An Alternative "Description of Personality": The Big-Five Factor Structure

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In the 45 years since Cattell used English trait terms to begin the formulation of his "description of personality," a number of investigators have proposed an alternative structure based on 5 orthogonal factors. The generality of this 5-factor model is here demonstrated across unusually comprehensive sets of trait terms. In the first of 3 studies, 1,431 trait adjectives grouped into 75 clusters were analyzed; virtually identical structures emerged in 10 replications, each based on a different factor-analytic procedure. A 2nd study of 479 common terms grouped into 133 synonym clusters revealed the same structure in 2 samples of self-ratings and in 2 samples of peer ratings. None of the factors beyond the 5th generalized across the samples. In the 3rd study, analyses of 100 clusters derived from 339 trait terms suggest their potential utility as Big-Five markers in future studies.

The variety of individual differences is nearly boundless, yet most of these differences are insignificant in people's daily interactions with others and have remained largely unnoticed. Sir Francis Galton may have been among the first scientists to recognize explicitly the fundamental lexical hypothesis—namely that the most important individual differences in human transactions will come to be encoded as single terms in some or all of the world's languages. Indeed, Galton (1884) attempted to tap "the more conspicuous aspects of the character by counting in an appropriate dictionary," and he "estimated that it contained fully one thousand words expressive of character, each of which has a separate shade of meaning, while each shares a large part of its meaning with some of the rest" (p. 181).

Galton's (1884) estimate of the number of personality-related terms in English was later sharpened empirically, first by Allport and Odbert (1936), who culled such terms from the second edition of *Webster's Unabridged Dictionary of the English Language*, and later by Norman (1967), who supplemented the earlier list with terms from the third edition. Galton's insight concerning the relations among personality terms has been mirrored in the efforts of later investigators to discover the nature of those relations, so as to construct a structural representation of personality descriptors (for historical reviews of such efforts, see John, 1990; John, Angleitner, & Ostendorf, 1988; and Wiggins & Trapnell, in press).

One of the first of these investigators was L. L. Thurstone, a pioneer in the development of factor analysis, and the report of his initial findings reads today with almost haunting clairvoyance:

> Sixty adjectives that are in common use for describing people . . . were given to each of 1300 raters. Each rater was asked to think of a person whom he knew well and to underline every adjective that he might use in a conversational description of that person. . . . The tetrachoric correlation . . . coefficients for the sixty personality traits were then analyzed by means of multiple factor methods and we found that *five* factors are sufficient to account for the coefficients.
>
> It is of considerable psychological interest to know that the whole list of sixty adjectives can be accounted for by postulating only *five* [italics added] independent common factors. . . . We did not foresee that the list could be accounted for by as few . . . factors. *This fact leads us to surmise that the scientific description of personality may not be quite so hopelessly complex as it is sometimes thought to be* (Thurstone, 1934, pp. 12–14 [italics added]).

The Big Five

One of the most influential scientists to apply empirical procedures to the task of constructing a personality taxonomy was Raymond B. Cattell, who began with a perusal of English personality-descriptive terms. Allport and Odbert (1936) had catalogued about 18,000 such terms and had divided them into four alphabetical lists, the first of which included approximately 4,500 terms that they had classified as stable traits. Cattell (1943) used this trait list as a starting point (adding some concepts gleaned from the psychological literature, including various aspects of psychopathology) to construct 171 scales, most of which were bipolar. Guided by the correlations among the 171 scales in some empirical analyses, Cattell (1943) developed a set of 35 bipolar clusters of related terms. Rating scales based on these clusters were then employed in various studies, in each of which the correlations among the variables were factored using oblique rotational procedures (Cattell, 1945).

PERSONALITY FACTOR STRUCTURE

Cattell has repeatedly claimed to have identified at least a dozen oblique factors. However, when Cattell's variables were analyzed by orthogonal rotational methods, only five factors proved to be replicable (e.g., Digman & Takemoto-Chock, 1981; Fiske, 1949; Norman, 1963; Tupes & Christal, 1961). Similar five-factor structures based on other sets of variables have been reported by Borgatta (1964), Digman and Inouye (1986), and McCrae and Costa (1985, 1987).

These "Big-Five" factors have traditionally been numbered and labeled as follows: (I) Surgency (or Extraversion), (II) Agreeableness, (III) Conscientiousness (or Dependability), (IV) Emotional Stability (vs. Neuroticism), and (V) Culture. Alternatively, Factor V has been interpreted as Intellect (e.g., Digman & Takemoto-Chock, 1981; Peabody & Goldberg, 1989) and as Openness (e.g., McCrae & Costa, 1987).

Because the Big-Five factor structure was originally discovered in studies using Cattell's 35 variables, some critics have argued that these five factors have not been sufficiently generalized beyond that initial set of variables. Indeed, Waller and Ben-Porath (1987) have asserted

> Much of the evidence that has been offered in support of the five-factor model stems from an assemblage of cognate studies better thought of as demonstrating the reliability rather than the validity (or comprehensiveness) of the five-factor paradigm. In other words, we feel that many of these studies are better thought of as a series of quasi-literal replications, rather than conceptual validations of the five-factor model. (p. 887)

The present article is an attempt to rebut such arguments by demonstrating the generality of the Big-Five representation within sets of trait terms that are far more representative of the total English trait lexicon than were those included in any previous studies. The article begins with analyses of the most comprehensive pool of English trait-descriptive adjectives ever studied empirically. Specifically, 1,431 trait terms grouped into 75 clusters are used to (a) discover whether the Big-Five structure can be confirmed with these data, (b) determine the robustness of the structure across different procedures for factor extraction and rotation, and (c) examine the nature of any additional factors beyond the first five. In a second study employing 479 commonly used English trait adjectives, four different factor structures are compared, two based on samples of individuals describing themselves and two based on samples of individuals describing others whom they know well. The use of four independent samples permits an analysis of the across-sample generality of the factor structures, thus providing a crucial test of the dimensionality of English trait adjectives. Finally, a third study focuses on the refinement of 100 synonym clusters based on a pool of 339 common trait terms, to be available for use as Big-Five marker variables in future studies.

Study 1

Rationale and Background

This study was designed to investigate the structure of a nearly comprehensive set of common English trait adjectives, probably the largest subset of the total pool that has yet been studied in this way. Initially, Norman (1967) had investigated 2,800 trait terms selected from unabridged English dictionar-

ies. Nonoverlapping sets of 200 terms were administered to samples of 100 university students (50 men and 50 women), who for each term (a) provided a definition (or indicated that they could not do so), (b) rated its social desirability, and (c) indicated the extent to which it characterized themselves and each of three peers. On the basis of these data, ambiguous terms and terms that were unfamiliar to the typical college student were culled from the set.

Later, Norman classified the remaining 1,431 terms into 75 categories based on his understanding of their similarities in meaning. In making his classifications, Norman began by sorting the terms into a few broad categories, and then he subsequently developed more fine-grained classifications within each of the initial categories. Table 1 lists the number of terms in each of his final 75 categories, along with a few terms as examples.

Method

From the 2,800 trait terms included in Norman (1967), Goldberg (1982) selected a subset of 1,710 (which included the 1,431 described earlier) to be included in a self-report inventory of trait-descriptive adjectives (see Goldberg, 1982, for the procedural details). Under instructions to work on this task for no more than an hour at a time, 187 college students (70 men and 117 women) described themselves on each of the 1,710 terms, using an 8-step rating scale ranging from extremely inaccurate to extremely accurate as a self-descriptor. After all omitted responses were given a middle (5) value in a transformed 1–9 rating scale, the responses for each subject in turn were standard scored, thereby eliminating all intersubject differences in their means and variances across the 1,710 items.

Responses to the terms in each of the Norman categories were aggregated to obtain 75 scale scores for every subject. The coefficient alpha reliability estimates for each of these variables, which are listed in Table 1, are quite high for scales constructed without recourse to any internal-consistency analyses: For the 74 scales including more than one item, 95% of the reliability coefficients were larger than .60, and 73% were at least .70; the median scale obtained a coefficient of .76. Because the scales vary markedly in their number of items and because coefficient alpha is highly sensitive to scale length, Table 1 also includes the mean intercorrelation among the items in each scale.

The variables are listed in Table 1 by the factor on which they had their highest loading in this first study, and within each factor by the size of their loadings on that factor. Consequently, the first variables listed for each factor (the factor definers) exemplify its core meaning and are likely to be the most robust across studies. On the other hand, the last variables listed for each factor, which are only peripherally related to its core content, may be equally related to other factors, and therefore the factor with which they are most highly related may tend to vary from study to study.

Results

Effects of different methods of factor extraction and rotation. At the outset, it is important to try to allay the qualms of any readers who assume that, in factor analysis, what one finds depends primarily on *how* one looks. If that were so, the general goal of developing a scientifically compelling taxonomy of individual differences could be a foolish quest, as Eysenck (1981) once argued:

> Correlational psychology cannot in the nature of things come up with objective, universally agreed dimensions or categories; there

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Table 1
The 75 Categories in the Norman Taxonomy of 1,431 Trait-Descriptive Adjectives

Factor pole/category	Examples	No. terms	Reliability α	r̄
I+				
Spirit	Jolly, merry, witty, lively, peppy	26	.88	.22
Talkativeness	Talkative, articulate, verbose, gossipy	23	.86	.21
Sociability	Companionable, social, outgoing	9	.77	.27
Spontaneity	Impulsive, carefree, playful, zany	28	.77	.11
Boisterousness	Mischievous, rowdy, loud, prankish	11	.78	.24
Adventure	Brave, venturous, fearless, reckless	44	.86	.12
Energy	Active, assertive, dominant, energetic	36	.77	.08
Conceit	Boastful, conceited, egotistical	13	.76	.20
Vanity	Affected, vain, chic, dapper, jaunty	5	.28	.07
Indiscretion	Nosey, snoopy, indiscreet, meddlesome	6	.55	.17
Sensuality	Sexy, passionate, sensual, flirtatious	12	.76	.20
I−				
Lethargy	Reserved, lethargic, vigorless, apathetic	19	.74	.13
Aloofness	Cool, aloof, distant, unsocial, withdrawn	26	.86	.19
Silence	Quiet, secretive, untalkative, indirect	22	.87	.23
Modesty	Humble, modest, bashful, meek, shy	18	.76	.15
Pessimism	Joyless, solemn, sober, morose, moody	19	.79	.17
Unfriendliness	Tactless, thoughtless, unfriendly	20	.70	.10
II+				
Trust	Trustful, unsuspicious, unenvious	20	.83	.19
Amiability	Democratic, friendly, genial, cheerful	29	.81	.13
Generosity	Generous, charitable, indulgent, lenient	18	.70	.11
Agreeableness	Conciliatory, cooperative, agreeable	17	.71	.13
Tolerance	Tolerant, reasonable, impartial, unbiased	19	.76	.14
Courtesy	Patient, moderate, tactful, polite, civil	17	.73	.14
Altruism	Kind, loyal, unselfish, helpful, sensitive	29	.76	.10
Warmth	Affectionate, warm, tender, sentimental	18	.82	.20
Honesty	Moral, honest, just, principled	16	.67	.11
II−				
Vindictiveness	Sadistic, vengeful, cruel, malicious	13	.79	.22
Ill humor	Bitter, testy, crabby, sour, surly	16	.75	.16
Criticism	Harsh, severe, strict, critical, bossy	33	.79	.10
Disdain	Derogatory, caustic, sarcastic, catty	16	.74	.15
Antagonism	Negative, contrary, argumentative	11	.75	.21
Aggressiveness	Belligerent, abrasive, unruly, aggressive	21	.79	.15
Dogmatism	Biased, opinionated, stubborn, inflexible	49	.78	.07
Temper	Irritable, explosive, wild, short-tempered	29	.86	.17
Distrust	Jealous, mistrustful, suspicious	8	.65	.19
Greed	Stingy, selfish, ungenerous, envious	18	.61	.08
Dishonesty	Scheming, sly, wily, insincere, devious	29	.80	.12
III+				
Industry	Persistent, ambitious, organized, thorough	43	.85	.12
Order	Orderly, prim, tidy	3	.62	.35
Self-discipline	Discreet, controlled, serious, earnest	17	.64	.10
Evangelism	Crusading, zealous, moralistic, prudish	13	.71	.16
Consistency	Predictable, rigid, conventional, rational	27	.77	.11
Grace	Courtly, dignified, genteel, suave	8	.73	.26
Reliability	Conscientious, dependable, prompt, punctual	11	.68	.16
Sophistication	Blasé, urbane, cultured, refined	16	.72	.14
Formality	Formal, pompous, smug, proud	13	.67	.13
Foresight	Aimful, calculating, farseeing, progressive	17	.62	.09
Religiosity	Mystical, devout, pious, spiritual	13	.86	.31
Maturity	Mature	1	—	—
Passionlessness	Coy, demure, chaste, unvoluptuous	4	.13	.04
Thrift	Economical, frugal, thrifty, unextravagant	4	.74	.42
III−				
Negligence	Messy, forgetful, lazy, careless	51	.90	.14
Inconsistency	Changeable, erratic, fickle, absent-minded	17	.72	.13
Rebelliousness	Impolite, impudent, rude, cynical	22	.81	.16
Irreverence	Nonreligious, informal, profane	9	.73	.23
Provinciality	Awkward, unrefined, earthy, practical	27	.63	.06
Intemperance	Thriftless, excessive, self-indulgent	13	.67	.13

Table 1 (continued)

Factor pole/category	Examples	No. terms	Reliability α	Reliability r̄
IV+				
Durability	Tough, rugged, unflinching	11	.66	.15
Poise	Worriless, calm, stable, sedate, peaceful	23	.83	.18
Self-reliance	Confident, independent, resourceful	11	.71	.18
Callousness	Ruthless, insensitive, cold, stern	17	.78	.17
Candor	Frank, blunt, explicit, curt, terse	31	.69	.07
IV−				
Self-pity	Touchy, careworn, whiny, oversensitive	14	.77	.19
Anxiety	Fearful, nervous, fussy, unstable	30	.85	.16
Insecurity	Unconfident, self-critical, unpoised	17	.84	.24
Timidity	Cowardly, timid, unventurous, wary	14	.72	.15
Passivity	Docile, dependent, submissive, pliant	22	.80	.15
Immaturity	Naive, gullible, superstitious, childlike	18	.70	.11
V+				
Wisdom	Intelligent, philosophical, complex, deep	16	.72	.14
Originality	Insightful, clever, creative, curious	17	.78	.17
Objectivity	Alert, perceptive, logical, certain	23	.72	.10
Knowledge	Informed, literate, studious, intellectual	16	.80	.20
Reflection	Pensive, thoughtful, meditative	10	.63	.15
Art	Literary, poetic, artistic, musical	4	.49	.19
V−				
Imperceptivity	Simple, ignorant, dull, illogical, narrow	45	.85	.11

Note. The two estimates of internal consistency—the coefficient alpha value for the total scale and the mean interitem correlation (r̄)—were based on the standardized (Z-scored) responses of 187 college students (70 men and 117 women) who described themselves using an inventory of 1,710 trait-descriptive terms.

are innumerable, mathematically equivalent ways of rotating factors, for instance, and no statistical magic key (not even simple structure) can close the door on alternative solutions. . . . Alternative solutions and rotations are in principle, and usually in practice, not only possible but also appeal to different people. . . . The final factors never completely escape the shadow of. . . the selection of methods of extraction and rotation. (p. 13)

Eysenck argued that scientific agreement on a structural representation is impossible, in part because alternative methods of factor extraction and rotation will generate different factors. In an attempt to examine the extent to which factor structures are influenced by the particular methods that are used, the 75 Norman categories were analyzed using a wide variety of such procedures, specifically five methods of factor extraction (principal-components, principal-factors, alpha-factoring, image-factoring, and maximum-likelihood procedures), each rotated by an orthogonal (varimax) and an oblique (oblimin) algorithm.

Of the 3,750 total factor loadings (75 variables × 10 methods × 5 factors) generated by these analyses, in only 30 cases (fewer than 1%) was the highest loading on a different factor than the modal one; in those few cases, moreover, the variables loaded about equally on two factors, one of which was the modal one. This high degree of intermethod congruence can be quantified more precisely by correlating across the 187 subjects the factor scores derived from each of the 10 factoring methods. When averaged across the five corresponding factors in each pair of analyses, the mean correlation of the factor scores between the orthogonal and oblique rotational procedures (holding constant the method of factor extraction) ranged from .991 to .995, and the mean intercorrelations among the five methods

of factor extraction (holding constant the procedure for rotation) ranged from .950 to .996. Table 2 lists the factor loadings from varimax rotations of both principal factors and principal components; the uniformity of the values in the table demonstrates the robustness of the solutions across these procedural variations.

Although it would be foolish to contend that factors are never influenced by the particular algorithm that is used, such procedural effects are typically quite small in size. For the data sets analyzed in this article, findings based on principal components have been compared with those based on principal factors, and orthogonal rotations have been compared with oblique ones. In none of these analyses have the findings changed in any substantial way as a function of the particular method used. As a consequence, this article will include only the varimax-rotated solutions based on an initial principal-components analysis of the variable intercorrelations. For convenience, however, these components will typically be referred to as "factors."

Effects of the number of factors rotated. The intercorrelations among the factor scores derived from the analyses described earlier were averaged across the 10 methods so as to provide mean congruence correlations for each of the five factors. These mean intermethod correlations for Factors I and II (.99 for both) and for Factors III and IV (.98 for both) were somewhat higher than that for Factor V (.96). Nonetheless, the latter factor (Intellect) remained invariant as more factors were rotated. Instead, Factor III bifurcated when six factors were rotated, providing a more homogeneous version of the Conscientiousness factor, plus one that included the more peripheral categories

Table 2

The 75 Norman Categories: Factor Loadings From Varimax Rotations
of Principal Components and Principal Factors

	Factor									
	I		II		III		IV		V	
Factor pole/category	Com	Fac	Com	Fac	Com	Fac	Com	Fac	Com	Fac

Factor I: Surgency

I+										
Spirit	79ᵃ	78ᵃ	23	22	02	02	05	05	01	01
Talkativeness	77ᵃ	75ᵃ	−07	−07	11	11	−08	−08	08	07
Sociability	75ᵃ	74ᵃ	24	24	17	17	18	18	04	04
Spontaneity	68ᵃ	67ᵃ	01	01	−37	−37	−14	−13	03	03
Boisterousness	63ᵃ	61ᵃ	−31	−31	−31	−31	02	02	−02	−02
Adventure	58ᵃ	57ᵃ	−14	−14	−31	−30	44	44	04	05
Energy	56ᵃ	55ᵃ	−19	−19	13	12	42	41	18	18
Conceit	46ᵃ	44ᵃ	−39	−37	00	−01	14	14	−09	−08
Vanity	41ᵃ	39ᵃ	−08	−07	31	28	−27	−24	−18	−17
Indiscretion	38ᵃ	36ᵃ	−32	−31	−12	−12	−16	−15	−07	−07
Sensuality	25ᵃ	24ᵃ	−17	−16	−01	−01	−13	−10	22	18
I−										
Lethargy	−78ᵃ	−77ᵃ	01	00	01	01	13	13	−27	−26
Aloofness	−78ᵃ	−76ᵃ	−16	−16	−11	−11	−06	−06	02	02
Silence	−76ᵃ	−75ᵃ	20	20	−12	−12	−18	−18	−17	−17
Modesty	−66ᵃ	−65ᵃ	44	44	−08	−08	−13	−13	01	01
Pessimism	−61ᵃ	−60ᵃ	−34	−33	07	07	−46	−45	09	08
Unfriendliness	−53ᵃ	−51ᵃ	−27	−26	−35	−34	17	16	−04	−03

Factor II: Agreeableness

II+										
Trust	−25	−25	82ᵃ	81ᵃ	05	05	10	09	−10	−09
Amiability	41	41	69ᵃ	68ᵃ	08	08	22	22	−02	−02
Generosity	30	29	68ᵃ	66ᵃ	07	07	−14	−14	05	05
Agreeableness	06	06	68ᵃ	66ᵃ	11	11	−13	−13	00	−01
Tolerance	−37	−37	61ᵃ	60ᵃ	−30	−29	17	17	19	19
Courtesy	−25	−24	61ᵃ	60ᵃ	33	32	20	19	15	15
Altruism	26	25	56ᵃ	55ᵃ	36	36	−30	−30	15	14
Warmth	33	32	43ᵃ	43ᵃ	38	37	−41	−40	−04	−04
Honesty	−11	−11	33ᵃ	31ᵃ	27	26	18	16	11	11
II−										
Vindictiveness	−01	−01	−79ᵃ	−77ᵃ	00	00	08	08	−09	−09
Ill humor	00	00	−74ᵃ	−72ᵃ	−09	−09	−15	−15	03	03
Criticism	08	09	−73ᵃ	−72ᵃ	32	32	12	11	11	11
Disdain	12	12	−67ᵃ	−64ᵃ	−10	−10	−11	−10	14	13
Antagonism	−07	−06	−65ᵃ	−63ᵃ	−12	−13	−18	−17	01	00
Aggressiveness	30	29	−64ᵃ	−63ᵃ	−21	−21	30	29	−15	−14
Dogmatism	08	08	−63ᵃ	−61ᵃ	10	10	31	30	−20	−18
Temper	30	30	−58ᵃ	−57ᵃ	−28	−27	02	02	18	17
Distrust	−15	−14	−52ᵃ	−50ᵃ	−11	−11	−33	−31	25	22
Greed	−26	−25	−51ᵃ	−49ᵃ	03	02	−09	−09	−14	−13
Dishonesty	28	26	−42ᵃ	−39ᵃ	−06	−06	11	11	00	00

Factor III: Conscientiousness

III+										
Industry	−11	−11	−13	−12	71ᵃ	70ᵃ	17	16	35	34
Order	−03	−02	−04	−03	68ᵃ	65ᵃ	−18	−17	01	01
Self-discipline	−30	−30	34	34	65ᵃ	64ᵃ	03	02	03	03
Evangelism	31	30	01	01	61ᵃ	58ᵃ	−07	−07	−25	−23
Consistency	−23	−23	−02	−02	59ᵃ	59ᵃ	45	43	−20	−19
Grace	27	26	23	23	59ᵃ	56ᵃ	−01	−01	14	13
Reliability	−05	−05	11	11	53ᵃ	51ᵃ	24	22	13	13
Sophistication	05	05	20	20	52ᵃ	49ᵃ	06	06	31	28
Formality	29	28	−25	−23	48ᵃ	45ᵃ	−15	−14	−17	−16
Foresight	00	01	14	14	49ᵃ	47ᵃ	16	15	44	41
Religiosity	−14	13	22	21	43ᵃ	40ᵃ	−10	−10	−21	−18
Maturity	−20	−18	17	17	35ᵃ	34ᵃ	31	29	11	11

Table 2 (continued)

	I		II		III		IV		V	
Factor pole/category	Com	Fac	Com	Fac	Com	Fac	Com	Fac	Com	Fac
Passionlessness	−11	−10	19	18	**31**ᵃ	**29**ᵃ	−13	−12	−23	−19
Thrift	−21	−19	17	16	**26**ᵃ	**25**ᵃ	09	08	13	12
III−										
Negligence	−04	−04	19	19	**−73**ᵃ	**−73**ᵃ	−10	−09	**−36**	**−35**
Inconsistency	−03	−03	05	05	**−62**ᵃ	**−61**ᵃ	**−50**	**−48**	−03	−04
Rebelliousness	13	12	**−54**	**−53**	**−55**ᵃ	**−55**ᵃ	09	09	**31**	**30**
Irreverence	−19	−18	−18	−17	**−53**ᵃ	**−50**ᵃ	08	08	28	25
Provinciality	−24	−23	06	05	**−53**ᵃ	**−49**ᵃ	08	07	−11	−10
Intemperance	16	14	−14	−14	**−44**ᵃ	**−42**ᵃ	−21	−20	−24	−22

Factor IV: Emotional Stability

	I		II		III		IV		V	
	Com	Fac	Com	Fac	Com	Fac	Com	Fac	Com	Fac
IV+										
Durability	−06	−06	−10	−10	−01	−01	**79**ᵃ	**77**ᵃ	01	02
Poise	**−37**	**−37**	**42**	**42**	14	14	**61**ᵃ	**60**ᵃ	−01	00
Self-reliance	16	15	14	14	14	15	**51**ᵃ	**49**ᵃ	**39**	**37**
Callousness	**−46**	**−45**	**−45**	**−45**	−06	−06	**48**ᵃ	**47**ᵃ	−07	−06
Candor	20	19	03	03	11	11	**43**ᵃ	**39**ᵃ	18	17
IV−										
Self-pity	−14	−14	−05	−04	15	14	**−81**ᵃ	**−80**ᵃ	−04	−05
Anxiety	25	26	−26	−26	05	05	**−75**ᵃ	**−74**ᵃ	−05	−06
Insecurity	**−31**	**−30**	−05	−05	−21	−21	**−69**ᵃ	**−67**ᵃ	−11	−12
Timidity	**−42**	**−41**	16	16	05	05	**−60**ᵃ	**−58**ᵃ	−07	−08
Passivity	−01	−01	**39**	**38**	16	15	**−55**ᵃ	**−53**ᵃ	**−30**	**−30**
Immaturity	15	14	22	21	−26	−26	**−52**ᵃ	**−51**ᵃ	**−42**	**−41**

Factor V: Intellect

	I		II		III		IV		V	
	Com	Fac	Com	Fac	Com	Fac	Com	Fac	Com	Fac
V+										
Wisdom	−02	−02	−10	−10	−06	−06	01	01	**75**ᵃ	**71**ᵃ
Originality	19	18	12	11	−09	−09	20	20	**70**ᵃ	**67**ᵃ
Objectivity	−05	−05	04	04	24	24	**46**	**44**	**60**ᵃ	**59**ᵃ
Knowledge	01	01	11	11	27	26	15	15	**60**ᵃ	**56**ᵃ
Reflection	**−43**	**−41**	15	14	−07	−07	**−32**	**−30**	**45**ᵃ	**41**ᵃ
Art	15	14	25	24	03	03	−08	−06	**42**ᵃ	**36**ᵃ
V−										
Imperceptivity	−18	−18	25	24	−21	−21	−17	−17	**−78**ᵃ	**−78**ᵃ

Note. All values equal to or greater than ±.30 are listed in boldface. These analyses are based on the standardized responses of 187 college students (70 men and 117 women) who described themselves using an inventory of 1,710 trait-descriptive terms. Decimal points are omitted. Com = components. Fac = factors.
ᵃ Highest factor loading of the variable in each analysis.

labeled Grace, Formality, Vanity, Sophistication, Order, Evangelism, and Religiosity (positive loadings) versus Provinciality, Irreverence, and Rebelliousness (negative loadings). When seven factors were rotated, the three Religiosity categories (Religiosity and Evangelism versus Irreverence) formed their own small factor.

Moreover, beyond these 7 factors, all additional ones were defined by only one or two variables (e.g., Thrift versus Intemperance, Sensuality versus Passionlessness), whereas the initial 7 factors remained nearly invariant across rotations of up to 13 factors. For this set of variables, then, the factor structures seem to be remarkably robust, regardless of the number of factors that are rotated. Thus, one can conclude from this first study that this five-factor structure seems to be nearly impervious to variations in the specific factor procedures that are used, and it

remains quite stable across variations in the number of factors that are rotated.

Factor structures are, however, known to be especially sensitive to the selection of variables under analysis (Peabody & Goldberg, 1989). Indeed, the structural representation displayed in Table 2 shows some anomalies when compared with analyses of other sets of variables. Some of these anomalies can be traced to the use of unfortunate terms as category labels; for example, the trait adjectives *conceited, vain,* and *unfriendly* (which normally are highly related to the negative pole of Factor II) were unfortunately used as the labels for categories that combine aspects of Surgency (Factor I) and Disagreeableness (Factor II). Nonetheless, although one should expect some differences in factor structures from study to study, the basic meaning of the factors must remain constant if they are to be

given the same labels. Specifically, to demonstrate the robustness of the Big-Five factor structure, it is necessary to show that the core variables associated with each factor (the factor definers in Table 2) play the same role when analyzed within other subsets of variables.

Study 2

Rationale and Method

For inclusion in other studies, Norman's 75 categories have two major disadvantages. In the first place, the 1,431 terms in that taxonomy are too numerous to be administered in a single testing session. In addition, all of the classification decisions were made by a single individual. To provide a more objective basis for such classifications, dictionaries and synonym finders were used to classify trait adjectives into clusters of quasi-synonyms. As the criteria for this sorting task, the terms in a cluster had to be independently judged by lexicographers as synonyms; in addition, their mean social-desirability ratings (Norman, 1967) had to fall within a reasonably narrow range. The result was a set of 133 synonym clusters based on 479 commonly used trait adjectives. These 479 terms, all of which had been included in the inventory of 1,710 trait adjectives (1,710-TDA), were augmented by some others to form inventories of 566 and 587 terms (for further details concerning the construction of these shorter inventories, see Goldberg, 1982).

Each of the 133 synonym clusters was treated as a personality scale. Separate factor analyses of these 133 variables were carried out within each of four samples, two of which provided self-descriptions and two of which provided peer descriptions. Sample D included the self-descriptions from those 187 subjects already described in Study 1, each of whom completed the 1,710-TDA. Sample C included 320 other college students who described themselves on the 587-TDA using the item format that was described in Studies 3 and 4 of Goldberg (1981b); four middle response options were provided (average or neutral, it depends on the situation, don't know, and term unclear or ambiguous), all of which were here given a midscale value of 0 on a scale ranging from −3 to +3. Sample A included 316 of the subjects from Sample C, who used the 587-TDA to describe someone of their sex and approximate age whom they knew well and liked. Sample B included 205 students in law school and in an upper-division psychology course, roughly one third of whom were randomly assigned to describe one of three types of peer targets: (a) "someone whom you know well and like as a person," (b) "someone whom you know well but neither like nor dislike," or (c) "someone whom you know well and dislike as a person." The targets were further specified in all three conditions to be "of the same sex as you are, and about your own age." Subjects in Sample B used the 566-TDA, with the same 8-step (transformed to 9-step) rating scale used by the subjects in Sample D. Ratings of the three types of targets were pooled in the analyses of Sample B.

Results

Self-ratings versus peer ratings. Because of space limitations, the findings from this study could not be presented in tabular form. Available from the author are the 133 variables analyzed in this study, including each of the terms in each cluster, the

coefficient alpha reliability estimates, and the mean correlations among the items. Because each of the clusters was designed to include only quasi-synonyms, they were all quite short (averaging fewer than 4 items each), and therefore their reliability coefficients would be expected to be low. The median of these alpha coefficients turned out to be .54, which is quite high for scales of this length.

Also available from the author are tables presenting the factor loadings from varimax rotations of five principal components analyzed separately in each of the four samples. Within each sample, the Big-Five factor structure emerged quite clearly. Tucker's coefficient of factor congruence (Harman, 1967, p. 257) was used as a quantitative index of the similarity between the factors derived in each of the four samples. The mean congruence coefficients across the five factors ranged from .86 (Samples B vs. D) to .94 (Samples A vs. C) and averaged .91. Moreover, the overall factor congruence between the two samples of peer ratings (.93) and between the two samples of self-ratings (.91) was not appreciably higher than that between the self and peer samples (.90).

Of more theoretical interest, however, intersample congruence varied substantially by factor; the values for Factors I, II, and III were all about .95, whereas those for Factors IV and V were both about .85. These findings, which replicate those reported by Peabody and Goldberg (1989) based on a set of 57 bipolar scales selected to be representative of common trait adjectives (Peabody, 1987), reflect the differential distribution of variables associated with each of the Big-Five factors. Specifically, within any pool of variables that is based on a reasonably representative sampling of the English lexicon of trait adjectives, there will be substantially more variables associated with each of the first three factors than with each of the last two. For example, within the set of 133 synonym clusters there were, on average, twice as many variables associated with each of Factors I, II, and III than with each of Factors IV and V.

What lies beyond the Big-Five domains? The design of this study permits a critical examination of the five-factor representation, both because of the relatively large number of variables under study and because the simultaneous analysis of four samples permits a direct test of factor replicability. Specifically, as progressively more factors are rotated, one can discover how many factors remain invariant across the four samples.

When additional factors were rotated in each of the four samples, the results paralleled those from the analyses of the 75 Norman categories in Study 1: The five original factors remained virtually invariant. Of even more significance, none of the additional factors replicated across the four samples. In three of the samples, Religiosity (Religious and Reverent) and Nonreligiosity (Nonreligious and Irreverent) loaded highly in opposite directions on one additional factor, but the other variables associated with that factor varied from sample to sample. In summary, then, this search for replicable domains beyond the Big Five was not successful.

Study 3

Rationale

The inclusion in the 479 set of some peripheral terms such as those tapping Religiosity and Nonreligiosity, the inelegance of

including among the 133 "clusters" a few single terms (for which there were no synonyms in the 1,710-TDA), and the low reliabilities of a few of the remaining clusters stimulated efforts to refine the set further. For this purpose, a new sample of subjects was used to develop a refined set of synonym clusters, and then two of the samples from Study 2 were used to provide independent evidence of their factor structure.

Derivation of the 100 Revised Clusters

As a first step, the 479 trait adjectives were ordered alphabetically and administered with instructions to describe oneself "as accurately as possible," using a 9-step rating scale where 1 = *extremely inaccurate as a self-description*, 5 = *I'm uncertain or the meaning of the term is unclear*, and 9 = *extremely accurate as a self-description*. Subjects in this study were 192 university undergraduates enrolled in an introductory course in personality who elected to complete a course-related battery of self-report measures for extra credit. Subjects responded to these measures semi-anonymously, using only numbers for identification. To correct for individual differences in their rating means and variances, the responses of each subject were standard (Z) scored across the items, and all analyses were carried out separately using both the original and the standard-scored response values.

For each of the original 133 synonym clusters that had been derived in Study 2, internal-consistency analyses were carried out separately within each data set. As would be expected, the clusters tended to be slightly more homogeneous when based on the original response values (M alpha = .55) than when based on the Z-scored data (M alpha = .48), demonstrating that part of the covariation in the original responses can be attributed to individual differences in usage of the rating scales. Consequently, the standard-scored data were used to cull out the least homogeneous items from each cluster, and in rare cases to add an item that had been excluded from another cluster. Through an iterative process, the least homogeneous clusters were eliminated, including all of the single items, and a few new synonym sets were formed.

The result is a set of 100 clusters based on 339 trait adjectives. Table 3 lists the terms in each of the clusters, as well as their coefficient alpha reliability estimates and mean item intercorrelations. Whereas the original 133 synonym clusters averaged 3.7 items, the corresponding length of the 100 revised clusters was 3.4. Moreover, as would be expected to occur in this derivation sample, the reliabilities of the new clusters were higher than the old ones; the mean alpha was raised from .55 to .66 (original responses) and from .48 to .61 (Z-scores), whereas the mean item intercorrelation was raised from .29 to .40 (original responses) and from .23 to .34 (Z-scores).

Five principal components were rotated by varimax separately within the original and Z-scored responses from this derivation sample, and clear versions of the Big-Five structure emerged; a table presenting both of these factor structures is available from Lewis R. Goldberg.

To provide independent replications of these factor structures, two of the data sets from Study 2 were used. The *self* sample included those 320 subjects in Sample C of Study 2 who used the 587-TDA to describe themselves. The *liked-peer* sample included a subset of 316 of those subjects (called Sample A in Study 2), who used the same inventory of 587 trait adjectives to describe someone of their own age and sex whom they knew well and liked.

Results

Table 4 presents the factor loadings from varimax rotations of five principal components separately in the *liked* and the *self* samples. The congruence coefficients between the corresponding factors in the two data sets were .97, .97, .97, .93, and .92 for Factors I through V, respectively. Moreover, when the factor scores based on the 100 clusters were related to those based on the original 133 synonym clusters derived in Study 2, the correlations were .99, .99, .98, .93, and .97 in the *liked* sample and .97, .98, .98, .93, and .96 in the *self* sample.

Clearly, then, the factors derived from the 100 clusters are virtually identical to those derived from the 133 clusters, even though the former are based on 140 fewer terms. Moreover, the 100 clusters provide essentially the same factor structure for self-descriptions as for descriptions of liked peers. And, finally, the factors displayed in Table 4 are nearly perfect examples of the Big-Five: Not only do each of the clusters load highly on the factor with which they are normally most highly associated, but instances of extreme factorial complexity are quite rare.

General Discussion

The major aim of this article has been to provide sufficient evidence to alleviate any qualms about the generality of the Big-Five structure. To this end, findings were presented to demonstrate factor robustness within a near-comprehensive set of 1,431 trait adjectives across a wide variety of factor-analytic procedures (Study 1), and within a representative set of 479 commonly used terms across samples of both self- and peer descriptions (Study 2). Moreover, in both studies it was possible to assess the overall dimensionality of the pool of common English trait adjectives by examining successively more factors beyond the initial five. In no case was any additional factor of any substantial size, and in Study 2 no additional factor demonstrated any significant amount of across-sample generality.

Consequently, it now seems reasonable to conclude that analyses of any reasonably large sample of English trait adjectives in either self- or peer descriptions will elicit a variant of the Big-Five factor structure, and therefore that virtually all such terms can be represented within this model. In other words, trait adjectives can be viewed as blends of five major features, features that relate in a gross way to Power, Love, Work, Affect, and Intellect (Peabody & Goldberg, 1989). These features are clearly dimensional, rather than categorical, in nature (Chaplin, John, & Goldberg, 1988). Moreover, it has been shown that it is possible to uncover a variant of the Big-Five structure from analyses of judgments of the semantic similarity among a representative selection of trait descriptors (Peabody & Goldberg, 1989).

Given that the Big-Five structure seems to characterize the relations among English trait adjectives, it is reasonable to try to discover its generality to other types of stimuli, as well as to other languages (Goldberg, 1981a). Although a preliminary taxonomy of common English trait nouns has been constructed

Table 3
The 100 Revised Synonym Clusters

Factor pole/cluster	Terms included	No. terms	α Raw	α Z	r̄ Raw	r̄ Z
I+						
Spirit	Enthusiastic, spirited, vivacious, zestful	4	.76	.71	.45	.38
Gregariousness	Extroverted, gregarious, sociable	3	.62	.58	.35	.31
Playfulness	Adventurous, mischievous, playful, rambunctious	4	.57	.55	.25	.24
Expressiveness	Communicative, expressive, verbal	3	.71	.67	.45	.40
Spontaneity	Carefree, happy-go-lucky, spontaneous	3	.64	.67	.37	.39
Unrestraint	Impetuous, uninhibited, unrestrained	3	.52	.49	.26	.24
Energy level	Active, energetic, vigorous	3	.75	.66	.50	.39
Talkativeness	Talkative, verbose, wordy	3	.68	.64	.42	.38
Assertion	Assertive, dominant, forceful	3	.61	.55	.34	.29
Animation	Demonstrative, exhibitionistic, flamboyant	3	.55	.48	.29	.24
Courage	Brave, courageous, daring	3	.71	.69	.46	.43
Self-esteem	Assured, confident, proud	3	.67	.65	.41	.38
Candor	Direct, frank, straightforward	3	.74	.73	.49	.48
Humor	Humorous, witty	2	.61	.58	.45	.42
Ambition	Ambitious, enterprising, opportunistic	3	.63	.54	.36	.28
Optimism	Cheerful, jovial, merry, optimistic	4	.71	.71	.38	.38
I−						
Aloofness	Seclusive, unsociable, withdrawn	3	.74	.68	.48	.41
Silence	Quiet, silent, untalkative	3	.80	.79	.57	.55
Reserve	Detached, reserved, secretive	3	.62	.55	.35	.29
Shyness	Bashful, shy, timid	3	.79	.77	.55	.52
Inhibition	Inhibited, restrained	2	.59	.58	.42	.41
Unaggressiveness	Unadventurous, unaggressive, uncompetitive	3	.56	.58	.29	.31
Passivity	Docile, passive, submissive	3	.60	.57	.34	.31
Lethargy	Lethargic, sluggish	2	.65	.49	.48	.33
Pessimism	Bitter, joyless, melancholic, moody, morose, pessimistic, somber	7	.79	.65	.35	.21
II+						
Cooperation	Accommodating, agreeable, cooperative, helpful, patient, peaceful, reasonable	7	.66	.68	.23	.25
Amiability	Amiable, cordial, friendly, genial, pleasant	5	.68	.68	.30	.30
Empathy	Considerate, kind, sympathetic, trustful, understanding	5	.72	.72	.36	.35
Leniency	Lenient, uncritical, undemanding	3	.50	.59	.24	.31
Courtesy	Courteous, diplomatic, polite, respectful, tactful	5	.75	.72	.39	.36
Generosity	Benevolent, charitable, generous	3	.59	.58	.33	.32
Flexibility	Adaptable, flexible, obliging	3	.45	.46	.21	.22
Modesty	Humble, modest, selfless, unassuming	4	.45	.48	.17	.19
Morality	Ethical, honest, moral, principled, sincere, truthful	6	.77	.74	.38	.35
Warmth	Affectionate, compassionate, sentimental, warm	4	.70	.66	.38	.34
Earthiness	Down-to-earth, earthy, folksy, homespun, simple	5	.49	.51	.16	.18
Naturalness	Casual, easygoing, informal, natural, relaxed	5	.57	.59	.21	.23
II−						
Belligerence	Antagonistic, argumentative, combative, quarrelsome	4	.78	.67	.47	.34
Overcriticalness	Faultfinding, harsh, unforgiving, unsympathetic	4	.66	.45	.33	.17
Bossiness	Bossy, demanding, domineering, manipulative	4	.73	.65	.41	.31
Rudeness	Abusive, disrespectful, impolite, impudent, rude, scornful	6	.75	.45	.34	.13
Cruelty	Cruel, ruthless, vindictive	3	.74	.55	.48	.29
Pomposity	Condescending, pompous, smug, snobbish	4	.71	.60	.39	.28
Irritability	Crabby, cranky, irritable, grumpy	4	.87	.82	.62	.55
Conceit	Boastful, conceited, egocentric, egotistical, vain	5	.83	.73	.50	.35
Stubbornness	Bullheaded, obstinate, stubborn	3	.64	.63	.38	.37
Distrust	Cynical, distrustful, skeptical, suspicious	4	.68	.60	.36	.28
Selfishness	Greedy, selfish, self-indulgent	3	.66	.57	.39	.30
Callousness	Cold, impersonal, insensitive	3	.72	.62	.47	.35
Surliness	Caustic, curt, flippant, gruff, surly	5	.79	.63	.44	.26
Cunning	Crafty, cunning, devious, sly	4	.76	.68	.45	.35

Table 3 (continued)

Factor pole/cluster	Terms included	No. terms	α Raw	Z	r̄ Raw	Z
Prejudice	Bigoted, prejudiced	2	.68	.59	.51	.41
Unfriendliness	Unfriendly, ungracious, unkind	3	.76	.65	.52	.38
Volatility	Explosive, tempestuous, volatile	3	.68	.56	.42	.31
Stinginess	Miserly, stingy	2	.67	.56	.51	.39
Deceit	Deceitful, dishonest, underhanded, unscrupulous	4	.69	.45	.35	.17
Thoughtlessness	Inconsiderate, tactless, thoughtless	3	.69	.60	.45	.34
III+						
Organization	Orderly, organized, systematic	3	.84	.84	.63	.62
Efficiency	Concise, exacting, efficient, fastidious, self-disciplined	5	.61	.62	.24	.24
Dependability	Dependable, reliable, responsible	3	.85	.82	.66	.60
Precision	Meticulous, perfectionistic, precise	3	.71	.68	.46	.42
Persistence	Industrious, persistent, tenacious, thorough	4	.59	.52	.26	.21
Caution	Careful, cautious	2	.70	.66	.54	.50
Punctuality	Prompt, punctual	2	.86	.87	.76	.77
Decisiveness	Decisive, deliberate, firm, purposeful	4	.53	.46	.22	.17
Dignity	Dignified, formal, mannerly	3	.51	.47	.27	.23
Predictability	Consistent, predictable, steady	3	.60	.64	.34	.38
Thrift	Economical, thrifty	2	.68	.70	.51	.53
Conventionality	Conventional, traditional	2	.57	.54	.40	.37
Logic	Analytical, logical	2	.45	.43	.30	.28
III−						
Disorganization	Disorganized, haphazard, inefficient, scatterbrained, sloppy, unsystematic	6	.80	.73	.41	.32
Negligence	Careless, negligent, undependable, unconscientious, unreliable	5	.78	.67	.43	.30
Inconsistency	Erratic, inconsistent, unpredictable	3	.50	.44	.25	.21
Forgetfulness	Forgetful, absent-minded	2	.80	.77	.67	.63
Recklessness	Foolhardy, rash, reckless	3	.70	.58	.44	.31
Aimlessness	Aimless, unambitious	2	.56	.57	.39	.40
Sloth	Lazy, slothful	2	.52	.41	.36	.26
Indecisiveness	Indecisive, wishy-washy	2	.49	.50	.33	.34
Frivolity	Extravagant, frivolous, impractical	3	.61	.53	.34	.27
Nonconformity	Nonconforming, rebellious, unconventional	3	.46	.43	.22	.20
IV+						
Placidity	Passionless, unexcitable, unemotional	3	.63	.49	.36	.23
Independence	Autonomous, independent, individualistic	3	.52	.46	.27	.22
VI−						
Insecurity	Defensive, fretful, insecure, negativistic, self-critical, self-pitying	6	.78	.70	.36	.27
Fear	Anxious, fearful, nervous	3	.61	.48	.34	.24
Instability	Temperamental, touchy, unstable	3	.66	.53	.40	.28
Emotionality	Emotional, excitable	2	.57	.44	.40	.29
Envy	Envious, jealous	2	.73	.71	.57	.55
Gullibility	Gullible, naive, suggestible	3	.58	.56	.31	.29
Intrusiveness	Intrusive, meddlesome, nosey	3	.71	.60	.46	.33
V+						
Intellectuality	Contemplative, intellectual, introspective, meditative, philosophical	5	.74	.71	.36	.32
Depth	Complex, deep	2	.63	.55	.46	.38
Insight	Foresighted, insightful, perceptive	3	.59	.56	.35	.31
Intelligence	Bright, intelligent, smart	3	.81	.76	.60	.52
Creativity	Artistic, creative, imaginative, innovative, inventive	5	.84	.81	.53	.47
Curiosity	Curious, inquisitive	2	.61	.56	.46	.40
Sophistication	Cosmopolitan, cultured, refined, sophisticated, worldly	5	.74	.74	.37	.36
V−						
Shallowness	Shallow, unintellectual, unreflective	3	.63	.51	.36	.25
Unimaginativeness	Uncreative, unimaginative	2	.84	.84	.74	.73
Imperceptiveness	Imperceptive, unobservant	2	.52	.41	.35	.26
Stupidity	Dull, ignorant, unintelligent	3	.59	.49	.33	.25
M		3.4	.66	.61	.40	.34

Note. The two estimates of internal consistency—coefficient alpha and the mean interitem correlation (r)—were based on the original (raw) and standardized (Z) responses of 192 college students who described themselves using an inventory of 479 terms.

Table 4

Varimax-Rotated Factor Loadings From the 100 Clusters in the Liked and the Self Samples

	Factor									
	I		II		III		IV		V	
Factor pole/cluster	Liked	Self	Liked	Self	Liked	Self	Liked	Self	Liked	Self
Factor I: Surgency										
I+										
Spirit	.70[a]	.63[a]	.27	.35	.05	.08	-.07	-.09	.10	-.01
Gregariousness	.70[a]	.73[a]	.07	.13	-.06	-.03	.03	-.07	.02	.03
Playfulness	.61[a]	.58[a]	.01	.01	-.18	-.17	.00	.04	.10	-.10
Expressiveness	.58[a]	.60[a]	.09	.05	.04	-.01	-.07	-.08	.19	.21
Spontaneity	.58[a]	.48[a]	.26	.29	-.28	-.21	.11	.03	-.07	-.16
Unrestraint	.55[a]	.55[a]	-.01	.01	-.32	-.14	.17	.07	.07	.09
Energy level	.54[a]	.60[a]	.09	.18	.19	.16	.18	.15	.06	-.09
Talkativeness	.53[a]	.58[a]	-.02	-.05	-.14	-.09	-.24	-.14	-.06	-.00
Assertion	.49[a]	.56[a]	-.46	-.33	.14	.15	.24	.28	.11	.09
Animation	.46[a]	.45[a]	-.16	-.14	-.21	-.14	-.07	.02	.08	.11
Courage	.40	.45[a]	-.04	-.03	.06	.06	.42[a]	.33	.10	-.09
Self-esteem	.48[a]	.51[a]	-.07	.08	.25	.24	.44	.38	.08	.07
Candor	.44[a]	.34[a]	-.01	-.10	.12	.03	.29	.29	.06	.17
Humor	.35[a]	.21[a]	.29	.07	-.12	-.04	.08	-.07	.14	.17
Ambition	.37[a]	.42[a]	-.06	-.10	.36	.28	.29	.15	.19	.21
Optimism	.59[a]	.47	.50	.59[a]	.08	.01	.09	.07	-.03	-.05
I-										
Aloofness	-.78[a]	-.71[a]	-.07	-.13	-.01	-.07	.01	.13	-.02	.05
Silence	-.78[a]	-.75[a]	.18	.10	.14	.11	.08	.14	.05	-.04
Reserve	-.66[a]	-.53[a]	-.02	-.08	.04	.03	.00	.17	-.02	-.05
Shyness	-.66[a]	-.66[a]	.35	.20	.06	-.01	-.19	-.18	-.06	-.18
Inhibition	-.59[a]	-.64[a]	.16	.08	.15	.12	-.13	.01	-.13	-.08
Unaggressiveness	-.57[a]	-.62[a]	.46	.19	-.06	-.21	-.11	-.14	-.10	.05
Passivity	-.48[a]	-.48[a]	.33	.28	.01	-.07	-.35	-.20	-.27	-.32
Lethargy	-.46[a]	-.28	-.06	-.12	-.26	-.30[a]	-.07	-.15	-.10	-.19
Pessimism	-.55[a]	-.52[a]	-.37	-.35	-.09	-.02	-.29	-.24	-.07	-.06
Factor II: Agreeableness										
II+										
Cooperation	.04	-.06	.77[a]	.72[a]	.25	.27	.13	.15	.00	-.13
Amiability	.32	.24	.61[a]	.60[a]	.04	-.02	-.11	-.08	.08	.07
Empathy	.17	.04	.74[a]	.70[a]	.21	.16	-.21	-.18	.06	-.07
Leniency	-.19	-.21	.63[a]	.49[a]	-.10	-.15	.24	.16	-.18	-.16
Courtesy	.00	.04	.55[a]	.48[a]	.37	.38	-.23	-.14	.18	.08
Generosity	.16	.03	.56[a]	.48[a]	.02	.04	-.04	.03	.14	.06
Flexibility	.13	.05	.55[a]	.54[a]	.15	.05	.12	.11	.04	.03
Modesty	-.30	-.39	.56[a]	.40[a]	.12	.11	.08	.02	-.05	-.16
Morality	-.10	-.09	.50[a]	.48[a]	.45	.24	-.05	.25	.10	.01
Warmth	.37	.19	.54[a]	.50[a]	.09	.08	-.37	-.44	.13	.00
Earthiness	-.03	-.11	.45[a]	.40[a]	.08	.08	.18	.12	-.21	-.32
Naturalness	.22	.19	.45[a]	.44[a]	-.17	-.09	.35	.37	-.06	-.19
II-										
Belligerence	.10	.22	-.74[a]	-.56[a]	-.02	-.12	-.14	-.07	.01	-.11
Overcriticalness	-.11	-.19	-.70[a]	-.67[a]	.01	-.07	.08	.08	-.14	-.03
Bossiness	.34	.40	-.68[a]	-.54[a]	.07	.15	-.09	.04	.00	.06
Rudeness	-.04	-.07	-.63[a]	-.53[a]	-.29	-.29	.26	.28	-.16	-.07
Cruelty	.02	.05	-.59[a]	-.46[a]	-.02	.03	.13	.12	-.22	-.27
Pomposity	-.04	.05	-.54[a]	-.50[a]	-.06	.00	-.15	-.07	-.10	-.12
Irritability	-.13	-.18	-.61[a]	-.42[a]	-.04	-.07	-.30	-.41	-.05	-.06
Conceit	.14	.16	-.64[a]	-.43[a]	-.16	-.21	-.02	.02	.03	.21
Stubbornness	.08	.12	-.57[a]	-.35[a]	-.07	-.15	.00	-.07	.04	-.03
Distrust	-.29	-.35	-.53[a]	-.49[a]	-.13	-.12	-.02	-.01	.05	.14
Selfishness	-.01	-.05	-.51[a]	-.44[a]	-.22	-.18	-.13	-.18	.04	.22
Callousness	-.38	-.32	-.50[a]	-.48[a]	.00	-.05	.33	.42	-.17	-.01
Surliness	.02	.09	-.44[a]	-.37[a]	-.08	-.10	.07	.08	-.26	-.34
Cunning	.18	.23	-.41[a]	-.35[a]	-.10	.12	.07	.05	.08	.08
Prejudice	-.04	-.03	-.44[a]	-.34[a]	-.09	.01	.08	.04	-.17	-.08
Unfriendliness	-.33	-.38	-.41[a]	-.38[a]	-.19	-.26	.28	.30	-.14	-.07
Volatility	.23	.29[a]	-.41[a]	-.23	-.10	-.17	-.20	-.26	-.06	-.12
Stinginess	-.32[a]	-.04	-.31	-.36[a]	.04	.04	-.03	-.07	-.06	.04

Table 4 (continued)

Factor pole/cluster	I Liked	I Self	II Liked	II Self	III Liked	III Self	IV Liked	IV Self	V Liked	V Self

Table header structure:

	Factor									
	I		II		III		IV		V	
Factor pole/cluster	Liked	Self	Liked	Self	Liked	Self	Liked	Self	Liked	Self
Factor II: Agreeableness (continued)										
Deceit	.09	.02	−.43ᵃ	−.31ᵃ	−.37	−.10	.08	.02	−.21	−.17
Thoughtlessness	−.15	−.04	−.49ᵃ	−.34	−.37	−.44ᵃ	.27	.21	−.24	−.14
Factor III: Conscientiousness										
III+										
Organization	−.09	−.08	.03	.02	.71ᵃ	.74ᵃ	−.02	.03	−.05	−.03
Efficiency	−.06	−.05	.03	.10	.75ᵃ	.73ᵃ	.19	.12	.10	.11
Dependability	.04	−.02	.31	.29	.67ᵃ	.61ᵃ	.12	−.02	.00	−.10
Precision	−.13	−.06	−.06	−.08	.54ᵃ	.62ᵃ	−.05	.09	.16	.14
Persistence	.13	.21	−.05	.00	.56ᵃ	.52ᵃ	.31	.24	.18	.15
Caution	−.26	−.24	.14	.10	.55ᵃ	.42ᵃ	−.13	−.02	.04	−.10
Punctuality	.00	−.07	.10	.08	.58ᵃ	.40ᵃ	.06	−.07	−.01	−.01
Decisiveness	.18	.19	−.09	−.02	.56ᵃ	.51ᵃ	.39	.36	.11	.06
Dignity	−.12	.00	.18	.05	.53ᵃ	.54ᵃ	−.18	−.18	.14	.02
Predictability	−.20	−.12	.20	.21	.49ᵃ	.48ᵃ	.30	.26	−.20	−.31
Thrift	−.22	−.10	.20	.10	.49ᵃ	.43ᵃ	.06	.13	−.16	−.09
Conventionality	−.21	−.15	.24	.09	.41ᵃ	.37	−.05	−.03	−.33	−.42ᵃ
Logic	−.11	−.14	.01	−.01	.45ᵃ	.30	.22	.34	.34	.39ᵃ
III−										
Disorganization	.05	−.08	−.02	.04	−.81ᵃ	−.81ᵃ	.00	−.02	−.04	−.08
Negligence	−.10	.03	−.22	−.12	−.75ᵃ	−.68ᵃ	−.04	.03	−.09	−.06
Inconsistency	.04	.09	−.22	−.17	−.55ᵃ	−.54ᵃ	−.19	−.12	.12	.21
Forgetfulness	−.10	−.09	−.05	.03	−.55ᵃ	−.49ᵃ	.00	−.15	−.01	.01
Recklessness	.20	.18	−.21	−.25	−.55ᵃ	−.47ᵃ	.01	.00	−.14	−.14
Aimlessness	−.31	−.26	.06	.12	−.50ᵃ	−.29ᵃ	−.07	.03	−.26	−.08
Sloth	−.20	−.26	−.15	−.10	−.46ᵃ	−.42ᵃ	.00	−.13	−.11	−.16
Indecisiveness	−.28	−.25	.04	.07	−.45ᵃ	−.45ᵃ	−.35	−.25	−.11	−.04
Frivolity	.14	.13	−.13	−.12	−.45ᵃ	−.40ᵃ	−.22	−.32	.06	−.01
Nonconformity	.11	.07	−.15	−.08	−.42ᵃ	−.33	.22	.24	.36	.39ᵃ
Factor IV: Emotional Stability										
IV+										
Placidity	−.49	−.37	−.09	−.14	.04	.03	.54ᵃ	.59ᵃ	−.06	−.09
Independence	.14	.04	−.07	−.09	.21	.09	.38ᵃ	.37ᵃ	.26	.31
IV−										
Insecurity	−.45	−.46	−.30	−.28	−.15	−.11	−.56ᵃ	−.53ᵃ	.02	.04
Fear	−.15	−.21	−.08	−.08	.01	−.02	−.55ᵃ	−.61ᵃ	−.05	−.08
Instability	−.20	−.16	−.42	−.27	−.17	−.15	−.53ᵃ	−.58ᵃ	−.06	.11
Emotionality	.37	.30	.21	.10	−.05	−.07	−.53ᵃ	−.59ᵃ	.08	−.02
Envy	−.03	−.11	−.26	−.30	−.12	−.01	−.49ᵃ	−.52ᵃ	−.10	−.15
Gullibility	−.15	−.08	.27	.27	−.22	−.20	−.37ᵃ	−.46ᵃ	−.32	−.18
Instrusiveness	.30ᵃ	.17	−.24	−.27	−.15	−.13	−.18	−.29ᵃ	−.12	−.22
Factor V: Intellect										
V+										
Intellectuality	−.27	−.21	.23	.14	.02	−.08	.09	.13	.64ᵃ	.71ᵃ
Depth	−.12	−.11	.11	.14	−.08	−.11	.02	−.02	.62ᵃ	.58ᵃ
Insight	.06	.00	.25	.14	.24	.18	.26	.07	.50ᵃ	.39ᵃ
Intelligence	−.05	−.01	.19	.08	.19	.06	.24	.08	.54ᵃ	.58ᵃ
Creativity	.09	.09	.13	.01	.02	.05	.10	.12	.59ᵃ	.55ᵃ
Curiosity	.21	.11	.01	.03	.00	−.13	.11	.00	.34ᵃ	.24ᵃ
Sophistication	.08	.15	.12	−.01	.26	.29ᵃ	−.15	−.01	.41ᵃ	.29
V−										
Shallowness	−.10	−.03	−.09	−.04	−.06	−.04	.04	.01	−.66ᵃ	−.67ᵃ
Unimaginativeness	−.23	−.16	.04	.09	.09	−.03	.09	.02	−.51ᵃ	−.49ᵃ
Imperceptiveness	−.20	−.17	.08	.13	−.23	−.20	.06	.08	−.49ᵃ	−.45ᵃ
Stupidity	−.27	−.28	−.08	.10	−.07	−.16	.00	−.05	−.49ᵃ	−.41ᵃ

Note. All values equal to or greater than ±.30 are listed in boldface. The values are based on subject-standardized responses in the liked (n = 316) and the self (n = 320) samples.
ᵃ Highest factor loading of each variable.

(Goldberg, 1980), no empirical analyses of these terms have been undertaken. On the other hand, analyses of Dutch trait nouns are already under way (de Raad & Hoskens, 1990), and the first analyses of German trait adjectives suggest that the Big-Five structure may well characterize the terms in that closely related language (Angleitner, Ostendorf, & John, 1990; Ostendorf, 1990).

When one turns from single terms to multiword statements, the picture is less clear. In some factor analyses of scales from one or more personality inventories, the investigators have interpreted their findings in terms of the Big-Five structure (e.g., Noller, Law, & Comrey, 1987), as have some reviewers (e.g., Digman, 1990; John, 1990), whereas other investigators have not (e.g., Zuckerman, Kuhlman, & Camac, 1988). However, only in studies in which markers of the Big-Five structure have been included is it possible to discover the actual degree of convergence. To solve this problem, Costa and McCrae (1985) have used questionnaire statements to construct a personality inventory (the NEO Personality Inventory [NEO-PI]) based on the Big-Five structure, and these investigators have been actively trying to assimilate the scales from a host of other inventories within the Big-Five framework (e.g., Costa, Busch, Zonderman, & McCrae, 1986; Costa & McCrae, 1988; McCrae & Costa, 1985, 1987, 1989).

In addition, the scales included in the NEO-PI have also been used as Big-Five factor markers in an extensive study by Borkenau and Ostendorf (1989). In a sample of 300 German adults, these investigators analyzed 36 scales, including the 5 from the NEO-PI, 14 from the Personality Research Form (PRF; Jackson, 1967), 11 from the Freiburger Personality Inventory (FPI; Fahrenberg, Hampel, & Selg, 1984), 3 from the Eysenck Personality Inventory (EPI; Eysenck & Eysenck, 1964), and 3 measures of response bias. Within this set of scales, the congruence with the Big-Five structure was exquisite: Factor I was defined by the Extraversion scales of the FPI, EPI, and NEO-PI; Factor II by Agreeableness (NEO-PI), Nurturance (PRF), Social Orientation (FPI), and Affiliation (PRF) versus Aggression (PRF and FPI); Factor III by Achievement (PRF), Conscientiousness (NEO-PI), Endurance (PRF), Order (PRF), and Achievement Orientation (FPI) versus Impulsivity (PRF); Factor IV by Emotionality (FPI), Neuroticism (EPI), Edwards's (1957) Social Desirability scale, Proneness to Stress (FPI), Somatic Complaints (FPI), and Irritability (FPI); and Factor V by Openness (NEO-PI) and Understanding (PRF).

The 100 new synonym clusters developed in Study 3 provide another set of Big-Five markers, which might now be included in future investigations. An inventory of the 339 adjectives used to score the 100 clusters is roughly the same size as the NEO-PI, and they both take about the same amount of time for self-descriptions. On the other hand, it should probably be easier to collect descriptions of a target from knowledgeable informants using the adjective inventory than using the NEO-PI. A description of the development of a number of more economical sets of adjective-based Big-Five markers is the topic of another report (Goldberg, 1990).

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