The Non-Evaluative Circumplex of Personality Adjectives

Gerard Saucier
University of Oregon
Fritz Ostendorf
Universität Bielefeld, Germany
Dean Peabody
Swarthmore College

ABSTRACT In judgments about personality, descriptive and evaluative aspects are ordinarily combined; separating them can be important both theoretically and practically. Study 1 showed that two similar descriptive factors can be found in analyses of personality terms, selected independently in English and in German and using different methods to control for evaluation. The factors relate to two pairs of independent axes suggested by previous work: Assertive-Unassertive and Tight-Loose, or alternatively, Interactional Orientation (Extraversion-Introversion) and Affective Orientation. These two pairs of axes are

Gerard Saucier, Department of Psychology, University of Oregon, USA; Fritz Ostendorf, Department of Psychology, University of Bielefeld, Germany; Dean Peabody, Department of Psychology, Swarthmore College, USA.

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Correspondence concerning this article should be addressed to Gerard Saucier, Department of Psychology, 1227 University of Oregon, Eugene OR 97403-1227. Electronic mail may be sent via Internet to gsaucier@oregon.uoregon.edu.

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shown to be rotations of each other, and to form the prime non-evaluative circumplex. As in previous studies, non-evaluative scales elicited higher levels of self-peer agreement than did more typical evaluation-confounded scales. Study 2 showed that adjective scales for the octants of this circumplex have circular ordering, can fit even very stringent constraints of a circumplex model, have mild to strong isomorphism with the interpersonal circumplex, but represent somewhat broader constructs, and are systematically related to the Big Five and the Big Three personality factors.

The British philosopher R. M. Hare observed that

> . . . there are two sorts of things that we can say, for example, about strawberries; the first sort is usually called descriptive, the second sort evaluative. Examples of the first sort of remark are, "This strawberry is sweet" and "This strawberry is large, red, and juicy." Examples of the second sort of remark are "This is a good strawberry" and "This strawberry is just as strawberries ought to be." (Hare, 1952, p. 111)

Statements about strawberries have some things in common with statements about persons. Any statement about personality can be separated conceptually into two aspects. First, most of the terms used to communicate personality judgments connote some degree of either approval or disapproval (Goldberg, 1981; Peabody, 1967), so that some evaluation of a person is implicit. Second, conceptually independent of the "evaluative" aspect, holding evaluation constant, there is a descriptive reference.

In the everyday use of personality language by adults, descriptive and evaluative aspects are typically combined. For example, each of the Big Five factors (Goldberg, 1993) confound the two aspects, in some degree. The same is true of the typical personality scale, although creators of scales may try to sharpen the descriptive element by lessening (e.g., Jackson, 1967) or, even more difficult, eliminating (e.g., Edwards, 1957) the evaluative aspect.

By contrast, in cognitive social psychology, evaluation is typically treated as the dominant factor in person perception. And, indeed, evaluation may be the prime element in person-description from an ontogenic standpoint: Ruble and Dweck (1995) review evidence suggesting that evaluation—a "global good-bad dimension"—is the "first stable disposition that young children become aware of" (p. 122). They recommend studies explicitly controlling for this dimension to more clearly

distinguish the timing and processes by which greater trait differentiation occurs. Thus, awareness of the separate contributions of evaluation and description may help to further integrate social and developmental psychology with the study of personality.

Awareness of these separate contributions can also prove valuable in practical contexts. For example, in counseling, the perceived personalities of partners in egalitarian relationships are often compared. Comparisons are more egalitarian—assuming each individual to be of equal worth—when made in non-evaluative terms (Saucier, 1994b). In general, a non-evaluative framework makes it easier to present results usefully to the actual person or persons being assessed, a principle amply demonstrated by the widespread use and popularity of the purportedly non-evaluative Myers-Briggs Type Indicator (Myers & Briggs, 1943/1962). Similarly non-evaluative comparisons can be made between ingroup versus outgroup judgments about the modal personalities of nations and cultures (Peabody, 1985), minimizing ethnocentric bias in studies of personality and culture.

Recent findings (Asendorpf & Ostendorf, 1998; John & Robins, 1993) indicate that non-evaluative scales, but not evaluation-confounded scales, have levels of self-peer agreement as high as those for peer-peer agreement. Thus, characterizations scored on non-evaluative scales might offer superior generalizability between self- and peer ratings. Here, non-evaluative constructs may have a predictive advantage, tending to elicit the most objective aspect of self-ratings. But the usefulness of separating description and evaluation in prediction contexts has been questioned (e.g., McCrae & Costa, 1983), on the grounds that removing the desirability component from ratings tends to decrease their validity coefficients. Indeed, the broad-bandwidth variable of "desirable versus undesirable personality attributes" is generally a useful, valid predictor, even in self-report where it could indicate only the respondent's accurate discernment of broad cultural norms. Partialing out desirability removes important substance, not just style. Accordingly, non-evaluative scales might be most applicable in assessment situations where accuracy (of which high self-peer agreement is an indicator) is important and the focus is not on highly desirable or highly undesirable attributes. Of course, if such attributes are the focus, one might simply add to the non-evaluative scales one or more broad-content scales that represent the evaluative aspect and that reinstate this predictively useful component. Because each of the Big Five factors has a considerable evaluative component,

and the favorable poles of the factors tend to be positively intercorrelated, one might easily conclude that the Big Five represents five ways of doing one thing: making what might be called moral judgments, character evaluations, or social rankings. The "one thing" all of the Big Five do appears to be captured in the evaluative component, which correlates with each of the five factors (Peabody & Goldberg, 1989; Saucier, 1994b). If we wish to isolate the other things personality judgments do, we ought to scrutinize the non-evaluative, descriptive components.

To be clear, we do not advocate the replacement of existing "confounded" personality models by a model in which evaluation and description are clearly unconfounded. Instead, we will show that a model of the latter type provides a complementary perspective and a viable alternative, with some advantages relative to the confounded models. The present studies trace the most robust features of that alternative, conceptualized as a non-evaluative circumplex that is readily obtainable in factor analyses of common personality adjectives in (at least) several major languages and that is also a useful rotation of more familiar factor structures.

What Are the Most Basic Descriptive Dimensions of Personality?

The foregoing considerations suggest some gain from being able to separate description and evaluation in personality judgments. But how does one determine the basic descriptive dimensions? The best evidence will satisfy the scientific criterion of replicability: An optimal set of factors would be stable within a sample and replicable across samples, even across samples in different nations using different languages.

Saucier (1997) reviewed evidence from studies of personality terms in nine languages and presented new evidence from familiar English-language adjectives, all of which tended to favor representations of either three or five factors among disposition terms. The five-factor representation is, of course, the well-known Big Five (Digman, 1990; Goldberg, 1993; John, 1990; Ostendorf, 1990a; Saucier & Goldberg, 1996; Wiggins & Trapnell, 1997). However, by a robustness criterion, there is a very strong case for three factors. Although Saucier (1997, 1998) found substantial robustness for a five-factor representation among disposition terms, he found that, by quantitative indices, the three-factor representation was markedly more robust and less affected

by variable selection. Moreover, lexical studies do not perfectly agree with regard to all five (or more) factors. But all lexical studies Saucier (1997) reviewed, spanning nine languages, agreed in finding variants of the first three of the Big Five factors—Extraversion, Agreeableness, and Conscientiousness.

Saucier's findings are backed up by a German lexical study (Ostendorf, 1990a). There, three-factor representations demonstrated high within-sample stability in both ipsatized (normalized or Z-scored, for each participant) and raw data, unlike representations of any other number of factors; the five-factor representations showed impressive stability in ipsatized data but were not as stable in raw data. Some lexical studies conducted in Italian (DiBlas & Forzi, 1998) failed to find the Big Five in five-factor solutions. These studies have, for reasons of parsimony and replicability, favored three- over five-factor solutions; Di Blas and Forzi (1999) have shown that circumplexes formed from three-factor solutions are much more evenly filled with descriptors and thus more circumplexical than are circumplexes formed from five-factor solutions (e.g., Hofstee, De Raad, & Goldberg, 1992). Peabody (1987; Peabody & Goldberg, 1989) provided evidence that the first three factors of the Big Five are typically larger than the latter two (Emotional Stability and Intellect) and that this pattern is more pronounced when the judgments involve either (a) a heterogeneous range of targets (e.g., both liked and disliked others) or (b) ratings of trait-inference, concept-similarity, or semantic relations rather than of actual persons. Three-factor representations seem more robust across types of personality judgments.

On average, each of these three factors is somewhat broader than the average Big Five factor (Saucier, 1997). Several studies (De Raad & Szirmak, 1994; Di Blas & Forzi, 1999; Saucier, 1997, 1998) indicate that the three factors do not correspond, either one-to-one or as rotational variants, to the well-known P-E-N model (Eysenck & Eysenck, 1975). They do correspond roughly to three-factor solutions in some recent large-sample studies of temperament structure, based on ratings of children age 3 and higher (Presley & Martin, 1994; Sanson, Smart, Prior, Oberklaid, & Pedlow, 1994). The Neuroticism (or Emotional Stability) factor does not seem as strong in ratings of other persons as it is in self-ratings (Saucier, 1998).

A three-factor representation of "confounded" dimensions would correspond to one evaluative and two descriptive "unconfounded"

dimensions.[1] That is, in three-dimensional space, if we place evaluation at the poles of the sphere, two descriptive dimensions should project along the equator. Indeed, as we shall show, the first three unrotated factors in ratings using personality adjectives tend to approach this positioning. It may be no coincidence, then, that separate lines of evidence suggest two prime descriptive dimensions, in Italian (Di Blas, Forzi, & Peabody, 2000) as well as in English. We will show that there are two basic descriptive dimensions replicable in English and in German. These dimensions can be rotated into either of two alternative axis positions. Taken together these axis positions form a circumplex.

Non-Evaluative Factors in Previous Studies

Peabody (1967) made the first attempts to define descriptive and evaluative dimensions among personality adjectives. The method involved a counterbalancing of descriptive and evaluative aspects. He selected sets of English adjectives that present both descriptive and evaluative contrasts. For example, Cautious differs from Bold, and Timid differs from Rash, in a way that is primarily descriptive rather than evaluative. But Cautious and Timid present primarily an evaluative contrast, as do Bold and Rash (see Figure 1). Personality scales of the typical sort would simply measure Cautious-Rash and Bold-Timid as two independent constructs, each of which confound description and evaluation. But when a number of sets like this one were analyzed, in a method that effectively controlled for evaluation, two descriptive dimensions were found repeatedly for trait inferences and for judgments about nationalities (Peabody, 1985). These descriptive dimensions can be labeled T/L (Tight/Loose; e.g., Thrifty and Stingy versus Generous and Extravagant) and A/U (Assertive/Unassertive; e.g., Bold and Rash versus Cautious and Timid). These two descriptive dimensions plus a dimension of general evaluation correspond to a rotation of either (a) the first three factors of the Big Five or (b) a Big Three model based on these factors: Factor I (Surgency; e.g., Bold vs. Timid), Factor II (Agreeableness; e.g., Kind vs. Unkind), and

1. One could conceivably, of course, propose two evaluative dimensions and one residual descriptive dimension. However, the two evaluative dimensions (labeled 1 and 2) could be readily collapsed into a single evaluative dimension (1+2 + vs. 1–2–) and the residual descriptive contrast (1+2 – vs. 1–2+). This principle would apply to the Positive Valence and Negative Valence dimensions proposed by Tellegen and Waller (1987).

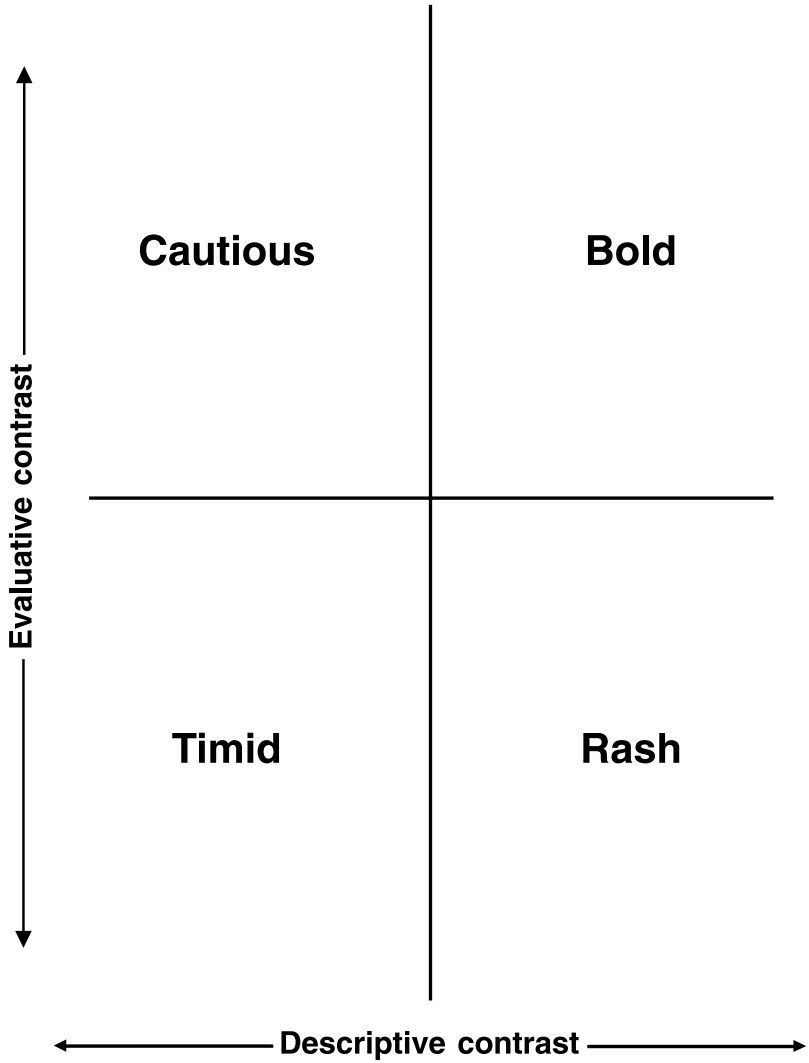

Figure 1
Example of evaluative and descriptive contrasts.

Factor III (Conscientiousness; e.g., Thorough vs. Careless) (Peabody & Goldberg, 1989).

Peabody had controlled for evaluation by using unrotated components (Peabody, 1967) or deliberate rotation (Peabody & Goldberg, 1989). Saucier (1994b) used two other methods to control for evaluation. In the

covariate method, he partialed social desirability values from the trait adjective variables and analyzed the covariances of the residual variables. In the neutral method, he restricted himself to trait adjective variables that were relatively neutral in evaluation.[2] Saucier found evidence for four descriptive factors, which could be understood as various evaluative heterogeneous blends[3] of Big Five factors. These four descriptive factors are nested within the Big Five, so they are susceptible to the effects of variable selection that contribute to the instability of the Big Five structure (Saucier, 1997). Much of the problematic between-study variation in Factor V (Intellect, Imagination, etc.) can be attributed to differences in variable-selection strategies and outcomes. The present studies will concentrate on the largest and most reliable of these dimensions, the first two, which Saucier (1994b) labeled as "Interactional orientation" (Io), related to Extraversion-Introversion (e.g., Talkative vs. Quiet), and "Affective orientation" (Ao; e.g., Emotional vs. Tough).

We propose that these first two dimensions of Saucier (1994b) can be interpreted as a rotational alternative to Tight-Loose and Assertive-Unassertive (Peabody, 1967, 1985). We propose that, taken together, the rotational alternatives form a circumplex. The proposed relations are illustrated in Figure 2, where the dimensions just reviewed are shown as defining eight octants of a circle; Saucier's labels are found on the diagonal positions, Peabody's on the vertical and horizontal positions.

Recurring patterns among previous unrotated factors derived from personality adjectives provide some prior support. In fairly representative selections of variables (e.g., Peabody & Goldberg, 1989), the first unrotated factor tends to represent general evaluation, possibly combined with the main descriptive tendency in the variables, which is often related to Factor II (Agreeableness). The second and third unrotated factors typically correspond to one of the two orthogonal alternatives in Figure 2—either to Io and Ao, or to T/L and A/U. The factors after rotation (e.g., by varimax), of course, generally correspond to

2. Actually, both methods tend to favor relatively neutral adjectives, the covariate method favoring them because such adjectives have greater commonality left after partialing out evaluation. In contrast, Peabody deliberately selected non-neutral adjectives.

3. Evaluatively heterogeneous blends involve the favorable pole of one factor with the unfavorable pole of another (e.g., high Agreeableness, low Conscientiousness) and are, on balance, typically fairly evaluation-neutral.

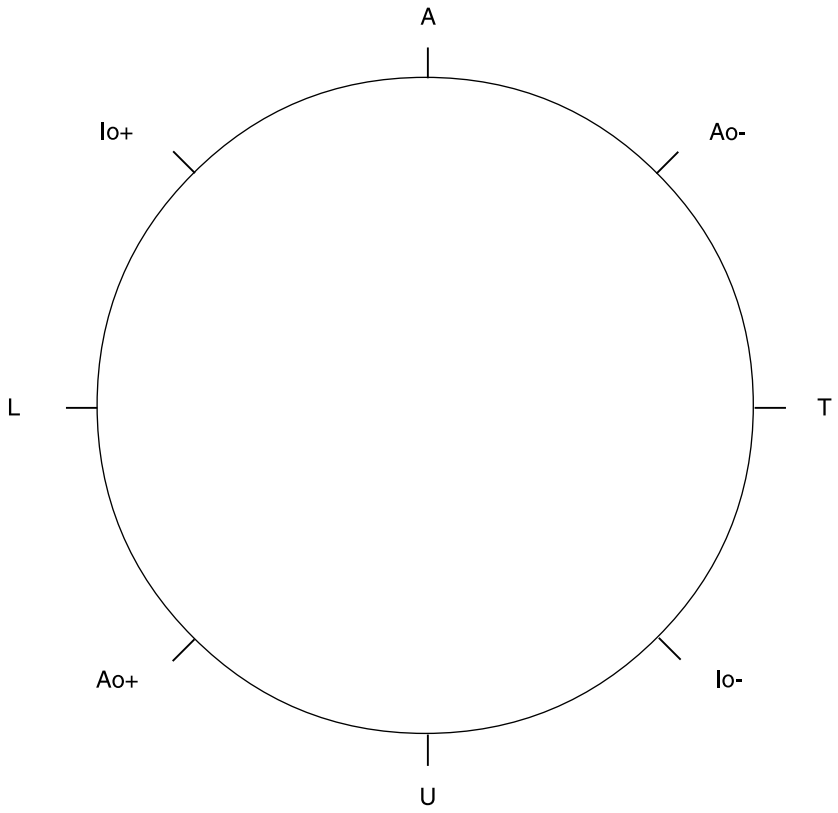

Figure 2
Circumplex representation showing proposed correspondence of Peabody's and Saucier's constructs.

factors that confound description and evaluation—for example, the Big Five when five factors are rotated.

HYPOTHESES

The preceding review suggests several hypotheses. First, analyses of representative sets of trait adjectives from the natural language, with some method to control for evaluation, will generate two factors that resemble either Peabody's T and A factors or the first two of Saucier's descriptive factors, Io and Ao; whichever of these pairs of factors the two factors do not resemble directly will be located midway between the two factors. Second, analyses using different methods of controlling for

evaluation will tend to converge on the same pairs of factors. By our third hypothesis, studies of adjectives selected independently in more than one language, with native speakers of each language as participants, will also tend to converge on the same factors. These three hypotheses were tested in Study 1.

Study 1

METHOD

American data. The derivation of a set of 520 adjectives has been described elsewhere (Goldberg, 1982, 1990). Here we make use of the subset of 435 familiar adjectives developed by Saucier and Goldberg (1996).

We analyzed data from two samples. The first, a Self sample, included 320 college students who described themselves. The second, a Peer sample, included 316 of the same college students who used the same inventory to describe someone of their sex and approximate age whom they knew well and liked.

German data. Personality descriptors in the German language have been examined in a multistage research project (Angleitner, Ostendorf, & John, 1990). Proceeding from these preliminary stages, Ostendorf (1990a) extracted the 430 terms that had been consensually classified into either of the two subcategories of "Dispositions: Temperament and Character Traits" and "Abilities, Talents, or Their Absence." "Attitudes and Worldviews" terms were classified into a separate category and were not included among the 430, in contrast to the American variable selection, which included a number of attitude-relevant adjectives (e.g., Traditional, Religious, Liberal).

Despite some specific differences, these 430 German terms seem generally comparable to the 435 used in the American data. For both selections, factor analysis with varimax rotation led to versions of the Big Five factor structure. In other words, independent and indigenous research projects in two different languages converged on the Big Five for the rotated "confounded" factors.

We used the same data sets employed by Ostendorf (1990a). Newspaper announcements were used to recruit 414 volunteer participants from a metropolitan area in northwest Germany. Each participant completed a self-report inventory including the selected 430 adjectives. Each participant was also sent a second inventory and instructed to pass this along to acquaintances or friends who would describe the same participant and independently mail the form back to the researcher. Forms were returned for 394 of the participants. In this study, we omitted participants with substantial percentages of missing responses, retaining 393 self-ratings and 382 acquaintance ratings. Of these self-ratings,

361 had corresponding acquaintance ratings, enabling us to compare validity of self-ratings for non-evaluative and evaluation-confounded scales.

Analytic strategy. Because previous studies had been conducted using adjectives in English, we began by examining the generalization of two- to four-factor structures to German. We tested the stability of two-, three-, and four-factor solutions among the 430 German adjectives, controlling for evaluation. We then compared the most stable solutions with those having similar numbers of factors in English to determine the extent and nature of replication of factor content. Our analyses (regardless of language) utilized either ipsatized ratings or desirability-partialed ratings. Ipsatization is standard scoring of participant responses (not of variables), so that each participant has a response mean of 0 and a response variance of 1.

The desirability-partialing procedure is part of the covariate method (Paulhus, 1981; Saucier, 1994b), which was our prime method of analysis. The covariate method removes differences in the evaluation of the targets of description. Desirability-rating means were available for both the English- (Hampson, Goldberg, & John, 1987; Norman, 1967) and German-language (Ostendorf, 1990b, 1994) variables. These means were derived by aggregating the social desirability ratings of multiple judges for each term, yielding a consensual normative value for each variable that has been shown to be highly predictive of self-ratings, especially means of self-rating samples (Edwards, 1966). These desirability means were partialed from the responses of each participant. In other words, the desirability means were employed as a predictor variable for each participant's responses across all terms, in a row-regression yielding residuals in which the ratings for each target have a zero correlation with social desirability. Because the covariance matrix has advantages over the correlation matrix with residualized data (Cudeck, 1989; Rosenberg & Olshan, 1970; Saucier, 1994b), the covariance matrix of residuals was factor analyzed, using the method of principal components followed by varimax rotation.

We began by dividing the set of German variables in half (by item number, odd versus even, the items already being in random order). This split of the variables enabled a check on the within-sample stability of the factor structure for both self- and peer ratings. Factor scores from the split halves of the variables were correlated with one another as an index of factor stability. As a useful comparison, we also examined unrotated solutions in both languages.

The effectiveness of the covariate method in producing evaluation-free factors was confirmed by a check of correlations between factor loadings and desirability values of variables. As had been found by Saucier (1994b, Table 3), these were all under .10; it is unsurprising that once a variable is partialed from data, factors extracted from the residuals are uncorrelated with that variable. In lexical studies of personality adjectives, the first unrotated factor tends to be closely related to general evaluation, with the succeeding unrotated factors

representing the largest non-evaluative dimensions. Loadings on the first unrotated factor in each data set were very highly related to desirability values; in the American data correlations were .93 (peer) and .94 (self), for the German data .97 (peer) and .95 (self). Because these first-unrotated-factor loadings correlated .93 and higher with desirability, and loadings on the next two factors generally had low correlations with desirability, there is some justification for interpreting these latter two factors as non-evaluative. Loadings on the second and third unrotated factors were in all cases correlated .08 or less in magnitude with desirability, with the exception that the second unrotated factor in German self-ratings correlated .22 with desirability. These findings suggest that the first unrotated factor can be a workable, if somewhat imprecise, stand-in for a desirability or evaluation factor.

RESULTS

Factor stability correlations for the German data were .96 and .96 for two factors, .97, .95, and .93 for three factors, and .94, .92, .80, and .76 for four factors. Thus the 2- and 3-factor solutions were more stable than that with four factors. Inspection suggested that the first two factors were similar between languages and similar to the first two factors found by Saucier (1994b).[4] In contrast, the third factors showed no such similarity between languages, nor with the other factors of Saucier (1994b). The four-factor solutions were the least stable and lacked clear one-on-one correspondence with Saucier's (1994b) four descriptive factors; these differences are probably attributable to differences in variable selection because, as already noted, attitude terms were excluded from the German selection, and one of Saucier's factors—Norm orientation—was highly constituted by such terms. Henceforth, we concentrate on the first two factors, which had the greatest cross-language generalizability.

Table 1 presents the six variables with the largest loadings on the each of the first two factors, as derived by the covariate method, from both American data (on the left) and German data (on the right). In addition, we include the highest-loading variables for the intermediate

4. Based on high-loading adjectives, the first two German factors might be interpreted as Io (Interactional orientation) and Ao (Affective orientation), replicating those of Saucier (1994b). But the third factor, contrasting Complexity/Irritability with Simplicity/Harmlessness, had no counterpart in Saucier (1994b), or in the three-factor covariate-method solutions in the American data, and in the American data these three-factor solutions differed noticeably in self- versus peer ratings.

Table 1
High-Loading Variables on Two Non-Evaluative Factors and Their Blends

American Data			German Data		
Term	Loadings		Term (translated)	Loadings	
A			*A*		
Confident	.39	.06	Determined	.27	–.25
Forceful	.41	.04	Articulate	.33	–.28
Aggressive	.58	.21	Combative	.25	–.26
Dominant	.52	.06	Dominant	.27	–.35
Rough	.42	–.09	Sly	.26	–.29
Domineering	.53	.07	Pretentious	.29	–.23
Io+			*Io+*		
Extraverted	.36	.47	Ebullient	.51	.03
Uninhibited	.28	.33	Pleasure-loving	.56	.16
Verbal	.28	.32	Impulsive	.52	.03
Mischievous	.24	.35	Fiery	.52	–.04
Talkative	.23	.52	Hot-blooded	.53	.04
Outspoken	.33	.28	Impatient	.51	.01
L			*L*		
Social	.15	.42	Generous	.25	.22
Happy-go-lucky	.02	.39	Extravagant	.24	.24
Impulsive	–.01	.38	Sentimental	.21	.45
Flirtatious	.13	.40	Emotional	.29	.34
Disorderly	–.05	.42	Playful	.43	.29
Disorganized	–.12	.48	Wavering	.31	.24
Ao+			*Ao+*		
Sympathetic	–.29	.15	Soft-hearted	–.04	.37
Feminine	–.53	.38	Dreamy	.08	.36
Sentimental	–.27	.17	Trusting	–.04	.38
Emotional	–.22	.26	Soft	–.03	.49
Gullible	–.44	.26	Unassured	–.14	.35
Indecisive	–.36	.19	Unambitious	.02	.35
U			*U*		
Meek	–.48	–.13	Mild-tempered	–.21	.36
Uncompetitive	–.42	–.04	Modest	–.35	.21
Unaggressive	–.67	–.18	Unaggressive	–.30	.23
Naive	–.42	.07	Tender-minded	–.22	.35
Submissive	–.46	–.07	Anxious	–.24	.27
Insecure	–.40	.07	Non-combative	–.33	.34

Table 1
(Continued)

American Data			German Data		
Term	Loadings		Term (translated)	Loadings	
Io- (UT)			*Io*- (UT)		
Quiet	–.42	–.47	Deliberate	–.39	–.02
Reserved	–.33	–.46	Self-denying	–.41	.03
Shy	–.60	–.43	Monosyllabic	–.42	.11
Silent	–.43	–.48	Reclusive	–.42	–.06
Bashful	–.52	–.32	Unsocial	–.55	–.07
Introverted	–.45	–.44	Taciturn	–.47	.16
T			*T*		
Orderly	.04	–.40	Self-disciplined	–.29	–.19
Organized	.06	–.45	Dutiful	–.30	–.16
Economical	–.04	–.35	Rationalistic	–.21	–.27
Precise	.11	–.34	Pushy	–.24	–.34
Systematic	.03	–.37	Miserly	–.28	–.21
Punctual	–.05	.33	Stingy	–.32	–.19
Ao- (TA)			*Ao*- (TA)		
Firm	.23	–.16	Ambitious	–.01	–.37
Decisive	.24	–.19	Know-all	–.05	–.39
Masculine	.48	–.30	All-knowing	–.04	–.38
Stern	.24	–.24	Domineering	.13	–.38
Rigid	.14	–.27	Power-driven	.05	–.40
Cold	.15	–.27	Dictatorial	.14	–.38

Note. Coefficients are covariances rather than correlations, based on rotated factors from social-desirability residuals. Several factors have been reflected. The labels are the same as those of Figure 1. A - Assertive, AL - Assertive-Loose, L - Loose, LU - Loose-Unassertive, U - Unassertive, UT - Unassertive-Tight, T - Tight, TA - Tight-Assertive, Io - Interactional Orientation, Ao - Affective Orientation. For each octant, variables are listed in order by desirability value, from the most to the least desirable attribute. Actual German terms were as follows (in order): *A*: durchsetzungsfähig, zungenfertig, kämpferisch, dominant, gerissen, groβspurig; *Io*+ (AL): temperamentvoll, vergnügungsfreudig, impulsiv, feurig, heiβblütig, ungestüm; *L*: freigiebig, spendabel, gefühlsbetont, emotional, verspielt, unbeständig; *Ao*+ (LU): weichherzig, verträumt, gutgläubig, weich, selbstzweiflerisch, ehrgeizlos; *U*: sanftmütig, bescheiden, unaggressiv, zartbesaitet, ängstlich, konfliktscheu; *Io*- (UT): bedächtig, enthaltsam, einsilbig, kontaktfeindlich, kontaktscheu, mundfaul; *T*: selbstdizipliniert, pflichteifrig, rational, streberhaft, knauserig, geizig; *Ao*- (TA): hochstrebend, superklug, allwiβend, herrschbegierig, herrschsüchtig, diktatorisch.

positions rotated 45 degrees from the factor axes. The resulting eight sets of variables can be considered as octants for a circumplex. The octants are arranged according to the model depicted in Figure 2, proceeding counterclockwise from A around to Ao- (or TA). For the American data, the two factor axes represented A/U (Assertive vs. Unassertive) and L/T (Loose vs. Tight). The alternative labels (Io and Ao) represent the intermediate positions. In the German data, the two factor axes represented Io and Ao, with A/U and L/T in the intermediate positions. Once an adjustment is made for the German and American factors being positioned approximately 45 degrees apart on a single plane, the general correspondence with Figure 2 is superb. Accordingly, we will henceforth label the Io and Ao octants using derivatives of T/L and A/U: Io+ as AL (Assertive/Loose), Io- as UT (Unassertive/Tight), Ao+ as LU (Loose/Unassertive), Ao- as TA (Tight/Assertive).

Similarities between the American and German octants are obvious in Table 1, partly because of cognate terms—Dominant (A) and Unaggressive (U) appearing in both data sets—and partly because of synonymous terms in corresponding octants, for example Sympathetic and Soft-hearted (LU), or Silent and Taciturn (UT).[5] But the similarities between the American and German octants tend to be at a broad, abstract level rather than a narrow, specific level. This might be expected, as this model represents a reduction of the content in personality descriptions to a mere two dimensions: Parsimony is achieved by recourse to a very broad level of reference.

Of course, there are inevitable problems in comparing results across languages. For example, it is difficult to make exact translations of single adjectives, matching favorability and familiarity as well as descriptive content. However, for the present task of interpreting broad factors the requirement is more limited; we need be concerned only with the overall correspondence between entire sets of terms. In this spirit, Table 1 provides English translations of the German descriptors.[6]

5. At a more molecular level, there are some differences in the content of the American and German octants. For example, although adjectives in the opposing LU octant seem highly similar, the American TA octant adjectives prominently include a theme of "toughness", whereas the German TA adjectives include more of a "power-driven" theme. It is tempting to speculate that this represents a difference between American and German cultures. However, the differences may be due to the age groups of the samples (college-age Americans vs. a wide range of adult Germans) or to differences in variable selection between the two samples.

6. These translations were contributed by the third author.

Unrotated Factors

As explained earlier, an alternative method for finding non-evaluative dimensions would make use of the unrotated factors. Table 2 presents the variables with the largest loadings on the second and third unrotated factors for the two data sets (self-ratings and peer-ratings), for each of the two nationalities.

Comparing the self- and peer ratings within each language, the self and peer factors are obviously highly similar, with a number of redundant terms among those with highest loadings. We find both divergent and convergent elements when comparing American and German versions of the factors. For the second factor in both data sets, we find A/U themes: adjectives like Domineering and Boastful opposed to those suggesting unaggressiveness. However, the American version has more L (Loose) content (e.g., Extraverted) at the assertive pole where the German has more T (Tight) content (e.g., Power-driven). For the third factor, both versions involve a Tight versus Loose contrast. However, the American version stresses the contrast between Big Five Agreeableness and Conscientiousness (i.e., Agreeableness vs. Conscientiousness; e.g., Emotional vs. Logical). The German version stresses more the extraverted (Io) aspects of Tight-Loose (e.g., Unspontaneous vs. Lively). Referring to the coordinates in Figure 2, we can say that the American version is a leftward rotation from the A/U and T/L benchmarks, whereas the German version is a rightward rotation. Thus, these unrotated factors seem to belong on the same plane or circle that is defined by Figure 2, and that is clearly reflected in the covariate method factors (Table 1). However, these unrotated factors are somewhat rotated from the covariate factors.

In general, the unrotated factors confirm the results obtained from the covariate method. There are some differences in rotational position, but the circumplex in Figure 2 helps us make sense of these differences.

Convergence of Self-Ratings and Peer Ratings

Previous studies (Asendorpf & Ostendorf, 1998; John & Robins, 1993) indicated that relatively non-evaluative scales have higher levels of self-peer agreement (relative to levels of peer-peer agreement) than is typical for evaluation-confounded scales. This finding might indicate special importance for non-evaluative representations of traits. We checked its replicability in the German sample. Six-item parcels

Table 2
Variables with Largest Loadings on Unrotated Factors

Self-Rating Factors		Liked-Peer-Rating Factors	
American Data: Second Unrotated Factor (blends of A and Io+ [AL])			
Dominant	.62	Aggressive	.67
Forceful	.59	Talkative	.60
Verbal	.58	Assertive	.59
Bold	.58	Bold	.59
Boastful	.57	Dominant	.57
Extraverted	.54	Domineering	.56
Domineering	.54	Unrestrained	.55
Assertive	.54	Extraverted	.54
Unaggressive	–.49	Timid	–.55
Quiet	–.47	Unaggressive	–.53
Shy	–.45	Bashful	–.52
Silent	–.42	Shy	–.52
Reserved	–.41	Silent	–.51
Bashful	–.38	Quiet	–.51
Introverted	–.37	Introverted	–.47
Passive	–.33	Withdrawn	–.46
American Data: Third Unrotated Factor (blends of Ao+ [LU] and L)			
Gullible	.49	Disorganized	.46
Indecisive	.44	Scatterbrained	.36
Disorganized	.43	Disorderly	.35
Emotional	.42	Careless	.34
Disorderly	.41	Inconsistent	.34
Sympathetic	.39	Emotional	.32
Impractical	.39	Gullible	.32
Forgetful	.38	Happy-go-lucky	.31
Precise	–.48	Thorough	–.54
Organized	–.47	Efficient	–.53
Logical	–.45	Precise	–.53
Systematic	–.44	Exacting	–.53
Unemotional	–.44	Organized	–.51
Perfectionistic	–.42	Firm	–.50
Thorough	–.42	Logical	–.49
Decisive	–.39	Stern	–.48
German Data: Second Unrotated Factor (blends of A and Ao- [TA])			
Self-important	.65	Domineering	.59
Pretentious	.61	Dominant	.58
Domineering	.61	Power-driven	.55
Bragging	.60	Sly	.55
Boastful	.60	Fame-greedy	.55
Sly	.60	Boastful	.53
Blustering	.58	Fame-addicted	.53
Swaggering	.57	Articulate	.52

Table 2
(Continued)

Self-Rating Factors		Liked-Peer-Rating Factors	
German Data: Second Unrotated Factor (blends of A and Ao- [TA]) (cont.)			
Modest	*–.39*	*Accommodating*	*–.40*
Peaceful	–.39	Unegoistic	–.36
Careful	–.38	Modest	–.33
Artistic	–.34	Unimaginative	–.31
Humane	–.32	Mild-tempered	–.29
Helpful	–.31	Peace-loving	–.28
Mild-tempered	–.31	Unselfish	–.26
Unaggressive	–.30	Selfless	–.25
German Data: Third Unrotated Factor (Io+ [AL])			
Lively	.53	Pleasure-loving	.60
Gregarious	.52	Lively	.56
Ebullient	.51	Ebullient	.55
Pleasure-loving	.51	Hot-blooded	.55
Social	.50	Gregarious	.55
Impulsive	.49	Fiery	.54
Uninhibited	.48	Social	.52
Impatient	.44	Impatient	.50
Unspontaneous	–.62	Unspontaneous	–.62
Unsocial	–.59	Retiring	–.61
Retiring	–.57	Unsociable	–.57
Unsociable	–.56	Meditative	–.54
Closed	–.56	Unsocial	–.53
Shy	–.56	Silent	–.53
Silent	–.55	Fastidious	–.52
Meditative	–.55	Thrifty	–.52

Note. The third unrotated factors (3u) have been reflected. A - Assertive, AL - Assertive-Loose, L - Loose, LU - Loose-Unassertive, U - Unassertive, UT - Unassertive-Tight, T - Tight, TA - Tight-Assertive, Io - Interactional Orientation, Ao - Affective Orientation. The actual German variables were as follows (in order): *Self-ratings, 2u*: wichtigtuerisch, groβspurig, herrschbegierig, aufschneiderisch, angeberisch, gerissen, groβmäulig, groβtuerisch; bescheiden, friedlich, rücksichtsvoll, musisch, menschlich, hilfsbereit, sanftmütig, unaggressiv. *3u*: lebhaft, gesellig, temperamentvoll, vergnügungsfreudig, kontaktfreudig, impulsiv, ungehemmt, ungestüm; unspontan; kontaktscheu, zurückhaltend, ungesellig, verschloβen, menschenscheu, schweigsam, bedachtsam. *Peer ratings, 2u*: herrschbegierig, dominant, herrschsüchtig, gerissen, ruhmbegierig, angeberisch, ruhmsüchtig, zungenfertig; nachgiebig, unegoistisch, bescheiden, ideenarm, sanftmütig, friedliebend, uneigennützig, selbstlos. *3u*: vergnüggungsfreudig, lebhaft, temperamentvoll, heiβblütig, gesellig, feurig, kontaktfreudig, ungestüm; unspontan, zurückhaltend, ungesellig, bedachtsam, kontaktscheu, schweigsam, penibel, sparsam.

representing non-evaluative constructs were those eight sets of German terms represented in Table 1. They were compared with (a) the six highest-loading terms on each pole of each of the Big Five factors in Ostendorf's analyses of self-ratings (Ostendorf, 1990a, Table 50 and Tables 52–56), and (b) the six highest-loading terms on each pole of the first unrotated principal component from self-ratings in those analyses reflected in the present Table 2.

The resulting coefficients are reported in Table 3. Self-peer agreement was slightly higher for the non-evaluative item parcels (mean *r* .56) than for the Big Five (mean *r* .52) and markedly higher than for the first-unrotated-principal-component (FUPC) item parcels (mean *r* .44). However, the reliabilities of the evaluation-confounded parcels (ranging from .70 to .89) were higher than those for the non-evaluative

Table 3
Self-Peer Validity Correlations for Non-Evaluative and Evaluation-Confounded Item Parcels

	Pole + α	S-P r	S-P r'		Pole – α	S-P r	S-P r'
Non-Evaluative 6-Item Parcels							
A	.66/.67	**.56**	.84	U	.61/.59	**.54**	.90
AL	.80/.84	**.61**	.75	UT	.74/.78	**.64**	.83
L	.65/.66	**.51**	.78	T	.63/.61	**.62**	1.00
LU	.50/.51	**.51**	1.00	TA	.67/.67	**.49**	.74
	Mean	***.55***	*.84*		*Mean*	***.57***	*.87*
Evaluation-Confounded 6-Item Parcels							
I+	.86/.87	**.67**	.78	I–	.88/.88	**.63**	.71
II+	.85/.88	**.45**	.52	II–	.80/.83	**.44**	.55
III+	.89/.89	**.61**	.68	III–	.75/.76	**.59**	.79
IV+	.63/.61	**.43**	.69	IV–	.79/.78	**.56**	.71
V+	.87/.87	**.40**	.46	V–	.85/.87	**.42**	.48
	Mean	***.51***	*.63*		*Mean*	***.53***	*.65*
FUPC+	.70/.71	**.49**	.69	FUPC–	.81/.81	**.39**	.48

Note. $N = 361$ targets of description, German sample. α is coefficient alpha, for self and then peer subsamples. S-P r is correlation between self and peer descriptions of the same target. S-P r' is this correlation corrected for attenuation due to the unreliability of the item parcels. The observed, uncorrected correlations are printed in boldface type. A - Assertive, L - Loose, U - Unassertive, T - Tight, I - Extraversion, II - Agreeableness, III - Conscientiousness, IV - Emotional Stability, V - Intellect. FUPC refers to the first unrotated principal component from the analyses reported in Table 2. I through V refer to Big Five factors.

parcels (ranging from .50 to .84). This suggests that if the non-evaluative parcels were made as reliable as the evaluation-confounded parcels (e.g., by scale lengthening), the advantage in self-peer agreement would become more dramatic. Correcting the correlations' attenuation due to unreliability provides a way of predicting whether the difference would increase if all the parcels had equal reliability. Therefore, attenuation-corrected self-peer *r* values are provided in Table 3. These corrected values should not be viewed uncritically: Perfect reliability is not practically attainable, and the necessary assumptions on which coefficient alpha is based could be violated by some or all of these item parcels. Holding aside these caveats about the correction, the disattenuated non-evaluative item parcels (mean r' .86) do assume a large advantage over the disattenuated Big Five (mean r' .64) and the FUPC (mean r' .59) item parcels. Thus we can predict that if non-evaluative and evaluation-confounded item parcels of equal reliability were compared, self-peer agreement would be markedly higher for the non-evaluative parcels. Thus, our results are consistent with those of Asendorpf and Ostendorf (1998) and of John and Robins (1993).

Summary

The proposed hypotheses were supported. First, analyses of representative sets of trait adjectives, with some control for evaluation, generated two factors resembling either Peabody's T and A factors or the first two of Saucier's descriptive factors, Io and Ao; whichever of these pairs of factors the two factors did not resemble were located midway between the two factors. Second, analyses using different methods of controlling for evaluation tended to converge on the same pairs of factors. Third, studies of adjectives selected independently in more than one language, and with native speakers in each language as participants, also tended to converge on the same factors. The convergences were made more intelligible by referring to a circumplex representation, which gave a clear account of differences in the rotational position of factor axes and thus helps integrate findings from previous studies.

Study 2

Study 1 indicated that, latent among the adjectives describing personality dispositions in two European languages, there is a common circumplex

along which descriptive denotations are not confounded with evaluative connotations. We call it the non-evaluative circumplex because of its recurrent nature: Its features consistently arise in solutions of only two broad factors when a method is used to control for evaluation. Moreover, its axes correspond to the robust second and third unrotated factors in lexical studies of English (Peabody & Goldberg, 1989; Saucier, 1998), Italian (Di Blas, Forzi, & Peabody, 1998), and German, and represent two of the three dimensions in the geometric space defined by the robust Big Three (Di Blas & Forzi, 1998, 1999; Saucier, 1997). Peabody (1967, 1985) found one expression of the circumplex: the T/L and A/U axes. Saucier (1994b) found another expression of it: the Io and Ao axes, about 45 degrees displaced from T/L and A/U. We have relabeled Saucier's Io as AL (Assertive-Loose) versus UT (Unassertive-Tight), and Ao as LU (Loose-Unassertive) versus TA (Tight-Assertive). To our knowledge, this report is the first to depict this circumplex.

Study 1 left unanswered several questions crucially relevant to this circumplex. First, how are the attributes on the circumplex to be measured so that the measurements are both non-evaluative and circumplexical? If we are to use adjectives, which adjectives should we include? How should our marker scales reconcile the variants of the circumplex octants we found in American versus German data? Second, just how non- evaluative and how circumplexical is this non-evaluative circumplex? Third, how does it relate to and compare to the highly influential interpersonal circumplex (Leary, 1957; Wiggins, 1980)? And fourth, how does it relate to other structural models of personality, such as the Big Five factors (Goldberg, 1993) and to the set of non-evaluative factors Saucier (1994b) found to be nested within the Big Five model? In Study 2, we looked for answers to these questions.

METHOD

Study 1 established the basis for a non-evaluative circumplex model but did not provide a way to measure the model. So one is left with two choices, analogous to a choice between a Cadillac or a Mercedes Benz. That is, we might choose to measure the circumplex based either on the American or on the German version of the octants. Although these two rather elegant models share very many features, there are also some differences.

We pursued a viable third choice, a "hybrid" of the Cadillac and the Mercedes. By differentially weighting item selection so as to favor those adjectives in the American octants having the closest equivalents in the corresponding German

octants, we generated a sort of robust hybrid. This strategy involved several steps.

The first step was to create evaluatively balanced initial scales for the octants of the circumplex. The six adjectives per octant that are listed in Table 1 were a starting point. In the American data, using Norman's (1967; Hampson, Goldberg, & John, 1987) social desirability values for the adjectives, the mean desirability of the six adjectives varies from octant to octant; for example the six in the U (Unassertive) octant refer mainly to undesirable attributes, whereas those in the T (Tight) octant refer entirely to desirable attributes. To correct this imbalance, four additional adjectives, strongly associated with the octant but having a desirability value that would tend to create a mean for the octant of about 5.00 on a 1-to-9 scale, were added to each octant. In the case of the T octant, five were added, and the weakest of the original adjectives (Punctual) replaced. The corresponding procedure was carried out in the German data set, using the adjective-desirability values of Ostendorf (1990b, 1994). This procedure led to sets of evaluatively balanced scales, made up of 80 terms in each language.

Unfortunately, each set of scales would reflect any idiosyncrasies within its respective language and data set. The second step was designed to cut away idiosyncrasies, so as to get at a common core of adjectives with equivalents in either language. To eliminate the possibility that our own biases might affect the results, we utilized sources that could have no investment in the outcome of the study. The 80 German terms were provided to one professional translator, with instructions to translate each into the three closest English equivalents. Another professional translator, working with another agency in another city 40 miles distant from the first, was given the 80 English terms, with instructions to translate each into the three closest German equivalents. The resulting translations were compared, looking for pairs of terms, one English and one German, that had been effectively back-translated. A back-translation would be when one translator, for example, gave the word "Modest" as an equivalent for the German word *Bescheiden*, and the other translator gave *Bescheiden* as an equivalent for "Modest." A parallel procedure was followed with a pair of German-English and English-German translating dictionaries (Betteridge, 1958; Springer, 1962), which had entries for most of the adjectives.

The translators created 13 back-translated pairs, the dictionaries created 13 as well, and the pairs back-translated by one method or another numbered 17. To the 17 was added the one cognate term (Unaggressive/Unaggressive) that lacked a dictionary reference. The 18 back-translated pairs included the adjectives Dominant and Shrewd (for A; Assertive); Reckless and Impulsive (for AL; Assertive-Loose); Emotional, Passionate, and Playful (for L; Loose); Sentimental, Soft, and Gullible (for LU; Loose-Unassertive); Meek,

Modest, and Unaggressive (for U; Unassertive); Reserved (for UT; Unassertive-Tight), Economical, Austere, and Strict (for T; Tight); and Decisive (for TA; Tight-Assertive).[7] A principal-factors analysis of these 18 terms in the American data from Study 1 indicated two factors with eigenvalues greater than unity, which after varimax rotation were readily labeled as T/TA and A/AL from the non-evaluative circumplex. Four "brief adjective" scales, of from 3 to 6 adjectives, were constructed from these 18 terms, one for each pair of opposing octants (e.g., A vs. U, AL vs. UT).

At the third step, reliable unit-weighted scales were created for each of the circumplex octants. In the American data, scores from the brief adjective scales were used as one set of reference axes, with the factor scores for the two covariate-method factors depicted in Table 1 providing a second set of reference axes. The full set of 587 adjectives available in the American data formed the pool of potential items. Three criteria were used in choosing items for these scales: (a) high correlations with one or both of the covariate-method factors and one of the brief adjective scales; (b) contribution to scale reliability; and (c) usefulness in correcting the mean desirability for the adjectives in the octant to the neutral level (about 5.00 on a 1-to-9 scale).

Table 4 provides information on the scales constructed by these criteria; the adjectives for each octant are listed in order from most to least desirable (based on Norman, 1967). The octant scales vary from 8 to 14 items in length, although alpha reliability coefficients are all roughly .70. Some octants (e.g., A; Assertive) are more homogeneous, others (e.g., T; Tight) more diffuse and heterogeneous. These scales were carefully constructed to be non-evaluative, and, indeed, their mean desirability values fall within a very restricted range: 5.04 to 5.27 on a 1-to-9 scale. For comparison, Big Five adjective scales (e.g., Saucier, 1994a) are likely to have mean desirability values between 6.00 and 8.00 on the favorable pole of the factor, and between 2.00 and 4.00 on the unfavorable pole of the factor.

Scales that control for evaluation with such precision are superior to methods that attempt to control for evaluation by identifying it with the set of means for the items, or latent variables, such as the first unrotated factor. These approaches are less useful because they tend to confound evaluation with certain descriptive content. The NEPC (non-evaluative personality circumplex) adjectives were used in Study 2 to provide a precise representation of the octants of the circumplex.

7. The German terms involved in these pairs were Dominant and Gewitzt (A), Impulsiv, Ungestuem, and Leichtsinnig (AL), Gefuehlsbetont, Emotional, Feurig, and Verspielt (L), Nachgiebig, Sanft, Weich, Leichtglaeubig, and Gefuehlvoll (LU), Bescheiden, Unaggressiv, and Sanftmuetig (U), Zurueckhaltend (UT), Streng (Gestreng) and Sparsam (T), and Entschlusskraeftig (TA).

Table 4
Non-Evaluative Personality Circumplex: Adjectives and Internal Consistency

Adjectives	Mean Desirability Value	Internal Consistency	
		Alpha	Mean *r*
A: Forceful, Bold, Shrewd, Cunning, Aggressive, Dominant, Demanding, Manipulative	5.13	.72	.24
AL (Io+): Extraverted, Talkative, Uninhibited, Impulsive, Unrestrained, Rambunctious, Mischievous, Reckless	5.17	.71	.23
L: Affectionate, Passionate, Playful, Romantic, Happy-go-lucky, Sensual, Emotional, Excitable, Flirtatious, Inconsistent, Impractical, Illogical, Unsystematic, Disorganized	5.13	.70	.15
LU (Ao+): Sympathetic, Warm, Sensitive, Sentimental, Soft, Overcompassionate, Dependent, Naive, Helpless, Gullible	5.27	.70	.20
U: Modest, Agreeable, Humble, Lenient, Bashful, Overtolerant, Meek, Unaggressive, Submissive, Uncompetitive	5.11	.74	.21
UT (Io-): Cautious, Controlled, Serious, Reserved, Restrained, Conservative, Conventional, Untalkative, Unsociable	5.11	.73	.23
T: Thorough, Efficient, Thrifty, Economical, Exacting, Meticulous, Perfectionistic, Strict, Unexcitable, Stern, Unemotional, Austere, Cold, Unaffectionate	5.04	.70	.14
TA (Ao-): Decisive, Brave, Strong, Firm, Independent, Tough, Overmasculine, Impersonal, Hard, Callous, Unsympathetic	5.13	.65	.15

Note. *N* = 636. A - Assertive, AL - Assertive-Loose, L - Loose, LU - Loose-Unassertive, U - Unassertive, UT - Unassertive-Tight, T - Tight, TA - Tight-Assertive, Io -Interactional Orientation, Ao - Affective Orientation. Mean social desirability based on Norman (1967) social desirability scale value of adjectives, on a 1-to-9 scale, 5 being neutral.

Data Sets

The sample used to derive the NEPC scales, described as American Data in Study 1, was used for a different purpose in this study: finding the relationships between the NEPC scales and both the Big Five and Saucier's (1994b) model of descriptive and evaluative factors. The Big Five was indexed by Goldberg's (1992) 100 unipolar markers, and Saucier's factors by a 60-adjective "briefer" inventory (Saucier, 1994b, Table 7). In both cases we used principal components factor scores from five-factor rotations in ipsatized data.

An additional "replication" sample consisted of 187 college students who completed an inventory of 1,710 personality adjectives (see Goldberg, 1982, 1990 for a description). The 1,710 adjectives included 76 of the 84 adjectives that make up the NEPC scales, incorporating the complete set used for four of the octants.[8] Except as noted, ipsatized ratings were used for the NEPC adjectives. The 1,710 adjectives also included all 64 of those making up the Interpersonal Adjective Scales (IAS-R; Wiggins, 1991), a commonly used measure of octants of the interpersonal circumplex. Indeed, this "replication" sample had functioned as a derivation sample for the original IAS (Wiggins, 1979).

We compared the NEPC and interpersonal models with respect to circumplexity, using several criteria (e.g., examination of the correlation matrix and formal confirmatory tests using model fitting programs). We tested fit with three circumplex models that varied in restrictiveness, the first two using CIRCUM (Browne, 1992) and the third using EQS (Bentler, 1995). In the least restrictive model, communalities and polar angles were unconstrained. In a more restrictive model, both communalities and polar angles were constrained to be equal. A very stringent model had the same constraints as the more restrictive model, but also constrained the loading magnitudes of the four axis octants (A, L, U, and T; one free parameter each) to be equal and loading magnitudes of the four between-axis octants (AL, LU, UT, and TA; two free parameters each) to be equal.[9] An analogous set of three circumplex models varying in restrictiveness was applied in a study by Gaines et al. (1997). As an index of fit, we used RMSEA (root mean square error of approximation); for RMSEA, values less than .05 suggest close fit and values less than about .08 suggest reasonable fit (Browne & Cudeck, 1992). We examined the fit of the NEPC octants in two samples (derivation and replication); the fit of the IAS-R could be examined only in the replication sample.

8. The missing adjectives were Romantic, Soft, Overcompassionate, Helpless, Overtolerant, Strong, Overmasculine, and Hard.

9. This model was fitted using EQS; the other two used CIRCUM. Detailed EQS program control information for this very stringent circumplex are available from the first author.

Using the same data set as our current replication sample, Wiggins and Holzmuller (1978) established that the two constructs (Masculinity, Femininity) developed in gender-stereotype research (e.g., Bem, 1974) were related to independent axes (Dominance, Nurturance) of the interpersonal circumplex. To compare the same gender-related constructs to the NEPC, we formed scales using the 11 Masculinity and the 15 Femininity adjectives (from Bem, 1974) found among the 1,710. We also examined point-biserial correlations between sex and the NEPC, both in the derivation and replication samples.

Finally, 164 of the 187 participants in the replication sample also completed the Personality Research Form (PRF; Jackson, 1967), a widely used measure of 20 manifest needs proposed by Murray (1938). Our hypothesis was that the NEPC, because it involves somewhat broader factors, would show higher overall correlations with the PRF than would the IAS-R.

RESULTS

Circular Ordering

At a minimum, the intercorrelations of scales that lie on a circumplex should show circular ordering. Circular ordering is manifested in the square intercorrelation matrix when the correlations follow an approximate "sine wave" pattern; reading down each column, or across each row, the values of the correlations predictably rise and fall such that, if their value is graphically plotted against their order, an approximate (though not perfect) sine wave appears. Although equidistant spacing is not a necessary element in the concept of a circumplex (Plutchik, 1997), the scales used to measure points on a circumplex are usually assumed to be equidistant from one another, and such is the case with the NEPC adjective scales. In the square correlation matrix, evidence of equidistant spacing is provided by reading along the diagonals, because with perfect equidistant spacing each diagonal will be a set of identical values (e.g., .40 down one diagonal, .00 down the next, –.40 down the next, –.70 down the next).

As Table 5 indicates, the NEPC scales show both circular ordering and a high degree of equidistant spacing. Because the empty main diagonal really consists of values of 1.00 for each scale's correlation with itself, each of the rows and columns demonstrates the sine-wave pattern. Moreover, each diagonal is fairly homogeneous in its values: about .40 for scales located one octant apart, .00 for those two octants apart, –.40 for those three octants apart, and about –.60 to –.70 for those four octants apart. Bold and italic print in the table highlights these patterns.

Table 5
Intercorrelations Among Non-Evaluative Personality Circumplex Octant Scales

	A	AL	L	LU	U	UT	T	TA
A		*.38*	–.07	*–.31*	**–.64**	*–.25*	.22	*.43*
AL	*.35*		*.37*	.04	*–.57*	**–.63**	*–.28*	.10
L	–.07	*.44*		*.44*	–.09	*–.33*	**–.63**	*–.35*
LU	*–.46*	–.07	*.40*		*.23*	.00	*–.33*	*–.49*
U	**–.68**	*–.47*	–.05	*.44*		*.45*	–.03	*–.32*
UT	*–.35*	**–.71**	*–.45*	.03	*.49*		*.39*	.14
T	.07	*–.41*	**–.66**	*–.33*	–.03	*.45*		*.47*
TA	*.46*	.03	*–.38*	**–.66**	*–.43*	.00	*.35*	

Note. Below the diagonal are intercorrelations from derivation sample ($N = 636$); above the diagonal are intercorrelations from a replication sample ($N = 187$). Correlations .50 and above in magnitude are printed in boldface type, those .23 to .49 in magnitude are printed in italics. A - Assertive, AL - Assertive-Loose, L - Loose, LU - Loose-Unassertive, U -Unassertive, UT - Unassertive-Tight, T - Tight, TA - Tight-Assertive.

NEPC scales are not only reasonably reliable and non-evaluative but also, by this informal criterion, circumplexical. How do the NEPC octants relate to the interpersonal circumplex, which demonstrates similar circular ordering?

The Interpersonal Circumplex

The top of Table 6 provides the intercorrelations of NEPC and IAS-R octants. The IAS-R octants are listed in clockwise order to facilitate their comparison with those of the NEPC. We direct our observations to four salient features of this 8 X 8 matrix.

First, most of the rows and columns demonstrate a sine-wave pattern, the only exceptions being in the U and TA columns (both involving JK, Unassuming-Ingenuous) and in the FG (Aloof-Introverted) row. This suggests some degree of isomorphism or interchangeability between the two circumplexes.

Second, values tend to be homogeneous in magnitude and direction as we read along the diagonals, providing further evidence of isomorphism.

Third, truly high (over .70) correlations and multiple correlations with the interpersonal circumplex are found for only two octants of the non-evaluative circumplex: A (Assertive; with PA, Assured-Dominant)

Table 6
Correlations of Non-Evaluative Circumplex Octant Scales With IAS-R Octant Scales and With Other Variables

	A	AL	L	LU	U	UT	T	TA	*R*
Interpersonal Adjectives Scales - Revised (Wiggins, 1991) (*N* = 187)									
PA	**.73***	**.36**	–.09	–.28	**–.60***	–.26	.28	**.50**	*.79*
NO	.27	**.53**	**.32**	.20	**–.33**	**–.39**	–.21	–.11	*.59*
LM	–.18	.04	**.32**	**.41**	.27	–.04	–.28	**–.33**	*.52*
JK	**–.49**	–.12	.08	.22	.24	.12	–.17	–.25	*.52*
HI	**–.63***	**–.56**	–.14	.10	**.77***	**.45**	–.01	**–.31**	*.82*
FG	–.16	**–.37**	–.29	**–.30**	.18	**.35**	.16	.13	*.53*
DE	.29	–.03	**–.35**	**–.49**	–.28	.05	**.32**	**.43**	*.58*
BC	**.58**	.22	–.09	**–.35**	**–.34**	–.21	.09	.26	*.62*
R	*.83*	*.64*	*.46*	*.57*	*.83*	*.52*	*.51*	*.65*	
Factor Scores from 100 Big Five Markers (Goldberg, 1992) (*N* = 636)									
I	**.57**	**.75***	.25	–.21	**–.68***	**–.72***	–.19	.26	.87
II	**–.42**	.08	**.33**	**.61***	**.41**	–.02	**–.33**	**–.45**	*.68*
III	.08	**–.30**	**–.55**	–.11	–.03	**.38**	**.64***	.24	*.71*
IV	–.04	–.05	**–.30**	**–.32**	.09	.14	.25	**.33**	*.51*
V	.12	.05	–.01	–.12	–.12	–.10	–.04	–.04	*.26*
R	*.72*	*.81*	*.75*	*.74*	*.81*	*.83*	*.78*	*.66*	
Factor scores from 60-item inventory for four descriptive factors and one evaluative factor (Saucier, 1994) (*N* = 636)									
Io	**.44**	**.74***	**.36**	–.06	**–.57**	**– .71***	**–.31**	.09	*.81*
Ao	**–.46**	.04	**.52**	**.78***	**.45**	–.06	**–.44**	**–.80***	*.90*
No	–.14	–.27	–.20	.16	.17	**.45**	**.30**	.00	*.53*
Of	.22	–.10	–.13	–.11	–.26	.07	**.32**	.01	*.51*
Ge	–.11	–.05	–.14	.04	.15	.14	.19	.12	*.35*
R	*.69*	*.80*	*.69*	*.81*	*.80*	*.86*	*.72*	*.82*	
Indices of Evaluation/Desirability (*N* = 636, except *N* = 164 for PRF Dy)									
SDR	–.06	.08	–.07	.11	.08	.04	.15	.02	*.34*
FUPC	–.03	.07	–.01	.04	.05	–.02	.01	–.03	*.15*
PRF Dy	.02	.02	–.08	.11	.00	.07	.09	.16	*.29*
Gender-stereotype adjectives (subset from Bem, 1974) (*N* = 187)									
F adjs.	–.25	–.02	**.44**	**.59**	.26	.06	–.28	**–.37**	*.65*
M adjs.	**.71***	**.34**	–.16	**–.39**	**–.57**	–.25	.28	**.53**	*.78*

Table 6
(Continued)

	A	AL	L	LU	U	UT	T	TA	*R*
Gender (man = 1, woman = 2)									
N = 187	–.25	.12	**.43**	**.58**	.06	–.08	**–.36**	**–.44**	*.65*
N = 636	–.15	.10	.28	**.35**	.07	–.11	–.17	**–.34**	*.42*

Note. *N* for each analysis is as noted. Correlations of .30 or greater in magnitude are printed in boldface type. * indicates correlations of .60 or greater in magnitude. *R* is multiple correlation, and *R*s are printed in italic type. Scale/factor abbreviations have the following denotations: PA: Assured-Dominant, NO: Gregarious-Extraverted; LM: Warm-Agreeable, JK: Unassuming-Ingenuous, HI: Unassured-Submissive, FG: Aloof-Introverted, DE: Cold-hearted, BC: Arrogant-Calculating, I: Extraverson, II: Agreeableness, III: Conscientiousness, IV: Emotional Stability, V: Intellect/Imagination, Io: Interactional-Orientation, Ao: Affective-Orientation, No: Norm-Orientation, Fo: Form-Orientation, Ge: General Evaluation, F: Femininity, M: Masculinity. SDR is an index of socially desirable responding, the correlation between (a) responses to all the adjectives with regard to a target of description and (b) the Norman (1967) social desirability scale values for the adjectives. FUPC is a 20-item scale developed from the first unrotated principal component of 540 adjectives in the derivation sample, criterion being this "FUPC" with the eight octant scales partialed out. PRF Dy is the PRF Desirability scale. The sex\gender variable is keyed such that a positive correlation indicates a greater association with women than with men.

and U (Unassertive; with HI, Unassured-Submissive). It appears that the NEPC's A/U axis corresponds rather closely to the interpersonal PA/HI (Assured-Dominant vs. Unassured-Submissive) axis. That is, *the vertical axis is essentially the same in either circumplex.*

Fourth, the L and T octants, the horizontal axis of the NEPC, are not strongly represented on the interpersonal circumplex, correlating no higher than .35 in magnitude with any IAS-R octant. Thus, the horizontal axes of the interpersonal and non-evaluative circumplexes are moderately correlated, but far from isomorphic. This suggests that if the IAS-R and NEPC scales were jointly factor analyzed, a useful solution would have three oblique factors—one for the vertical axes, one for the IAS-R horizontal axis, and one for the NEPC horizontal axis, with the latter two (horizontal-axis) factors being intercorrelated. Table 7, showing the results of a joint factor analysis, confirms this view. The first 10 eigenvalues were 4.89, 4.04, 1.52, 1.21, .70, .65, .51, .47, .44, and .34; a two-factor orthogonal solution blended factors 2 and 3 from the 3-factor solution into a single jointly-defined horizontal axis. In the three-factor

Table 7
IAS-R and NEPC Octant Scales: Joint Factor Analysis, Three Oblique Factors

Scale	Factor 1	Factor 2	Factor 3
IAS-R			
PA (Assured-Dominant)	**.82**	.10	.08
BC (Arrogant-Calculating)	**.53**	.28	.06
DE (Coldhearted)	.29	**.80**	.35
FG (Aloof-Introverted)	–.33	**.75**	.37
HI (Unassured-Submissive)	**–.82**	.24	.23
JK (Unassuming-Ingenuous)	**–.45**	–.16	–.12
LM (Warm-Agreeable)	–.20	**–.67**	–.29
NO (Gregarious-Extraverted)	**.48**	**–.69**	–.43
NEPC			
A (Assertive)	**.82**	.10	.08
AL (Assertive-Loose)	**.59**	–.27	**–.56**
L (Loose)	–.03	**–.45**	**–.71**
LU (Loose-Unassertive)	–.32	**–.54**	–.40
U (Unassertive)	**–.79**	–.06	.21
UT (Unassertive-Tight)	**–.45**	.23	**.61**
T (Tight)	.16	.34	**.79**
TA (Tight-Assertive)	**.47**	.38	**.47**
Factor Intercorrelations			
1			
2	–.01		
3	–.08	**.49**	

Note. $N = 187$. Structure coefficients derived from promax rotation (kappa = 4). Coefficients of .45 and greater in magnitude are printed in boldface type. IAS-R - Interpersonal Adjective Scales - Revised; NEPC - Non-Evaluative Personality Circumplex.

oblique solution, Factor 1 was defined primarily by the vertical-axis octants from both models, Factor 2 by the IAS-R's horizontal-axis octants, and Factor 3 by the NEPC's horizontal-axis octants. Factors 2 and 3 were correlated .49 with one another, but virtually 0 with Factor 1.

To synthesize these observations: The non-evaluative personality circumplex resembles the interpersonal circumplex at the vertical axis. At the horizontal axis, however, it adds content for conscientiousness and impulse control versus expression to the affiliation content found at the interpersonal horizontal axis. Adding such content has the effect of

turning an evaluation-confounded axis of affiliation (Warm-Agreeable) versus non-affiliation (Coldhearted) into an evaluation-neutral one: impulse-expressive, non-conscientious affiliation (Loose) versus impulse-controlled, conscientious, non-affiliation (Tight). The IAS-R has Big Five Extraversion near the vertical axis, and Agreeableness near the horizontal axis, and is fairly independent of the rest of the Big Five (Trapnell & Wiggins, 1990). The NEPC, in contrast, adds substantial Conscientiousness content to the horizontal axis. Accordingly, the relations of the two circumplexes are best understood by conceptualizing them in three dimensions, as part of a common sphere. This common sphere theoretically corresponds to that defined by the Big Three (e.g., Di Blas & Forzi, 1999).

Fit With an Ideal Circumplex Model

Fit indices for the confirmatory tests of circumplex models are provided in Table 8. Due to relatively large sample sizes (especially in the Derivation Sample), high chi-square values enabled the null hypothesis of perfect fit (RMSEA = .00) to be rejected for all the tests. The null hypothesis of close fit (RMSEA ≤ .05) could not be rejected for three tests, one involving the IAS-R and two involving the NEPC.

When raw, rather than ipsatized, data was employed, the IAS-R fit the less restrictive circumplex model (RMSEA = .077); using 90% confidence intervals, fit indices were significantly higher for more restrictive models or for ipsatized data. This suggests that the IAS-R can be fit to a circumplex model relatively well if the model imposed is not too restrictive (i.e., constraining communalities, angles, or loading magnitudes to be equal). Recently, using comparatively large samples, Gurtman and Pincus (2000) tested the IAS-R's fit to models corresponding to the less restrictive and more restrictive models we used and obtained RMSEA values very similar to ours. There, as well, the IAS-R's fit to the less restrictive model was better than to the more restrictive model; no counterpart to our "very stringent" model was applied.

The NEPC fit both the less restrictive and the more restrictive circumplex model with ipsatized data in the derivation sample (RMSEA values of .044 and .053). Fit indices were significantly higher for other tests, although fit was at least marginally good (RMSEA ≤ .111) for 7 of these other 10 tests. Notably, when ipsatized data were employed, the restrictiveness of the model had a relatively minor influence on the fit of the

Table 8
Circumplex Fit for NEPC and IAS-R Scales

Scale Set	Data Type	Circumplex Fit (RMSEA) Less Restrictive	More Restrictive	Very Stringent
Replication Sample (N = 187)				
Interpersonal Adjective Scales - Revised	Raw data	.077*$_a$	.117	.184
	Ipsatized data	.148	.133	.166
Non-Evaluative Personality Circumplex (based on 76 of 84 items)	Raw data	.131	.102	.183
	Ipsatized data	.111	.096*	.105
Derivation Sample (N = 636)				
Non-Evaluative Personality Circumplex (based on all 84 items)	Raw data	.083*	.076*	.145
	Ipsatized data	.044*$_a$	.053*$_a$	.079*

Note. RMSEA - Root mean square error of approximation. Less restrictive – communalities and polar angles not constrained to be equal. More restrictive – communalities and polar angles constrained to be equal. Very stringent – communalities, polar angles, and loading magnitudes (among axis and among between-axis octants) all constrained to be equal. * -RMSEA < .10. $_a$ - Null hypothesis of close fit (RMSEA ≤ .05) cannot be rejected (at $p < .05$); in all analyses, null hypothesis of perfect fit (RMSEA = 0) was rejected (at $p < .05$). IAS-R - Interpersonal Adjective Scales - Revised; NEPC - Non-Evaluative Personality Circumplex.

NEPC; RMSEA values for the very stringent model were .079 (derivation) and .105 (replication). For the very stringent model, fit of the NEPC in raw data was significantly lower, as was fit of the IAS-R in either raw or ipsatized data.

We may now compare the IAS-R and the NEPC. These model-fitting tests indicate that (a) the IAS-R and NEPC have comparable levels of fit to relatively unrestrictive circumplex models, (b) the NEPC has better fit to very stringent circumplex models, and (c) using ipsatized data seems to improve NEPC fit but not IAS-R fit.[10] Ipsatization, by removing

10. Fit for the NEPC in the replication sample could be lower due to missing items: In the replication sample the octants were defined by only 76, rather than 84, terms. But when octants defined by the same 76-adjective subset were used in the *derivation* sample (ipsatized data), the fit indices (RMSEA .044, .066, and .082 for less restictive, more

individual differences in response means that may be due to acquiescence, reduces the tendency of a correlation matrix to form a positive manifold; this tendency would reduce circumplex fit (though increasing fit with a simplex model). The NEPC was derived (in Study 1) using ipsatized data, whereas the IAS-R was not. The NEPC's apparent advantage with respect to stringent circumplex criteria may stem from its purely empirical rationale for construction. In contrast, the IAS-R was constructed, at least in part, to conform to the previously developed theory of the interpersonal circle.

The Big Five

We noted previously that the NEPC, in contrast to the interpersonal circumplex, has substantial Conscientiousness content at the horizontal axis. This supposition is confirmed by the comparison with the Big Five markers in Table 6. Conscientiousness (Factor III) is most highly correlated with the T (Tight) and L (Loose) octants that lie on the horizontal axis, but Agreeableness (Factor II) also is related to L and T. Using the correlations with A/U and T/L for orientation, and proceeding counterclockwise from T at 0 degrees, Extraversion is located at 109 degrees (in the upper left quadrant in Figure 2), Agreeableness at 233 degrees (in the lower left quadrant), and Conscientiousness at 355 degrees (on the right). These three factors are spaced approximately 120 degrees from one another (as in Peabody & Goldberg, 1989).

What about the other two Big Five factors? Intellect/Imagination (Factor V) had low correlations with the NEPC octants, the highest being along the axis defined by A (Assertive; .12) and U (Unassertive; –.12). It is possible, however, that these low coefficients mask the higher correlation of different aspects of Factor V, such as Imagination and Intellect correlating divergently with various octants. To explore this possibility, we correlated the octants with factor scores for three aspects of Factor V (defined by Saucier, 1994c, Table 1) in an analysis using the present "derivation" sample ($N = 636$).

The "creative" (Imagination) aspect was most associated with the AL/UT and A/U polarities (magnitude .15 to .20 correlations), indicating

restrictive, and very stringent models) were not significantly different. It appears, then, that replication-sample fit was lower because the NEPC octant scales had their circumplex characteristics optimized in another sample.

a location in the upper left quadrant of the NEPC. The "smart" (Intellect) aspect was most associated with the TA/LU and T/L polarities (magnitude .13 to .23 correlations), indicating a location in the upper right quadrant. The distinction between these two aspects corresponds to that between Expressive and Controlled Intellect (Peabody & Goldberg, 1989). Moreover, the association of these aspects with the upper quadrants is sensible given the overall positive correlation of Factor V with A (Assertive; e.g., Shrewd, Cunning), as opposed to U (Unassertive), in Table 6. But Factor V's third "contemplative" aspect was most positively associated with U, and negatively with A (again, correlations around .20), indicating a location at the bottom of the circle. Thus although Imagination and Intellect were moderately associated with quadrants in the upper half of the circle, Contemplativeness was moderately associated with the lower half. The inclusion of both relatively assertive and relatively unassertive aspects of Intellect within an aggregate broad factor (V) disperses its content around the circle and tends to wash out that aggregate's association with the NEPC octants. The subcomponents of Factor V appear to be more correlated with the NEPC than the overall factor is.

Big Five Emotional Stability (Factor IV) had larger associations with NEPC octants. In particular, T (Tight) and TA (Tight-Assertive) was associated with Stability, and L (Loose) and LU (Loose-Unassertive) with Instability. But, as was the case with Intellect, Emotional Stability content was well-dispersed around the circle. Among IV (Emotional Instability) adjectives, for instance, Fearful, Insecure, Nervous, and Envious were most highly associated with LU, and Emotional with L, consistent with the predominant direction of Factor IV's association with the octants. But terms like Argumentative, Quarrelsome, Impatient, and Irritable, representing more hostile and aggressive forms of emotional instability, were most highly associated with the A (Assertive) octant toward the other side of the circle.

Saucier's Descriptive Factors and Evaluative Factor

The correlations in Table 6 indicate the expected relations with Saucier's (1994b) descriptive factors. The AL (Assertive-Loose) and UT (Unassertive-Tight) NEPC octants were indeed very strongly associated with Saucier's Io factor. Moreover, the LU (Loose-Unassertive) and TA

(Tight-Assertive) octants were similarly strongly related to Saucier's Ao factor. Less expectably, Saucier's No (Norm-orientation) factor, which was orthogonal to Io (AL vs. UT) and Ao (LU vs. TA) in the earlier study (Saucier, 1994b), showed systematic correlations with certain octants, UT and T versus AL and L. Neither was Saucier's Fo (Form-orientation) factor entirely orthogonal to all the octants. These findings indicate that the non-evaluative personality circumplex is more broad and inclusive of descriptive content than would be a circumplex formed by only the first two of Saucier's (1994b) factors, though some aspects of No and Fo probably still fall outside the circle.

Saucier's (1994b) General Evaluation (Ge) factor correlated no more than .19 in magnitude with any octant. The correlations of an index of social desirable responding (SDR; explained in Table 6 Note) with the octants are even lower, and lack any coherent sine-wave pattern, providing clear support for the non-evaluativeness of the circumplex. However, several of the NEPC octant scales acted as suppressors with respect to one another in predicting these evaluative scales: That is, such octant scales were negatively correlated with one another, but both (slightly) positively correlated with the indices of evaluation. As a result, the multiple correlation of the octant scales with these indices was unexpectedly high—about .35.

Another evaluative scale was developed to minimize these effects. The criterion for this scale was factor scores from the first unrotated principal component (FUPC) in the full set of adjectives in Study 1, with scores on the eight NEPC octant scales partialed out. This scale is composed of 20 adjectives (a = .70), 10 for desirable attributes (Adaptable, Bright, Diplomatic, Eloquent, Empathic, Perceptive, Philosophical, Poised, Truthful, and Unselfish), and 10 for undesirable attributes (Aimless, Bitter, Condescending, Cranky, Defensive, Narrow-minded, Negativistic, Shallow, Unforgiving, and Unsophisticated). As Table 6 indicates, this "FUPC" scale had very low zero-order correlations with the octant scales and a low (.15) multiple correlation with them. Nonetheless, it was correlated .81 with SDR, .67 with Saucier's (1994b) Ge scale, and .79 with the (unpartialed) first unrotated component in the full set of adjectives.

Gender

The frequently studied gender-stereotypic facets of personality have been shown previously to be associated with the Dominance and Nurturance

axes of the interpersonal circumplex (Wiggins & Holzmuller, 1978). In our "replication" sample these associations were confirmed. The scale formed by 11 "masculine" (M) adjectives correlated .79 with the IAS-R PA (Assured-Dominant) octant, whereas the scale formed by 15 "feminine" (F) adjectives correlated .72 with the LM (Warm-Agreeable) octant. As Table 6 indicates, associations with NEPC octants were nearly as strong. M adjectives correlated .71 with the A (Assertive) adjectives correlated .59 with LU (Loose-Unassertive), and .44 with the neighboring L (Loose) octant.

Gender itself correlated with the octants in a pattern similar to that of F and of Agreeableness, though the magnitude of these correlations was higher in the replication sample (up to .58) than in the larger derivation sample (up to .35). Gender too might be located on the circle, although the projections seem not to be as strong as for gender-stereotypical attributes.

PRF Scales

Table 9 presents correlations with PRF scales. Multiple correlations with the NEPC octants for the 20 PRF scales based on Murray needs ranged from .29 to .73, whereas those with the IAS-R (rightmost column) ranged from .26 to .73. Although there was little difference in the range of these correlations, there were more differences in central tendency and the shape of the distribution. Comparing the sets of multiple correlations (NEPC vs. IAS-R), the NEPC octants had a higher mean (.48 vs. .41) and were less positively skewed (skewness .26 vs. .95). These findings are consistent with the view that, overall, the NEPC octants represent broader constructs. The NEPC octants had also a smaller standard deviation (.12 vs. .15), suggesting that they are more homogeneous than the IAS-R with respect to their breadth.

Comparison of multiple *R*s for individual PRF scales provides a more detailed picture. For three scales (Affiliation, Nurturance, Desirability), multiple *R*s with the IAS-R were distinctly higher, all three projecting most highly onto the NO (Gregarious-Extraverted) and LM (Warm-Agreeable) octants—close to the horizontal axis of the interpersonal circumplex. For seven scales (Impulsivity, Cognitive Structure, Harm-avoidance, Order, Succorance, Endurance, Change), multiple *R*s with the NEPC were distinctly higher: These scales all projected most highly onto

Table 9
Correlations and Multiple Correlations With Personality Research Form Scales

	NEPC									IAS-R
	A	AL	L	LU	U	UT	T	TA	*R*	*R*
Abasement	**–.32**	–.06	–.07	.08	**.36**	.10	–.07	–.22	*.47*	*.47*
Achievement	.09	.07	–.20	–.06	–.18	.01	.01	**.25**	*.37*	*.36*
Affiliation	.09	**.27**	.21	**.32**	–.03	–.21	–.18	–.18	*.46*	*.68*
Aggression	**.45**	.17	–.04	**–.25**	**–.49**	**–.33**	.11	.21	*.59*	*.55*
Autonomy	.01	.00	–.07	**–.40**	–.11	–.10	–.01	**.28**	*.51*	*.40*
Change	–.03	**.27**	**.27**	–.06	–.11	**–.28**	**–.31**	–.17	*.45*	*.32*
Cogn. Structure	.14	–.06	–.18	.17	–.01	.15	**.36**	.02	*.50*	*.28*
Defendance	.20	–.05	–.02	–.05	–.21	–.04	.08	.09	*.31*	*.37*
Dominance	**.63**	**.38**	–.08	–.23	**–.62**	**–.26**	.18	**.46**	*.73*	*.73*
Endurance	.12	.03	**–.32**	–.21	–.14	.02	**.33**	**.34**	*.45*	*.29*
Exhibition	**.44**	**.51**	**.27**	–.02	**–.51**	**–.51**	–.14	.04	*.65*	*.66*
Harmavoidance	–.07	–.19	–.01	**.33**	.15	.19	.10	–.24	*.48*	*.27*
Impulsivity	.05	**.44**	**.51**	.08	**–.30**	**–.49**	**–.46**	–.15	*.65*	*.28*
Nurturance	–.18	.03	**.25**	**.42**	.23	–.07	**–.29**	**–.40**	*.50*	*.63*
Order	.13	–.09	–.19	.14	–.02	.14	**.37**	.08	*.48*	*.28*
Play	.13	**.31**	**.35**	.06	–.18	**–.26**	**–.27**	–.18	*.45*	*.44*
Sentience	–.13	.10	.13	.11	–.02	–.11	–.20	–.02	*.29*	*.26*
Soc. Recognition	.12	.00	.01	**.26**	–.02	.06	.05	–.17	*.42*	*.33*
Succorance	.01	.08	.17	**.43**	.07	–.07	–.13	**–.40**	*.55*	*.37*
Understanding	–.01	.11	–.05	–.13	–.14	–.17	–.02	.11	*.30*	*.34*
Desirability	.02	.02	–.08	.11	.00	.07	.09	.16	*.29*	*.44*
Infrequency	–.14	–.07	–.02	–.02	.07	–.05	–.01	–.06	*.21*	*.27*

Note. $N = 164$. Correlations of .25 or greater in magnitude are printed in boldface type. *R* denotes multiple correlation. A - Assertive, AL - Assertive-Loose, L - Loose, LU - Loose-Unassertive, U - Unassertive, UT - Unassertive-Tight, T - Tight, TA - Tight-Assertive.

the T versus L (Tight vs. Loose) and TA versus LU (Tight-Assertive vs. Loose-Unassertive) octants on the NEPC, here close to the horizontal axis. Thus, although the NEPC represents somewhat broader constructs, its vertical axis is similar to that of the interpersonal circumplex, and most of the differences in external correlates stems from the differences in content at the horizontal axis.

DISCUSSION

Wiggins (1979) commented that a "set of interpersonal variables that did not differ in desirability (or did not reveal sex differences) would be a feeble representation of real-life categories of social perception" (p. 408). The non-evaluative circumplex (NEPC) variables do not meaningfully differ in desirability, yet they are clearly related to some interpersonal variables and do reveal some sex differences.

Moreover, this is not a feeble representation of personality traits. The NEPC represents two of the first three large dimensions along which personality adjectives differentiate. With regularity across at least the English, German, and Italian languages, these are the second and third unrotated factors in ratings using personality attributes. In lexical analyses, unrotated factors appear to be at least as robust as rotated factors (Saucier, 1998). And, if one takes steps to control for the evaluative element, as in Study 1 (and in Saucier, 1994b), they even appear in the rotated solutions. But there are four other ways in which the non-evaluative circumplex is a potent representation of basic personality dimensions.

Relation to Models of Psychopathology

First of all, the NEPC appears to be related not only to the interpersonal circumplex but also to circumplexes representing personality disorders. Plutchik (1997, Figure 3), Romney and Bynner (1997, Figure 2), and Soldz (1997, Figure 1) have represented personality disorders on all sides of a circle in a way that, with a little circular rotation in some cases, seems to project well onto the non-evaluative personality circumplex. Specifically, descriptive features of the Narcissistic, Antisocial, and Sadistic disorders might be associated with the top, assertive octants (around A) in Figure 2, whereas Avoidant and Self-Defeating disorders may be associated with the bottom, self-abnegating octants (around U). The Histrionic-Schizoid polarity may correspond to that of the octants AL (Assertive-Loose) versus UT (Unassertive-Tight). Dependent disorder has some affinities with LU (Loose-Unassertive). Obsessive-Compulsive has some affinities with T (Tight). Additional disorders of impulse control probably have higher projections on the non-evaluative circle than on the interpersonal circle because the NEPC contains more Impulse Control/Expression content, in particular at the horizontal axis,

where the themes include work versus play and achievement versus affiliation. Another problem with representing personality disorders with the interpersonal circle is that this circle, unlike the NEPC, is virtually devoid of Neuroticism content.

To arrive at a non-evaluative model of psychopathology one would ask, Assuming an equal level of maladjustment among a set of cases, what are the most important dimensions differentiating them? Circumplex models of personality disorders mentioned above address this question with two-dimensional models. So does the circumplex model of the Inventory of Interpersonal Problems (IIP; Horowitz, Dryer, & Krasnoperova, 1997, Figure 2), which, because a general factor of maladjustment is not represented, is also a sort of non-evaluative circumplex. Each octant of this circle is associated with a distinct tendency to problems, controlling for differences in levels of adjustment. The IIP circumplex, too, has some apparent correspondence with the NEPC. Indeed, on the NEPC, each octant of the circle could be associated with a tendency toward a certain sort of potential clinical problems, such as those suggested by the distinct unfavorable adjectives in each octant.

In sum, the NEPC provides a useful natural-language model for differentiating personality disorders and types of psychological problems from one another.

How Are Assets Related to Liabilities?

Another respect in which this circumplex is a potent representation of personality characteristics has to do with its unique perspective. In a work published in 1688, Jean de La Bruyere observed that "No vice exists which does not pretend to be more or less like some virtue, and which does not take advantage of this assumed resemblance" (La Bruyere, 1929, p. 97). In other words, sometimes, desirable attributes can be related to undesirable attributes, and vice versa. Such even-handedness goes against the grain of halo tendencies in social judgment and can open up potentially insightful alternatives that may be, as noted earlier, clinically useful.

An analogous form of even-handedness has been considered desirable through much of the interpersonal tradition. Early versions of the interpersonal circle (Freedman, Leary, Ossorio, & Coffey, 1951; La Forge & Suczek, 1955) attempted to include both adaptive and maladaptive (desirable and undesirable) features in all sectors of the

circle. This tradition was continued in Kiesler's (1983) interpersonal circle. Although maladaptive variants of love are certainly conceivable (cf. Horowitz, Dryer, & Krasnoperova, 1997), even-handedness proved to be difficult for the horizontal "Love-Hate" axis. Wiggins' version of the interpersonal circle improved the model's psychometric features partly by making the association of this axis with desirability less ambiguous. The non-evaluative circumplex represents a development in a different direction, in which one finds fuller realization of the ideal of equiprobability: On average, across persons, the likelihood of applicability of the aggregated descriptors in one octant is roughly equal to that for each of the other octants. The descriptors in each octant includes both adaptive and maladaptive elements.

Parsimony

A third strength is that the non-evaluative personality circumplex is a highly parsimonious model. Whereas the interpersonal circumplex explicitly involves only two of the Big Five personality factors (Extraversion and Agreeableness; Saucier, 1992; Trapnell & Wiggins, 1990), the NEPC involves three factors very clearly, and even Emotional Stability and Intellect have meaningful, if complex, projections on the circle. Average higher multiple *R*s with PRF scales indicate the relative breadth of the NEPC. The difference in breadth is not accidental: An interpersonal circumplex is derived by excluding a large number of variables not considered to be sufficiently interpersonal (e.g., Wiggins, 1979). The NEPC makes no such exclusions, being based on both the interpersonal and the excluded variables. Because it is based on such a broad domain, this is a highly parsimonious circumplex, capturing a wide spectrum of attributes in one empirically based representation.

Moreover, by model-fitting criteria, the NEPC clearly is a circumplex. Fit with an ideal circumplex model appears to be reasonably good even when very stringent constraints are imposed, and fit is substantially higher than that obtained in testing many personality models (Church & Burke, 1994). The interpersonal circle's fit with circumplex models appears good in less restrictive models but (at least based on present data) not as good when very stringent constraints are imposed.

Self-Report Accuracy

The coefficients in Table 3 lend support to a finding reported by other investigators (Asendorpf & Ostendorf, 1998; John & Robins, 1993). To the extent that the accuracy of a self-report is gauged by its correlation with peer reports of the same target, self-reports using the NEPC should be more accurate than self-reports using evaluation-confounded dimensions (e.g., the Big Five). Why might this be? Evidently, part of the discrepancy between self- and peer ratings of the same target is a difference in favorableness, including a possible systematic self-enhancement effect. Using carefully constructed non-evaluative item aggregates might cancel out this evaluative discrepancy. One limitation is that some trait dimensions probably cannot be measured non-evaluatively. Yet it may be that relatively neutral terms are used with more objectivity than evaluatively polarized terms, by self, by peer, or by both.

More broadly, self-peer discrepancy on the evaluative component may reflect the lack of consensus in many human groups as to hierarchy, that is, social ranking. Brison (1992) documented how gossip processes make it chronically difficult for individuals to maintain high-rank leadership positions in a Papua New Guinea village. Hutson (1971) noted that inhabitants of a French Alpine village "rank each other" but among them "there is no consensus" (p. 49) as to the rankings: Each person maintains a different version of the ranked hierarchy. She concluded that ranking processes represent a verbal form of "competitive bidding for prestige" (Hutson, 1971, p. 49) in which, due to equality norms, one person's claims to high social standing are unlikely to be supported by other persons. If favorable ratings on personality measures are, in part, claims to high social standing, the evaluative component probably best captures this aspect, and disagreements on evaluation may reflect the processes to which Brison and Hutson refer.

Whatever its cause, higher self-peer agreement for non-evaluative scales could have important practical consequences. In situations where one wishes to assess stylistic aspects of personality (e.g., dominance, extraversion, impulsivity, emotionality, sensitivity) rather than aspects of well-adjustedness, and where one is limited to self-report data, scales that are explicitly evaluatively balanced may offer superior fidelity.

CONCLUSIONS

In these studies, analyses of representative sets of trait adjectives, with some control for evaluation, generated two factors resembling either Peabody's T and A factors or the first two of Saucier's descriptive factors, Io and Ao. The two sets of factors were shown to be reconciled in a single circumplex. Similar factors, or divergent sets of factors reconcilable in the circumplex, appeared across different methods of controlling for evaluation and across two languages (German and English).

We call this the non-evaluative circumplex and propose that it is a recurrent feature of the structure of personality attributes. Its features consistently arise in solutions of only two broad factors when a method is used to control for evaluation. Evaluatively balanced, reasonably reliable adjective scales were developed for each octant of the circumplex, based on features of the American circumplex that most resembled those in the German circumplex. The NEPC octant scales demonstrated appropriate circular ordering and reasonably good fit with the constraints of circumplex models. We found them to be partially isomorphic with octant scales for the interpersonal circumplex and to reflect systematic patterns of intercorrelation with the Big Five factors and the scales of the Personality Research Form.

Future research might be directed toward articulating the circumplex more clearly within three- and five-factor models of personality and determining its cross-cultural generality beyond those languages in which its existence is already well documented. In this respect, it would be useful if future lexical studies in diverse nations reported unrotated, as well as rotated, factor structures. In another direction, further investigations might indicate whether the circumplex provides a useful template for integrating personality structure with circular models of personality disorders, psychological problems, or both. They might also investigate the sources of the self-report validity boost for non-evaluative scales.

By indicating necessary content features for an adequate model of personality attributes and parsimonious structures for those attributes, the lexical approach has made a vital contribution to personality psychology. The present studies document some little-noticed regularities in lexical factor structures that generate a model conspicuous for its conceptual clarity, parsimony, and replicability.

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