

## THE DESCRIPTION OF PERSONALITY: BASIC TRAITS RESOLVED INTO CLUSTERS

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### OBJECTIVES OF THE RESEARCH

IN a preparatory, theoretical paper (11), propounding conceptual clarifications necessary for pursuing the present research, an attempt has been made to distinguish and classify the various forms of trait unity in which trait elements are found to be integrated. Apparently there exist only three kinds of integration, which have been called *dynamic*, *environmental mold*, and *constitutional* unities. Logical, evaluative, stylistic, co-nascent, etymological, stimulus-response, and other unities, frequently utilized, by implication, in common speech (as indicated by a survey of trait names), have a self-consistency which is either one of the above basic forms, disguised, or which is spurious, nonfunctional, and resident only in the mind of the observer. Of the true functional unities it must be said, however, that since they are relations between a genetically mutable organism and an historically changing environment their permanence is only relative.

Methods of investigating trait unities were next examined and found to reduce to two, both of which are founded on, and only on, observation of co-variation (co-occurrence) of behavior events, as follows: (1) correlational, cluster, or factor analyses, based either on static differences or changes in differences ("differential factor analysis"), with or without experimental control of sources of variation; (2) temporal sequence, intra-individual studies, also of two kinds (11).

The above generalizations about method apply, without exception, only to *common traits*. It is maintained, however, that individual differences in personality can be described, with reasonable completeness, in terms of common traits. But, in a majority of people to a minor extent and in a minority of people to a major extent, individual, *unique traits* (1) become important in defining and measuring personality. Unique traits can be delimited and

measured (mainly as special sentiments, peculiar interests, abilities, and attitudes) only in logical categories, and in units of a logical, non-normative kind (11).

The present research, accepting the above methodology, sets out to put it into practice by discovering the actual instances of these three types of common trait unities existing in our present population and culture. It aims at mapping the major traits or syndromes—hereafter called “basic traits”—through which the exact description and measurement of personality may be most parsimoniously<sup>1</sup> achieved.

Although ideally the search for basic traits should be guided by a combination of all four of the methods indicated above and described in the previous article (11), the present research makes a beginning with the first method only—the factor analysis of existing individual differences in a sample population—and the present article is confined to describing the preparatory stages. The methodology of combining data from various approaches and diverse fields of psychological observation, principally to determine the “rotation of axes” and insure that the basic traits are psychologically real and universally applicable, will be discussed in an ensuing article (12).

#### REMEDIES FOR DEFECTS IN THE FACTOR ANALYTIC APPROACH TO PERSONALITY

Even within the first method, namely, static factor analysis of the conventional kind, our aim has been to discover new conditions for eliminating doubt or error and for improving the procedure generally. Inspection of recent research will show that since factor analysis swung from the comparatively familiar field of abilities and educational attainments into the new jungle of difficulties presented by personality study some two dozen sets of true factor analytic findings have been produced (3; 4; 5; 13; 14; 15; 16; 17; 18; 19; 20; 21; 24; 25; 26; 28; 29; 30; 31; 32; 33; 39; 40; 41; 42; 43; 44; 48; 49; 50; 53) and a somewhat larger number of less systematic correlation cluster studies, of which the most important seem to be (6; 22; 34; 35; 38; 47; 51). Unfortunately, fewer than half of the former build on test results or checked ratings, of known reliabil-

<sup>1</sup> By “parsimoniously” we do not mean, as in Thurstone’s use of the term in this connection, “most economically with respect to one set of mathematical analyses, in a single research,” but economically with respect to all the predictive and other situations in which the trait elements are likely to be employed.

ity, while the majority rest only on self-assessments on questionnaire items.

Despite the somewhat varied methods and the uneven and unrelated sources of data so characteristic of pioneer work it is claimed by Wolffe (52) that the fifty odd factors listed confirm one another, by recognizable coincidence, to an encouraging extent. He instances the repeated appearance of the will-character factor ( $w$ ), the surgency factor of temperament ( $c$  or  $f$ ), the shyness factor, the dominance factor, the depression-worry factor, and the factor for hypersensitivity. But it may be objected that any common direction of interest among investigators, resulting from, for example, fashions in applied psychology, will lead to their choosing similar trait populations and the consequent emergence of similar major factors. This overdetermination by interest can be seen, for example, in the fact that all but two of the investigators finding a will-character factor are English, while every one of the researches discovering a dominance pattern is American. Moreover, the number of factors which fail to reappear in more than one research, or which appear differently bounded and subdivided in different researches, is more impressive than the above list of recognizably similar factors.

Both the failure to rediscover factors found previously and the possibility of getting uncertain or spurious confirmation are rooted in certain defects in the technique of factor analytic research. The chief defects which we need to remedy are as follows:

1. The founding of some studies on behavior ratings or measurements and of others on mere self-ratings and questionnaire responses. A trait syndrome may "feel" to the wearer a different garment from the one seen by an outside observer, and the matching of the two may never be possible with certainty.
2. The attempt to combine results from populations of diverse age, sex, or social background. We should expect new or modified factors to appear in passing from children to adolescents to adults.
3. The practice of working out analyses on samples which are selected or abnormal with respect to one or more variables or with introduced homogeneities which are sometimes not even recorded. Some populations, for example, seem to have been far too heterogeneous with respect to age. Many existing analyses have unfortunately been based on student groups, narrowly selected for economic background or defective in range of intelligence.

4. The universe of "trait elements"<sup>2</sup> for which intercorrelations have been calculated has been defective in number or in range of personality aspects.<sup>3</sup>

5. The trait elements which have been intercorrelated to reveal larger unities have themselves been too wide and therefore probably not pure elements. Commonly because of some logical similarity in the behavior concerned, investigators have assumed congruence of psychologically dissimilar subelements, *e.g.*, of different kinds of "sociability," "neuroticism," or "dominance." A sufficiently large number of trait elements has to be taken to give reasonable expectation (from clinical experience) that any one of them is "atomic" as far as functional unity is concerned. This can only be assured by progressively splitting trait elements until the intercorrelations of the parts show that the procedure has gone too far.

6. No universally agreed and theoretically satisfying method for determining the rotation of axes and for recognizing and orienting non-orthogonal axes has yet been attained.

All of these defects, however, seem remediable; some with the merest attention to common sense and cooperativeness on the part of investigators; others by nothing but painstaking and creative thought. With regard to the first of the above defects the remedy is generally admitted. It lies in shifting from introspective self-ratings to the observation and rating of behavior by judges or external measuring instruments. With regard to defects numbered 2 and 3 above the solution is the somewhat ambitious one of instituting a systematic exploration of factor patterns at certain definite, important age levels—if not at the seven ages of man at least at

<sup>2</sup> As in (11), this term will be used throughout for the atomic traits, minor traits, subtraits, specific behavior elements, habits, etc., which constitute the elements out of which the patterns of basic traits, syndromes, or factors are established.

<sup>3</sup> As is now widely realized, the factor analyst can grind from his mathematical mills only the particular factors for which grist is already provided in the form of suitable trait elements. It is realized also that in experimental design the experimenter may "manipulate the electorate" of trait elements in such a way as to make minor factors appear larger, *e.g.*, to make "specific" factors into "group" factors, or the latter into "general" factors. By other controls of trait or subject population one may also change the variance due to any factor or even make it disappear entirely.

But it is accidental variations along these lines, *e.g.*, in the unconscious idiosyncrasy of the experimenter, which are the most important cause of such difficulties in piecing together the results from different researches. Instances abound in which an investigator finds a set of traits saturated with a certain *X* factor, in a pattern very similar to that with which the same traits are saturated by a *Y* factor in some previous research. But he has no means of establishing with reasonable certainty that *X* and *Y* are really the same psychological entity. The notion that several very limited researches can be dovetailed together, as the aerophotographer cements many separate camera shots, is an attractive illusion. New techniques must be developed to meet this difficulty, one of which is propounded below.

four of them, say infancy (4 years), childhood (11 years), adolescence (17 years), and adulthood (say at 30 to 50 years). At each level one would control the irrelevant heterogeneities, such as age, sex, nationality, and race. But it seems likely, incidentally, that this purging of heterogeneities cannot with advantage be carried so far in the personality field as has been rightly done, in the interests of avoiding spurious correlations and factors, in the field of abilities. For some trait patterns may be quite closely tied up with such "heterogeneities" as social status or sex in a manner which is less likely for abilities. In exploring so complex a set of factors as appear likely in the personality field it seems necessary to proceed in definite steps. First one needs to look for the main and most universal factors by taking groups controlled and homogeneous with respect to several variables. Later, various heterogeneities can be added (ultimately everything but age might be heterogeneous) until a complete exploration is made. One could then combine with some confidence the findings of different researches having the same degree of homogeneity, and trace the origins of factors by contrasting the results from  $r$ 's differing in one degree of heterogeneity.

#### THE PROBLEM OF SELECTING A TRAIT POPULATION

The remedying of the fourth and fifth of the above defects is a matter deferred to this point as requiring more detailed discussion. To insure the "atomic" nature of the trait elements there is no alternative, as has frequently been pointed out, to the procedure of splitting the supposed "atom" of behavior again and again until the point is reached where perfect correlation persists between the parts.

But the term "parts" seems to be differently understood by investigators stemming from different psychological schools. For those having the reflexological approach it means the sections resulting from splitting the trait behavior into temporal sections or into the specific responses to particular stimuli. For the scions of Gestalt school theory, to whom this atomization is anathema, the only unities which might be separately considered are "aspects" of the total personality. In this particular connection the use of "aspects" may not be merely a verbal screen behind which to escape from the Gestalt cul-de-sac of empty wholeness. It represents the Gestaltist's dim perception of the real nature of those trait entities whose existence he seeks to deny. This nature is well expressed

by a recent writer who, however, uses the word syndrome where we here use trait (23), saying that a trait (syndrome) is "a general flavor which can be detected or savored in practically everything that the person does, feels or thinks," thus reflecting Allport's views, especially regarding stylistic traits (1).

Considerations advanced in the previous article (11) indicate that this pervasiveness of the trait elements of a single trait, suffusing all behavior, is not likely to be so complete in social mold traits as in dynamic traits, or as complete in the latter as in constitutional traits. But in all traits we may expect the trait elements to be scattered widely over the personality behavior. And indeed in trait elements, as in traits, the atomic unity is likely to reside in what may be implied by the term "aspects" of behavior rather than in temporal or spatial slabs cut out of the total activity. Not the movement of this particular limb or the responses immediately following this particular stimulus, but the pattern or style of several such items, as guessed at by psychological insight and intuitive observation, must constitute the trait element on which correlational examination is begun. This insistence on art in the choice of trait elements may delay the shifting of correlation studies from ratings to measurements, for one can measure crude slabs of stimulus-response behavior more easily than these pattern unities perceived only by the skilled clinical psychologist. Similarly it took the chemist longer to assess the bouquet of wine, normally left to the judgment of wine tasters, than the alcohol content. Needless perhaps to add, this process of cleaving the total behavior to get trait elements for intercorrelation studies must have regard to the kind of trait involved, so that one would look for dynamic subtraits of dynamic traits, the educational subelements of social mold traits, and the stylistic elements of constitutional trends.

The inexorable requirement of a large number of items (trait elements) in the initial stage of a factor analysis, to which this discussion points, happens also to be demanded as the solution of the fourth of the above difficulties, namely, that resident in dovetailing together the results of factor analyses of limited area. For there seems to be only one satisfactory solution to this problem, namely, the radical one of carrying out a factor analysis on a trait population which covers every aspect of personality.

That this Herculean task has not been undertaken or even advo-

cated by any investigator in the field of abilities is no refutation of its necessity in the field of personality. For, in the first place, the identification of factors among abilities has occurred easily through the concrete characteristics of the test performances by which the factor becomes permanently recognized and anchored. Collation and dovetailing of different researches has thus been relatively easy and fruitful. On the other hand, personality traits, as rated, are comparatively fluid and not so easily identified except in relation to other traits. Secondly, the abilities which common sense and experience insisted to be the most important, *e.g.*, intelligence, mechanical aptitude, verbal ability, were established comparatively early in factor analytic terms, so that the researchers were never made acutely aware, by obvious gaps, of any undue limitation of their frame of reference.

In the field of personality such definitive landmarks of performance can scarcely be said to exist, nor is it certain that the variables cover what, in the long run, can be called the important aspects of personality. A few such aspects of personality as extraversion, character integration, general emotionality, and various psychotic and neurotic syndromes exist in clinical observation, but they float freely in relation to each other and in an uncharted universe of large possibilities. For alone they contribute very little to the total definition of personality. The problem of primary importance at the outset of systematic factor analyses of personality, therefore, is to find means of choosing so complete a universe of traits that (1) no possible trait cluster will escape detection and (2) the interrelations of all important constellations will be given by the analysis.

#### CONCEPT OF THE TRAIT SPHERE

The universe of traits, ideally covering all aspects of personality, or at least sampling them with even density, we will call the *trait sphere*.<sup>4</sup> Traits are thus points or, rather, small areas on the continuous but finite surface which represents all the observed behavior of the individual. The questions which straightway arise are (1) is the trait sphere a self-consistent, useful concept and (2) does it lead to any clear logical rule for assembling trait populations guaranteed to represent with equal frequency all aspects of personality?

These questions naturally bristle with philosophical and mathe-

<sup>4</sup> Because in factor analysis the traits are on the surface of a sphere in the ultimate hyperspace required by personality.

matical issues, the majority of which, however, need not and cannot be pursued at a first encounter. The position we shall adopt is a very direct one, verging on a pragmatic philosophy, and making only the one assumption that all aspects of human personality which are or have been of importance, interest, or utility have already become recorded in the substance of language. For, throughout history, the most fascinating subject of general discourse, and also that in which it has been most vitally necessary to have adequate, representative symbolism, has been human behavior. Necessity could not possibly be barren where so little apparatus is required to permit the birth of invention. The necessity for good predictions of behavior would tend to make the verbal categories accurate also in boundaries, *i.e.*, properly adjusted to real behavior unities. However, we shall assume only the first property of vocabulary: that it covers all important areas of behavior.

The possible objections to this assumption which seem worth examining, seriously if briefly, are as follows:

1. That language has not yet caught up with the task of describing personality, but is still in process of evolving an adequate terminology. An answer to this could be sought by examining the curve of increase of total language vocabulary, or of personality-describing terms in particular, to ascertain if a plateau is now being approached. Our experience in the present research process as described below, in which almost every trait term was found to have a retinue of exact synonyms and many approximate ones, provides a contingent answer. For it would seem to indicate that, except for traits specific to the recent phases of our culture (and for lack of which Shakespeare's characters do not seem impoverished), the saturation point has been reached in trait labeling. Whatever creation still goes on is, therefore, apparently concerned largely with replacing worn, unfashionable, or damaged terms, or with readjusting the boundaries between terms.

2. A second objection, as Allport and Odbert point out (2), is that among trait names manufactured in the past are many peculiar to an age and a culture. This suggests, contrary to the above argument, that the new traits appearing in a rapidly changing culture cannot be handled in terms of labels from the past. As instances of "the tendency of each social epoch to characterize qualities in the light of standards and interests peculiar to the times" the writers



(2, pp. 2-3) cite the Hippocratic temperament terms born with the theory of humors; the labels "sincere," "pious," and "bigoted," contributed by the introspective Protestant Reformation; the expression "selfish" coined by the Presbyterians; the terms "fatuous," "countrified," and "disingenuous" produced by the aristocratic world of the seventeenth century. So the process could be traced, through various word factories, to the abundant jargon of various "schools" of modern psychology.

One cannot doubt, however, that selfishness existed before the Presbyterians, and that people had a word for it. In fact, it could be argued that in the last three hundred years the further additions to language have been almost entirely applicable to relatively superficial and culturally local traits. The general proposition is already admitted that, since all traits consists essentially of *a relationship between the individual and his environment* rather than a reactive tendency which can be defined in terms of the individual alone, all traits become changed—in their boundaries and units of measurement—as the environment changes. Further, as argued above, constitutional traits will change but little, whereas social mold and dynamic traits, *e.g.*, being a skillful auto-driver or showing the characteristics of a good air-raid warden, may come and go with superficial changes in the cultural and physical environment. In a first survey of traits the investigator can afford to neglect these more obviously ephemeral trait patterns, but a more detailed study should employ them and determine their relationships to the more stable landmarks.

3. The hypothesis that language is a complete, reticulated mirror to human nature has next to face the objections, also raised by Allport and Odbert (2), that "many traits never receive a name." This may be taken to differ from the first-listed objection by implying not merely that terms are lacking, but that language could not, by the very nature of its approach, ever produce terms for certain possible traits. There can be no doubt that this is true in regard to certain kinds of traits. In quite a number of researches in recent years one finds a trait described by a phrase, for lack of a trait term. One study (35), for example, asks for a rating on "youthful intentness of speech or manner," while questionnaires itemize aspects of personality with such questions as, "Do you admire a person who can make a great impression in company?"

With regard to the majority of these silences on the part of language it seems sufficient to point out that language has found these traits too narrow to deserve terms. It has found other patterns more important and inclusive and has incorporated these minor traits in the larger pattern. Social experience has thus performed its own factor analysis by linguistic methods.

Evidence of gaps of a possibly more serious nature, however, is found in the existence of terms in one language without any corresponding terms in another. There is, for example, no English term for "spießbürgerlich" or "Schadenfreude" and no exact translation of "esprit" or "galante." We may note, in the first place, that such instances are linguistic curiosities precisely because they are rare; secondly, that most of the absences seem to occur where a social mold trait is actually nonexistent in one of the culture patterns; and, thirdly, that the situation is often not that of a real gap in the language but of failure of coincidence of terms in the two languages, *e.g.*, the area of "Schadenfreude" behavior is perhaps covered in English by parts of the behavior under the terms spiteful, smug, and malevolent.

The issue can be illuminated by comparing the simpler, concrete situation in which diverse languages attempt to describe the same material environment. Fuller perspective can be gained by instancing primitive languages, etymologically and culturally remote from ours. We find primitive languages with, for example, only two words for all the varieties of birds described in our more-developed language—namely, a word for edible birds and a word for those not normally caught for food. The same area is covered, but utility and relevance to social purpose create a different division. Now the aspects of personality having relevance to other people's lives must have been substantially the same for thousands of years<sup>5</sup> and we may suppose that the prolificness of language and the natural selection exercised upon it by experience have sufficed to evolve the most suitable categories for prediction and description. Modifications may be expected to occur with increasing intellectual objectivity of viewpoint (as with the above instance of describing fauna or flora) and with changes in social organization which bring more

<sup>5</sup> Punctuality had its importance even in the stone age hunting party.

personality qualities into relevance with the lives of our fellows, but these modifications are slow and slight.

But, by contrast, the area of the personality which does not bear on other people, which deals with the physical world, and in a way not relevant to the interests of society, will be sparsely and incompletely populated with trait terms. If chairs and automobiles and cheeses had tongues we should doubtless find trait terms for light and heavy sitters, for a wide variety of gear changers, and for the varying behavior of digestive organs. The trait vocabularies of modern languages, therefore, may be expected to cover, with reasonable completeness and efficiency, patterns and elements of behavior as seen from the standpoint of man, but not as seen from the standpoint of nature. The exploration of personality from this latter standpoint, the enumeration of aspects of personality affecting only the nonhuman environment, the devisal of names for such aspects, and the building of a sample of *trait terms equally representing these areas or aspects* would constitute a special and considerable task. Discussion of the philosophical presuppositions alone would have little practical value for psychology. As Kelley (20) has insisted, utility, in the broader sense, must be one of the main touchstones in choosing traits and factors. Consequently this by-path is not explored farther in the present research. Instead we shall choose our trait population evenly from language, assuming that our factor space is thus complete from the standpoint of relevance to human affairs. In short, by a factor analysis of the whole field of language we are assured of a space which will give an undistorted factor picture of basic human traits as they affect human society.

#### CONSTRUCTION OF A TRAIT SPHERE

Having agreed that the complete "surface" of personality is represented by existing verbal symbols and that the basic traits or factors of personality may be extracted from a population of trait elements adequately sampled from this surface, we may now ask how a correct sampling of the English vocabulary of personality traits is to be made. First we have to decide what constitutes the complete trait surface and then we have to find means of obtaining a truly representative sample of trait elements, numerically

small enough to make rating, measurement, and factor analysis practicable.

The first task—that of combing the dictionary for all terms applying to personality—has been very thoroughly carried out for the English language by Allport and Odbert (2), who collated, from Webster's *New Unabridged International Dictionary*, seventeen thousand nine fifty-three terms applied to human behavior. The words were classified in four groups: personal traits, temporary states, social evaluations, and metaphorical or doubtful terms. In the first group, which includes only those terms which the authors consider "real" traits of personality, there are 4504 terms, constituting approximately 1 per cent of all words in the dictionary. Reviewing other attempts to list all the personality-describing (real trait) terms in the English or German languages, the authors show that independent estimates generally arrive at between 3000 and 5000 terms.

It was decided to reduce the language vocabulary to a trait sample practicable for factor analysis, by two successive processes. The first rejected no terms but aimed simply at grouping all synonymous terms together, each synonym group under a key term. The second made no further demands on human judgment but proceeded by correlation studies to group the trait list reduced by the first method in a still more limited number of clusters. The crux of the first method is the problem of insuring that human judgment, in condensing the traits in synonym groups, does not trespass from semantic into psychological judgments. Naturally, the term "synonym" can be used with varying breadth, but we employed it here fairly narrowly, classifying together only words which in the opinion of the average educated man would be taken as synonymous and approximately interchangeable in describing personality. This part of the work was carried out independently by two persons, one a psychologist, one a student of literature. They started with no preconceived ideas as to the number of synonym categories to which it would be possible to reduce the 4000 odd terms, and with no views as to the nature of the categories. They did not actually confine themselves to the personal trait section of Allport and Odbert's list, for the latter have shown that judges do not completely agree in assigning terms to the four categories they used.

A few hundred additional trait terms were thus included, mostly from the "temporary states" group, for many of these, *e.g.*, *grateful*, *rebellious*, may also be considered consistent attitudes of personality. Conversely, some hundreds of terms were rejected from the personal traits list because they were too vague, *e.g.*, *overpotent*, *haltless*, or too figurative and metaphorical, *e.g.*, *macaronic*, *puffy*, *rough-riding*, *staccato*, *speedy*, *steepish*, or too rare and esoteric.

After the work of classification had proceeded for two or three months it was found that the two workers were converging toward very similar synonym lists, both with regard to the number of categories, which seemed likely to approximate two hundred, and with regard to the disposal of particular words. But it was also found, and particularly where there were disagreements, that the categories in fact sometimes passed continuously one into another, in one or more directions. The term "surface" was thus seen to be more than a metaphor, for in these cases it became necessary to carve the categories by arbitrary incisions out of an area of evenly distributed terms. At this point the judges and other psychologists were brought together for discussion of the situation. In this way it was usually found that some natural nuclei for categorization suggested themselves and were generally agreed upon, so that finally a single list of categories emerged and one in which everyone agreed on the place assigned to particular words.

Now the hypothesis that vocabulary supplies the basis for the *personality sphere*, *i.e.*, the full description of personality defining the factor space for basic personality variables, may or may not carry with it the implication that the vocabulary population is evenly distributed over the surface of the sphere. The most reasonable expectation according to the line of argument we have so far followed would be that since vocabulary tends to leave no large area uncovered the synonym categories would be approximately equally spaced. The individual terms, entering into synonyms, however, would not be expected to be equally spaced, for historical influences might be calculated to produce more synonyms for some traits than for others. Consequently we watched with considerable interest to see whether the synonym clusters at which the workers arrived by processes of judgment of meaning alone would be approximately equal or very divergent in size. It was soon evident that the

synonym categories varied very greatly in number of constituent terms. For example the synonyms clustering about the key word "talkative" numbered 48, those in the category of "frank" numbered 24, and those under "clever" only six. That there are reasons other than utility and necessity accounting for the prolificness of language in particular personality areas is well illustrated by, for example, the perennial coining of semi-slang terms for "intoxicated" and for "impecunious." Having regard to our main purpose, therefore, we decided not to make further investigations of these differences of synonym frequency, considering them irrelevant to the question of factor space.

For the sake of parsimony and simplicity we classified with synonyms also opposites. This resulted in the great majority of trait categories being "bipolar" traits. The further advantage then arises that in rating, and other operations upon traits, more accurate orientation of the trait occurs than if only one end of the axis were defined. The fixing of opposites also compels the experimenter to sharpen and refine his concepts and the rater to concentrate on the essential nature of the trait he is dealing with.

Nevertheless, bipolar definition is fraught with dangerous logical and psychological pitfalls. Any trait term will be found to have a variety of opposites, according to one's field of reference. To illustrate by a physical example, the opposite of the north pole may be the south pole, or the equator, or any nonpolar point on a sphere. In psychological matters the universes of reference may be even more inexplicit. Is the opposite of *bullying*, *sadistic*, *etc.*, to be considered as just *nonbullying* or as *protective* or as *masochistic*? Is *creative* the opposite of *sterile* or of *destructive*? Is *impulsive* the opposite of *self-controlled* or of *phlegmatic*? Some opposites are logical rather than psychological; some have reference to native factors in behavior, others to metanergic (9) or other factors determining the same kind of behavior.

Our procedure here, following the arguments of the preceding article, was to deal with psychological rather than logical opposites, aligning opposites with regard to the real dynamic, constitutional, and social mold trait (11) structure, as far as structure can at present be known. Thus it would be psychologically uninformative to put as opposites those independent drives (dynamic traits) which hap-

pen to be of opposite logical and purposive intent though psychologically unconnected. For example, the true opposite of *acquisitive* is not *generous* but *nonacquisitive*. Most permissible opposites, in fact, will be found to lie among social mold traits, some among constitutional traits, but none among dynamic traits. In short, whenever there was any doubt, even among social mold traits, concerning the true opposite of a trait, the putative opposites were not fused in a single axis but retained for the time being in independence. There are consequently several traits in the final list, e.g., *acquisitive*, *argumentative*, *claustrophobic*, *hypochondriacal*, *gluttonous*, *debonnaire*, and *jealous*, for which no opposites are set up. Occasionally difficulties were encountered where two traits appear, on semantic grounds, to radiate from an almost identical zero quality, e.g., "*placid*," the opposite of *worrying*, is not commonly distinguished from "*phlegmatic*," the opposite of *excitable* or *excited* (high strung), or from *relaxed*, the opposite of *high strung*. But, if we are really dealing with different traits and dimensions these apparent identities must be spurious, and it was our practice in such instances to assume no identity of zero poles, to split the trait terms into groups indicated by the opposites, and to await the verdict of the later intercorrelations as to whether we had in fact attempted the splitting of an identity.

The final result of the synonym grouping was to bring the original four or five thousand terms into some 160 odd categories. The list is shown below. In each category a few representative synonyms from the full synonym family were included. They were not the closest synonyms in the family, but, on the contrary, are chosen to stake out the whole area of meaning covered by the key term.<sup>6</sup> In the complete classification of terms, from which the list below is abstracted, there are, on an average, 13.4 approximate synonyms within each category. That the number is not larger indicates that the original Allport and Odbert vocabulary has been subjected to some considerable trimming before categorization. Principally the reduction results from the omission of terms with the prefixes *over-*, *under-*, *un-*, *ir-*, and *in-*, when the stem terms had already been

<sup>6</sup> E.g., the first personality trait is marked out as follows:

*Alert* ..... *Absent-minded*  
 Observant, vigilant, omnipercipient ..... Dreamy, indefinite, depersonalized

To save space in the journal these bounding terms have had to be omitted from the list below. The writer will be pleased to supply the amplified, definitive listing to research workers desiring it.

recorded in the appropriate categories. A number of rare, archaic, and colloquial terms (*e.g.*, *cunctations*, *perrisological*, *reesty*, *slipslop*, *tonguey*) in the exhaustive Allport and Odbert list were also omitted when their meaning was already substantially represented by some other term.

In regard to the choice of key words wherewith to define each of the categories the first consideration was naturally the degree of centrality of meaning with respect to the group of approximate synonyms which had accumulated within the category. As categories filled up they sometimes shifted the center of gravity of meaning, so that it was found desirable to use only temporary "acting" key words, and in about one case in ten the final choice was different from that of the early stages. Wherever possible the judges aimed at getting a keyword which, in addition to being central in meaning, was also a familiar, much-used, and well-stabilized term.

A persistent difficulty in this task of reducing any systematizing personality trait terms arose from the great variability of width or area of meaning of the different terms. While most described single traits, a minority really had reference to "types" and might be described as syndrome or "blanket" terms, *e.g.*, *old-maidish*, *Mephistophelean*, *neurotic*, *having the qualities of a leader*, *extravert*, *gentlemanly*, and various occupational syndromes. These very wide terms, like some exceptionally narrow ones mentioned above, were set aside for special handling in connection with various additions to the Allport-Odbert dictionary list which are now to be described.

From the beginning of this study it had been decided to make the list of traits as complete as possible by including, in addition to all that could be obtained from the dictionary, the substance of all syndromes and types which psychologists have observed and described in the past century or so. These syndromes, in company with the above, were split into their component traits before being included in the synonym categories. Where the trait elements were very specific, numerous, and narrow, as in Sheldon's types (35), only a representative selection was incorporated, sufficient to establish a factor, in the ensuing factor analysis, if such a factor should exist in the manner claimed by the author. The additional syndromes and patterns are as follows:



## SYNDROMES THE ELEMENTS OF WHICH ARE ADDED TO THE CATEGORIZED TRAIT LIST

- The classical temperaments: sanguine, choleric, etc.
- Trait patterns defined by Reid 1780 [see (37)].
- Trait patterns defined by Stewart 1827 [see (37)].
- Trait patterns defined by Gall 1810 [see (37)].
- James's explosive and obstructed types.
- Ostwald's romantic and classical types.
- Heymans' and Wiersma's shallow-wide and deep-narrow types.
- Spranger's six interest types.
- Introversion-extraversion clusters [as in (6)].
- Cyclothyme-schizothyme clusters [as in (6)].
- The inferiority complex syndrome [as in (6)].
- The anal-erotic syndrome [as in (6)].
- The five principal neurotic and psychoneurotic syndromes [as in (8)].
- The principal psychotic syndromes.
- McDougall's "temper" variables (27).
- Antevert and retrovert types (48).
- Masculinity-femininity.
- Emotional maturity (51).
- Burt's two principal factors in emotionality (4).
- Ascendance-submission (1).
- Thurstone's radicalism-conservatism (of attitudes) (45).
- Sheldon's viscer-, somato-, and cerebrotonic types (35).

Save for two or three instances, none of the true factor analysis researches needed to be included in the additions, for they have proceeded on trait terms already in the dictionary. On adding this harvest of a century and more of psychological invention to the trait categories already derived from the dictionary, the investigators were astonished to find that apart from a few exceptions, *e.g.*, some neurotic and psychotic traits and one of Burt's emotionality factors, no new categories were necessary. The elements of these types had already long been recognized by nontechnical language. In several instances, however, the single trait term was enlarged, by this last addition, to a phrase more precisely characterizing the behavior in that category.

The list of personality traits was finally brought to 171 items through the addition of two kinds of personality variable not enjoying such precise representation in the dictionary material as in psychological literature, namely, (1) interests and (2) abilities. Since the latter field has already been well explored by factor analysis of measurements, it seemed advisable to use the categories already arrived at by Spearman, Kelley, Thurstone, and others (8). The categories for interests were those already found most useful by the present writer in his studies on the measurement on

interest (7, 8). In both fields it was found possible to combine and condense these new categories with some, at least, of the dictionary categories, *e.g.*, the dictionary interest categories with some of Spranger's types, "S" with intelligence, and so on. In all major instances, *abilities* in special fields, *e.g.*, music, were kept distinct from *interests* in those fields.

The decision to add these interest and ability categories to the personality items was made on the clinical evidence that special abilities, and to some extent general intelligence, are likely to be related to, and perhaps therefore determining or determined by, dynamic and constitutional personality traits. The factor analysis of abilities seems to have been kept too long in separation from the analysis of the total personality, and we hoped to bridge this gap. Interests were included similarly with the object of relating aspects of personality not previously included in a common correlation study. Both interests and abilities are, in any case, special varieties of the general population of personality traits.

THE FINAL POPULATION OF THE TRAIT SPHERE

The variables eventually arrived at by the above processes are published in full below, since a list derived so exhaustively may prove a useful basis for research enterprises by others.

PERSONALITY VARIABLES COMPRISING THE COMPLETE PERSONALITY SPHERE

FIRST CONDENSATION FROM UNABRIDGED DICTIONARY AND PSYCHOLOGICAL LITERATURE FIELDS

TRAIT OR VARIABLE.....	OPPOSITE OF TRAIT OR VARIABLE (if Any)
1. ABILITIES. <i>Intelligence.</i>	Capacity to perceive relations, insight, quickness to learn, adaptability in problems.
2. " <i>Special Abilities.</i>	<i>Drawing.</i> Facility in graphical representation.
3. " " "	<i>Mathematical.</i> Thurstone's <i>N</i> or number ability.
4. " " "	<i>Manual Dexterity.</i> (See Cox's <i>M</i> factor.)
5. " " "	<i>Mechanical Aptitude.</i> Facility in constructing and understanding machinery.
6. " " "	<i>Musical Aptitude.</i> (See Seashore.)
7. " " "	<i>Physical Strength and Endurance.</i>
8. " " "	<i>Logical Ability, Reasoning.</i> Thurstone's <i>I</i> .
9. " " "	<i>Spatial, Visual Ability.</i> Thurstone's <i>S</i> and Kelley's factors.
10. " " "	<i>Verbal Attitude.</i> Thurstone and Spearman's <i>V</i> factor. Facility in right use of words.
11. ALERT.....	ABSENT-MINDED
12. ACQUISITIVE.....	
13. AFFECTED.....	NATURAL
14. AFFECTIONATE.....	FRIGID
15. AGORAPHOBIC.....	

16.	ALCOHOLIC	
17.	AMBITIOUS	UNAMBITIOUS
18.	AMOROUS	LUSTLESS
19.	ANALYTICAL	
20.	ANTEVERT	RETROVERT
21.	ARGUMENTATIVE	
22.	ARROGANT	HUMBLE
23.	ASCETIC	SENSUOUS
24.	ASSERTIVE	SUBMISSIVE
25.	AUSTERE	PROFLIGATE
26.	AUTOCRATIC	
27.	BOASTFUL	MODEST
28.	BROODING	UNREPINING
29.	CAUTIOUS	RECKLESS
30.	CHARMING	
31.	CHEERFUL	GLOOMY
32.	CLEAR THINKING	INCOHERENT
33.	CLEVER	
34.	CLAUSTROPHOBIC	
35.	CONCEITED	SELF-DISSATISFIED
36.	CONSCIENTIOUS	CONSCIENCELESS
37.	CONSTRUCTIVE	
38.	CONTENTED	DISSATISFIED
39.	CONVENTIONAL	INDIVIDUALISTIC
40.	COOPERATIVE	OBSTRUCTIVE
41.	COURAGEOUS	COWARDLY
42.	CURIOUS	UNENQUIRING
43.	CYNICAL	IDEALISTIC
44.	DEBONNAIRE	
45.	DEFENSIVE	
46.	DUBITATIVE	DECISIVE
47.	EASY-GOING	SHORT-TEMPERED
48.	ECCENTRIC	
49.	EFFEMINATE	MASCULINE
50.	EGOTISTICAL	ALTOCENTRIC
51.	ELOQUENT	INARTICULATE
52.	EMOTIONAL I	UNEMOTIONAL
	Emotionality in all varieties of emotion. Burt's general emotionality factor.	
53.	EMOTIONAL II (Burt's Sthenic-asthenic factor) . . . .	UNEMOTIONAL
	Emotionality in sociability, assertive.	
54.	ENERGETIC-SPIRITED	LANGUID
55.	ENERGETIC-INDUSTRIOUS	INACTIVE-INDOLENT
56.	ENTERPRISING	SHIFTLESS
57.	ENTHUSIASMIC	APATHETIC
58.	EVASIVE	FACING LIFE
59.	EXCITABLE	PHLEGMATIC
60.	EXTRA-PUNITIVE	PRAISEFUL
61.	EXHIBITIONISTIC	SELF-EFFACING
62.	FAIR-MINDED	PARTIAL
63.	FASTIDIOUS	COARSE
64.	FLATTERING	
65.	FORMAL	CASUAL
66.	FRANK	SECRETIVE
67.	FRIENDLY	HOSTILE
68.	GENEROUS	TIGHT-FISTED
69.	GENIAL	COLD-HEARTED
70.	GLUTTONOUS	QUEASY
71.	GRATEFUL	THANKLESS
72.	HABIT-BOUND	LABILE
73.	HARD	SOFT-HEARTED
74.	HEADSTRONG	GENTLE TEMPERED
75.	HEARTY	QUIET
76.	HIGH-STRUNG	RELAXED

77.	HONEST .....	DISHONEST
78.	HURRIED .....	LETHARGIC
79.	HYPOCHONDRIACAL .....	
80.	IMAGINATIVE .....	DULL
81.	IMITATIVE .....	
82.	IMPULSIVE TEMPERAMENTALLY .....	DELIBERATE
83.	INDEPENDENT .....	DEPENDENT
84.	INFLEXIBLE (EMOTIONALLY) .....	ADAPTABLE (to change)
85.	INHIBITED .....	INCONTINENT
86.	INTERESTS WIDE .....	INTERESTS NARROW
87.	INTERESTS SPECIAL, <i>Aesthetic</i> (GENERAL)	
88.	"    " <i>Artistic</i> (PAINTING, ART, ARCHITECTURE)	
89.	"    " <i>Economic</i>	
90.	"    " <i>Home and Family</i>	
91.	"    " <i>Music</i>	
92.	"    " <i>Physical Activity</i>	
93.	"    " <i>Political</i>	
94.	"    " <i>Religious</i>	
95.	"    " <i>Social</i>	
96.	"    " <i>Theoretical</i>	
97.	"    " <i>Technical</i>	
98.	INTUITIVE .....	LOGICAL
99.	INTROSPECTIVE .....	
100.	IRRITABLE .....	GOOD TEMPERED
101.	JEALOUS .....	
102.	KIND (by disposition) .....	RUTHLESS
103.	KIND (on principle) .....	
104.	LAUGHTERFUL .....	MIRTHLESS
105.	LEADING (not Domineering) .....	
106.	LOYAL .....	FICKLE
107.	MATURE (in emotional development) .....	INFANTILE
108.	MEMORY GOOD .....	FORGETFUL
109.	MISCHIEVOUS .....	
110.	MULISH .....	REASONABLE
111.	MYSTICAL .....	APPOLLONIAN
112.	NEUROTIC .....	
113.	OPINIONATED .....	TOLERANT
114.	OPTIMISTIC .....	PESSIMISTIC
115.	ORIGINAL .....	BANAL
116.	PATIENT .....	IMPATIENT
117.	PAINSTAKING .....	SLIPSHOD
118.	PEDANTIC .....	DISORDERLY
119.	PERSEVERING .....	QUITTING
120.	PHANTASYING .....	
121.	PHYSICALLY ACTIVE .....	
122.	PIOUS .....	WORLDLY
123.	PLAINTIVE .....	
124.	PLANFUL .....	PLANLESS
125.	POISED .....	AWKWARD
126.	POLISHED .....	ROUGH
127.	PRACTICAL .....	UNREALISTIC
128.	PUGNACIOUS .....	PEACEABLE
129.	RELIABLE .....	UNDEPENDABLE
130.	RESERVED .....	INTRUSIVE
131.	RESILIENT .....	DEPRESSIBLE
132.	RESPONSIVE .....	ALOOF
133.	REVERENT .....	REBELLIOUS
134.	SADISTIC .....	MASOCHISTIC
135.	SARCASTIC .....	
136.	SELF-CONFIDENT .....	SELF-DISTRUSTING
137.	SELF-CONTROLLED .....	
138.	SELF-DECEIVING .....	
139.	SELF-PITYING .....	

140.	SELF-RESPECTING .....	
141.	SELFISH .....	SELF-DENYING
142.	SENSITIVE .....	TOUGH
143.	SENTIMENTAL .....	HARD-HEADED
144.	SERIOUS .....	FRIVOLOUS
145.	SHREWD .....	NAÏVE
146.	SLANDEROUS .....	
147.	SLEEPS WELL .....	SLEEPS POORLY
148.	SLOW (temperamentally, in movement, in reaction) .....	QUICK
149.	SOCIABLE I .....	SHY
	Fond of meeting people, good mixer.	
150.	SOCIABLE II .....	EXCLUSIVE
	Gregarious, congregative, companionable.	
151.	SOPHISTICATED .....	SIMPLE HEARTED
152.	SOUR .....	
153.	STABLE EMOTIONALLY .....	CHANGEABLE
154.	STRONG IN PERSONALITY .....	
155.	SUBJECTIVE .....	GUIDED BY REALITY
156.	SUGGESTIBLE .....	
157.	TACTFUL .....	TACTLESS
158.	TALKATIVE .....	TACITURN
159.	TEMPERATE .....	EXTREME (in schizothyme sense)
160.	THOUGHTFUL .....	UNREFLECTIVE
161.	THRIFTY .....	CARELESS WITH GOODS
162.	TIMID (Disposition) .....	ADVENTUROUS
163.	TREACHEROUS .....	
164.	TRUSTFUL .....	SUSPICIOUS
165.	VERSATILE .....	
166.	VINDICTIVE .....	UNRESENTFUL
167.	VIVACIOUS .....	
168.	WANDERING .....	SETTLING DOWN
169.	WITTY .....	HUMORLESS
170.	WISE .....	FOOLISH
171.	WORRYING .....	PLACID

### THE FIRST CORRELATIONAL REDUCTION OF THE TRAIT SPHERE

By beginning with so many as 171 traits, gathered in the special manner here described, we may claim to have avoided initially some of the besetting defects of the factor analytic approach. Our next purpose, as stated in the introduction, was the further reduction of this list, through strictly correlational methods, to a set of variables brief enough to permit their being very reliably estimated and completely factor analyzed with the time and facilities possible to one experimenter.

The preliminary correlational reduction was made on correlations based on ratings on 100 adults, each rated by an intimate (but not emotionally involved) acquaintance, on the 171 traits obtained by semantic reduction. The rater was required to make a judgment only as to whether the subject was above or below average on the trait, *i.e.*, whether he was best described by the right- or the left-hand member of each pair, *e.g.*, whether ascendant or submissive.

Such an approach does not overstrain psychological judgment and permits the trait relations to be worked out later in tetrachoric correlation coefficients, the simplicity of which is an important consideration when one has to work out 14,535 coefficients.

Care was taken to get a population which would be (1) fully adult—over 25 years, and (2) truly representative of the general population. The almost inevitable overrepresentation of intelligent, professional, and indeed academic types in psychological research was at least very greatly reduced and the final group contained domestic servants, janitors, artisans, a lumber jack, a Nova Scotian fisherman, and so on.

The correlations having been computed, by the use of Thurstone's diagrams (46), they were set out for inspection on a table 14 feet square. Our objectives were now two: (1) to discover the cluster structure among these variables, as something distinct from the factor structure which would later be revealed, and, (2) to *choose from the 171 variables a set of some 30 to 40 derived, representative variables which would contain, if possible, all the factors involved in the larger trait population.* This second step might or might not be identical with the first. Only if the clusters included all 171 variables and were sufficiently small in number would it be possible to take the clusters as the new variables for the intensive factor analysis.

The actual trait or variable list chosen finally for the third, factor analytic study will be set out at the beginning of the ensuing article (12). Here it suffices to state the general principles on which we proceeded to select the reduced set of variables, as follows: (1) Since a separate study had shown that the judges had a reliability of about 0.7 to 0.8 in estimating these traits, any traits correlating above 0.8 were considered identical, *i.e.*, as instances of our having cautiously split a trait element further than was necessary. (2) Any traits not showing significant correlations with any others in the population, and therefore not appearing in any cluster or identity, were added as presumably independent variables, but only if they had a reasonable degree of practical importance. (3) Each of the non-overlapping clusters of four traits or larger was represented as a single variable, described by all the behavior common to the cluster.

## THE CLUSTER ANALYSIS OF PERSONALITY

The grouping of correlated behavior variables into clusters, which appeals to many experimenters as a more concrete and simple procedure than factor analysis, actually may involve difficult procedures and complex concepts, which would require the scope of a separate article for their adequate description. The ideal cluster, as a set of highly intercorrelating variables, each of which is far more highly correlated with its fellow cluster members than with any outside variable, does not exist in nature. One deals rather with a continuous, straggling network of large and small and more or less overlapping clusters. Indeed the term cluster is used in two senses, which we may designate by "phenomenal clusters" and "cluster cores" or "nuclear clusters," illustrated respectively by *X*, *Y*, *Z*, and by *A* in the diagram below. In finding clusters it is necessary to look for phenomenal clusters first, but later it may be more useful to list only nuclear clusters and to designate the *X*, *Y*, and *Z* modifications by the appendages which modify the main core.<sup>7</sup>

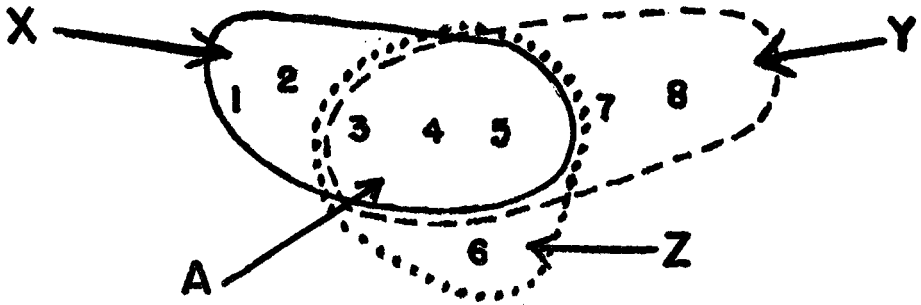


FIG. 1. PHENOMENAL CLUSTERS AND CLUSTER CORES

*X* is a "phenomenal cluster" and includes variables 1, 2, 3, 4, and 5.

*Y* is a "phenomenal cluster" and includes variables 3, 4, 5, 7, and 8.

*Z* is a "phenomenal cluster" and includes variables 3, 4, 5, and 6.

*A* is a "cluster core" and includes only variables 3, 4, and 5.

Whether two overlapping clusters shall be listed separately or as a single cluster—in fact, whether they shall appear to the investigator as a pair or a single cluster—depends upon the size of corre-

<sup>7</sup> See footnote to Table 1 for the practice adopted here.

lation coefficient set up as the minimum for qualifying for entry to the group. This becomes immediately obvious if we represent correlations spatially as cosines, when it will be seen that a single pencil of variables subtending 20 degrees can be considered as three overlapping pencils of, say, 16 degrees each. However convincing or unconvincing our previous arguments (11) for considering a trait as a factor rather than a cluster may be, the argument remains that a factor is at least in this sense more definite and less arbitrary than a cluster. While commenting on the factor-cluster relationship we may also note that clusters are likely to be more numerous, so that 20 or so narrow clusters could conceivably be represented by only two or three factors.

Owing to the very large number of correlations to be considered, the search for clusters was not carried out by such sensitive methods as Holzinger and Harman's B-coefficient technique or Tryon's system. Instead, two arbitrary levels of correlation are set up, after inspection of the values in the large table, such as promised to cut off about one tenth and one hundredth of the distribution of coefficients and to indicate a moderately good and an extremely good relationship. The first was set at  $\pm 0.45$  (corresponding to a shared variance of 20 per cent or more) and the second at  $\pm 0.84$  (corresponding to a common variance of 70 per cent or more). Clusters were then sought among these correlations only, no regard being paid to the variations of magnitude within these limits in the first search for clusters. Consequently all that can be asserted of the clusters below is that every member correlates with every other member to the extent of 0.45 or more.

The variables with such correlations fell at first into two large groups of loosely tied (having many missing correlations) items and a third less well-defined group. Closer inspection split these into smaller groups with none of the mutual correlations missing (*i.e.*, none below 0.45). The clusters having six to a dozen members were relatively few, but triads and tetrads (*i.e.*, clusters of three or four) were quite numerous. This is not surprising when one reflects that a single cluster of 14 variables can be broken down into 364 separate triads. After excluding from the lists any cluster which could be included in a larger cluster, we had left, in addition to the major clusters of six or more variables, approximately 15



TABLE I  
FINAL LIST OF PERSONALITY CLUSTERS OR SYNDROMES\*

LIST NUMBER	PROVISIONAL TITLES	REFERENCE NUMBERS OF TRAITS IN CLUSTER CORE	APPENDAGE TRAITS AND CLUSTERS	RELATED CLUSTERS
1	Assertive, egotistic	21, 22, 24, 26, 27, 35, 61, 74	128, 164	4, 32, 47
2	Widely intelligent	1, 9, 37, 83, 86, 115, 165	All of 3 (except 3); 19, 129, 108, 162, (9, 83 with 107, 112, 126, 154), 56	3, 5, 6
3	Analytically intelligent	1, 3, 8, 9, 19, 32, 33	All of cluster 2, especially 83, 86, 96 (96, 156), (37, 115, 165, 80 with 192, 33), 125	2
4	Scaramouche, psychopathic	21, 27, 60, 61, 158, 163	(13, 77), (13, 22), (13, 48), (74, 113, 123, 128)	1
5	Gentlemanly, philosophical	25, 83, 126, 129, 160, 170	—156, All of cluster 6, 94, 124, 9, 32, 33, 154, 157, (19, 86, 15)	2, 6
6	Emotionally, intellectually, mature	9, 32, 83, 107, —112, 129	97, 115, 126, 165, 156	5, 2, 3
7	Stoic, Puritan, controlled	25, —82, 130, 144, 153, 160, 170	19, 129	
8	Neurotic, unrealistic, hypochondriacal	79, 112, 123, 138, 139, —159	12, 155, 159, 171, 123, (129, —107, —137), (—96, —153), (61, —107), 48, 163, 120, 46	21, 25
9	Warmhearted	67, 68, 771, —73, —101, 102, —146, —163	Most of cluster 14 (42, 43, 67, 71, —73), 30	14, 11, 24, 50, 54

\* Where clusters overlap by less than 50 per cent they are listed independently, the relationship being indicated by the insertion of the cluster-relative's number in the fifth column.

Where they overlap by more than 50 per cent the cluster core is listed as one cluster, and the two (or more) outlying appendages are listed separately, in column four, the parentheses indicating the boundaries of each appendage.

Traits in the third column have *every* common intercorrelation falling above 0.44. A minus sign indicates the right-hand member of the trait pair on the trait list having the given number.

TABLE I—Continued

LIST NUMBER	PROVISIONAL TITLES	REFERENCE NUMBERS OF TRAITS IN CLUSTER CORE	APPENDAGE TRAITS AND CLUSTERS	RELATED CLUSTERS
10	Extrapunitive, exhibitionist, wilful	12, 45, 60, —71, 163	(50, 135, 146, 166) or (61, —62, 74) and 24, 107, and clusters 32, 35	27, 34
11	Cyclothymic, viscerotonic	47, 69, 71, —73, —146, —152, —166	42, 79, 106, 107	9
12	Evasive, autistic, egoistic	12, 46, 58, —127, 138	(120, 143, 155)	53
13	Integrated, persevering, character (factor $W_1$ )	32, 36, 83, 117, 119, 129	137, 73, 115, (4, 55, 118, 124, 162, 165 with 32, 117, 119), (124, 140, with 117, 119, 129)	26, 48
14	Faithful, hopeful, charitable	42, —43, 67, 71, —73	Most of cluster 9	9, 24
15	Reasoning, planful	8, 96, 124, —156, 160, 170	153, cluster 3, 16	3, 16
16	Analytical, sophisticated	19, 86, 126, 151, 160	(99, 170), 25, 83, clusters 3 and 15, 63	3, 15
17	Infantile, hostile	—71, 101, —107, 139, 146, 163	12, 60, 68, 102, —62, 152, 110, 45	3, 10, 38
18	Anti-social schizoid	—40, 43, 60, —67, 136	74, 72, 162	
19	Cheerful, enthusiastic	31, 57, 69, 104, 114, —152	79, —107, 169	65
20	Active, unstable	82, —112, —130, —137, —144	139, 153, 15, —106, 159	41, 21, 8
21	Solid, dependable	106, 112, 127, 129, 137	156, 138, 119	20, 40
22	Highly strung	59, 75, 76, 78, 82, 167	21, 51, 74, —116, 158	52
23	Foppish, sycophantic	13, 44, 61, 64, 158		
24	Friendly, secure	—15, 40, 67, 68, —101		18
25	Emotional, maladjusted, dissatisfied	16, —38, 52, 138, —159	(16 and 159 with 119, 140, 153, 160), 59, (58, 139)	8

TABLE I—Continued

LIST NUMBER	PROVISIONAL TITLES	REFERENCE NUMBERS OF TRAITS IN CLUSTER CORE	APPENDAGE TRAITS AND CLUSTERS	RELATED CLUSTERS
26	Technically capable, self-confident	5, 83, 97, 136, 165	86	13, 33, 28
27	Rigid, tyrannical	50, 60, 64, —67, 84, 113	26, 134, 45, 110	34, 10
28	Ascendant, spirited, euphoric	24, 44, 54, 75, 167	136, (57, 59)	26, 33
29	Aloof, desurgent	65, —66, —132, 134	(42, 64), 21, 69, 146	45
30	Brooding, misanthropic	28, —95, —132, 146, 152	Cluster 57; 66, 131	11
31	Facile, forward, verbose	—51, 61, 64, 81, 163	79	10
32	Eager to lead, pushful	27, 35, 105, 136	74, 78	1, 47
33	Energetic, confident (somatotonic)	54, 57, 83, 136	44, 92	29, 27, 26, 28
34	Stubborn, pugnacious, clamorous	60, 61, 110, 113, 128, 139	163	28, 27, 10
35	Paranoid	100, 134, 135, —164, 166	163, 122, 110, 119, 134	55
36	Aesthetic, intellectual	6, 37, 87, 88, 160	17, 19, (83, 86)	17, 63
37	Restlessly, hypomanically emotional	52, 59, 82, —116, —137	53, 75, 100	21, 23
38	Infantile, self-centered	61, 79, —107, —137, 139		17
39	Integrated, self-respecting character (factor $W_2$ )	129, 137, 140, 153, —156, 160	127, 126	5
40	Immature, undependable [(neurotic) or (defensive)]	—77, —106, —107	(—45, 77) or (112, 158), (100, 152), 139	12, 21
41	Assertive, sophisticated	1, 24, 83, 151		
42	Inquisitive, glib	10, 42, 64, 86		

TABLE 1—Continued

LIST NUMBER	PROVISIONAL TITLES	REFERENCE NUMBERS OF TRAITS IN CLUSTER CORE	APPENDAGE TRAITS AND CLUSTERS	RELATED CLUSTERS
43	Lively, alert	11, 33, 54, 83	24, —148, —162	44
44	Psycho-physically vigorous	11, 54, —148, 154		43
45	Genial, sentimental	14, 69, 132, 143	152, 163	29
46	Generally inhibited	—24, —70, 85, 162	(42, —70, 86 wholly with 162)	
47	Shrewd, autocratic	24, 26, 27, 145	25	1, 32
48	Bohemian	25, —67, 118, 124	117, 119	13
49	Sociable, bold	42, 95, —130, 149, —162	—146	
50	Amoral, villainous	43, —77, —140, 146, 164		9, 14
51	Sociable, warm	75, 95, 132, 149, 150	130	
52	Energetic, tense, driven	76, 78, 82, 100, —147	118, 167	22
53	Aimless, autistic	119, 127, 129, —154, 156	—138, 166	12
54	Christian	71, 103, —134, —141, —166	139	9
55	Poised, shrewd, predatory	—78, 134, 135, 145, 166	22, 118, 141, 164	35
56	Agitated, melancholic	79, 114, 139, 171	72, 138, 152	
57	Amorous, mischievous	18, 48, 109		
58	Alcoholic, impious, spendthrift	16, —122, —133	141, 161	
59	Sensitive, hurried, withdrawn	78, 99, 142	29, 120, —158	
60 *	Set, smug, thrifty	72, 98, 161	—42, —96	

\* Seven smaller clusters, including otherwise unrepresented variables, also exist, the chief being designated musical-esthetic, wandering-inflexible, retrovert-hypochondriacal, physically courageous, and domestic.

pentads, 20 tetrads, and 88 triads. Triads are not listed systematically in Table 1, which is reserved for the 56 largest clusters found. One hundred thirty-five of the original trait list are included in these clusters and the recorded appendages. Of the unincluded traits four were of sufficient practical importance to demand representation and have been added in the triads which were the largest units which could be found to represent them.

The analysis into clusters was made entirely "blind," on mathematical criteria only, and the experimenter became aware of the nature of the clusters only at the stage of listing, when it became necessary to give them provisional titles. This titling is necessarily unsatisfactory, since language lacks terms for the broad qualities revealed by the clustering.

#### SUMMARY

A method is discussed for improving the factor analytic pursuit of basic personality traits (or syndromes) by commencing with a complete field of personality traits, called the *trait sphere*. As a preliminary step toward factor analysis the complete personality trait vocabulary of the language was condensed to some 60 variables in two successive steps. The first condensation, to a personality-comprehensive list of 171 variables, was carried out semantically, by grouping synonyms. The process of condensing further was made dependent on the verdict of correlations. One hundred adults, sampled as evenly as possible from the general population, were rated on 171 traits. On the basis of tetrachoric correlations these variables were grouped into clusters, the largest of which are listed in Table 1. At present no attempt is made to interpret these clusters or relate them to "types" arrived at speculatively or clinically. Interpretation is deferred to an ensuing article in which the cluster analysis data will have been augmented by the findings of a superimposed factor analysis.

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