This report covers part of a project designed to develop and to make available to research workers markers for some of the temperament factors that have been established in the factor-analytic literature. An earlier report describes 28 such factors and defines several divisions of each factor, called subfactors, that appear in the literature to be associated with the factors. Each subfactor is described as a positive pole versus a negative pole. It was hypothesized that scales for these subfactors, when placed in a factor analysis, would have salient loadings on those factors for which they were intended to define one of the divisions. Scales comprised of newly constructed items were developed for each subfactor, half of the items representing each pole, and an equal number of those for each pole keyed "yes" and "no", in order to balance out the tendency to acquiesce. This report covers two factor analyses in which some of the subfactors were divided such that each pole was represented by a separate variable. By more fully determining some of the factors and by utilizing the extraction and rotation of several different numbers of factors, it is now possible to suggest markers in the form of unipolar scales for ten additional factors. The evidence used in making these suggestions is presented. (Author/RC)
SEEKING MARKERS FOR TEMPERAMENT FACTORS AMONG POSITIVE
AND NEGATIVE POLES OF TEMPERAMENT SCALES

John W. French and Diran Dermen

December 1974

Technical Report No. 7

Research sponsored by the
Office of Naval Research
under
Contract N00014-71-C-0117
NR 150 5-9

Harry H. Harman
Principal Investigator

Approved for public release; distribution unlimited.

Reproduction in whole or in part is permitted for any purpose of the
United States Government.

Educational Testing Service
Princeton, New Jersey
SEEKING MARKERS FOR TEMPERAMENT FACTORS AMONG POSITIVE AND NEGATIVE POLES OF TEMPERAMENT SCALES

by
John W. French and Diran Dermen

December, 1974

Technical Report No. 7

Research Sponsored by the Office of Naval Research under Contract N00014-71-C-0117 NR 150 329

Harry H. Harman
Principal Investigator

Approved for Public Release; Distribution Unlimited

Reproduction in whole or in part is permitted for any purpose of the United States Government

Educational Testing Service
Princeton, New Jersey
# Technical Report No. 7

## 4. TITLE (and Subtitle)
Seeking markers for temperament factors among positive and negative poles of temperament scales

## 7. AUTHOR(s)
John W. French and Diran Dermer

## 9. PERFORMING ORGANIZATION NAME AND ADDRESS
Educational Testing Service
Princeton, New Jersey

## 11. CONTROLLING OFFICE NAME AND ADDRESS
Personnel and Training Research Programs
Office of Naval Research (Code 458)
Arlington, Virginia 22217

## 12. REPORT DATE
December, 1974

## 14. MONITORING AGENCY NAME AND ADDRESS (IF DIFFERENT FROM CONTROLLING OFFICE)

## 16. DISTRIBUTION STATEMENT (OF THIS REPORT)
Approved for public release; distribution unlimited

## 19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

## 20. ABSTRACT (Continue on reverse side if necessary and identify by block number)
This report covers part of a project designed to develop and to make available to research workers markers for some of the temperament factors that have been established in the factor-analytic literature. An earlier report describes 28 such factors and defines several divisions of each factor, called subfactors, that appear in the literature to be associated with the factors. Each subfactor is described as a positive pole versus a negative pole. It was hypothesized that scales for these subfactors, when placed in a factor...
analysis, would have salient loadings on those factors for which they were intended to define one of the divisions. Scales comprised of newly constructed items were developed for each subfactor, half of the items representing each pole, and an equal number of those for each pole keyed "yes" and "no", in order to balance out the tendency to acquiesce. Another earlier report covers two factor studies of these subfactor scales. Those studies revealed satisfactory markers in the form of subfactor scales for eight of the 28 factors. The present report covers two factor analyses in which some of the subfactors were divided such that each pole was represented by a separate variable. By more fully determining some of the factors and by utilizing the extraction and rotation of several different numbers of factors, it is now possible to suggest markers in the form of unipolar scales for ten additional factors. The evidence used in making these suggestions is presented.
Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>1</td>
</tr>
<tr>
<td>Analyses of Whole Scales</td>
<td>3</td>
</tr>
<tr>
<td>Analyses of Separate Scales for Poles</td>
<td>9</td>
</tr>
<tr>
<td>Unipolar Markers for Ten Additional Factors</td>
<td>13</td>
</tr>
<tr>
<td>Discussion of the Factor Patterns</td>
<td>15</td>
</tr>
<tr>
<td>References</td>
<td>21</td>
</tr>
</tbody>
</table>

List of Tables

1. Variables Used in Different Analyses                                4
2. Factor Coefficients and Intercorrelations: 22 Variables           11
3. Factor Coefficients and Intercorrelations: 38 Variables           12
SEEKING MARKERS FOR TEMPERAMENT FACTORS AMONG POSITIVE AND NEGATIVE POLES OF TEMPERAMENT SCALES

John W. French and Diran Dermen

Introduction:

The authors participated in the writing of a pool of self-report temperament items intended to make more available to research workers separate scales that would mark temperament factors that have been established in the literature. Establishment is defined here as the identification of factors with the same apparent psychological meaning in a minimum of three analyses performed by at least two different laboratories. A summary of the literature by French (1973) points out the establishment of 28 temperament factors. It presents meaningful divisions of the domain of each factor, so that reference can be made to these divisions in order to describe the factors in the studies being covered by the summary. These divisions are called "subfactors", and scales for them might serve as suitable factor markers.

Consequently, in order to generate factor markers for the use of research workers, a pool of items was constructed to build scales that would measure several subfactors for each of the 28 factors judged to have been established by the literature. For each subfactor 16 items were written, with four items for each of the following categories:

(a) A positive pole or interpretation, with answers keyed "yes".
(b) A positive pole or interpretation, with answers keyed "no".
(c) A negative pole or opposite interpretation, with answers keyed "yes".
(d) A negative pole or opposite interpretation, with answers keyed "no".

An equal number of items keyed "yes" and "no" were written so as to balance out the tendency of some subjects to acquiesce. The several 16-item scales for each factor were intended to cover the broadest conception of the factors as they were observed in the literature. It was anticipated that this effort to cover the full extensiveness of factors in the literature would cause some of the factors to overlap with one another. However, it was hoped that, in trial analyses, these sub-factor scales would be found to correlate sufficiently with one another so as to give rise to factors that could be readily identified as those found repeatedly in the literature as "first order" or "primary" factors.

Very clearly it was important to put these new items and scales to the test in factor studies, not only because newly constructed items can never be trusted prior to suitable analyses, but also because the factors, as they appear in the literature, often cover only a part of the total domain recognized as the factor, and often emphasize just one of the poles or directional interpretations, sometimes ignoring completely the opposite pole. This means that the definition of an opposite pole was sometimes left entirely up to a reasoned psychological understanding of the domain of the factor. For example, is "objectivity" a concept that is a true opposite of "paranoid tendency", and is "credit given by others" a true opposite of "blame given by others"? An appropriate number of items were written to represent opposite poles of this kind, even though there was not always any actual evidence in the factor literature to support the existence of such seemingly valid psychological opposites. The complete
list of 87 hypothesized markers for the 28 factors is presented in Table 1.

**Analyses of Whole Scales**

Factor analyses of the whole subfactor scales, including items representing both favorable poles and oppositely keyed negative poles, were reported on two samples by Dermen et al. (1974). One sample consisted of Naval recruits tested in overlapping groups, so that the numerous scale intercorrelations were actually based on different groups but never fewer than 100 subjects. Unfortunately, these men were not typical of many people that might use these reference tests. They had such trouble reading the items that it became necessary to read all of the items aloud during the testing period. However, reasonably high reliabilities computed from these data for most of the subfactor scales suggest that the subjects responded seriously to the items. The second sample included 153 female and 92 male college students.

Each of the scales of whole subfactors contained 16 items when first constructed, but, using the Navy data, items showing low or negative consistency with other items in the same scale were deleted. A few entire scales were deleted because of questionable reliability or the deletion of too many individual items. The variables used in both of these analyses were the scales remaining after making these deletions based on the Navy sample. These are the variables indicated under the "77" heading in Table 1. Items representing opposite poles or "ends" of the scales were combined and were keyed in such a way that all items contributed to measurement of positive strength on the subfactor.
### VARIABLES USED IN DIFFERENT ANALYSES

<table>
<thead>
<tr>
<th>Analysis</th>
<th>Variable</th>
<th>Factor and Subfactor Scale Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>22 38 77</td>
<td>Ac</td>
<td>General Activity</td>
</tr>
<tr>
<td></td>
<td>AcA</td>
<td>Moves rapidly, quick in physical performance vs. slow</td>
</tr>
<tr>
<td></td>
<td>AcB</td>
<td>Busy, active in projects or non-social affairs vs. uninvolved, feels overburdened</td>
</tr>
<tr>
<td></td>
<td>AcC</td>
<td>Accomplishes things rapidly vs. indolent, unmotivated</td>
</tr>
<tr>
<td></td>
<td>Ag</td>
<td>Agreeableness</td>
</tr>
<tr>
<td></td>
<td>AgA</td>
<td>Interested in people's welfare, friendly vs. prefers lone intellectual contributions</td>
</tr>
<tr>
<td></td>
<td>AgD</td>
<td>Trustful, CONFIDENCE in people vs. suspicious, keeps distance</td>
</tr>
<tr>
<td></td>
<td>AgE</td>
<td>Friendly, likeable, outgoing vs. aloof, unpleasant, withdrawn</td>
</tr>
<tr>
<td></td>
<td>Al</td>
<td>Alertness</td>
</tr>
<tr>
<td></td>
<td>AlA</td>
<td>Alert to immediate surroundings, attentive vs. unaware, engrossed, absent-minded</td>
</tr>
<tr>
<td></td>
<td>Au</td>
<td>Autistic Tendency</td>
</tr>
<tr>
<td></td>
<td>AuA</td>
<td>Daydreams vs. has practical thoughts</td>
</tr>
<tr>
<td></td>
<td>AuB</td>
<td>Anxiety leading to autistic thinking vs. relaxed, adjusted, realistic thoughts</td>
</tr>
<tr>
<td></td>
<td>Ca</td>
<td>Calmness vs. Anxiety</td>
</tr>
<tr>
<td></td>
<td>CaA</td>
<td>Relaxed, at-ease vs. anxious, worried about self, edgy, nervous, tense, restless</td>
</tr>
<tr>
<td></td>
<td>CaB</td>
<td>Takes time to think, deliberate vs. overreacts, impulsive, jittery</td>
</tr>
<tr>
<td></td>
<td>CaC</td>
<td>Confident or optimistic about world vs. fears or worries about outside influences</td>
</tr>
<tr>
<td></td>
<td>Co</td>
<td>Concentration</td>
</tr>
<tr>
<td></td>
<td>CoA</td>
<td>Concentrates on study or reading vs. mind wanders, bored, forgets names</td>
</tr>
<tr>
<td></td>
<td>De</td>
<td>Dependability</td>
</tr>
<tr>
<td></td>
<td>DeA</td>
<td>Dependable, punctual, keeps promises vs. careless about promises and details</td>
</tr>
<tr>
<td></td>
<td>DeB</td>
<td>Self-sentiment control, control of feelings vs. actions, thoughts swayed by emotions</td>
</tr>
<tr>
<td></td>
<td>DeC</td>
<td>Conscientious, scrupulous vs. careless about doing what is right</td>
</tr>
<tr>
<td></td>
<td>Do</td>
<td>Dominance</td>
</tr>
<tr>
<td></td>
<td>DoA</td>
<td>Takes charge socially, wants power vs. submissive, willing to serve</td>
</tr>
<tr>
<td></td>
<td>DoB</td>
<td>Egoistic, pushes own ideas vs. respects others' ideas, self-effacing</td>
</tr>
<tr>
<td></td>
<td>DoC</td>
<td>Rights-conscious, complaining vs. tolerant</td>
</tr>
<tr>
<td></td>
<td>Em</td>
<td>Emotional Maturity</td>
</tr>
<tr>
<td></td>
<td>EmA</td>
<td>Patient, adjusts to frustration vs. verbally aggressive, demanding</td>
</tr>
<tr>
<td></td>
<td>EmB</td>
<td>Modest, shuns attention, outwardly directed vs. seeks, attention, egotistical</td>
</tr>
<tr>
<td></td>
<td>EmC</td>
<td>Satisfied, cooperates with authority vs. asserts independence from authority, stubborn</td>
</tr>
<tr>
<td></td>
<td>Es</td>
<td>Emotional Stability</td>
</tr>
<tr>
<td></td>
<td>EsA</td>
<td>Emotionally stable, tolerant, solid vs. emotionally sensitive, irritable</td>
</tr>
<tr>
<td></td>
<td>EsB</td>
<td>Optimistic, faces problems vs. worrying, dwells on problems, escapist</td>
</tr>
<tr>
<td></td>
<td>EsC</td>
<td>Healthy, feels vigorous vs. tired, intermittent loss of energy, hypochondriacal</td>
</tr>
<tr>
<td></td>
<td>EsD</td>
<td>Life is good, life is worthwhile vs. feels frustrated dissatisfied</td>
</tr>
<tr>
<td></td>
<td>Gs</td>
<td>Gregariousness</td>
</tr>
<tr>
<td></td>
<td>GsA</td>
<td>Likes to be with people physically vs. likes to be alone</td>
</tr>
<tr>
<td></td>
<td>GsC</td>
<td>Likes work or socializing with people vs. likes work alone or isolated activities</td>
</tr>
<tr>
<td></td>
<td>Me</td>
<td>Meticulousness</td>
</tr>
<tr>
<td></td>
<td>MeA</td>
<td>Meticulous, orderly, neat, particular about personal effects vs. messy, careless</td>
</tr>
<tr>
<td></td>
<td>Mo</td>
<td>Morality</td>
</tr>
<tr>
<td></td>
<td>MoA</td>
<td>Law-abiding, obedient, well-mannered, patriotic vs. free, progressive, liberal</td>
</tr>
<tr>
<td></td>
<td>MoB</td>
<td>Moral, knows right from wrong, resists temptation vs. pleasure seeking</td>
</tr>
<tr>
<td></td>
<td>MoC</td>
<td>Generous, helpful, fair, gives to causes vs. selfish, uncharitable</td>
</tr>
<tr>
<td></td>
<td>Na</td>
<td>Need for Achievement</td>
</tr>
<tr>
<td></td>
<td>NaA</td>
<td>Likes to do his best, works hard, persists until successful vs. play before work</td>
</tr>
<tr>
<td></td>
<td>NaB</td>
<td>Likes success in competition, likes getting ahead vs. dislikes competition</td>
</tr>
<tr>
<td></td>
<td>NaC</td>
<td>Strives for accomplishment vs. no motivation to do good or to help people</td>
</tr>
<tr>
<td></td>
<td>Ob</td>
<td>Objectivity vs. Paranoid Tendency</td>
</tr>
<tr>
<td></td>
<td>ObA</td>
<td>Objectivity and fairness attributed to others vs. paranoid delusions about others</td>
</tr>
<tr>
<td></td>
<td>ObB</td>
<td>Credit is given by others vs. blame by others is unfair</td>
</tr>
<tr>
<td></td>
<td>ObC</td>
<td>Depends on others for help, advice, sympathy vs. not interested in others, independent</td>
</tr>
</tbody>
</table>

1 Positive pole is presented first with negative following "vs".

2 28 and 22 variable analyses were done using separately scored poles and are presented in the present report. The variable analyses were done on whole scales (i.e., summed across poles) and are reported in Dermen, et al. (1974).
<table>
<thead>
<tr>
<th>Analysis</th>
<th>Variable</th>
<th>Factor and Subfactor Scale Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>Om</td>
<td>Open-Minded vs. Authoritarian</td>
</tr>
<tr>
<td></td>
<td>OmA</td>
<td>Many philosophies, religious, political views reasonable vs. only one possible</td>
</tr>
<tr>
<td></td>
<td>OmB</td>
<td>Respect for philosophies of others vs. belief in rightness or wrongness of principles</td>
</tr>
<tr>
<td></td>
<td>OmC</td>
<td>Innovative, ready for new ideas, flexible vs. conservative, conventional, unchangeable</td>
</tr>
<tr>
<td></td>
<td>Pe</td>
<td>Persistence</td>
</tr>
<tr>
<td></td>
<td>PeA</td>
<td>Persistent, persevering, determined vs. quitting, needs change, gets discouraged</td>
</tr>
<tr>
<td></td>
<td>PeB</td>
<td>Likes stable tasks, interests stable vs. likes changing tasks, interests change</td>
</tr>
<tr>
<td></td>
<td>PeC</td>
<td>Conscientious, careful, exacting, tidy, orderly vs. relaxed, carefree, nonchalant</td>
</tr>
<tr>
<td></td>
<td>Po</td>
<td>Poise vs. Self-Consciousness</td>
</tr>
<tr>
<td></td>
<td>PoA</td>
<td>Enjoys group attention, exhibitionistic, poised vs. dislikes being in front of people</td>
</tr>
<tr>
<td></td>
<td>PoB</td>
<td>Enjoy performing in public, likes speaking to group vs. dislikes performing in public</td>
</tr>
<tr>
<td></td>
<td>PoC</td>
<td>Seeks comment from important people vs. self-conscious with superiors, avoids criticism</td>
</tr>
<tr>
<td></td>
<td>Re</td>
<td>Relaxed vs. Nervous</td>
</tr>
<tr>
<td></td>
<td>ReA</td>
<td>Physically relaxed vs. fidgets, has nervous habits, twitches, has restless movements</td>
</tr>
<tr>
<td></td>
<td>ReB</td>
<td>Tolerant of nonhuman or situational annoyances vs. irritated by mishaps, frustrations</td>
</tr>
<tr>
<td></td>
<td>ReC</td>
<td>Restraint vs. Rhythemia</td>
</tr>
<tr>
<td></td>
<td>ReA</td>
<td>Planning vs. acting without thought, impulsive</td>
</tr>
<tr>
<td></td>
<td>ReB</td>
<td>Serious, responsible vs. lively, carefree, irresponsible, no thought of the future</td>
</tr>
<tr>
<td></td>
<td>ReC</td>
<td>Enjoys stable pursuits vs. wants excitement, change, wildness</td>
</tr>
<tr>
<td></td>
<td>Sc</td>
<td>Self-confidence</td>
</tr>
<tr>
<td></td>
<td>ScA</td>
<td>Feels confident vs. needs encouragement, feels inferior, afraid of failure</td>
</tr>
<tr>
<td></td>
<td>ScB</td>
<td>Claims abilities, skills, good experiences vs. claims handicaps, ineptitude</td>
</tr>
<tr>
<td></td>
<td>ScC</td>
<td>Sees others as positive toward him vs. sees others as negative toward him</td>
</tr>
<tr>
<td></td>
<td>Se</td>
<td>Sensitive Attitude</td>
</tr>
<tr>
<td></td>
<td>SeA</td>
<td>Warm, soft, cooperative, kind, considerate vs. hard, stern, bossy</td>
</tr>
<tr>
<td></td>
<td>SeB</td>
<td>Sensitive, empathic, delicate, quiet vs. robust, noisy, active, tough, fearless</td>
</tr>
<tr>
<td></td>
<td>SeC</td>
<td>Interest in people's welfare, religion vs. interest in people for companionship or fun</td>
</tr>
<tr>
<td></td>
<td>SeD</td>
<td>Interest in imagination, music, aesthetics vs. interest in practical, technical, political</td>
</tr>
<tr>
<td></td>
<td>So</td>
<td>Sociability</td>
</tr>
<tr>
<td></td>
<td>SoA</td>
<td>Competent socially, social organizer vs. withdrawn, fears public speaking</td>
</tr>
<tr>
<td></td>
<td>SoB</td>
<td>Glib talker, superficial social know-how vs. aloof, doesn't know what should be said</td>
</tr>
<tr>
<td></td>
<td>SoC</td>
<td>Experienced or confident in social contacts vs. shy, socially insecure</td>
</tr>
<tr>
<td></td>
<td>Ss</td>
<td>Self-Sufficiency</td>
</tr>
<tr>
<td></td>
<td>SsA</td>
<td>Self-sufficient, likes to be alone in stress, planning vs. dependent, needs others</td>
</tr>
<tr>
<td></td>
<td>SsB</td>
<td>Desires to be different, individualistic, free vs. needs approval, conforms</td>
</tr>
<tr>
<td></td>
<td>SsC</td>
<td>Unconventional, idealistic vs. tends to have same feelings as others, majority opinions</td>
</tr>
<tr>
<td></td>
<td>SsD</td>
<td>Emotionally independent vs. needs love, friends, succorance, and protection</td>
</tr>
<tr>
<td></td>
<td>Su</td>
<td>Surgency vs. Repression</td>
</tr>
<tr>
<td></td>
<td>SuA</td>
<td>Exuberant, enthusiastic, cheerful vs. repressed, reserved, inhibited</td>
</tr>
<tr>
<td></td>
<td>SuB</td>
<td>Likes to stimulate and cheer up people vs. quiet, stay-at-home</td>
</tr>
<tr>
<td></td>
<td>SuC</td>
<td>Expressive, frank, talks without inhibition vs. cautious in talking, precise, secretive</td>
</tr>
<tr>
<td></td>
<td>Th</td>
<td>Thoughtfulness</td>
</tr>
<tr>
<td></td>
<td>ThA</td>
<td>Likes to reflect, meditate vs. prevented from doing it by social or business activity</td>
</tr>
<tr>
<td></td>
<td>ThB</td>
<td>Likes to think about people vs. enjoys the company of people without analyzing them</td>
</tr>
<tr>
<td></td>
<td>ThC</td>
<td>Thinks about self vs. cares for about self</td>
</tr>
<tr>
<td></td>
<td>ThD</td>
<td>Intellectual interests vs. active interests</td>
</tr>
<tr>
<td></td>
<td>To</td>
<td>Tolerance of Human Nature and Things vs. Criticalness</td>
</tr>
<tr>
<td></td>
<td>ToA</td>
<td>Naive, believes people honest and fair vs. believes people are unfair to gain advantage</td>
</tr>
<tr>
<td></td>
<td>ToB</td>
<td>Believes people are capable of good work vs. critical, fault finding</td>
</tr>
<tr>
<td></td>
<td>ToC</td>
<td>Tolerant of human nature vs. cynical about human nature</td>
</tr>
<tr>
<td></td>
<td>ToE</td>
<td>Tolerate imperfections in things vs. feels hostility toward things that fail to work</td>
</tr>
<tr>
<td></td>
<td>Wb</td>
<td>Well-Being vs. Depression</td>
</tr>
<tr>
<td></td>
<td>WbA</td>
<td>Has feeling of well-being, happy vs. depressed, blue, lonely</td>
</tr>
<tr>
<td></td>
<td>WbB</td>
<td>Hopeful, optimistic about own future vs. fear and worry about doom or vague dangers</td>
</tr>
<tr>
<td></td>
<td>WbC</td>
<td>Confident, can stand criticism vs. guilt prone, feels worthless, worries about himself</td>
</tr>
</tbody>
</table>

Table 1 (continued)
In factor analyses of these data, just four factors out the 28 hypothetical ones emerged nearly as intended, with salient factor coefficients or weights on the particular scales that were written as markers for them. These factors are:

1. Open-mindedness vs. Dogmatism (Om)
2. Self-Confidence (Sc)
3. Thoughtfulness (Th)
4. Tolerance of Human Nature vs. Criticalness (To)

(Tolerance of things was originally included in this factor but was omitted because of low loadings, although this concept occasionally seemed in the literature to be a part of the factor.)

Four more factors, numbered 5-8 below, yielded salient coefficients on at least three possible marker variables including at least one scale originally intended for the factor plus other scales originally proposed for other factors, but so close to the factor in psychological meaning that the new assignments for the subfactors were judged not to be inconsistent with the literature. These are instances where two or more factors supposedly matching those in the literature were clearly overlapping.

The attention of the reader is called here to the result that in both analyses the intended factor, Self-Sufficiency, was split into what we will call Individualism vs. Conformity (In), (No 7 below) and Self-Sufficiency vs. Dependence (Ss). A second look at the literature on this point revealed that this division of the factor actually represents the findings.
of the literature more accurately than did a combining of these two concepts as a single factor of Self-Sufficiency in the original review (French, 1973).

In the case of the General Activity factor (No. 1), it should be mentioned that the best evidence for the markers indicated is in a 25-factor solution done at the same time as the 22 factor solutions reported by Dermen et al. (1974). In the 22-factor analyses the factor containing the markers indicated below was too broad to be definable as the General Activity factor observed in the literature.

These four additional factors and their subfactors are shown below with symbols in parentheses to indicate the factors and lettered subfactors as originally assigned in the literature review (French, 1973). As a result of subfactor reassignments based on the Dermen et al (1974) studies, it is now being proposed that the scales listed below for these additional four factors will serve as suitable markers for the factors.

5. General Activity (Ac)

(AcA) Moves rapidly, quick in physical performance vs. slow

(AcB) Busy, active in projects or nonsocial affairs vs.

Uninvolved, gets overburdened

(EsC) Healthy, feels vigorous vs. Tired, intermittent loss of energy, hypochondriacal.

Although originally intended for Emotional Stability, the association of this subfactor with General Activity is consistent with the literature.

6. Calmness vs. Anxiety (Ca)

(CaA) Relaxed, stable, at ease vs. Anxious, worried about self, edgy, uneasy, nervous, tense, restless without cause
(AuB reflected) Relaxed, adjusted, realistic thoughts

vs. Anxiety and worry that leads to autistic thinking

(ReA) Physically relaxed vs. Fidgets, has nervous habits,
twitches, makes restless movements

Although hypothesized for three different factors, all of
these subfactors seem quite suitable as markers for Calmness
vs. Anxiety

7. Individualism vs. Conformity (In)

(Part of what was originally called Self-Sufficiency, Ss)

(SsB) Desires to be different, individualistic, free vs.
Needs approval of others, conforms, accepts social
order, agrees with group, likes affiliation

(SsC) Unusual ideas, unconventional, idealistic, reflective
vs. Has majority opinions, tends to have same feel-
ings as others

(EmC reflected) Asserts independence from authority,
stubborn vs. Satisfied, cooperates with

8. Emotional Maturity (Em)

(EmA) Patient, adjusts to frustration vs. Verbally aggressive,
demanding

(ReB) Tolerant of physical, non-human or situational annoy-
ances vs. Irritated by mishaps and frustrating cir-
cumstances

(ToE) Tolerates the imperfections in things vs. Feels
hostility toward things that fail to work

(EsA) Emotionally stable, tolerant, stolid vs. Emotionally
sensitive, irritable.
Actually, these four subfactors seem more homogeneous in a psychological sense than are many variables with high loadings on Emotional Maturity in the literature.

Analyses of Separate Scales for Poles

It has been concluded that satisfactory marker variables for the eight factors described above consist of the subfactor scales given for them. It was surmised that satisfactory markers for at least some of the remaining hypothesized factors failed to appear due to constraints on the earlier analyses. As was noted above, scales had been defined in terms of opposite poles with some educated guesses to define an "opposite" even when the literature failed to show its existence (or its non-existence). An ideal procedure might have considered item analyses separately for each pole of a hypothesized scale as well as factor analyses of a matrix as large as 174 x 174 (87 defined subfactors x 2 poles). Both the item analyses by poles and factor analyses of such a large matrix were deemed impractical, especially given the relatively small sample sizes. In the item analyses actually done, scores had been summed across the two poles and items retained or discarded in terms of their correlations with the composite of the two poles. Subfactor scales had been, in turn, retained or discarded as a function of their homogeneity across the total of both poles. It is likely that these procedures diluted or contaminated some markers where one pole was on target but the other not. It also often produced scales that were not balanced in terms of the representation of the two poles, occasionally an entire pole having been eliminated. Because of these considerations, in the present analyses
the original full length scales were used, but scored separately by poles.

Two factor analyses were carried out: one with the 22 single-pole scales and one with 38 such variables. Both of these used the Naval recruit data.

Minres factor analyses were employed. These were followed by Direct Oblimin rotation, separately rotating 6 and 10 factors for the 22-variable study and separately rotating 6, 10 and 14 factors for the 38-variable study. Tables 2 and 3 consist of the rotated factor patterns and the matrices of correlations among the factors.

In the next section is a listing of ten additional factors found to be marked satisfactorily by at least three of the unipolar scales. The number of factors extracted and rotated made an important difference in the findings. Of some theoretical interest is the justification for selecting markers of a factor those variables that emerge together when few factors are considered rather than many. Conversely, some variables emerge together in a suitable way when many factors are considered rather than fewer. It may be argued that, because of the somewhat varying generality of the factors even among so-called "primary" factors, all of them may not behave similarly in a single analysis. As demonstrated by Taylor and Coyne (1973), hierarchical relationships among factors based on their generality can be revealed by rotating different numbers of factors even when all rotations are orthogonal. Tables 2 and 3 provide examples of these relationships. When relatively few factors are extracted and rotated, it is presumably the more general
### Table 2

**Factor Coefficients (over .25) and Intercorrelations**

<table>
<thead>
<tr>
<th>Description of Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>PoA+</td>
<td>50*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>41</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>30</td>
</tr>
<tr>
<td>PoA-</td>
<td>53</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>81</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>102</td>
</tr>
<tr>
<td>PoB+</td>
<td>33</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>31</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>41</td>
</tr>
<tr>
<td>PoB-</td>
<td>25</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>28</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>48</td>
</tr>
<tr>
<td>PoC</td>
<td>85*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>82</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PoD</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PoE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PoF</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PoG</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PoH</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PoI</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PoJ</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PoK</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PoL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PoM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PoN</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PoO</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PoP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PoQ</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PoR</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PoS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PoT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PoU</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PoV</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PoW</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PoX</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PoY</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PoZ</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Factor Correlations**

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. 100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. 100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. 100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. 100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. 100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Decimals omitted

* Indicates suggested markers
### TABLE 3

**Factor Coefficients (over .25) and Inter correlations: 38 Variables**

<table>
<thead>
<tr>
<th>Description of Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 factor solution</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Descriptive</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alpha, unpleasing, withdrawn</td>
<td>62</td>
<td>66*</td>
<td>66*</td>
<td>66*</td>
<td>66*</td>
<td>28</td>
<td>34</td>
<td>27</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>DBw - Dependable, punctual, keeps promises</td>
<td>42</td>
<td>46</td>
<td>47</td>
<td>52*</td>
<td>49</td>
<td>96</td>
<td>92</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DBw = Careless about promises and details</td>
<td>64</td>
<td>42</td>
<td>47</td>
<td>52*</td>
<td>49</td>
<td>96</td>
<td>92</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DBw - Consistent, scrupulous</td>
<td>35</td>
<td>29</td>
<td>34</td>
<td>27</td>
<td>20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DBw - Careless about doing what is right</td>
<td>33</td>
<td>29</td>
<td>34</td>
<td>27</td>
<td>20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DBw - Moral, knows right from wrong</td>
<td>53*</td>
<td>47</td>
<td>35</td>
<td>66</td>
<td>32</td>
<td>99</td>
<td>71</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DBw - Moral, helpful, fair, gives to causes</td>
<td>40</td>
<td>28</td>
<td>35</td>
<td>66</td>
<td>32</td>
<td>99</td>
<td>71</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DBw - Selfish, uncharitable</td>
<td>72</td>
<td>28</td>
<td>35</td>
<td>66</td>
<td>32</td>
<td>99</td>
<td>71</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DBw - Persistent, persevering, determined</td>
<td>32</td>
<td>29</td>
<td>30</td>
<td>30</td>
<td>96</td>
<td>96</td>
<td>52</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DBw - Quitting, needs change, gets discouraged</td>
<td>46</td>
<td>29</td>
<td>30</td>
<td>30</td>
<td>96</td>
<td>96</td>
<td>52</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DBw - Consistent, careful, exacting, tidy</td>
<td>36</td>
<td>30</td>
<td>30</td>
<td>96</td>
<td>96</td>
<td>52</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DBw - Relaxed, careless, nonchalant</td>
<td>33</td>
<td>29</td>
<td>30</td>
<td>30</td>
<td>96</td>
<td>96</td>
<td>52</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DBw - Meticulous, orderly, neat, careful</td>
<td>53</td>
<td>29</td>
<td>30</td>
<td>30</td>
<td>96</td>
<td>96</td>
<td>52</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DBw - Messy, careless, impulsive</td>
<td>32</td>
<td>29</td>
<td>30</td>
<td>30</td>
<td>96</td>
<td>96</td>
<td>52</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DBw - Likes to do his best, works hard</td>
<td>36</td>
<td>30</td>
<td>96</td>
<td>96</td>
<td>52</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DBw - Play before work</td>
<td>46</td>
<td>29</td>
<td>30</td>
<td>30</td>
<td>96</td>
<td>96</td>
<td>52</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DBw - No motivation to do good/help people</td>
<td>26</td>
<td>30</td>
<td>30</td>
<td>96</td>
<td>96</td>
<td>52</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DBw - Objectivity, fairness attributed to others</td>
<td>33</td>
<td>29</td>
<td>30</td>
<td>30</td>
<td>96</td>
<td>96</td>
<td>52</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DBw - Paranoid delusions about others</td>
<td>32</td>
<td>29</td>
<td>30</td>
<td>30</td>
<td>96</td>
<td>96</td>
<td>52</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DBw - Credit is given by others</td>
<td>36</td>
<td>30</td>
<td>96</td>
<td>96</td>
<td>52</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DBw - Blame by others is unfair</td>
<td>26</td>
<td>30</td>
<td>96</td>
<td>96</td>
<td>52</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DBw - Warm, soft, cooperative, kind, considerate</td>
<td>26</td>
<td>47*</td>
<td>42</td>
<td>42</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DBw - Hard, stern, bossy</td>
<td>41*</td>
<td>41*</td>
<td>42</td>
<td>42</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DBw - Sensitive, empathetic, delicate, quiet</td>
<td>49*</td>
<td>49*</td>
<td>42</td>
<td>42</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DBw - Robust, noisy, active, tough, fearless</td>
<td>46</td>
<td>38</td>
<td>38</td>
<td>38</td>
<td>38</td>
<td>38</td>
<td>38</td>
<td>38</td>
<td>38</td>
<td>38</td>
</tr>
<tr>
<td>DBw - Interest in people's welfare, religion</td>
<td>26</td>
<td>26</td>
<td>26</td>
<td>26</td>
<td>26</td>
<td>26</td>
<td>26</td>
<td>26</td>
<td>26</td>
<td>26</td>
</tr>
<tr>
<td>DBw - Interest in work, occupation</td>
<td>32</td>
<td>32</td>
<td>32</td>
<td>32</td>
<td>32</td>
<td>32</td>
<td>32</td>
<td>32</td>
<td>32</td>
<td>32</td>
</tr>
<tr>
<td>DBw - Interest in imagination, music, aesthetics</td>
<td>35</td>
<td>35</td>
<td>35</td>
<td>35</td>
<td>35</td>
<td>35</td>
<td>35</td>
<td>35</td>
<td>35</td>
<td>35</td>
</tr>
<tr>
<td>DBw - Interest in practical, technical, political</td>
<td>34</td>
<td>34</td>
<td>34</td>
<td>34</td>
<td>34</td>
<td>34</td>
<td>34</td>
<td>34</td>
<td>34</td>
<td>34</td>
</tr>
<tr>
<td>DBw - Exhuberant, enthusiastic, cheery</td>
<td>26</td>
<td>26</td>
<td>26</td>
<td>26</td>
<td>26</td>
<td>26</td>
<td>26</td>
<td>26</td>
<td>26</td>
<td>26</td>
</tr>
<tr>
<td>DBw - Repressed, reserved, inhibited</td>
<td>46</td>
<td>46</td>
<td>46</td>
<td>46</td>
<td>46</td>
<td>46</td>
<td>46</td>
<td>46</td>
<td>46</td>
<td>46</td>
</tr>
<tr>
<td>DBw - Expressive, frank, talks without inhibition</td>
<td>46</td>
<td>46</td>
<td>46</td>
<td>46</td>
<td>46</td>
<td>46</td>
<td>46</td>
<td>46</td>
<td>46</td>
<td>46</td>
</tr>
<tr>
<td>DBw - Cautious in talking, precise, secretive</td>
<td>46</td>
<td>46</td>
<td>46</td>
<td>46</td>
<td>46</td>
<td>46</td>
<td>46</td>
<td>46</td>
<td>46</td>
<td>46</td>
</tr>
</tbody>
</table>

Decimals omitted

* Indicates suggested markers
ones that are separated clearly, while more specific factors may merge with one another. When a larger number of factors is extracted and rotated, the more general ones may break up, while the relatively specific factors are satisfactorily separated.

**Unipolar Markers for Ten Additional Factors**

In the list below are the symbols and names of factors as they were originally hypothesized and as they are listed in Table 1. Also the positive or negative direction of each pole is noted. The first four factors come from Table 2 and the last six from Table 3.

9. Gregariousness (Gs)

(GsA-) Likes to be alone

(GsC+) Likes work or socializing with people

(GsC-) Likes work alone or activities that are isolated

10. Poise vs. Self-Consciousness (Po)

(PoA+) Enjoys group attention, exhibitionistic, poised

(PoA-) Dislikes being in front of people

(PoB+) Enjoys performing in public, feels pride in speaking to a group

(PoB-) Dislikes performing in public

(DoA+) Takes charge socially, wants power

(SoA-) Withdrawn, fears public speaking and social responsibility
11. **Sociability (So)**
   - *(SoB+)* Glib talker, has superficial social know-how
   - *(SoB−)* Aloof, does not know what should be said
   - *(SoC−)* Shy, socially insecure
   - *(GsA+)* Likes to be in the presence of people

12. **Self-Sufficiency vs. Dependence (Ss)**
   - *(SsA+)* Self-sufficient, likes to be alone in stress, in planning, or in facing problems
   - *(SsA−)* Dependent, needs help from others, group dependent
   - *(SsD+)* Emotional independence
   - *(SsD−)* Needs love, friends, succorance, and protection

13. **Dependability (De)**
   - *(DeB+)* Dependable, punctual, keeps promises
   - *(DeB−)* Careless about promises and details
   - *(DeD+)* Conscientious, scrupulous

14. **Meticulousness (Me)**
   - *(MeA+)* Meticulous, orderly, neat, careful, particular about personal effects
   - *(MeA−)* Messy, careless, impulsive
   - *(PeC+)* Conscientious, careful, exacting, tidy, orderly

15. **Objectivity vs. Paranoid Tendency (Ob)**
   - *(ObA+)* Objectivity and fairness attributed to others
   - *(ObA−)* Paranoid delusions about others
   - *(ObB+)* Credit is given by others
   - *(ObB−)* Blame by others is unfair
16. Persistence (Pe)

(PeA+) Persistent, persevering, determined
(PeA-) Quitting, fickle, needs change, gets discouraged
(NaA-) Play before work

17. Sensitive Attitude (Se)

(SeA+) Warm, soft, cooperative, kind, considerate
(SeA-) Hard, stern, bossy
(SeB+) Emotionally sensitive, empathic, delicate, quiet
(AgA+) Interested in people's welfare, helpful
(MoC-) Selfish, uncharitable
(NaC-) No motivation to do good or to help people

18. Surgency (Su)

(SuA+) Exuberant, enthusiastic, cheerful
(SuA-) Repressed, reserved, inhibited
(SuC+) Talks without inhibition, expressive, frank

The ten factors listed above are revealed by the analyses presented in Tables 2 and 3. Their symbols appear in the tables beneath the factor numbers. No effort will be made to give names to the other factors in those tables. However, a discussion of some of the detailed findings in the tables may be useful.

Discussion of the Factor Patterns

Table 2 shows the factor pattern coefficients for the 22 variables when 6 and 10 factors are extracted and rotated. The + or – designation on a variable indicates the direction of the pole. The abbreviations are those presented in Table 1 and also correspond to the categories in
the report by French (1973). Table 3 gives the factor patterns for
the 38-variable set when 6, 10, and 14 factors are extracted and
rotated. The variables that were suggested as factor markers in the
preceding section of this report are identified by asterisks placed
to the right of the salient weights in the "best-fitting" solution.

This discussion of the tables is intended to explain some of the
evidence on which unipolar markers were selected for ten of the puta-
tive factors. In addition, it is desirable to make clear to the readers
to what extent, if any, there exists capitalization on chance, because
some markers are selected from solutions where rather few factors are
rotated and some are selected from solutions presenting a larger
number of factors. While a theoretical discussion of the estimation
of the number of dimensions in a matrix is not appropriate here, it is
clear from these results that different factors become visible when
different numbers of dimensions are considered.

Let us look first at Table 2, which shows the factor patterns
of the 22 variables for six and ten factors. It happens that four of
our hypothesized factors were revealed most clearly by the 6-factor
solution.

The unipolar variables for Poise vs. Self-Consciousness and for
Sociability were placed together in this analysis, because they are
often found separately in the literature, but were combined on the same
factor in Dermen et al. (1974). It turned out that analyzing the
separate poles of the subfactors for these two factors was successful
in that the two factors appear as distinct but rather highly correlated
in the two analyses in Table 2. Some useful looking markers for both of
these factors were originally intended in French (1973) for other factors, but, as shown by the variable descriptions given, the change in their assignments as markers is not only consistent with the present results but also makes good psychological sense.

Now look at Factor 2 in the 6-factor solution in Table 2. This factor is determined by the two poles of the two subfactors of Self-sufficiency vs. Dependence found in both samples in Dermen et al. (1974). The purpose of putting the two poles of each of these two subfactors into this analysis was to provide four variables that might be used as markers. This objective was met very well in the 6-factor solution, while an increased number of factors permitted the freedom for one member of this group to split away and become a specific factor (Factor 7 in the 10-factor solution which correlates .48 with the original factor). Nevertheless, it is being suggested that all four of these poles may be used as markers for the factor.

The factor Gregariousness is found in the 6-factor solution in Table 2, being represented by just three of the four unipolar variables that had been provided for it in this analysis. Here is an instance where unipolar scales intended to be opposites are found not to be opposed accurately enough to appear on the same factor. Indeed the anticipation of such instances was good reason to make factor analytic studies of at least some of these separate unipolar scales. Three markers for a factor is minimal but satisfactory, and so the three unipolar variables having high weights on Gregariousness are suggested as markers for that factor. Look also at this factor in the 10-factor
solution. It might have been Factor 4, but spreading the variance over a larger number of factors has had the effect of breaking off one of the three markers and making it a specific factor, Factor 10.

Table 3 illustrates similar phenomena with the group of 38 variables. Surgency has three good markers in the 6-factor solution, but one of these is broken among several factors when a greater number of factors is rotated. Sensitive Attitude, having here an emphasis on social helpfulness, seems a little more specific than are most of its appearances in the literature. It has some good markers not originally intended for it. The factor is clearest with six factors, but can also be seen as Factor 4 in the 10-factor solution. Dependability is confused with other factors in the 6-factor solution, probably because too few dimensions are represented in that analysis to separate it. This factor is clearest in the 10-factor solution, but is also quite visible as Factor 8 in the 14-factor solution. Persistence follows a similar pattern in the 6-factor solution; clearest in the 10-factor solution and loses one of its markers in the 14-factor solution. Meticulousness is also confused with other factors in the 6-factor analysis but is clear in the other two analyses. Objectivity vs. Paranoid Tendency was found to have only two salient markers in Dermen et al. (1974), and so its separate poles were placed in this analysis in order to obtain evidence for a sufficient number of markers. Its presence is clear in all of the 38-variable analyses, being clearest in the 14-factor solution.

The intercorrelations among the factors are shown with each table mainly for purposes of completeness. The highest of these values are
correlations around .60 shown in Table 2 between Poise vs. Self-Consciousness and Sociability. It is this correlation that caused these factors to merge in the analyses of the full subfactor scales. Such a close relationship between these two factors is evidence for the second-order factor that has been found often in the literature and called "extraversion" or a similar name. In this same table there is substantial correlation between the above-named factors and a specific factor originally intended as a negative pole of a marker for Dominance: (DoA) Respects others' ideas, self-effacing. Possibly the items written for this scale had too much of an anti-sociability or self-consciousness slant. The 6-factor analysis in Table 3 shows a correlation of .51 between two factors characterized by a confusion of factors including Morality, Persistence, and Need for Achievement. This suggests the effect of some sort of "good guy" factor at the second-order level.

As noted above, it is likely that the factors revealed most clearly when dimensionality is held to a low level are rather general ones, while those revealed by using a larger number of dimensions are more specific in nature. However, we cannot be very confident about the generality of a given factor, because this characteristic depends so much on the particular mix of variables or other qualities of the analysis. While it will be useful to warn users of any extremes in the generality of factors that our markers may generate, we should probably not eliminate factors or markers for such factors merely on the basis of differences of this kind. In particular, it is stressed here that the mix of variables
or other characteristics of our own analyses should not be allowed to
negate or grossly alter the repeated findings of other workers who
have published their results in the literature of factor analysis. We
hope that our final "Guide", subject to our own factorial tryouts, will
accurately represent a consensus of the findings in the literature of
self-report questionnaires that attempt to measure temperamental
characteristics.
References


Taylor, J. B. and Coyne, L. Varimax and Maxplane rotational methods under different conditions of sampling error and hierarchical structure. Multivariate Behavioral Research, 1973, 8, 365-378.
DISTRIBUTION LIST

NAVY

4 Dr. Marshall J. Farr, Director Personnel and Training Research Programs Office of Naval Research (Code 458) Arlington, VA 22217

1 ONR Branch Office 495 Summer Street Boston, MA 02210 ATTN: Dr. J. Lester

1 ONR Branch Office 1030 East Green Street Pasadena, CA 91101 ATTN: E.E. Gloye

1 ONR Branch Office 536 South Clark Street Chicago, IL 60605 ATTN: M.A. Bertin

1 Office of Naval Research Area Office 207 West 24th Street New York, NY 10011

6 Director Naval Research Laboratory Code 2627 Washington, DC 20390

12 Defense Documentation Center Cameron Station, Building 5 5010 Duke Street Alexandria, VA 22314

1 Special Assistant for Manpower OASN (M&RA) Pentagon, Room 4E794 Washington, DC 20350

1 LCDR Charles J. Theisen, Jr., MSC, 4024 Naval Air Development Center Warminster, PA 18974

1 Chief of Naval Reserve Code 3055 New Orleans, LA 70146

1 Dr. Lee Miller Naval Air Systems Command AIR-413E Washington, DC 20361

1 Chief Bureau of Medicine & Surgery Research Division (Code 713) Washington, DC 20372

1 Chairman Behavioral Science Department Naval Command & Management Division U.S. Naval Academy Luce Hall Annapolis, MD 21402

1 Chief of Naval Education & Training Naval Air Station Pensacola, FL 32508 ATTN: CAPT Bruce Stone, USN

1 Mr. Arnold Rubinstein Naval Material Command (NAVMAT 03424) Room 820, Crystal Plaza #6 Washington, DC 20360

1 Commanding Officer Naval Medical Neuropsychiatric Research Unit San Diego, CA 92152

1 Director, Navy Occupational Task Analysis Program (NOTAP) Navy Personnel Program Support Activity Building 1304, Bolling AFB Washington, DC 20336
1 Dr. Richard J. Niehaus  
Office of Civilian Manpower Management  
Code 263  
Washington, DC 20390

1 Chief of Naval Operations (OP-987E)  
Department of the Navy  
Washington, DC 20350

1 Department of the Navy  
Office of Civilian Manpower Management  
Code 263  
Washington, DC 20390

1 Superintendent  
Naval Postgraduate School  
Monterey, CA 93940  
ATTN: Library (Code 2124)

1 Commander, Navy Recruiting Command  
4015 Wilson Boulevard  
Arlington, VA 22203  
ATTN: Code 015

1 Mr. George W. Graine  
Naval Ship Systems Command  
SHIPS 047C12  
Washington, DC 20362

1 Chief of Naval Technical Training  
Naval Air Station Memphis (75)  
Millington, TN 38054  
ATTN: Dr. Norman J. Kerr

1 Dr. William L. Malay  
Principal Civilian Advisor  
for Education & Training  
Naval Training Command, Code 01A  
Pensacola, FL 32508

1 Dr. Alfred F. Smode, Staff Consultant  
Training Analysis & Evaluation Group  
Naval Training Equipment Center  
Code N-00T  
Orlando, FL 32813

1 Dr. Hanns H. Wolff  
Technical Director (Code N-2)  
Naval Training Equipment Center  
Orlando, FL 32813

1 Chief of Naval Training Support  
Code N-21  
Building 45  
Naval Air Station  
Pensacola, FL 32508

1 Dr. Bernard Rimland  
Navy Personnel R&D Center  
San Diego, CA 92152

5 Navy Personnel R&D Center  
San Diego, CA 92152  
ATTN: Code 10

ARMY

1 Headquarters  
U.S. Army Administration Center  
Personnel Administration Combat  
Development Activity  
ATCP-HRO  
Ft. Benjamin Harrison, IN 46249

1 Armed Forces Staff College  
Norfolk, VA 23511  
ATTN: Library

1 Commandant  
United States Army Infantry School  
ATTN: ATSH-DET  
Fort Benning, GA 31905

1 Deputy Commander  
U.S. Army Institute of Administration  
Fort Benjamin Harrison, IN 46216

1 Dr. Stanley L. Cohen  
U.S. Army Research Institute  
1300 Wilson Boulevard  
Arlington, VA 22209

1 Dr. Ralph Dusek  
U.S. Army Research Institute  
1300 Wilson Boulevard  
Arlington, VA 22209

1 Mr. Edmund F. Fuchs  
U.S. Army Research Institute  
1300 Wilson Boulevard  
Arlington, VA 22209
1 Dr. J.E. Uhlaner, Technical Director
U.S. Army Research Institute
1300 Wilson Boulevard
Arlington, VA  22209

1 HQ USAREUR & 7th Army
ODCSOPS
USAREUR Director of GED
APO New York  09403

AIR FORCE

1 Research Branch
AF/DPMYAR
Randolph AFB, TX  78148

1 AFHRL/DOJN
Stop #63
Lackland AFB, TX  78236

1 Dr. Robert A. Bottenberg (AFHRL/SM)
Stop #63
Lackland AFB, TX  78236

1 Dr. Martin Rockway (AFHRL/TT)
Lowry AFB
Colorado  80230

1 Major P.J. DeLeo
Instructional Technology Branch
AF Human Resources Laboratory
Lowry AFB, CO  80230

1 AFSOR/NL
1400 Wilson Boulevard
Arlington, VA  22209

1 Commandant
USAF School of Aerospace Medicine
Aeromedical Library (SUL-4)
Brooks AFB, TX  78235

MARINE CORPS

1 Mr. E.A. Dover
Manpower Measurement Unit (Code MPI)
Arlington Annex, Room 2413
Arlington, VA  20380

1 Commandant of the Marine Corps
Headquarters, U.S. Marine Corps
Code MPI-20
Washington, DC  20380

1 Director, Office of Manpower Utilization
Headquarters, Marine Corps (Code MPU)
MCB (Building 2009)
Quantico, VA  22134

1 Dr. A.L. Slafkosky
Scientific Advisor (Code RD-1)
Headquarters, U.S. Marine Corps
Washington, DC  20380

COAST GUARD

1 Mr. Joseph J. Cowan, Chief
Psychological Research Branch
U.S. Coast Guard Headquarters
Washington, DC  20590

OTHER DOD

1 Lt. Col. Henry L. Taylor, USAF
Military Assistant for Human Resources
OAD (E&LS) ODDR&E
Pentagon, Room 3DL29
Washington, DC  20301

1 Col. Austin W. Kibler
Advanced Research Projects Agency
Human Resources Research Office
1400 Wilson Boulevard
Arlington, VA  22209

OTHER GOVERNMENT

1 Dr. Lorraine D. Eyde
Personnel Research and Development Center
U.S. Civil Service Commission
1900 E. Street, N.W.
Washington, D.C.  20415

1 Dr. William Gorham, Director
Personnel Research and Development Center
U.S. Civil Service Commission
1900 E. Street, N.W.
Washington, DC  20415

1 Dr. Vern Urry
Personnel Research and Development Center
U.S. Civil Service Commission
1900 E. Street, N.W.
Washington, DC  20415

1 Dr. Andrew R. Molnar
Technological Innovations in Education
National Science Foundation
Washington, DC  20550
MISCELLANEOUS

1 Dr. John Annett
The Open University
Milton Keynes
Buckinghamshire
ENGLAND

1 Dr. Richard C. Atkinson
Stanford University
Department of Psychology
Stanford, CA 94305

1 Dr. Gerald V. Barrett
University of Akron
Department of Psychology
Akron, OH 44325

1 Dr. Bernard M. Bass
University of Rochester
Management Research Center
Rochester, NY 14627

1 Mr. Kenneth M. Bromberg
Manager - Washington Operations
Information Concepts, Inc.
1701 North Fort Myer Drive
Arlington, VA 22209

1 Dr. Ronald P. Carver
School of Education
University of Missouri - Kansas City
Kansas City, Missouri 64110

1 Centry Research Corporation
4113 Lee Highway
Arlington, VA 22207

1 Dr. Kenneth E. Clark
University of Rochester
College of Arts & Sciences
River Campus Station
Rochester, NY 14627

1 Dr. Rene' V. Davis
University of Minnesota
Department of Psychology
Minneapolis, MN 55455

1 Dr. Norman R. Dixon
Room 170
190 Lothrop Street
Pittsburgh, PA 15260

1 Dr. Robert Dubin
University of California
Graduate School of Administration
Irvine, CA 92664

1 Dr. Harold J. Dupuy
10220 Shiloh Street
Fairfax, VA 22030

1 Dr. Marvin D. Dunnetee
University of Minnesota
Department of Psychology
Minneapolis, MN 55455

1 ERIC
Processing and Reference Facility
4833 Rugby Avenue
Bethesda, MD 20014

1 Dr. Victor Fields
Montgomery College
Department of Psychology
Rockville, MD 20850

1 Dr. Edwin A. Fleishman
American Institutes for Research
Foxhall Square
3301 New Mexico Avenue, N.W.
Washington, DC 20016

1 Dr. Robert Glaser, Director
University of Pittsburgh
Learning Research & Development Center
Pittsburgh, PA 15213

1 Dr. Richard S. Hatch
Decision Systems Associates, Inc.
11428 Rockville Pike
Rockville, MD 20852

1 Dr. M.D. Havron
Human Sciences Research, Inc.
7710 Old Spring House Road
West Gate Industrial Park
McLean, VA 22101

1 HumRRO
Division No.3
P.O. Box 5787
Presidio of Monterey, CA 93940
1 HumRRO
Division No. 4, Infantry
P.O. Box 2086
Fort Benning, GA 31905

1 HumRRO
Division No. 5, Air Defense
P.O. Box 6057
Fort Bliss, TX

1 HumRRO
Division No. 6, Library
P.O. Box 428
Fort Rucker, IL 36360

1 Dr. Lawrence B. Johnson
Lawrence Johnson & Associates, Inc.
200 S. Street, N.W., Suite 502
Washington, DC 20009

1 Dr. Steven W. Keele
University of Oregon
Department of Psychology
Eugene, OR 97403

1 Dr. David Klahr
Carnegie-Mellon University
Department of Psychology
Pittsburgh, PA 15213

1 Dr. Frederick M. Lord
Educational Testing Service
Princeton, NJ 08540

1 Dr. Ernest J. McCormick
Purdue University
Department of Psychological Sciences
Lafayette, IN 47907

1 Dr. Robert R. Mackie
Human Factors Research, Inc.
6780 Cortona Drive
Santa Barbara Research Park
Goleta, CA 93017

1 Dr. Edmond Marks
405 Old Main
Pennsylvania State University
University Park, PA 16802

1 Dr. Leo Munday, Vice-President
American College Testing Program
P.O. Box 168
Iowa City, IA 52240

1 Dr. Donald A. Norman
University of California, San Diego
Center for Human Information Processing
LaJolla, CA 92037

1 Dr. Luigi Petrullo
2431 North Edgewood Street
Arlington, VA 22207

1 Dr. Diane M. Ramsey-Klee
R-K Research & System Design
3947 Ridgemont Drive
Malibu, CA 90265

1 Dr. Joseph W. Rigney
University of Southern California
Behavioral Technology Laboratories
3717 South Grand
Los Angeles, CA 90007

1 Dr. Leonard L. Rosenbaum, Chairman
Montgomery College
Department of Psychology
Rockville, MD 20850

1 Dr. Arthur I. Siegel
Applied Psychological Services
404 East Lancaster Avenue
Wayne, PA 19087

1 Dr. C. Harold Stone
1428 Virginia Avenue
Glendale, CA 91202

1 Dr. Dennis J. Sullivan
725 Benson Way
Thousand Oaks, CA 91360

1 Dr. Benton J. Underwood
Northwestern University
Department of Psychology
Evanston, IL 60201

1 Dr. David J. Weiss
University of Minnesota
Department of Psychology
Minneapolis, MN 55455

1 Dr. Anita West
Denver Research Institute
University of Denver
Denver, CO 80210