Recurrent Personality Factors Based on Trait Ratings

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ABSTRACT Intercorrelations among ratings on 35 personality traits, selected as representative of the personality domain, were obtained for eight samples. These samples differed in length of acquaintanceship from 3 days to more than a year; in kind of acquaintanceship from assessment programs in a military training course to a fraternity house situation; in type of subject from airmen with only a high-school education to male and female undergraduate students to first-year graduate students; and in type of rater from very naive persons to clinical psychologists and psychiatrists with years of experience in the evaluation of personality. Centroid or multiple-group factors were extracted and rotated orthogonally to simple structure. For one study, an independent solution was obtained in which analytic rotations were accomplished on an IBM 650 computer using Kaiser's normal varimax criterion. Five fairly strong and recurrent factors emerged from each analysis, labeled as (*a*) Surgency, (*b*) Agreeableness, (*c*) Dependability, (*d*) Emotional Stability, and (*e*) Culture.

The measurement of personality by means of trait ratings has a history of at least 50 years, dating back to the investigations of Heymans and Wiersma (1909) in which 400 physicians rated over 2,500 individuals. After a brief surge of interest in the area in the 1920s, few research studies were carried out on trait ratings until fairly recently. Several early investigators reported findings indicating that ratings of personality traits were quite unreliable, and thus not very useful mea-

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surements. At the same time, the increasing popularity of the Gestalt and Dynamic Psychology theories with their view that man must be studied as a whole person in action did little to stimulate interest in trait measurement. However, the concept of the "whole person," although it may ultimately lead to greatest accuracy of description and prediction, is unmanageable from a measurement point of view and will likely remain so for some time to come. Furthermore, as Cattell (1946) has pointed out, the trait concept does not preclude the concept of the whole person, since any person can be uniquely and adequately described by a combination of a number of independent traits or factors. Although earlier studies indicated personality trait ratings to be unreliable (low rater agreement), unstable (specific to the rating situation), and contaminated by a large general factor (halo), Symonds (1931) and Allport (1937) concluded that such deficiencies might be overcome by the use of fairly large groups of raters who have observed the subjects' day-to-day behavior over a considerable period of time, and by requiring the rating of several subjects on one trait at a time, rather than the rating of each subject on several traits at a time.

Several recent studies have borne out Symonds's and Allport's conclusions. Results from the Veterans Administration Research Program on the Selection of Clinical Psychologists as reported by Kelly and Fiske (1951) tentatively indicated that ratings on personality traits were predictive of future behavior. Tupes (1957, 1959), in studies using Air Force officer candidates and senior Air Force officers as subjects, found peer ratings on personality traits to be predictive of later performance as second lieutenants in the case of the officer candidates, and to be related to concurrent but independent measures of officer performance in the latter group. Furthermore, the profiles of the correlations between personality traits and officer performance were quite similar in the two groups. All three of these studies, as well as one by Mays (1954), indicated that even though personality trait ratings by a single rater may be quite unreliable (about .2 to .3), ratings obtained from a group of raters (10 to 20 raters) when summed yielded scores whose reliabilities were quite satisfactory (.8 to .9). In general, it may be concluded that ratings on personality traits are useful predictors of future behavior and that such ratings yield sufficiently reliable individual differences to be useful in themselves, either for the study of individual differences in personality or as criteria against which other types of personality measures (for example, paper-and-pencil tests) may be validated.

As indicated by Eysenck (1953) and French (1953), many studies have been reported concerning the factor structure underlying person-

ality trait rating variables. In spite of this fact, the domain has not been at all clearly defined. Cattell (1945, 1947, 1948) has published two factor analyses of men and one of women, each based on ratings of 35 personality traits selected to represent the entire personality area. In each he found 11 or 12 factors which he has identified as similar in the three analyses. For many of these factors, however, the factor loadings are so small that some factor analysts would hesitate to try to interpret them at all. Fiske (1949) analyzed ratings of 22 of the same or highly similar variables using beginning graduate students in clinical psychology for his sample. He obtained about the same factorial structure from ratings of the students by themselves (self-ratings), by their peers, and by clinical psychologists. However, a comparison of the factors isolated by Fiske with those defined by Cattell is quite difficult, in spite of the fact that the variables used by Fiske in the main corresponded quite closely with those used by Cattell. Some similarities can be noted between the Cattell and Fiske factors, but it is difficult to tell whether the differences observed are a function of divergent extraction and rotational philosophies, the nature of the samples rated, the nature of the rater groups, or the omission of 13 of the trait variables from the Fiske study. Attempts to compare the results of either the Fiske or Cattell analyses with those found by other investigators are generally futile, since it is rarely possible to determine from the studies whether all, some, or for that matter, any of the variables used are similar from one study to another. When what might be recurrent factors are found (e.g., Extroversion-Introversion, Emotionality-Stability, and Conformity-Independence), differences in the nature of variables identifying these factors are such as to make impossible any but subjective judgments as to their possible similarities.

The present study was designed to help clarify the personality trait-rating domain. The goal was to isolate meaningful and relatively independent trait-rating factors which are universal enough to appear in a variety of samples, and which are not unduly sensitive to the rating conditions or situations.

METHOD

Eight intercorrelation matrices were factored and rotated orthogonally to approximate simple structure.[1] The matrices were selected in such a way that differences due to the traits rated would be minimized, while differences in

1. Six of these analyses appear in an earlier report (Tupes & Christal, 1958).

the type of subjects, raters, and situations would be maximized. None of the analyses were carried out "blind" (without identification of the variables), nor were they made independently of one another. The goal was to rotate the separate factor matrices into similar structure while at the same time following accepted principles of rotation and arriving at simple structure.

For comparison purposes, one of the solutions was redetermined in a completely objective manner by subjecting the centroid factors to a varimax rotational program on an IBM 650 computer.

The trait variables entering into each analysis were among the 35 developed by Cattell (1947), who used as a basis the comprehensive list of adjectives originally identified by Allport and Odbert (1936) as describing human behavior. Each trait is bipolar, with each pole defined by a short group of adjectives or phrases. These traits are believed especially appropriate for an investigation of the trait-rating domain since the method by which they were developed led to some assurance that they are representative of the entire personality area. The bipolar names of these traits appear in Tables 1 to 6. For their defining adjectives or phrases the reader is referred to Cattell (1947), Fiske (1949), or Tupes (1957).

Three of the intercorrelation matrices are based on Air Force Officer Candidate School [OCS] subjects who rated each other in various-sized groups. One analysis is based on Air Force field-grade officers (majors and a few lieutenant colonels) who rated each other while students at the Air Force Command and Staff School. Two analyses are rerotations of analyses published by Cattell (1947, 1948) in which the subjects are male and female college students. The two final analyses are based on two of Fiske's (1949) intercorrelation matrices of ratings of first-year graduate students in clinical psychology. In the first of these, ratings were obtained from peers; in the second, ratings were obtained from experienced clinical psychologists and psychiatrists.

All groups of subjects and raters are described below. Briefly, they differ in length of acquaintanceship from 3 days to a year or more; in kind of acquaintanceship from assessment programs to a military training course to a fraternity house situation; in type of subject from airmen with only a high-school education to male and female undergraduate students to first-year graduate students; and in type of rater from very naive persons to clinical psychologists or psychiatrists with years of experience in the evaluation of personality. It would appear that any factors common to all of these groups would have a wide range of generality both in terms of type of subject and type of rating situation.

Description of the Eight Studies

Study A: OCS 790-case sample. The subjects were 790 male graduates of OCS Classes 49B, 50A, 50B, 50C, 51B, and 51D. The earliest class, 49B, was graduated in December 1949; the latest, 51D, was graduated in Decem-

ber 1951. All candidates in each class had been selected from a much larger number of applicants (selection ratio about 10 applicants for each vacancy) on the basis of a board interview, a biographical inventory designed to measure leadership characteristics, and differential credit for completion of more than the required minimum of 2 years at college. For applicants on active duty in an enlisted status, an evaluation form completed by the applicant's commanding officer was also considered. The average age was 23.6 years, with a standard deviation of 1.5 and a range of from 20.5 to 26.5 years. The average education was 3.6 years of college, with a standard deviation of 0.6 and a range of from 2 to 6 years. Distributions on both variables were decidedly skewed toward the lower end. Slightly over half of each class came from an enlisted status, with the others selected for OCS directly from civilian life.

Each OCS class was divided at the start of training into flights of from 25 to 30 candidates each. Each flight lived together in one dormitory, ate as a flight, and attended classes and drill as a flight. In fact, nearly all of each candidate's time was spent with his flight, and he soon became intimately acquainted with each of his fellow flight members. It was the well-organized OCS flight which constituted the rating group in the present study. Each candidate rated all his fellow flight members and was in turn rated by all his fellow flight members on 30 of the 35 Cattell traits. Each rater was required to pick one-third of the group as best described by the definition at each end of each bipolar trait.

Lengths of acquaintanceship at time of rating varied from as little as 3 weeks for one class to 1 year in another (this class rated each other 6 months after graduation from OCS at the end of an on-the-job training period at Lackland Air Force Base).

Product-moment intercorrelation matrices of the 30 traits were computed for each class separately. A final matrix was then obtained by taking the median correlation between each pair of traits in the separate class matrices. Eight factors were extracted from this matrix using the complete centroid method, and rotated to orthogonal simple structure.

Study B: OCS 3-day assessment sample. The subjects were 125 male officer candidates in OCS Class 55B, whose ages ranged from 20½ through 27 years. A little more than half had no college training; about a fifth had some college; and about a fifth were college graduates. All had some previous Air Force enlisted service ranging from 1 year to 7, with a median of 2½ years. The majority were planning on an Air Force career and all had been required to sign a contract for 3 years of commissioned service after graduation from OCS. All had been screened on a measure of general learning ability—the Officer Quality [OQ] composite of the Air Force Officer Qualifying Test. Eighty-five percent of the class had OQ scores as high as the upper 10% of the general population of young males and as high as the upper 40% of college freshmen.

Ratings were obtained at the end of a 3-day assessment program just prior

to the start of OCS. Rating groups consisted of 12 candidates, 6 of whom had observed each other in an intensive series of group and individual performance tests, and 6 of whom had only shared a barrack floor and dining table with the other 6. Each rater was required to pick the 4 subjects who were best described by each end of the bipolar trait.

Five multiple-group factors (corresponding to the five found in Study A) were extracted, along with three centroids. All eight factors were rotated to simple structure.

Study C: OCS end-of-training assessment sample. These are the same subjects who were used in Study B. At the end of the assessment, the groups were re-formed into OCS flights of from 15 to 20 candidates each. No two flight members had been members of the same assessment group. Near the end of the 6-month OCS course, members of each flight rated each other on the 30 traits. Raters were asked to pick the third who were best described by each end of each bipolar trait. These ratings, although based on the same subjects, were entirely independent of the ratings analyzed in Study B.

Five multiple-group and three centroid factors were extracted from these data and rotated to simple structure.

Study D: Command and staff school sample. The subjects were 500 students in the Air Force Command and Staff School Class of 1958. These officers had been screened originally on about the same basis as the OCS sample. However, at the time the trait ratings were obtained, the average Command and Staff School Officer was about 15 years older and had approximately 15 more years of military experience than the average OCS subject. Nearly all of the officers rated held the rank of major, although the sample included a few holding the rank of lieutenant colonel.

Ratings on 30 of the bipolar traits were obtained on these subjects after they had been in attendance at the Command and Staff School about 2 months. Each rating group was composed of from 12 to 14 officers who attended all classes as a unit. Only a third of each group served as raters; these rated all members of the group by selecting the 4 subjects in their seminar group who were best described by each pole of each trait.

Only five multiple-group factors (and no centroids) were extracted and rotated to simple structure. However, at a later time factors were extracted from the intercorrelation matrix by the complete centroid method and rotated on an IBM 650 computer using the varimax program.

Study E: Cattell's male university sample. Subjects were 133 male university students with an average age of 20 years. Some were returning veterans. Ratings on 35 bipolar traits were obtained in groups of 17 men, all of whom lived together in fraternity houses or dormitories. Each rater rated all members

of his group on each trait as below average, average, or above average on each trait, with a suggested distribution of ¼, ½, and ¼ for the three categories. For a complete description of this sample see Cattell (1947).

The intercorrelation matrix was factored and rotated twice. In one instance, eight centroid factors were extracted and rotated; in the second case, five multiple-group factors and three centroid factors extracted from the resulting residual matrix were rotated. Only the latter solution is reported, since the solution based upon the centroid extractions was discovered to contain errors introduced by the graphic rotational process.

Study F: Cattell's female university sample. The subjects were 140 female university students. Ratings on these students were collected from their peers (all women) at the same time and in the same manner as in Study E. The sample is more completely described by Cattell (1948).

Since this was the only female sample studied, it was considered desirable to include several more factors in the analysis than might reasonably be expected to exist. Therefore 12 factors were rotated to simple structure; 5 of these were orthogonalized multiple-group factors and the other 7 were centroids extracted from the residual matrix.[2]

Study G: Fiske's teammates' ratings of graduate students. The subjects were 128 male graduate students in clinical psychology who participated in an intensive assessment program during the summer before they started their graduate training. Their median age was 26 years, nearly all were veterans, and nearly all had World War II experience as military psychologists. During the week-long assessment, they ate, roomed, and took their recreation together. Twenty-four trainees were assessed each week and were split arbitrarily into groups of four who participated in a series of situational tests. At the end of the week, each subject rated himself and the other three members of his group on a series of variables, including 22 bipolar personality traits. Ratings were made on an 8-point scale. The three ratings made on each subject by his three teammates were summed to obtain the rating scores used in this study. For a complete description of the sample, the variables, and the rating procedure, see Fiske (1949).

Five multiple-group factors and three centroid factors were extracted from the correlation matrix.

2. It is the authors' opinion that introduction of the additional factors into the rotation process reduced the clarity of the final solution and greatly increased the effort necessary to arrive at a reasonably good simple structure. It also led to excessively high communalities, undoubtedly as a result of the error variance reflected in the excess factors.

Study H: Fiske's staff members' ratings of graduate students. These subjects were the same as those of Study G. The same rating variables and rating scales were used except that staff members were asked to normally distribute their ratings on each trait. The raters were three assessment staff members assigned to each group of four subjects, and the rating scores were the sum of the ratings made by these individuals. Each staff member was a clinical psychologist (a few were psychiatrists) with years of experience. The raters had not only intensively observed each subject during a period of 1 week but in addition had the results of 10 objective tests, four projective tests, a biographical inventory, an autobiography, and the write-ups of three interviewers. The staff ratings were made without knowledge of the teammates' ratings.

Five multiple-group and three centroid factors were extracted and rotated to approximate orthogonal simple structure.

RESULTS

In each analysis five fairly strong rotated factors emerged. In the four studies involving Air Force samples and the two Fiske samples, all but the five strong factors were residualized (e.g., none of the residualized factors had loadings on any trait variable above an arbitrary .30 level). In the analysis of Cattell's male sample, two factors were residualized, and a weak factor involving primarily an intelligence test was defined [but not reported]. In Cattell's female sample, what had been identified as the fifth factor in the other analyses split into two factors. Both of these factors are reported for comparison purposes.

The five factors are reported in Tables 1 through 5. To save space and to make comparisons easier, each factor loading is presented to only one decimal space (e.g., .6).[3] In each table, the trait rating variables are listed in the first column, grouped together in accordance with the factor to which they make the highest contribution. Thus the first group are those variables defining Factor I, the second group are those defining Factor II, etc. Each of the other columns shows the loadings of each variable on the appropriate factor in each of the eight studies. These columns are labeled A through H to correspond with the letters

3. The intercorrelation matrices, communality estimates, and both original and final factor matrices are presented in Appendices A through H. [For the present publication, factor loadings have been given to two decimal places. In a few instances, the table values differed from those reported in the appendices; in those cases values from the appendices are reported here.]

assigned to each sample above. Traits not rated in any particular study are so indicated by [a dash] in the appropriate column.

Factor I: Surgency. Factor I appears to be that labeled by Cattell (1947, 1948) and French (1953) as Surgency and by many other investigators as Extroversion. It is best defined by the traits Talkativeness, Frankness, Adventurousness, Assertiveness, Sociability, Energetic, Composed, Interest in Opposite Sex, and Cheerfulness. It appears to be a true bipolar factor with negative loading (.3 or greater) obtained for the traits of Emotional Maturity, Mildness, Kindliness, Conventionality, and Calmness.

Factor II: Agreeableness. This factor corresponds quite closely to that called Agreeableness by French (1953). It, too, is a bipolar factor, defined on the positive end by the variables Good-Natured, Not Jealous, Emotionally Mature, Mildness, Cooperativeness, Trustfulness, Adaptability, Kindliness, Attentiveness to People, and Self-Sufficiency (as opposed to Attention-Getting). Traits loaded negatively on Factor II include Assertiveness and to a lesser extent Talkativeness and Orderliness.

Factor III: Dependability. The primary definers of this factor are Orderliness, Responsibility, Conscientiousness, Perseverance, and Conventionality, with several other variables (Cooperativeness, Mildness, and Emotional Stability) having positive loadings above .3. Practically all definers of Factor I are loaded negatively on this factor, as are Adaptability and Imaginative. The factor in many respects is like that labeled by French (1953) as Dependability or by Fiske (1949) as Conformity. It appears to be quite similar to the old "w" or Will factor found by Webb (1915).

Factor IV: Emotional Stability. The inverse of this factor seems to be that listed by French (1953) as Emotionality. It is loaded highest by Not Neurotic, Placid, Poised, Not Hypochondriacal, Calm, Emotionally Stable, and Self-Sufficient (as opposed to Dependent). Secondary definers of the factor are Lack of Jealousy, Emotional Maturity, Cooperativeness, Trustfulness, Adaptability, Responsibility, Perseverance, and Independent-Mindedness. Kindliness has a significant negative loading on this factor.

Table 1
Loadings on Recurrent Factor I from Eight Analyses

Trait variable		Analysis							
No.	Name	A	B	C	D	E	F	G	H
14	**Silent vs. Talkative**	**.82**	**.75**	**.65**	**.83**	**.80**	**.81**	**.88**	**.86**
28	**Secretive vs. Frank**	**.82**	**.73**	**.75**	**.81**	**.67**	**.71**	**.75**	**.46**
16	**Cautious vs. Adventurous**	**.82**	**.74**	**.81**	**.79**	**.70**	**.69**	**.70**	**.57**
3	**Submissive vs. Assertive**	**.72**	**.65**	**.83**	**.68**	**.45**	**.58**	**.67**	**.77**
29	**Self-Contained vs. Sociable**	**.69**	**.66**	**.78**	**.53**	**.71**	**.69**	—	—
7	**Languid, Slow vs. Energetic**	**.68**	**.70**	**.69**	**.73**	**.51**	**.77**	**.84**	**.71**
33	**Shy, Bashful vs. Composed**	—	—	—	—	**.61**	**.73**	—	—
35	**Slight vs. Marked Interest in Opposite Sex**	—	—	—	—	**.48**	**.43**	**.65**	**.44**
32	**Depressed vs. Cheerful**	—	—	—	—	**.46**	**.61**	**.72**	**.61**
10	Spiteful vs. Good-Natured	.12	.02	.09	.11	.12	.13	.00	−.04
20	Jealous vs. Not So	−.08	−.09	.05	−.12	−.16	−.11	—	—
22	Demanding vs. Emotionally Mature	−.10	−.46	−.13	−.35	−.30	−.09	—	—
13	Self-Willed vs. Mild	−.31	−.53	−.19	−.51	−.33	−.24	—	—
1	Obstructive vs. Cooperative	.17	.10	.14	−.19	.37	.36	.23	−.11
9	Suspicious vs. Trustful	.14	.12	.15	.09	.01	.13	.06	−.05
21	Rigid vs. Adaptable	.19	.18	.40	.13	.34	.23	.33	.27
17	Hard, Stern vs. Kindly	−.28	−.53	−.58	−.30	.14	−.07	—	—
5	Cool, Aloof vs. Attentive to People	.53	.42	.32	.37	.51	.65	.48	.61
31	Attention-Getting vs. Self-Sufficient	—	—	—	—	−.54	−.50	—	—

18	Relaxed, Indolent vs. Insistently Orderly	−.19	−.10	−.22	−.18	−.14	−.11	—	—
4	Frivolous vs. Responsible	.05	−.01	.05	−.10	−.14	.02	−.36	−.32
25	Unscrupulous vs. Conscientious	−.21	−.18	−.18	−.17	−.33	−.21	−.35	−.28
15	Quitting vs. Persevering	.12	.23	.33	.12	−.24	.11	—	—
23	Unconventional vs. Conventional	−.41	−.46	−.36	−.45	−.27	−.26	—	—
26	Neurotic vs. Not So	.25	.10	.43	.24	−.03	−.03	—	—
24	Worrying, Anxious vs. Placid	.13	.02	.48	.07	−.11	.02	−.16	.13
6	Easily Upset vs. Poised, Tough	.32	.50	.49	.37	.00	.19	−.01	.25
12	Hypochondriacal vs. Not So	.11	.06	.31	.23	−.03	−.12	—	—
11	Emotional vs. Calm	−.34	−.34	−.01	−.49	−.44	−.45	—	—
2	Changeable vs. Emotionally Stable	.01	.14	.14	−.19	−.29	−.04	.06	−.23
37	Dependent vs. Self-Sufficient	—	—	—	—	—	—	−.09	.16
8	Boorish vs. Intellectual, Cultured	.05	.06	.18	.13	−.01	.04	.19	.25
27	Lacking Artistic Feelings vs. Esthetically Fastidious	.02	−.06	.09	—	.19	−.03	—	—
34	Practical, Logical vs. Imaginative	—	—	—	−.09	.11	.11	.35	.26
19	Clumsy, Awkward vs. Polished	.11	−.05	.18	.00	−.01	.00	.00	−.06
30	Immature vs. Independent-Minded	.36	.56	.63	.39	−.12	.30	.26	.26

[Note. A dash indicates that the variable was not used in the study. Consistent definers of the factor are given in boldface.]

Table 2
Loadings on Recurrent Factor II from Eight Analyses

Trait variable		Analysis							
No.	Name	A	B	C	D	E	F	G	H
14	Silent vs. Talkative	.00	−.16	−.12	−.16	−.09	−.09	−.12	.10
28	Secretive vs. Frank	.08	.11	.31	−.02	−.24	−.16	.18	.51
16	Cautious vs. Adventurous	.10	.05	.10	−.15	.12	.02	.06	.19
3	Submissive vs. Assertive	−.38	−.40	−.32	−.43	−.63	−.53	−.37	−.45
29	Self-Contained vs. Sociable	.20	.07	.18	.13	.02	.10	—	—
7	Languid, Slow vs. Energetic	−.02	.01	.05	−.05	.21	.09	.03	.14
33	Shy, Bashful vs. Composed	—	—	—	—	−.09	−.02	—	—
35	Slight vs. Marked Interest in Opposite Sex	—	—	—	—	−.02	−.13	.02	.17
32	Depressed vs. Cheerful	—	—	—	—	.34	.41	.29	.43
10	**Spiteful vs. Good-Natured**	**.84**	**.74**	**.79**	**.75**	**.72**	**.80**	**.74**	**.77**
20	**Jealous vs. Not So**	**.75**	**.69**	**.77**	**.64**	**.63**	**.80**	—	—
22	**Demanding vs. Emotionally Mature**	**.77**	**.62**	**.82**	**.62**	**.72**	**.80**	—	—
13	**Self-Willed vs. Mild**	**.74**	**.65**	**.73**	**.58**	**.61**	**.84**	—	—
1	**Obstructive vs. Cooperative**	**.68**	**.46**	**.69**	**.72**	**.56**	**.62**	**.60**	**.68**
9	**Suspicious vs. Trustful**	**.57**	**.53**	**.67**	**.50**	**.59**	**.72**	**.63**	**.67**
21	**Rigid vs. Adaptable**	**.59**	**.45**	**.68**	**.53**	**.60**	**.63**	**.40**	**.66**
17	**Hard, Stern vs. Kindly**	**.60**	**.45**	**.51**	**.52**	**.68**	**.74**	—	—
5	**Cool, Aloof vs. Attentive to People**	**.67**	**.54**	**.58**	**.52**	**.35**	**.66**	**.41**	**.47**
31	**Attention-Getting vs. Self-Sufficient**	—	—	—	—	**.40**	**.57**	—	—

18	Relaxed, Indolent vs. Insistently Orderly	−.29	−.19	−.17	−.14	−.11	−.13	—	—
4	Frivolous vs. Responsible	.27	.49	.40	.22	.31	.42	.00	.19
25	Unscrupulous vs. Conscientious	.51	.47	.56	.39	.38	.60	.29	.45
15	Quitting vs. Persevering	.25	.23	.36	−.01	−.07	.05	—	—
23	Unconventional vs. Conventional	.19	.31	.41	.25	.19	.34	—	—
26	Neurotic vs. Not So	.35	.11	.43	.27	.18	.47	—	—
24	Worrying, Anxious vs. Placid	.30	.32	.50	.12	.02	.15	.45	.30
6	Easily Upset vs. Poised, Tough	.14	−.05	.17	.01	−.04	−.10	.13	.14
12	Hypochondriacal vs. Not So	.37	.09	.44	.23	.09	.42	—	—
11	Emotional vs. Calm	.44	.31	.56	.30	.23	.38	—	—
2	Changeable vs. Emotionally Stable	.50	.59	.60	.34	.22	.56	.44	.21
37	Dependent vs. Self-Sufficient	—	—	—	—	—	—	.25	−.02
8	Boorish vs. Intellectual, Cultured	.23	.16	.30	.12	.06	.27	.00	.07
27	Lacking Artistic Feelings vs. Esthetically Fastidious	.10	−.03	.02	—	.02	−.09	—	—
34	Practical, Logical vs. Imaginative	—	—	—	.05	.12	.12	.09	.04
19	Clumsy, Awkward vs. Polished	.33	.15	.28	.32	.06	.26	.32	.24
30	Immature vs. Independent-Minded	.08	−.11	.14	−.13	−.01	.07	−.12	−.25

[Note. A dash indicates that the variable was not used in the study. Consistent definers of the factor are given in boldface.]

Table 3
Loadings on Recurrent Factor III from Eight Analyses

Trait variable		Analysis							
No.	Name	A	B	C	D	E	F	G	H
14	Silent vs. Talkative	−.23	−.34	−.20	−.16	−.30	−.29	−.05	−.14
28	Secretive vs. Frank	−.20	−.30	.04	−.06	−.08	−.17	.04	.22
16	Cautious vs. Adventurous	−.35	−.11	−.28	−.23	−.44	−.48	−.36	.08
3	Submissive vs. Assertive	−.07	−.29	−.23	−.09	−.14	.03	−.01	.10
29	Self-Contained vs. Sociable	−.39	−.43	−.16	−.42	−.42	−.31	—	—
7	Languid, Slow vs. Energetic	.28	.02	.06	−.07	−.17	.04	−.06	.04
33	Shy, Bashful vs. Composed	—	—	—	—	−.31	−.22	—	—
35	Slight vs. Marked Interest in Opposite Sex	—	—	—	—	−.21	−.26	−.43	−.36
32	Depressed vs. Cheerful	—	—	—	—	−.36	−.25	−.10	−.02
10	Spiteful vs. Good-Natured	.02	−.03	.28	.00	.06	−.18	−.02	.42
20	Jealous vs. Not So	.02	.02	.17	.11	.03	.01	—	—
22	Demanding vs. Emotionally Mature	.20	.12	.26	.18	.17	.16	—	—
13	Self-Willed vs. Mild	.19	.13	.43	.29	.33	.10	—	—
1	Obstructive vs. Cooperative	.40	.49	.47	.17	.34	.27	.18	.32
9	Suspicious vs. Trustful	.15	.25	.09	.17	−.02	−.05	.10	.32
21	Rigid vs. Adaptable	−.31	−.25	−.16	−.25	−.27	−.27	−.08	.06
17	Hard, Stern vs. Kindly	−.04	−.06	.22	.07	.11	−.11	—	—
5	Cool, Aloof vs. Attentive to People	.14	−.14	.47	.08	.03	−.01	.18	.13
31	Attention-Getting vs. Self-Sufficient	—	—	—	—	.41	.32	—	—

18	**Relaxed, Indolent vs. Insistently Orderly**	**.69**	**.38**	**.51**	**.49**	**.64**	**.74**	—	—
4	**Frivolous vs. Responsible**	**.59**	**.44**	**.61**	**.64**	**.63**	**.59**	**.69**	**.74**
25	**Unscrupulous vs. Conscientious**	**.54**	**.49**	**.56**	**.60**	**.45**	**.33**	**.56**	**.74**
15	**Quitting vs. Persevering**	**.58**	**.33**	**.43**	**.49**	**.45**	**.70**	—	—
23	**Unconventional vs. Conventional**	**.59**	**.40**	**.58**	**.43**	**.48**	**.49**	—	—
26	Neurotic vs. Not So	.12	.03	.25	.11	−.02	.12	—	—
24	Worrying, Anxious vs. Placid	−.12	−.03	−.11	−.10	−.23	−.13	.00	−.15
6	Easily Upset vs. Poised, Tough	−.03	−.09	−.10	.03	−.09	.05	.15	.13
12	Hypochondriacal vs. Not So	.07	.06	.03	.05	.06	−.05	—	—
11	Emotional vs. Calm	.20	.18	.14	.30	.22	.20	—	—
2	Changeable vs. Emotionally Stable	.29	.33	.32	.25	.23	.37	.42	.35
37	Dependent vs. Self-Sufficient	—	—	—	—	—	—	.13	.16
8	Boorish vs. Intellectual, Cultured	.07	−.02	.04	.18	.25	.15	.27	.04
27	Lacking Artistic Feelings vs. Esthetically Fastidious	.12	.14	.23	—	−.04	.14	—	—
34	Practical, Logical vs. Imaginative	—	—	—	−.38	−.15	−.53	.06	.03
19	Clumsy, Awkward vs. Polished	.11	.17	.07	.06	.13	.32	.20	.19
30	Immature vs. Independent-Minded	.01	−.01	.17	.14	.05	.08	.21	.19

[Note. A dash indicates that the variable was not used in the study. Consistent definers of the factor are given in boldface.]

Table 4
Loadings on Recurrent Factor IV from Eight Analyses

Trait variable		Analysis							
No.	Name	A	B	C	D	E	F	G	H
14	Silent vs. Talkative	−.20	−.06	−.41	−.12	.00	−.18	.18	.05
28	Secretive vs. Frank	.06	.12	−.05	.00	−.05	−.03	−.02	.00
16	Cautious vs. Adventurous	.19	.36	.10	.08	.09	.15	.24	.16
3	Submissive vs. Assertive	.17	.36	.14	.16	.14	.20	.15	.18
29	Self-Contained vs. Sociable	−.10	.08	−.16	−.13	−.12	−.28	—	—
7	Languid, Slow vs. Energetic	.28	.22	.06	.11	.39	.08	−.21	−.43
33	Shy, Bashful vs. Composed	—	—	—	—	.19	.23	—	—
35	Slight vs. Marked Interest in Opposite Sex	—	—	—	—	−.14	−.06	.20	.28
32	Depressed vs. Cheerful	—	—	—	—	.08	−.03	.27	.37
10	Spiteful vs. Good-Natured	.23	.18	.19	.07	−.03	−.18	.06	.10
20	Jealous vs. Not So	.47	.32	.36	.32	.45	.14	—	—
22	Demanding vs. Emotionally Mature	.40	.30	.19	.25	.30	.05	—	—
13	Self-Willed vs. Mild	.27	.08	.25	.00	.09	−.19	—	—
1	Obstructive vs. Cooperative	.27	.39	.29	.09	.07	−.10	.13	.14
9	Suspicious vs. Trustful	.59	.46	.45	.51	.43	.31	.12	.28
21	Rigid vs. Adaptable	.41	.38	.27	.03	.23	.08	.31	.31
17	Hard, Stern vs. Kindly	−.35	−.27	−.44	−.41	−.31	−.52	—	—
5	Cool, Aloof vs. Attentive to People	.07	.04	−.13	−.09	−.06	−.15	.00	.14
31	Attention-Getting vs. Self-Sufficient	—	—	—	—	.35	.12	—	—

18	Relaxed, Indolent vs. Insistently Orderly	−.01	−.01	−.03	−.13	.31	.00	—	—
4	Frivolous vs. Responsible	.46	.20	.40	.18	.35	.06	.05	−.01
25	Unscrupulous vs. Conscientious	.25	.17	.20	.08	−.03	−.24	−.02	−.11
15	Quitting vs. Persevering	.45	.49	.44	.17	.39	.21	—	—
23	Unconventional vs. Conventional	.07	−.17	.00	−.08	.01	−.35	—	—
26	**Neurotic vs. Not So**	**.67**	**.73**	**.53**	**.61**	**.70**	**.55**	—	—
24	**Worrying, Anxious vs. Placid**	**.71**	**.71**	**.60**	**.66**	**.58**	**.81**	**.67**	**.78**
6	**Easily Upset vs. Poised, Tough**	**.67**	**.54**	**.62**	**.50**	**.76**	**.69**	**.69**	**.80**
12	**Hypochondriacal vs. Not So**	**.69**	**.60**	**.65**	**.46**	**.48**	**.51**	—	—
11	**Emotional vs. Calm**	**.61**	**.53**	**.63**	**.43**	**.40**	**.54**	—	—
2	**Changeable vs. Emotionally Stable**	**.60**	**.39**	**.56**	**.44**	**.44**	**.42**	**.22**	**.45**
37	**Dependent vs. Self-Sufficient**	—	—	—	—	—	—	**.42**	**.56**
8	Boorish vs. Intellectual, Cultured	.24	.08	.16	.19	.34	.10	.21	.14
27	Lacking Artistic Feelings vs. Esthetically Fastidious	.07	.13	.00	—	−.07	−.04	—	—
34	Practical, Logical vs. Imaginative	—	—	—	.12	−.34	−.40	.01	−.01
19	Clumsy, Awkward vs. Polished	.24	.11	.16	.20	.25	−.02	.30	.57
30	Immature vs. Independent-Minded	.54	.40	.47	.36	.54	.38	.32	.28

[Note. A dash indicates that the variable was not used in the study. Consistent definers of the factor are given in boldface.]

Table 5
Loadings on Recurrent Factor V from Eight Analyses

Trait variable		Analysis								
							Factor			
No.	Name	A	B	C	D	E	V	VI	G	H
14	Silent vs. Talkative	.00	−.24	−.23	.24	.03	−.15	−.07	.16	.08
28	Secretive vs. Frank	.06	−.20	.00	.02	.16	−.05	−.08	.16	.12
16	Cautious vs. Adventurous	.07	−.18	.10	.13	−.13	−.02	.12	.45	.10
3	Submissive vs. Assertive	.27	.09	−.03	.32	.23	.35	.08	.24	.17
29	Self-Contained vs. Sociable	.08	−.12	.04	.04	.05	−.25	.15	—	—
7	Languid, Slow vs. Energetic	.47	.25	.35	.43	.32	.08	.14	.08	.13
33	Shy, Bashful vs. Composed	—	—	—	—	.43	.34	.20	—	—
35	Slight vs. Marked Interest in Opposite Sex	—	—	—	—	−.01	−.17	.43	.24	.00
32	Depressed vs. Cheerful	—	—	—	—	.12	−.21	.17	.11	−.07
10	Spiteful vs. Good-Natured	−.03	.00	.16	−.13	.14	−.03	−.02	.22	−.03
20	Jealous vs. Not So	.01	.02	.23	.00	−.19	.07	−.01	—	—
22	Demanding vs. Emotionally Mature	.12	.02	.23	−.03	.09	.10	−.05	—	—
13	Self-Willed vs. Mild	.05	.15	.23	−.09	.15	.03	−.08	—	—
1	Obstructive vs. Cooperative	.14	.27	.34	.18	.25	.24	.06	.22	.03
9	Suspicious vs. Trustful	.17	.17	.41	.04	.04	.02	.20	.18	−.20
21	Rigid vs. Adaptable	.03	−.14	.07	−.13	−.20	−.25	.18	.47	.38
17	Hard, Stern vs. Kindly	−.18	−.01	.11	−.20	−.13	−.01	−.02	—	—
5	Cool, Aloof vs. Attentive to People	.21	.02	.31	.07	.40	−.12	−.24	.32	.01
31	Attention-Getting vs. Self-Sufficient	—	—	—	—	−.17	.02	−.10	—	—

18	Relaxed, Indolent vs. Insistently Orderly	.28	.55	.60	.34	.40	.21	.01	—	—
4	Frivolous vs. Responsible	.33	.39	.33	.44	.17	.48	−.13	.04	.16
25	Unscrupulous vs. Conscientious	.29	.44	.40	.31	.34	.34	−.24	.20	.06
15	Quitting vs. Persevering	.42	.21	.43	.53	.45	.45	−.07	—	—
23	Unconventional vs. Conventional	.09	.24	.32	.04	−.32	−.15	.00	—	—
26	Neurotic vs. Not So	.12	.08	.25	.14	−.22	−.18	−.01	—	—
24	Worrying, Anxious vs. Placid	.14	−.08	.13	.00	−.05	.03	.06	.08	.00
6	Easily Upset vs. Poised, Tough	.38	.23	.31	.37	.02	.39	.12	.10	.12
12	Hypochondriacal vs. Not So	.12	.03	.08	−.16	−.11	−.13	.02	—	—
11	Emotional vs. Calm	.09	.22	.34	.10	.08	.13	.08	—	—
2	Changeable vs. Emotionally Stable	.25	.30	.32	.46	.48	.33	.02	−.15	−.28
37	Dependent vs. Self-Sufficient	—	—	—	—	—	—	—	.38	.28
8	**Boorish vs. Intellectual, Cultured**	**.79**	**.78**	**.72**	**.81**	**.64**	**.85**	**−.07**	**.61**	**.82**
27	**Lacking Artistic Feelings vs. Esthetically Fastidious**	**.78**	**.79**	**.86**	—	**.55**	**.28**	**.62**	—	—
34	**Practical, Logical vs. Imaginative**	—	—	—	**.53**	**.46**	**.18**	**.20**	**.68**	**.73**
19	**Clumsy, Awkward vs. Polished**	**.76**	**.78**	**.81**	**.62**	**.63**	**.49**	**.54**	**.59**	**.41**
30	**Immature vs. Independent-Minded**	**.51**	**.37**	**.35**	**.61**	**.49**	**.76**	**−.10**	**.42**	**.64**

[Note. A dash indicates that the variable was not used in the study. Consistent definers of the factor are given in boldface.]

Factor V: Culture. Factor V is the least clear of the five factors identified by the eight analyses. It appears to be similar to the factor labeled by French (1953) as Culture and by Fiske (1949) as the Inquiring Intellect. It is defined by the variables Cultured, Esthetically Fastidious, Imaginative, Socially Polished, and Independent-Minded, with secondary loadings by Energetic, Poise, Emotional Stability, and all the variables in Factor III. It will be noted that loadings for two factors are shown under Column F. This is the analysis of the female college students, and in this sample only, Factor V split into two quite distinct subfactors. The first of these has a pattern of loadings quite similar to the Factor V found recurring throughout the studies. The second of these is defined by the variables Esthetically Fastidious, Socially Polished, and Interest in the Opposite Sex.

DISCUSSION

The results of these analyses clearly indicate that differences in samples, situations, raters, and lengths and kinds of acquaintanceship have little effect on the factor structure underlying ratings of personality traits. Statistical tests are not needed to indicate the similarity of corresponding factors from one analysis to another. There can be no doubt that the five factors found throughout all eight analyses are recurrent.

In evaluating the results of a series of factor solutions, such as those presented in Tables 1 through 5, it is natural for the reader to wonder to what extent the results might reflect biases on the part of the authors. There is little doubt that the words "simple structure" have been used very loosely by many analysts, and it is also undoubtedly true that a preconceived solution can be favored through a little "forcing" during the rotational process.

The first factors rotated were those from the 790-case OCS sample described in Study A. While these rotations were not made blind, they were made with no preconceived notions as to how the final solution should appear. Even so, there were certain "choice points" during the rotational process at which somewhat arbitrary decisions were made. These are the same types of decisions which are familiar to all who have participated in orthogonal graphical rotations. In the main they are of two types: (*a*) those concerning final positioning of reference axes when there was a choice of favoring one or the other of two factors or of balancing the two; and (*b*) those concerning whether to attempt the buildup or residualization of weak factors introduced into the rotational

system. The rules of simple structure do not provide clear guidance in either event, and the rotator is generally left with the job of imposing some subjectivity in deciding which alternatives best fit the criteria.

The choice on final positioning of the reference axes is probably not too critical, since it generally affects only the relative magnitude of the loadings on the two factors considered and does not greatly affect the pattern of factor definers. The decision concerning the buildup or residualization of weak factors is considerably more serious, and whether the choice goes one way or the other can affect both the number and nature of factors reported.

Individuals seem to arrive at their decision in many different ways. Generally the final positioning of reference axes is subjective, although it many times is tempered with reason. In regard to the rotation of weak factors, some prefer to be guided by one or more of the 20-odd mathematical criteria which propose to estimate the true rank of the original intercorrelation matrix. Unfortunately, the various criteria often do not agree, even when the beginning communality estimates are identical. Other individuals prefer to overextract and fight the battle on the rotation board. If a weak factor can be built up into something they interpret as meaningful they accept it; otherwise they make a strong attempt at residualization.

In the current study the final positioning of reference axes in Study A was made arbitrarily within the general bounds of acceptable simple structure. Once these decisions had been made, the tendency was to make choices in the same direction in later analyses—still staying within the bounds of simple structure. A variety of criteria were considered in making decisions concerning the introduction and rotation of weak factors. These included several statistical criteria relating to matrix rank, the results reported by past investigators analyzing the same data, the results of attempted buildups and residualizations of such factors, and, admittedly, a little subjective judgment. The actual number of factors rotated varied from only 5 in the Command and Staff School analysis to 12 in the rerotation of the Cattell women's sample. In every sample except one there appeared to be five relatively strong and recurrent personality factors and nothing more of any consequence. In the Cattell women's sample, the fifth factor appears to have split into two related factors.

Subsequent to completion of all eight analyses, a program became available for accomplishing analytic rotations by means of the IBM 650 computer using the normal varimax criterion (Kaiser, 1958). There are

good indications that this completely objective analytical rotation procedure will not only save many hours of labor, but will bring considerably more rigor to what has thus far been a rather loose area. Perhaps the most encouraging note is that the normal varimax solution appears to be invariant under changes in the composition of a test battery. Thus, submitting one or more of the analyses in the current paper for analytic rotation using the normal varimax criterion would serve at least two purposes: (*a*) It would remove (or confirm) any doubts the reader (or authors) might have concerning the biases involved in the reported solutions, and (*b*) it would produce factors likely to be invariant under changes in the composition of the trait-rating battery.

The Command and Staff School sample (Study D) was selected for analytic rotation because in the authors' judgment it was the one most subject to criticism. This is because all the factors were extracted by the multiple-group method and only five factors were introduced into the rotational process.

In order to maximize the independence of the new solution, only the intercorrelation matrix was sent to the statistical services section, with instructions to extract eight centroid factors and obtain a normal varimax solution. The variables in this matrix were not identified. It was the decision of the consultants in the statistical services section to rotate only six factors, the last of which was residualized by the analytic procedure.[4] The five identifiable factors are reported in Table 6, along with the corresponding solution obtained via graphic rotations. It can be seen that the two solutions are for all practical purposes identical. In every instance the loadings for the defining variables are exactly the same or differ by only .1. [Only one] loading differs by more than .2, even among the nondefining variables.

In many ways it seems remarkable that such stability should be found in an area which to date has granted anything but consistent results. Undoubtedly the consistency has always been there, but it has been hidden by inconsistency of factorial techniques and philosophies, the lack of replication using identical variables, and disagreement among analysts as to factor titles. None of the factors identified in this study are new. They have been identified many times in previous analyses, although they have not always been called by the same names.

Even so, it might surprise some to find the same factors emerging

4. One variable had a loading of .24 on the sixth factor; all other variables had loadings below .20.

from such a wide variety of samples and conditions. One interpretation is that there are only five fundamental concepts running through the 35 trait names used in these studies. If the common variance in these 35 bipolar traits reflects only five fundamental meaning concepts, then it is reasonable to expect these concepts to correspond to the factors identified in any sample to which the 35 traits are applied.

It should be noted that there may exist little relationship between the magnitude of intercorrelations obtained among trait-rating variables and the level of interrater agreement concerning which traits apply to given individuals being rated. Thus it would be possible to identify very strong trait-rating factors having no practical utility. As indicated above, however, trait ratings based on the variables included in this study not only grant satisfactory interrater agreement coefficients, but are related to later meaningful criteria.

It is unlikely that the five factors identified are the *only* fundamental personality factors. There are quite likely other fundamental concepts involved among the Allport-Odbert adjectives on which the variables used in the present study were based. The 35 traits (or more accurately trait clusters) used in the present study represent the distillate drawn by Cattell from the interrelationships among some 175 traits which in turn were selected as representative of the Allport-Odbert adjectives. The communalities of the trait-rating variables in the various samples studied are on the whole quite sizable (averaging .80 to .85); however, for some traits they are as low as .4 or .5. Thus many of the traits have specific variances greatly in excess of their common variance. In many cases these specific variances would become common variances were other variables to be included in the analyses. Thus it is likely that other fundamental factors may be identified in future studies.

SUMMARY

The present study was designed to help clarify the personality trait-rating domain. The goal was to isolate meaningful and relatively independent trait-rating factors which are universal enough to appear in a variety of samples, and which are not unduly sensitive to the rating conditions or situations.

A total of 35 personality traits were selected as representative of the personality domain. Intercorrelations among these traits were obtained for eight samples. These samples differed in length of acquaintanceship from 3 days to a year or more; in kind of acquaintanceship from as-

Table 6
Comparison of Normal Varimax Solution with That Obtained using Graphic Rotations

Trait variable		Factor and rotation									
		I		II		III		IV		V	
No.	Name	V	G	V	G	V	G	V	G	V	G
14	Silent vs. Talkative	**.9**	**.8**	−.1	−.2	.0	−.2	.0	−.1	.1	.2
28	Secretive vs. Frank	**.8**	**.8**	.1	.0	.0	−.1	.1	.0	.0	.0
16	Cautious vs. Adventurous	**.8**	**.8**	−.1	−.2	−.1	−.2	.2	.1	.0	.1
3	Submissive vs. Assertive	**.7**	**.7**	−.4	−.4	.0	−.1	.1	.2	.2	.3
29	Self-Contained vs. Sociable	**.6**	**.5**	.2	.1	−.4	−.4	−.1	−.1	.1	.0
7	Languid, Slow vs. Energetic	**.7**	**.7**	.0	.0	.1	−.1	.2	.1	.3	.4
10	Spiteful vs. Good-Natured	−.1	.1	**.8**	**.7**	.0	.0	.2	.1	.0	−.1
20	Jealous vs. Not So	−.2	−.1	**.6**	**.6**	.1	.1	.4	.3	.1	.0
22	Demanding vs. Emotionally Mature	−.5	−.4	**.5**	**.6**	.1	.2	.3	.2	.1	.0
13	Self-Willed vs. Mild	−.6	−.5	**.5**	**.6**	.3	.3	.0	.0	−.1	−.1
1	Obstructive vs. Cooperative	−.3	−.2	**.7**	**.7**	.1	.2	.1	.1	.3	.2
9	Suspicious vs. Trustful	.0	.1	**.5**	**.5**	.1	.2	.5	.5	.2	.0
21	Rigid vs. Adaptable	.0	.1	**.5**	**.5**	−.4	−.2	.1	.0	.1	−.1
17	Hard, Stern vs. Kindly	−.3	−.3	**.6**	**.5**	.0	.1	−.3	−.4	−.2	−.2
5	Cool, Aloof vs. Attentive to People	.3	.4	**.6**	**.5**	.1	.1	.0	−.1	.0	.1

18	Relaxed, Indolent vs. Insistently Orderly	−.1	−.2	−.1	−.1	**.5**	**.5**	−.3	−.1	.4	.3
4	Frivolous vs. Responsible	−.2	−.1	.2	.2	**.7**	**.6**	.2	.2	.3	.4
25	Unscrupulous vs. Conscientious	−.2	−.2	.3	.4	**.6**	**.6**	.1	.1	.2	.3
15	Quitting vs. Persevering	.1	.1	.0	.0	**.6**	**.5**	.1	.2	.4	.5
23	Unconventional vs. Conventional	−.5	−.4	.2	.3	**.4**	**.4**	−.1	−.1	.0	.0
26	Neurotic vs. Not So	.1	.2	.2	.3	.1	.1	**.6**	**.6**	.1	.1
24	Worrying, Anxious vs. Placid	.0	.1	.0	.1	−.1	−.1	**.7**	**.7**	.2	.0
6	Easily Upset vs. Poised, Tough	.3	.4	−.1	.0	.1	.0	**.5**	**.5**	.4	.4
12	Hypochondriacal vs. Not So	.1	.2	.2	.2	.0	.0	**.6**	**.5**	−.1	−.2
11	Emotional vs. Calm	−.6	−.5	.2	.3	.2	.3	**.3**	**.4**	.2	.1
2	Changeable vs. Emotionally Stable	−.2	−.2	.2	.3	.3	.3	**.4**	**.4**	.5	.5
8	Boorish vs. Intellectual, Cultured	.2	.1	.0	.1	.3	.2	.1	.2	**.7**	**.8**
34	Practical, Logical vs. Imaginative	.1	−.1	.0	.0	.1	−.4	.0	.1	**.5**	**.5**
19	Clumsy, Awkward vs. Polished	.0	.0	.2	.3	.2	.1	.2	.2	**.6**	**.6**
30	Immature vs. Independent-Minded	.4	.4	−.2	−.1	.3	.1	.3	.4	**.5**	**.6**

Note. V = varimax solution, G = graphic rotations. [Major definers of each factor are given in boldface.]

sessment programs in a military training course to a fraternity house situation; in type of subject from airmen with only a high-school education to male and female undergraduate students to first-year graduate students; and in type of rater from very naive persons to clinical psychologists and psychiatrists with years of experience in evaluation of personality. Centroid or multiple-group factors were extracted from the intercorrelations and rotated orthogonally to simple structure. For one of the studies an independent solution was obtained in which analytic rotations were accomplished by an IBM 650 computer using Kaiser's normal varimax criterion.

In all solutions except one there appeared to be five relatively strong and recurrent factors and nothing more of any consequence. In one solution, based upon data from undergraduate women, the fifth factor split into two highly related factors. The solution obtained by analytic rotations using the normal varimax criterion was for all practical purposes identical to the corresponding solution obtained via graphic rotations to the simple structure criterion.

The five recurrent factors were labeled as (*a*) Surgency, (*b*) Agreeableness, (*c*) Dependability, (*d*) Emotional Stability, and (*e*) Culture.

While no claim is made by the authors that the five factors identified are the only personality dimensions, reasons are given in support of their fundamental nature and probable invariance.

REFERENCES

Allport, G. W. (1937). *Personality: A psychological interpretation*. New York: Henry Holt.

Allport, G. W., & Odbert, H. S. (1936). Trait-names: A psycho-lexical study. *Psychological Monographs*, **47**(1, Whole No. 211).

Cattell, R. B. (1945). The description of personality: Principles and findings in a factor analysis. *American Journal of Psychology*, **58**, 69–90.

Cattell, R. B. (1946). *Description and measurement of personality*. New York: World Book.

Cattell, R. B. (1947). Confirmation and clarification of primary personality factors. *Psychometrika*, **12**, 197–220.

Cattell, R. B. (1948). The primary personality factors in women compared with those in men. *British Journal of Psychology*, **1**, 114–130.

Eysenck, H. J. (1953). *The structure of human personality*. New York: Wiley.

Fiske, D. W. (1949). Consistency of the factorial structures of personality ratings from different sources. *Journal of Abnormal and Social Psychology*, **44**, 329–344.

French, J. W. (1953). *The description of personality measurements in terms of rotated factors*. Princeton: Educational Testing Service.

Heymans, G., & Wiersma, E. (1909). Beiträge zur speziellen Psychologie auf Grund einer Massenuntersuchung [Contributions to differential psychology based on a large-scale investigation]. *Zeitschrift für Psychologie*, **51**, 1–72.

Kaiser, H. F. (1958). The varimax criterion for analytic rotation in factor analysis. *Psychometrika*, **23**, 187–200.

Kelly, E. L., & Fiske, D. W. (1951). *The prediction of performance in clinical psychology*. Ann Arbor: University of Michigan Press.

Mays, R. J. (1954). *Relationships between length of acquaintance and nature of trait rated and agreement between raters* (USAF PTRC Tech. Rep. No. 54-55). Lackland Air Force Base, TX: U.S. Air Force.

Symonds, P. M. (1931). *Diagnosing personality and conduct*. New York: Appleton-Century-Crofts.

Tupes, E. C. (1957). *Relationships between behavior trait ratings by peers and later officer performance of USAF Officer Candidate School graduates* (USAF PTRC Tech. Note No. 57-125, ASTIA Document No. AD-134 257). Lackland Air Force Base, TX: U.S. Air Force.

Tupes, E. C. (1959). *Personality traits related to effectiveness of junior and senior Air Force officers* (USAF WADC Tech. Note No. 59-198). Lackland Air Force Base, TX: U.S. Air Force.

Tupes, E. C., & Christal, R. E. (1958). *Stability of personality trait rating factors obtained under diverse conditions* (USAF WADC Tech. Note No. 58-61, ASTIA Document No. AD-151 041). Lackland Air Force Base, TX: U.S. Air Force.

Webb, E. (1915). Character and intelligence. *British Journal of Psychology, Monograph Supplement*, **1**(Whole No. 3).