low_conscientious and
             high_outgoing and
             high_stability and
             high_maturity and
             high_self_discipline and
             adaptability = hard_time_adjusting_to_change and
             high_initiative and
             high_aggressive
          then p3_attribute.
```

```
rule-44:  if low_conscientious and
             out_going = quiet_reserved and
             high_stability and
             high_maturity and
             high_self_discipline and
             high_adaptability and
             high_initiative and
             high_aggressive
          then p3_attribute.

rule-45:  if high_conscientious and
             high_outgoing and
             high_stability and
             maturity = very_immature and
             low_self_discipline and
             high_adaptability and
             high_initiative and
             high_aggressive
          then p3_attribute.

rule-46:  if high_conscientious and
             out_going = quiet_reserved and
             high_stability and
             high_maturity and
             low_self_discipline and
             high_adaptability and
             high_initiative and
             high_aggressive
          then p3_attribute.

rule-47:  if low_conscientious and
             high_outgoing and
             high_stability and
             high_maturity and
             low_self_discipline and
             high_adaptability and
             high_initiative and
             high_aggressive
          then p3_attribute.

rule-48:  if high_conscientious and
             high_outgoing and
             high_stability and
             high_maturity and
             low_self_discipline and
             high_adaptability and
             low_initiative and
             low_aggressive
          then p4_attribute.
```

```
rule-49:  if high_conscientious and
             out_going = quiet_reserved and
             high_stability and
             maturity = very_immature and
             high_self_discipline and
             high_adaptability and
             high_initiative and
             high_aggressive
          then p3_attribute.

rule-50:  if low_conscientious and
             high_outgoing and
             high_stability and
             maturity = very_immature and
             high_self_discipline and
             high_adaptability and
             high_initiative and
             high_aggressive
          then p3_attribute.

rule-51:  if low_conscientious and
             out_going = quiet_reserved and
             high_stability and
             maturity = very_immature and
             high_self_discipline and
             high_adaptability and
             high_initiative and
             high_aggressive
          then p4_attribute.

rule-52:  if low_conscientious and
             out_going = quiet_reserved and
             high_stability and
             high_maturity and
             low_self_discipline and
             high_adaptability and
             high_initiative and
             high_aggressive
          then p4_attribute.

rule-53:  if low_conscientious and
             out_going = quiet_reserved and
             high_stability and
             high_maturity and
             high_self_discipline and
             adaptability = hard_time_adjusting_to_change and
             high_initiative and
             high_aggressive
          then p4_attribute.
```

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rule-54:  if low_conscientious and
             out_going = quiet_reserved and
             high_stability and
             high_maturity and
             high_self_discipline and
             high_adaptability and
             low_initiative and
             high_aggressive
          then p4_attribute.

rule-55:  if low_conscientious and
             out_going = quiet_reserved and
             high_stability and
             high_maturity and
             high_self_discipline and
             high_adaptability and
             high_initiative and
             low_aggressive
          then p4_attribute.

rule-56:  if low_conscientious and
             high_outgoing and
             maturity = very_immature and
             high_stability and
             low_self_discipline and
             high_adaptability and
             high_initiative and
             high_aggressive
          then p4_attribute.

rule-57:  if low_conscientious and
             high_outgoing and
             maturity = very_immature and
             high_stability and
             high_self_discipline and
             adaptability = hard_time_adjusting_to_change and
             high_initiative and
             high_aggressive
          then p4_attribute.

rule-58:  if low_conscientious and
             high_outgoing and
             maturity = very_immature and
             high_stability and
             high_self_discipline and
             high_adaptability and
             low_initiative and
             high_aggressive
          then p4_attribute.
```

```
rule-59:  if low_conscientious and
             high_outgoing and
             maturity = very_immature and
             high_stability and
             high_self_discipline and
             high_adaptability and
             high_initiative and
             low_aggressive
          then p4_attribute.

rule-60:  if low_conscientious and
             high_outgoing and
             high_stability and
             high_maturity and
             low_self_discipline and
             adaptability = hard_time_adjusting_to_change and
             high_initiative and
             high_aggressive
          then p4_attribute.

rule-61:  if low_conscientious and
             high_outgoing and
             high_stability and
             high_maturity and
             low_self_discipline and
             high_adaptability and
             low_initiative and
             high_aggressive
          then p4_attribute.

rule-62:  if low_conscientious and
             high_outgoing and
             high_stability and
             high_maturity and
             low_self_discipline and
             high_adaptability and
             high_initiative and
             low_aggressive
          then p4_attribute.

rule-63:  if low_conscientious and
             high_outgoing and
             high_stability and
             high_maturity and
             high_self_discipline and
             adaptability = hard_time_adjusting_to_change and
             low_initiative and
             high_aggressive
          then p4_attribute.
```

```
rule-64:  if low_conscientious and
             high_outgoing and
             high_stability and
             high_maturity and
             high_self_discipline and
             adaptability = hard_time_adjusting_to_change and
             high_initiative and
             low_aggressive
          then p4_attribute.

rule-65:  if low_conscientious and
             high_outgoing and
             high_stability and
             high_maturity and
             high_self_discipline and
             high_adaptability and
             low_initiative and
             low_aggressive
          then p4_attribute.

rule-66:  if high_conscientious and
             out_going = quiet_reserved and
             high_stability and
             maturity = very_immature and
             low_self_discipline and
             high_adaptability and
             high_initiative and
             high_aggressive
          then p4_attribute.

rule-67:  if high_conscientious and
             out_going = quiet_reserved and
             high_stability and
             maturity = very_immature and
             high_self_discipline and
             adaptability = hard_time_adjusting_to_change and
             high_initiative and
             high_aggressive
          then p4_attribute.

rule-68:  if high_conscientious and
             out_going = quiet_reserved and
             high_stability and
             maturity = very_immature and
             high_self_discipline and
             high_adaptability and
             low_initiative and
             high_aggressive
          then p4_attribute.
```

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rule-69:  if high_conscientious and
             out_going = quiet_reserved and
             high_stability and
             maturity = very_immature and
             high_self_discipline and
             high_adaptability and
             high_initiative and
             low_aggressive
          then p4_attribute.

rule-70:  if high_conscientious and
             out_going = quiet_reserved and
             high_stability and
             high_maturity and
             low_self_discipline and
             adaptability = hard_time_adjusting_to_change and
             high_initiative and
             high_aggressive
          then p4_attribute.

rule-71:  if high_conscientious and
             out_going = quiet_reserved and
             high_stability and
             high_maturity and
             low_self_discipline and
             high_adaptability and
             low_initiative and
             high_aggressive
          then p4_attribute.

rule-72:  if high_conscientious and
             out_going = quiet_reserved and
             high_stability and
             high_maturity and
             low_self_discipline and
             high_adaptability and
             high_initiative and
             low_aggressive
          then p4_attribute.

rule-73:  if high_conscientious and
             out_going = quiet_reserved and
             high_stability and
             high_maturity and
             high_self_discipline and
             adaptability = hard_time_adjusting_to_change and
             low_initiative and
             high_aggressive
          then p4_attribute.
```

```
rule-74:  if high_conscientious and
             out_going = quiet_reserved and
             high_stability and
             high_maturity and
             high_self_discipline and
             adaptability = hard_time_adjusting_to_change and
             high_initiative and
             low_aggressive
          then p4_attribute.

rule-75:  if high_conscientious and
             out_going = quiet_reserved and
             high_stability and
             high_maturity and
             high_self_discipline and
             high_adaptability and
             low_initiative and
             low_aggressive
          then p4_attribute.

rule-76:  if high_conscientious and
             high_outgoing and
             high_stability and
             maturity = very_immature and
             low_self_discipline and
             adaptability = hard_time_adjusting_to_change and
             high_initiative and
             high_aggressive
          then p4_attribute.

rule-77:  if high_conscientious and
             high_outgoing and
             high_stability and
             maturity = very_immature and
             low_self_discipline and
             high_adaptability and
             low_initiative and
             high_aggressive
          then p4_attribute.

rule-78:  if high_conscientious and
             high_outgoing and
             high_stability and
             maturity = very_immature and
             low_self_discipline and
             high_adaptability and
             high_initiative and
             low_aggressive
          then p4_attribute.
```

```
rule-79:  if high_conscientious and
             high_outgoing and
             high_stability and
             maturity = very_immature and
             high_self_discipline and
             adaptability = hard_time_adjusting_to_change and
             low_initiative and
             high_aggressive
          then p4_attribute.

rule-80:  if high_conscientious and
             high_outgoing and
             high_stability and
             maturity = very_immature and
             high_self_discipline and
             adaptability = hard_time_adjusting_to_change and
             high_initiative and
             low_aggressive
          then p4_attribute.

rule-81:  if high_conscientious and
             high_outgoing and
             high_stability and
             maturity = very_immature and
             high_self_discipline and
             high_adaptability and
             low_initiative and
             low_aggressive
          then p4_attribute.

rule-82:  if high_conscientious and
             high_outgoing and
             high_stability and
             maturity = very_immature and
             low_self_discipline and
             adaptability = hard_time_adjusting_to_change and
             low_initiative and
             high_aggressive
          then p4_attribute.

rule-83:  if high_conscientious and
             high_outgoing and
             high_stability and
             high_maturity and
             low_self_discipline and
             adaptability = hard_time_adjusting_to_change and
             high_initiative and
             low_aggressive
          then p4_attribute.
```

```
rule-84:  if high_conscientious and
             high_outgoing and
             high_stability and
             high_maturity and
             high_self_discipline and
             adaptability = hard_time_adjusting_to_change and
             low_initiative and
             low_aggressive
          then p4_attribute.

rule-85:  if low_conscientious and
             out_going = quiet_reserved and
             high_stability and
             maturity = very_immature or
             low_self_discipline or
             adaptability = hard_time_adjusting_to_change or
             low_initiative or
             low_aggressive
          then p5_attribute.

rule-86:  if low_conscientious and
             out_going = quiet_reserved and
             high_stability and
             low_self_discipline or
             maturity = very_immature or
             adaptability = hard_time_adjusting_to_change or
             low_initiative or
             low_aggressive
          then p5_attribute.

rule-87:  if low_conscientious and
             out_going = quiet_reserved and
             high_stability and
             low_self_discipline or
             maturity = very_immature and
             adaptability = hard_time_adjusting_to_change or
             low_initiative or
             low_aggressive
          then p5_attribute.

rule-88:  if low_conscientious and
             out_going = quiet_reserved and
             high_stability and
             low_self_discipline or
             maturity = very_immature or
             adaptability = hard_time_adjusting_to_change and
             low_initiative or
             low_aggressive
          then p5_attribute.
```

```
rule-89:  if low_conscientious and
             out_going = quiet_reserved and
             high_stability and
             low_self_discipline or
             maturity = very_immature or
             adaptability = hard_time_adjusting_to_change or
             low_initiative and
             low_aggressive
          then p5_attribute.

rule-90:  if low_conscientious or
             out_going = quiet_reserved and
             high_stability and
             low_self_discipline and
             maturity = very_immature or
             adaptability = hard_time_adjusting_to_change or
             low_initiative or
             low_aggressive
          then p5_attribute.

rule-91:  if low_conscientious or
             out_going = quiet_reserved and
             high_stability and
             low_self_discipline or
             maturity = very_immature and
             adaptability = hard_time_adjusting_to_change or
             low_initiative or
             low_aggressive
          then p5_attribute.

rule-92:  if low_conscientious or
             out_going = quiet_reserved and
             high_stability and
             low_self_discipline or
             maturity = very_immature or
             adaptability = hard_time_adjusting_to_change and
             low_initiative or
             low_aggressive
          then p5_attribute.

rule-93:  if low_conscientious or
             out_going = quiet_reserved and
             high_stability and
             low_self_discipline or
             maturity = very_immature or
             adaptability = hard_time_adjusting_to_change or
             low_initiative and
             low_aggressive
          then p5_attribute.
```

```
rule-94:  if low_conscientious or
             out_going = quiet_reserved and
             high_stability or
             low_self_discipline and
             maturity = very_immature and
             adaptability = hard_time_adjusting_to_change or
             low_initiative or
             low_aggressive
          then p5_attribute.

rule-95:  if low_conscientious or
             out_going = quiet_reserved and
             high_stability or
             low_self_discipline and
             maturity = very_immature or
             adaptability = hard_time_adjusting_to_change and
             low_initiative or
             low_aggressive
          then p5_attribute.

rule-96:  if low_conscientious or
             out_going = quiet_reserved and
             high_stability or
             low_self_discipline and
             maturity = very_immature or
             adaptability = hard_time_adjusting_to_change or
             low_initiative and
             low_aggressive
          then p5_attribute.

rule-97:  if low_conscientious or
             out_going = quiet_reserved and
             high_stability or
             low_self_discipline or
             maturity = very_immature and
             adaptability = hard_time_adjusting_to_change and
             low_initiative or
             low_aggressive
          then p5_attribute.

rule-98:  if low_conscientious or
             out_going = quiet_reserved and
             high_stability or
             low_self_discipline or
             maturity = very_immature and
             adaptability = hard_time_adjusting_to_change or
             low_initiative and
             low_aggressive
          then p5_attribute.
```

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rule-99:  if low_conscientious or
             out_going = quiet_reserved and
             high_stability or
             low_self_discipline or
             maturity = very_immature or
             adaptability = hard_time_adjusting_to_change and
             low_initiative and
             low_aggressive
          then p5_attribute.

rule-100: if out_going = quiet_reserved or
             low_conscientious and
             high_stability and
             low_self_discipline and
             maturity = very_immature or
             adaptability = hard_time_adjusting_to_change or
             low_initiative or
             low_aggressive
          then p5_attribute.

rule-101: if out_going = quiet_reserved or
             low_conscientious and
             high_stability and
             low_self_discipline or
             maturity = very_immature and
             adaptability = hard_time_adjusting_to_change or
             low_initiative or
             low_aggressive
          then p5_attribute.

rule-102: if out_going = quiet_reserved or
             low_conscientious and
             high_stability and
             low_self_discipline or
             maturity = very_immature or
             adaptability = hard_time_adjusting_to_change and
             low_initiative or
             low_aggressive
          then p5_attribute.

rule-103: if out_going = quiet_reserved or
             low_conscientious and
             high_stability and
             low_self_discipline or
             maturity = very_immature or
             adaptability = hard_time_adjusting_to_change or
             low_initiative and
             low_aggressive
          then p5_attribute.
```

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rule-104:  if out_going = quiet_reserved or
              low_conscientious and
              high_stability or
              low_self_discipline and
              maturity = very_immature and
              adaptability = hard_time_adjusting_to_change or
              low_initiative or
              low_aggressive
           then p5_attribute.

rule-105:  if out_going = quiet_reserved or
              low_conscientious and
              high_stability or
              low_self_discipline and
              maturity = very_immature or
              adaptability = hard_time_adjusting_to_change and
              low_initiative or
              low_aggressive
           then p5_attribute.

rule-106:  if out_going = quiet_reserved or
              low_conscientious and
              high_stability or
              low_self_discipline and
              maturity = very_immature or
              adaptability = hard_time_adjusting_to_change or
              low_initiative and
              low_aggressive
           then p5_attribute.

rule-107:  if out_going = quiet_reserved or
              low_conscientious and
              high_stability or
              low_self_discipline or
              maturity = very_immature and
              adaptability = hard_time_adjusting_to_change and
              low_initiative or
              low_aggressive
           then p5_attribute.

rule-108:  if out_going = quiet_reserved or
              low_conscientious and
              high_stability or
              low_self_discipline or
              maturity = very_immature and
              adaptability = hard_time_adjusting_to_change or
              low_initiative and
              low_aggressive
           then p5_attribute.
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rule-109:  if out_going = quiet_reserved or
              low_conscientious and
              high_stability or
              low_self_discipline or
              maturity = very_immature or
              adaptability = hard_time_adjusting_to_change and
              low_initiative and
              low_aggressive
           then p5_attribute.

rule-110:  if low_self_discipline or
              low_conscientious and
              high_stability or
              out_going = quiet_reserved and
              maturity = very_immature and
              adaptability = hard_time_adjusting_to_change or
              low_initiative or
              low_aggressive
           then p5_attribute.

rule-111:  if low_self_discipline or
              low_conscientious and
              high_stability or
              out_going = quiet_reserved and
              maturity = very_immature or
              adaptability = hard_time_adjusting_to_change and
              low_initiative or
              low_aggressive
           then p5_attribute.

rule-112:  if low_self_discipline or
              low_conscientious and
              high_stability or
              out_going = quiet_reserved and
              maturity = very_immature or
              adaptability = hard_time_adjusting_to_change or
              low_initiative and
              low_aggressive
           then p5_attribute.

rule-113:  if low_self_discipline or
              low_conscientious and
              high_stability or
              out_going = quiet_reserved or
              maturity = very_immature and
              adaptability = hard_time_adjusting_to_change and
              low_initiative or
              low_aggressive
           then p5_attribute.
```

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rule-114:  if low_self_discipline or
              low_conscientious and
              high_stability or
              out_going = quiet_reserved or
              maturity = very_immature and
              adaptability = hard_time_adjusting_to_change or
              low_initiative and
              low_aggressive
           then p5_attribute.

rule-115:  if low_self_discipline or
              low_conscientious and
              high_stability or
              out_going = quiet_reserved or
              maturity = very_immature or
              adaptability = hard_time_adjusting_to_change and
              low_initiative and
              low_aggressive
           then p5_attribute.

rule-116:  if maturity = very_immature or
              low_self_discipline or
              low_conscientious and
              high_stability or
              out_going = quiet_reserved and
              adaptability = hard_time_adjusting_to_change and
              low_initiative or
              low_aggressive
           then p5_attribute.

rule-117:  if maturity = very_immature or
              low_self_discipline or
              low_conscientious and
              high_stability or
              out_going = quiet_reserved and
              adaptability = hard_time_adjusting_to_change or
              low_initiative and
              low_aggressive
           then p5_attribute.

rule-118:  if maturity = very_immature or
              adaptability = hard_time_adjusting_to_change or
              low_self_discipline or
              low_conscientious and
              high_stability or
              out_going = quiet_reserved and
              low_initiative and
              low_aggressive
           then p5_attribute.
```

rule-119: if adaptability = hard_time_adjusting_to_change or
            maturity = very_immature or
            low_self_discipline or
            low_conscientious and
            high_stability or
            out_going = quiet_reserved and
            low_initiative and
            low_aggressive
          then p5_attribute.

/* The next series of rules checks the personality attributes
with the criticality factor to see if the personality factor
is needed.*/

rule-120: if criticality = 70 and
            high_len_serv and
            p4_attribute
          then person_attribute cf 50.

rule-121: if criticality = 70 or
            criticality = 50 and
             high_len_serv and
             p3_attribute
            then person_attribute cf 75.

rule-122: if criticality = 70 or
            criticality = 50 or
             criticality = 30 and
             high_len_serv and
            p2_attribute
             then person_attribute cf 90.

rule-123: if criticality = 70 and
             not high_len_serv and
             p3_attribute
            then person_attribute cf 50.

rule-124: if criticality = 70 or
              criticality = 50 and
             not high_len_serv and
             p2_attribute
             then person_attribute cf 75.

/* p5_attribute signifies that the individual does not have
the enough qualities to be successful.*/

rule-125: if p5_attribute
            then not person_attribute.

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```
rule-126:  if criticality = zero and
              not high_len_serv and
               p1_attribute or
              p2_attribute or
              p3_attribute or
              p4_attribute
              then not person_attribute.

rule-127:  if criticality = zero and
              high_len_serv and
               not p1_attribute
               then not person_attribute.

rule-128:  if criticality = 30 and
              not high_len_serv and
               not p1_attribute
              then not person_attribute.

rule-129:  if criticality = 30 and
               high_len_serv and
               not p1_attribute or
               not p2_attribute
               then not person_attribute.

rule-130:  if criticality = 50 and
              not high_len_serv and
              not p1_attribute or
               not p2_attribute
              then not person_attribute.

rule-131:  if criticality = 50 and
               high_len_serv and
               p4_attribute or
               p5_attribute
               then not person_attribute.

rule-132:  if criticality = 70 and
              not high_len_serv and
              p4_attribute or
               p5_attribute
              then not person_attribute.

rule-133:  if p1_attribute and
              high_len_serv
              then person_attribute cf 100.

rule-134:  if p1_attribute and
               not high_len_serv and
               criticality = 30 or
               criticality = 50 or
               criticality = 70
              then person_attribute cf 90.
```

```
/* The following rules take all factors into consideration
and arrive at the goal.*/

rule-135:   if person_attribute and
            not rate = e5 and
            criticality = zero and
            min_req
            then recruiter = "Individual has all the
attributes needed to be a successful recruiter.".

rule-136: if not min_req
            then recruiter = "Individual does not meet the
minimum requirements to be assigned to recruiting.".

rule-137: if not person_attribute and
            min_req
            then recruiter = "Individual does not possess the
attributes needed to be successful in recruiting.".

rule-138: if criticality = 50 or
            criticality = 30 and
            min_req and
            not rate = e5 and
            person_attribute
            then recruiter = "Individual is qualified for
recruiting.".

rule-139:   if criticality = 100 and
             min_req
             then recruiter = "Individual meets minimum
standards for recruiting duty".

rule-140:   if criticality = 70 and
            min_req and
            not rate = e5 and
            person_attribute
            then recruiter = "Individual meets minimum
standards and has the personality attributes to be
successful.".

rule-141: if rate = e5 and
           person_attribute and
           min_req
           then recruiter = "Individual is qualified however
assignment should not be made to a high cost area.".


/* The questions for personality attributes*/
```

```
question-14: question(conscientious) = 'Rate the individual
on the attribute: conscientiousness.'.

legalvals(conscientious) = [very_hi,hi,normal,low,very_low].

question-15: question(out_going) = 'Rate the individual on
the attribute:  outgoing.'.

legalvals(out_going) =
[very_outgoing,outgoing,quiet_reserved].

question-16: question(stability) = 'Rate the individual on
the attribute:  stability.'.

legalvals(stability) = [very_stable, stable, unstable].

question-17: question(maturity) = 'Rate the individual on the
attribute:  maturity.'.

legalvals(maturity) =
[very_mature,mature,slightly_immature,very_immature].

question-18: question(self_discipline) = 'Rate the individual
on the attribute:  self discipline.'.

legalvals(self_discipline) = [hi_degree, normal, low_degree,
none].

question-19: question(adaptability) =  'Rate the individual
on the attribute:  adaptability.'.

legalvals(adaptability) =
[very_adaptable,adaptable,hard_time_adjusting_to_change].

question-20: question(initiative) =  'Rate the individual on
the attribute:  initiative.'.

legalvals-21: question(initiative) =[great_initiative,
some_initiative, little_initiative, no_initiative].

question-21: question(aggressive) = 'Rate the individual on
the attribute:  aggressiveness.'.

legalvals(aggressive) = [very_hi, hi, normal, low, very_low].

/* Area looks at years of service and the paygrade of the
individual.*/
```

```
rule-142:  if len_serv = 4-6 or
              len_serv = 12-16 or
              len_serv = 7-12
              then high_len_serv.


question-22: question(rate) = 'What is the paygrade of the
individual?'.

legalvals(rate) = [e5, e6, e7, e8, e9].

question-23: question(len_serv) = 'What is the number of
years in service of the individual?'.

legalvals(len_serv) = [4-6,7-12,12-16,over_16].

/*_____End Consultation_____*/

rule-143:   if end_message = EM and
              display(EM)
              then done.

end_message = [
nl,
nl,
nl,
nl,'   If you wish to run another consultation press the',
nl,'   alternate key and the letter G key together. ',
nl,
nl,'   If you wish to exit the program press the alternate',
nl,'   key and the letter Q key together. ',
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APPENDIX C

REVISED PROSPECTIVE RECRUITER INTERVIEW DOCUMENT

The Commanding Officer, Medical Officer and Dental Officer _must_ interview and evaluate prospective recruiters in each category as indicated. Upon completion, forward this document to COMNAVMILPERSCOM (NMPC-4010) with member's request for recruiting duty or as directed by NMPC transfer directive.

SERVICE MEMBER'S NAME_____SSN_____
                        (Last, First, MI)

RATE:_____

A. MEDICAL OFFICER'S SCREENING

The purpose of the medical screening is to determine whether the member or dependents have medical history or problems which would prevent assignment to high stress duty or to an area where military medical facilities are not available. Assignment to such area, would require use of CHAMPUS for dependent medical treatment.

1. Member's height_____ weight_____ % body fat_____
    Is the member overweight?   YES/NO
    Is member on weight control?   YES/NO
    Should member be on weight control?   YES/NO
    Does the member's weight fluctuate frequently?   YES/NO

2. Is the member presently being treated for or in the past for high blood pressure, heart problems, ulcers or other stress related illnesses?_____ If yes, provide details:_____

3. Has the member been treated at an ARS, ARC, CAAC for alcohol or drug abuse?_____Date(s):_____
    Prognosis:_____

    If married, are all members of the family free from health problems which require special medical attention?_____
    If not, provide details and if appropriate, area of country recommended for assignment and/or location of medical facilities able to care for dependents:_____

B.   DENTAL OFFICER'S SCREENING

The dental screen is to determine whether the member has
dental conditions which require ongoing treatment and for
which treatment cannot be completed prior to transfer. Such
conditions are disqualifying for recruiting duty for reasons
similar to those above for the medical screening.

1.   Has the member completed a TYPE II dental examination in
     the past six months. Has an entry been made on the
     Dental Standard Form 63 that the member does not require
     dental treatment or dental prosthetic
     restorations?_____

2.   If the member requires dental treatment or dental
     prosthetic restorations, give estimated length of time
     needed to complete treatment and month/year member will
     be fit for
     transfer._____

3.   Is the individual in need of and periodontal
     work?_____

                         Dental Officer Signature, rank
                         Autovon phone no._____

C.   COMMANDING OFFICER'S COMMENTS

The Commanding Officer and interviewing officer must be
thoroughly familiar with Articles 11.03 through 11.033.
This interview must be conducted by an officer and certified
personally by the Commanding Officer.

1.   Is the individual able to speak clearly without speech
     impediment?_____ If not, provide a
     brief explanation:_____

2.   Is the individual's record clear of court-martial or
     Commanding Officer's NJP or civil authorities
     involvement by the member or dependents for the past
     three years?_____
     If not, provide details. Give specific recommendations
     for waiver consideration if appropriate:_____

3. Does the individual have the ability to discharge
    responsibilities in an independent duty
    assignment?_____
    If not, provide explanation:_____

4. Does a review of the members overall evals show 3.6
    marks and above with an upward trend?_____
    Does the individual present a neat, well-groomed
    appearance?_____
    Does the member meet height and weight or body fat
    standards?_____
    Bodyfat percentage_____ Height_____
    Weight_____

5. Is the individual free from financial difficulty based
    on service record review and interview?_____
    If appropriate, attach summary of financial status.

6. Does the member hold a valid state motor vehicle
    operator's license?_____
    If not, member must obtain one prior to transfer. If
    member is unable to obtain one give specific
    reasons:_____

7. Has the member had alcohol/drug related problems in the
    past?_____

8. Rate the individual on the job performance:
    Satisfactory, Marginal, Unsatisfactory.

9. Rate the individual on self motivation: Satisfactory,
    Marginal, Unsatisfactory.

10. Rate the individual on the attribute: conscientiousness.
    Very high, high, normal, low, very low.

11. Rate the individual on the attribute: outgoing. Very
    outgoing, outgoing, quiet--reserved.

12. Rate the individual on the attribute: stability. Very
    stable, stable, unstable.

13. Rate the individual on the attribute: maturity. Very
    mature, mature, slightly immature, very immature.

14. Rate the individual on the attribute: self-discipline.
    High degree, normal, low degree, none.

15. Rate the individual on the attribute: initiative.
    Great initiative, some initiative, little initiative,
    no initiative.

16. Rate the individual on the attribute: aggressiveness.
    Very high, high, normal, low, very low.

17. Is the member a volunteer for recruiter duty?_____

18. Other information considered pertinent by the
    interviewing officer or the Commanding
    Officer:_____

19. Are any negative comments in items reflected in members
    evals.   N/A_____   YES_____   NO_____

    _____
    Commanding Officer, signature, rank
    Autovon phone no:_____

A SAMPLE RUN OF THE PROGRAM

This section leads the user step-by-step through the program. It illustrates the ease of use and the simplicity of the application. For the demonstration the criticality factor will be equal to 50, the minimum requirements will be met, and the individual will be an E-5 with 7 years in the Navy. He will possess all the personality attributes required with the exception of conscientiosness and adaptibility.

The program begins with a screen that welcomes the user to the Recruiter Selection Expert System and asks the user if he is ready to begin the consultation. Each module has an explanation of the questions that will be asked. The demonstration is shown on the following pages.

RECRUITER SELECTION
EXPERT SYSTEM

This expert system will ask you simple questions about the attributes a prospective recruiter possesses. It will use it knowledge about the characteristics a recruiter should have and determine if the prospective recruiter should be assigned.

Are you ready to begin the consultation?

    1. yes
    2. no

>> 1

    Criticality deals with the urgency in which the billet
needs to be filled. If the billet has been gapped and it
must be filled then the choice would be 100. The system
will only look at the minimum requirements. If the choice
is 70 it means the billet needs to filled asap. Now
personality attributes will be taken into consideration.
The lower the criticality the more stringent the
requirements to be used for determining whether best suited
for recruiting.

    What is the criticality of filling this recruiting
billet: 100 (must fill ASAP), 70 (important), 50 (important
but can be somewhat selective), 30 (not vital can be
selective), 0 (individual requested recruiter duty)?

    1. 100
    2. 70
    3. 50
    4. 30
    5. 0

>> 3

    The next series of questions are the minimum
requirements needed to be assigned to recruiting duty. If

any of these questions are answered negatively then the individual is ineligible.

Is the individual or a member of his family in need of

    specialized medical treatment?

    1. yes
    2. no

>> 2

Is the individual or a member of his family require

    extensive dental of periodontal work?

    1. yes
    2. no

>> 2

Has the individual ever been treated for drug abuse?

    1. yes
    2. no

>> 2

Has the individual ever been treated for alcohol abuse?

    1. yes
    2. no

>> 2

Rate the past performance of the individual: satisfactory,

    marginal, unsatisfactory.

    1. satisfactory
    2. marginal
    3. unsatisfactory

>> 1

Rate the motivation of the individual on the job.

    1. satisfactory
    2. marginal
    3. unsatisfactory

>> 1

Is the record of the individual clear of court martial or

    NJP or civil involvement by the member or dependents for

    the past three years?

    1. yes
    2. no

>> 1

Does the individual meet standard height, weight, and body

    fat requirements?

    1. yes
    2. no

>> 1

Does the individual present a neat well-groomed appearance?

    1. yes
    2. no

>> 1

Is the individual able to communicate effectively?

    1. yes
    2. no

>> 1

Does the individual have any serious financial problems?

    1. yes
    2. no

>> 2

The next series of questions asks to rate the individual
on these personality characteristics:

        conscientiousness
        outgoing
        stability
        maturity
        self-discipline
        adaptability
        initiative
        aggressiveness

In addition it will ask number of years of service the

    individual has.

Rate the individual on the attribute: conscientiousness.

    1.   very high
    2.   high
    3.   normal
    4.   low
    5.   very low

>> 4

What is the number of years in service of the individual?

    1.   4-6
    2.   7-12
    3.   12-16
    4.   over 16

>> 2

Rate the individual on the attribute: outgoing.

    1.   very outgoing
    2.   outgoing
    3.   quiet-reserved

>> 1

Rate the individual on the attribute: stability.

    1.   very stable
    2.   stable
    3.   unstable

>> 1

Rate the individual on the attribute: maturity.

    1. very mature
    2. mature
    3. slightly immature
    4. very immature

>> 2

Rate the individual on the attribute: self discipline.

    1. high degree
    2. normal
    3. low degree
    4. none

>> 1

Rate the individual on the attribute: adaptability.

    1. very adaptable
    2. adaptable
    3. hard time adjusting to change

>> 3

Rate the individual on the attribute: initiative.

    1. great initiative
    2. some initiative
    3. little initiative
    4. no initiative

>> 1

Rate the individual on the attribute: aggressiveness.

    1. very high
    2. high
    3. normal
    4. low
    5. very low

>> 1

What is the paygrade of the individual?

    1. e5
    2. e6
    3. e7

```
        4.   e8
        5.   e9

>>1


    If you wish to run another consultation press the
alternate key and the letter G key together.
    If you wish to exit the program press the alternate key
and the letter Q key together.
```

recruiter = Individual is qualified however assignment
    should not be made to a high cost area. (75%) because
    rule-141.

The last line shows that the goal (recruiter) has been
reached. It states that the individual has an 75% chance of
succeeding in recruiting given his personality profile.
Rule 141 is the rule that determined that the person met all
the criteria for a positive recommendation. As the
individual is an E-5 the system suggests that the person
should not be assigned to a high cost area.

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