

Data sets from seven original trait taxonomies from different languages, American English, Dutch, German, Hungarian, Italian, Czech, and Polish, are used for a cross-cultural study. The taxonomic procedures, involving culling trait terms from the various lexicons and the construction of representative samples of trait terms, are briefly discussed. Factor structures, presumably Big Five structures, within these languages, based on ratings from an average of about 640 subjects on an average of approximately 430 trait variables per language, are used for comparison. Congruence coefficients are calculated for the corresponding factors in the different languages, based on their independent positions and on their positions after rotations, using the American English solution as target. In a relative sense, the congruences show replicability of the first four American English, Big Five factors in the other languages.

LINGUA FRANCA OF PERSONALITY

Taxonomies and Structures

Based on the Psycholexical Approach

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What do we learn when we read in the psychological literature that in various languages or cultures the Big Five personality trait factors have been recovered? The somewhat presumptuous message seems to be that the Big Five factors of personality have universal potential. If true, that could be a finding with revolutionary impact in certain areas of psychology because the longtime search for basic trait factors necessary to constitute broadband personality questionnaires could come to an end. How much of the message

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reflects valid information, and how much reflects mere rhetoric? Has the ultimate proof of the Big Five taken place? And, what are the Big Five?

The Big Five (Goldberg, 1981) personality trait factors, named Extraversion, Agreeableness, Conscientiousness, Emotional Stability, and Intellect/Autonomy/Creativity, are basic trait factors that are supposed to capture the gamut of meanings of personality characteristics. These factors summarize, on an empirical basis, the findings of an enterprise with international status that purports to give full account of the language of personality traits. This enterprise started with the pioneering work of Allport and Odbert (1936) and Cattell (1943) and was guided by the idea that all significant individual differences are embodied in language. This rationale was already stipulated by Allport and Odbert (1936) who wrote:

Linguistic symbols have demonstrated utility; they have been tested throughout the ages for their power of representing stable facts of experience. . . . If traits exist at all, it is natural and proper to name them. . . . Naturally, the more often a disposition . . . is encountered in the population, the more chance it has of being christened. (p. 19)

This rationale, summarized by Cattell (1943) as the necessary assumption that "all aspects of human personality which are or have been of importance, interest, or utility have already become recorded in the substance of language" (p. 483), has obtained its most popular phrasing in the so-called lexical hypothesis articulated by Goldberg (1981):

Those individual differences that are of most significance in the daily transactions of persons with each other will eventually become encoded into their language. The more important is such a difference, the more people will notice it and wish to talk of it, with the result that eventually they will invent a word for it. (pp. 141-142).

Saucier and Goldberg (1996) provide an elaborate discussion of the rationale of the psycholexical approach.

The explicit and ultimate aim of the psycholexical approach, in concordance with the lexical hypothesis, is to arrive at a specification of a trait domain that virtually exhausts the universe of traits and enables a representative selection of traits for practical and theoretical usage. Ideally, trait psychologists should have available the entire lexicon of personality traits, enabling all-inclusive coverage of the gamut of individual differences. Different routes are possible to achieve this goal, all falling within the confines of the psycholexical approach, such as extracting terms from dictionaries and other documents of written or verbal discourse (e.g., books, letters, audiotapes, films) and from free descriptions and free associations. The psycho-

lexical approach, in the tradition of Allport and Odbert (1936), has used the dictionary as the only tangible sediment of the lexicon. The advantage of using a dictionary over other forms of lexical compilation is twofold: (a) dictionaries are taken to be complete with respect to actual usage and (b) they have been under systematic surveillance by generations of lexicographers.

The vocabulary of trait names constructed by Allport and Odbert (1936) forms a fair first approach of what such a trait lexicon might look like. Their list of 17,953 trait names is lengthy and overinclusive, as a first full listing should be, and it comprises all the terms that have "the capacity . . . to distinguish the behavior of one human being from that of another" (Allport & Odbert, 1936, p. 24). So, might this comprise a comprehensive list of human traits? The problem is that languages differ from each other, and American English trait terms, for example, do not all have matching translations in other languages. Yet, the trait approach to personality assumes that it is possible to identify a set of constructs by which all members of the world-community can be differentially characterized. The psycholexical approach to personality traits correspondingly assumes that a common, universal set of constructs can be identified for describing those traits.

How might one test the universality of the psycholexical findings? Ideally, for such a test, it is necessary that a language is found that may be considered independent from the languages that have thus far been under psycholexical treatment and that has undergone little or no internationalization through longtime interaction and information exchange with surrounding cultures. Speakers of that language, and preferably some documents of written or verbal discourse, should be available. One might then ask whether that language contains a similar list of about 17,953 trait names and whether the personality lexicon in that language has a Big Five trait structure. A more conclusive test might hardly be conceivable. The idea of such a test is mentioned here to give a proper context to the psycholexical quest for the lingua franca of personality. Such a definitive Big Five test has not been performed yet. In the meantime, we have to satisfy ourselves with approximations of such an ideal test. Good tests are available in some studies, however, and the results of these studies confirm the general contours of the Big Five model as the best working hypothesis of an omnipresent trait structure.

In at least eight different languages (American English, Dutch, German, Hungarian, Italian, Polish, Czech, and Tagalog), personality trait taxonomies, which involve using a dictionary as the raw tangible repository of lexical items, have been constructed, largely according to comparable procedures, culling person-relevant lexical items from that dictionary, selecting a set of personality-descriptive items that is representative of the personality-relevant

lexicon, and structuring that set of trait terms on the basis of self-ratings and/or peer ratings (Brokken, 1978; Caprara & Perugini, 1994; Church, Katigbak, & Reyes, 1996; Di Blas & Forzi, 1994; Goldberg, 1990; Hrebícková, 1995; Ostendorf, 1990; Szarota, 1996; Szirmák & De Raad, 1994). Each of these taxonomies may echo the universal set of trait constructs referred to above, and each resulting trait structure can be considered as an embodiment of the Big Five model.

The warm reception of the lexically based Big Five model was accompanied by critical commentaries on its limitations (cf. Block, 1995; Briggs, 1992; Loevinger, 1994; McAdams, 1992; McCrae, 1994; Pervin, 1994). Of particular relevance in the present context are the disputes that allude to the cross-cultural or cross-lingual generality of the Big Five model. Most trait terms are not adequately translatable (for a discussion, see Hofstee, 1990; Hofstee, Kiers, De Raad, Goldberg, & Ostendorf, 1997). There is difference of opinion on the number of factors that may be cross-lingually tenable (Benet & Waller, 1995; De Raad & Szirmák, 1994) and on the comprehensiveness of the psycholexical approach (Loevinger, 1994; McCrae, 1994). For an optimal cross-cultural result, it may be desirable that the same taxonomic procedures are applied. But, if a cross-culturally valid Big Five model would result in spite of variations in taxonomic procedures, the model would be even more convincing.

In this article, we compare seven different taxonomies, covering the American English personality lexicon, the Dutch, the German, the Hungarian, the Italian, the Czech, and the Polish. In these comparisons, the American English taxonomy was used as a reference structure. Each of these indigenous trait taxonomies was derived using the principles of psycholexical research. Our comparisons are based on the seven published Big Five solutions in American English (Hofstee, De Raad, & Goldberg, 1992), Dutch (De Raad, Hendriks, & Hofstee, 1992), German (Ostendorf, 1990), Hungarian (Szirmák & De Raad, 1994), Italian (Caprara & Perugini, 1994), Czech (Hrebícková, 1995), and Polish (Szarota, 1996).

THE SEVEN TRAIT TAXONOMIES

PROCEDURES FOR SELECTION OF TRAIT ADJECTIVES

Here we describe the procedures for the derivation of the adjectives used in the seven taxonomies, focusing on their distinct characteristics and commonalities. In Table 1, the first row shows that there is considerable variation in the size of the dictionaries used for mapping all relevant trait terms.

De Raad, Di Blas, and Perugini (in press) have shown, however, that the size of the dictionary has no effect on the semantics of the trait lexicon. The second row of Table 1 contains the number of adjectives that were selected on the basis of a global criterion (e.g., any adjective that may be relevant for distinguishing people's personality characteristics). In all seven taxonomies, some version of this criterion, meant to be as inclusive as possible, has been applied for the selection of adjectives at the first stage(s) of the dictionary search. The third row shows that this general criterion resulted in roughly the same proportion (4.4%, on average) of the dictionary entries being selected as possible personality trait descriptors. From there, more substantial differences may occur. The fifth row contains the final selections of trait adjectives on which ratings have been obtained. These sets of adjectives have been selected on the basis of varying sets of criteria, referred to by the letters A through G in the fourth row.

In all seven taxonomies (A-G), exclusion criteria have been applied to arrive at the rating sets of adjectives in the last row of Table 1. These criteria include obscurity, ambiguity, and unfamiliarity. In some cases (A, B, and E), terms expressing pure evaluation were explicitly excluded. In all cases except E, an explicit distinction was made between stable traits (or dispositions) and other terms. In the case of E, a criterion of utility (or relevance) formed the main principle of reduction, and in B, C, F, and G, grammatical heuristics or fitting-sentences (e.g., "How [adjective] am I?") were used as a means of reduction. Of special importance is the distinction made in C, F, and G between temperament and character traits (henceforth called Temperament) and abilities, talents, or their absence (henceforth called Abilities). This distinction, which is particularly characteristic of the German (C) taxonomic procedure (Angleitner, Ostendorf, & John, 1990), has also been applied in Czech and Polish. The set of dispositions or stable traits is taken to be the union of the subsets of terms categorized as Temperament and as Abilities. The explicit use of an Abilities subset gives an extra emphasis to the identification of ability terms as part of the trait domain (cf. De Raad et al., in press). More differences can be discerned in the different taxonomies, of which some may be specifically characteristic of one taxonomy (e.g., the use of a so-called fundamentality criterion in the Dutch case and the exploitation of communalities in a first-factor analysis in the Italian case). Because the starting sets of personality-relevant trait adjectives vary substantially in number and because a varying set of reduction criteria was applied in the different taxonomies, it is virtually impossible to assess precisely the effects of the various reduction principles in the different taxonomies. The study by De Raad et al. (in press) demonstrated that such effects are probably

TABLE 1
Characteristics of Seven Taxonomies: Procedures and Facts

	<i>American English</i>	<i>Dutch</i>	<i>German</i>	<i>Hungarian</i>	<i>Italian</i>	<i>Czech</i>	<i>Polish</i>
Dictionary entries	550,000	200,000	96,664	70,000	40,000	118,529	35,000
Personality-relevant adjectives	17,954	8,690	4,827	3,644	1,337	4,513	2,027
Percentage	3.3	4.3	5.0	5.2	3.3	3.8	5.8
Criteria	A	B	C	D	E	F	G
Rating-set of adjectives	540	551	430	561	285	358	287

NOTE: Table entries are based on taxonomic procedures described in the following references: American English (Hofstee, De Raad, & Goldberg, 1992), Dutch (De Raad, Hendriks, & Hofstee, 1992), German (Ostendorf, 1990), Hungarian (Szirmák & De Raad, 1994), Italian (Caprara & Perugini, 1994), Czech (Hřebíčková, 1995), and Polish (Szarota, 1996).

small and the differences that occur are most likely due to differences in the pertaining cultures.

SUBJECTS AND MATERIALS

The American English data set consisted of 540 trait-descriptive adjectives on which self-ratings were available from a sample of 320 college students. Of these subjects, 316 described someone else on the basis of the same adjectives (for further details, see Hofstee et al., 1992). For the Dutch set of 551 trait adjectives, self-ratings and peer ratings were available from a sample of 600 subjects. Two hundred pairs (people who know each other well), mostly students, provided the ratings. Each member of a pair rated himself or herself, and the other subject rated the partner (Brokken, 1978). This set of data was amplified with self-ratings from 200 subjects, mostly students (De Raad, Mulder, Kloosterman, & Hofstee, 1988). The German data set consisted of 430-trait adjectives on which both self-ratings and peer ratings were available from a sample of 802 subjects. These were students and others, varying in age from 15 to 81 years (Ostendorf, 1990). The Hungarian data set was composed of only self-ratings from 400 subjects on a set of 561 trait adjectives. The subjects were all students (Szirmák & De Raad, 1994). The Italian data set was composed of 285 adjectives; self- and peer-ratings were provided by 961 subjects (Caprara & Perugini, 1994). Of these, about half were females, two thirds were university students, and one third were employed in various occupations. The Czech data set consisted of self-ratings from 397 subjects (age 17 to 81 years) on 358 trait adjectives (Hřebícková, 1995). Finally, the Polish data set consisted of self- and peer-ratings from a sample of 716 subjects (secondary school students; mean age of 16.6) on a set of 287 trait adjectives (Szarota, 1996). To correct for differences in means and standard deviations among subjects, we transformed each subject's ratings into standard scores.

THE SEVEN FIVE-FACTOR STRUCTURES

Five-factor solutions were derived by the original authors of each taxonomy. Except for American English, the five-factor solutions were varimax rotations of the first five principal components. In the American study, the positions of the five factors were determined by a principal-components analysis and varimax rotation of a subset consisting of Goldberg's (1992) 100 Big Five marker variables. In Table 2, the factors are depicted by representative trait variables for each factor pole (+ or -). These terms were either

the highest loading terms or were selected from the 20 highest loading terms per pole.

Column 1 in Table 2 gives representative terms from the American English five-factor structure. The five factors in American English have been labeled Extraversion or Surgency (I), Agreeableness (II), Conscientiousness (III), Emotional Stability (IV), and Intellect (V) (see Goldberg, 1990; Hofstee et al., 1992). The term Surgency has been used for Factor I (see also Peabody & Goldberg, 1989) to express a distinct feature of the American English Big Five, specifically conveyed by the adjectives aggressive and assertive.

De Raad et al. (1992) labeled their Dutch factors Extraversion (I), Agreeableness (II), Conscientiousness (III), Emotional Stability (IV), and Intellect (V). The Dutch five-factor structure (Table 2, column 2) differs most distinctively from the American English in Factor V, which is characterized in Dutch by such pairs as unconventional-conventional, critical-uncritical, and progressive-conservative. The specific coloring is that of rebelliousness rather than intellect and creativity. Extraversion (Factor I) is different from the American English factor in that the Dutch factor conveys a more cheerful tone (e.g., using terms such as cheerful vs. somber). The Dutch factor, Agreeableness (Factor II), seems to express more leniency than the American English factor, as is expressed by such terms as tolerant versus intolerant. Conscientiousness (Factor III) looks very similar to the American English Factor III. Finally, the adjectives assured, decisive, and resolute, in the Dutch Factor IV, suggest a commonality with the Surgency aspect of American English Factor I.

The German structure is represented in column 3 of Table 2. Ostendorf (1990) labeled these German factors Extraversion (I), Agreeableness (II), Conscientiousness (III), Emotional Stability (IV), and Intellect (V). In this structure, Factor I, Extraversion, seems to carry more emotional tones than the American English first factor (e.g., using terms like temperamental and hot-blooded). The German Factor IV, Emotional Stability, is particularly distinguished by such adjectives as acrobatic and slippery, on the one hand, and obstinate and uncontrolled, on the other. This German factor seems to cover more temperamental aspects than both the American English and the Dutch Factor IV. Particularly typical of the fifth German factor, which is a clear Intellect factor, is the emphasis on giftedness and being talented, seemingly at the cost of the creativity included in the American English.

Table 2, column 4 contains representative terms of the Hungarian five-factor structure. Szirmák and De Raad (1994) labeled these factors Extraversion (I), Agreeableness (II), Conscientiousness (III), Emotional Stability (IV), and Integrity (V). Particularly special about this structure are the Factors II and V. As demonstrated by Szirmák and De Raad (1994), these two factors are

TABLE 2
Representation of Five-Factor Structures of Seven Languages

Factors	American English	Dutch	German	Hungarian	Italian	Czech	Polish
I+	talkative, extroverted, aggressive, sociable, assertive, social, unrestrained, confident	spontaneous, exuberant, cheerful, vivacious, enthusiastic, candid, jovial, extroverted	temperamental, sociable, lively, gregarious, frank, impulsive, hot-blooded, dynamic	talkative, sociable, laughing, full of life, vivacious, temperamental, hyperactive, direct	sparkling, lively, extroverted, dynamic, free and easy, active, cheerful, energetic	talkative, verbose, eloquent, temperamental, sociable, energetic, enterprising, bold	resourceful, dynamic, energetic, bold, enterprising, active, brisk, vivacious
I-	shy, introverted, silent, untalkative, bashful, reserved, timid, unaggressive	uncommunicative, silent, introverted, reserved, stiff, somber, shy, withdrawn	timid, bashful, withdrawn, unspontaneous, untalkative, reserved, silent, introverted	withdrawn, silent, taciturn, introverted, untalkative, unsociable, dull, gray	introverted, timid, shy, taciturn, passive, melancholic, depressive, unsociable	secretive, quiet, silent, untalkative, shy, inhibited, unsociable, passive	timid, cowardly, shy, fearful, bashful, helpless, quiet, passive
II+	sympathetic, warm, understanding, helpful, considerate, cooperative, trustful, affectionate	mild, good-hearted, peaceful, tolerant, flexible, accommodating, indulgent, cordial	warm-hearted, considerate, magnanimous, humane, good-natured, willing, lenient, helpful	humanitarian, benevolent, friendly, gentle, adaptable, peaceful, kind-hearted, philanthropic	peaceful, meek, understanding, reasonable, calm, patient, conciliating, tolerant	soft-hearted, benevolent, agreeable, fair, polite, tolerant, moral, unaggressive	helpful, magnanimous, compassionate, hearty, agreeable, lenient, generous, compliant
II-	cold, unsympathetic, rude, harsh, inconsiderate, insensitive, insincere, hard	bossy, autocratic, domineering, callous, imperious, egocentric, intolerant, arrogant	bossy, domineering, ruthless, tyrannical, greedy, self-opiniated, egotistical, self-seeking	explosive, self-willed, obstinate, headstrong, impetuous, tempestuous, pitiless, aggressive	irritable, aggressive, quarrelsome, choleric, domineering, autocratic, intolerant, touchy	bossy, belligerent, insensitive, domineering, aggressive, argumentative, arough, quarrelsome	selfish, egotistical, ruthless, vindictive, despotic, greedy, conceited, mercenary
III+	organized, systematic, efficient, responsible, precise, thorough, practical, dependable	accurate, careful, diligent, prompt, precise, orderly, punctual, conscientious	conscientious, purposeful, hard-working, diligent, ambitious, zealous, consequent, firm	diligent, careful, precise, thorough, deliberate, orderly, disciplined, persistent	precise, steady, responsible, consistent, conscientious, rational, balanced, industrious	thorough, consistent, conscientious, careful, industrious, purposeful, persistent, systematic	steady, scrupulous, conscientious, thorough, dutiful, systematic, precise, organized

III-	disorganized, careless, unsystematic, inefficient, sloppy, inconsistent, impractical, negligent	irresponsible, nonchalant, frivolous, lax, lazy, thoughtless, immoral	work-shy, scatterbrained, wishy-washy, frivolous, reckless, extravagant, unambitious, unstable	lax, neglectful, unsystematic, immature, inconsiderate, lazy, frivolous, irresponsible	inconsistent, irresponsible, foolhardy, unruly, thoughtless, irrational, imprecise, unstable	lazy, unconscientious, unstable, disorganized, indecisive, thoughtless, inconsistent, forgetful	inaccurate, negligent, reckless, chaotic, disorderly, inattentive, inconsistent, rash
IV+	unenvious, relaxed, unexcitable, patient, imperturbable, uncritical, masculine, optimistic	assured, stable, imperturbable, independent, decisive, down-to-earth, resolute, calm	insensitive, poised, steady, solid, hard-boiled, imperturbable, acrobatic, slippery	nerves of steel, crafty, self-assured, wily, well-balanced, optimistic, calm, bold	insensitive, indifferent, cold, dishonest, imperturbable, insincere, ruthless, individualistic	poised, tranquil, courageous, assured, bright, confident, alert, brilliant	unemotional, patient, even-tempered, rational, unexcitable, reserved, unchanging, gruff
IV-	moody, temperamental, jealous, envious, irritable, emotional, self-pitying, nervous	panicky, uncertain, unstable, nervous, anxious, vulnerable, emotional, dependent	vulnerable, touchy, sensitive, moody, self-doubting, obstinate, sentimental, uncontrolled	oversensitive, anxious, vulnerable, whining, worrying, complaining, fearful, nervous	sensitive, emotional, humane, sentimental, romantic, altruistic, vulnerable, generous	nervous, excitable, passionate, irritable, unstable, touchy, restless, anxious	explosive, boisterous, impulsive, impetuous, excitable, erratic, temperamental, nervous
V+	creative, intellectual, imaginative, philosophical, inventive, intelligent, innovative	critical, philosophical, versatile, unconventional, inventive, progressive, original, imaginative	ingenious, intelligent, knowledgeable, clever, gifted, talented, intellectual, educated	truthful, just, secretive, humane, altruistic, natural, reliable, unselfish	nonconformist, rebellious, progressive, innovative, original, revolutionary, extravagant, ironical	clever, intelligent, cultured, thoughtful, understanding, imaginative, knowledgeable, efficient	intelligent, gifted, creative, clever, knowledgeable, bright, talented, receptive
V-	uncreative, unimaginative, unintellectual, simple unintelligent, imperceptive, shallow, unsophisticated	uncritical, docile, bourgeois, conservative, conventional, shallow, servile, narrow-minded	untalented, uneducated, unintelligent, incompetent, ignorant, uninformed, unimaginative, stupid	greedy, swollen-headed, overbearing, hypocritical, conceited, pretending, self-seeking, theatrical	traditional, devoted, conservative, conventional, obedient, servile, religious, puritan	dull, unintelligent, bullheaded, untalented, unsophisticated, simple, inefficient, uncreative	dull, unintelligent, undereducated, dense, unspicacious, silly, slow-witted, uneducated

related in content. Though being quite similar to Factor II in columns 1, 2, and 3, adjectives like philanthropic and humanitarian not only form good examples of the special coloring of the Hungarian Factor II, they may also express the common feature with Hungarian Factor V. Factor V, in turn, is strikingly unlike the Factor V in Columns 1, 2, and 3. Szirmák and De Raad's (1994) Integrity label conveys this distinctive character.

The Italian five-factor structure is presented in column 5 of Table 2. Caprara and Perugini (1994) labeled these factors Extraversion/Energy (I), Quietness versus Irritability (II), Conscientiousness (III), Selfishness versus Altruism (IV), and Conventionality (V). The distinctive features of this structure were already indicated by the different labeling. Caprara and Perugini (1994) particularly considered the Factors II, IV, and V worthy of alternative names. Of these three, Factor IV (Selfishness vs. Altruism), clearly relates to the Factor II in other languages, with adjectives such as humane, altruistic, and generous, as well as to features in Hungarian Factor V. Italian Factor V seems to come closest to Dutch Factor V, as reflected in pairs such as progressive-conservative and nonconformistic-conventional.

The Czech five-factor structure, represented in column 6 of Table 2, provides a fairly representative version of the Big Five trait structure, with some peculiar characteristics. Hřebícková (1995) labeled these factors Extraversion/Surgency (I), Agreeableness (II), Conscientiousness (III), Emotional Stability (IV), and Intellect (V). Particularly special is Factor IV because of the Factor Five traits of bright and brilliant. Factor V, in turn, contains some Conscientiousness traits, such as efficient and thoughtful. Moreover, more than the other structures, this factor has a culture coloring (Norman, 1963), expressed by the combination of cultured, understanding, and knowledgeable.

The Polish five-factor structure is represented in column 7 of Table 2. Although some subtle differences may be observed, this structure seems to be a fair and representative version of the Big Five. Szarota (1996) assigned the standard Big Five labels to these factors (i.e., Extraversion, Agreeableness, Conscientiousness, Emotional Stability, and Intellect).

In summary, inspection of the seven five-factor structures may give rise to some discomfort and despair because the American English referent structure does not appear to be interchangeable with any of the other six-factor structures. All of the structures have one or more factors with specific, distinct semantic colorings. Moreover, some structures, in particular the Dutch, Hungarian, and Italian structures, have a fifth factor with totally different semantics. The latter observation coincides with a difference in selection procedure. In contrast to the Dutch, Hungarian, and Italian taxonomies, the German, Czech, and Polish taxonomies (C, F, and G) have taken

the united terms from the Temperament and Abilities categories as their final pool of dispositional terms.

This divergent picture of the Big Five structure is based on visual inspection of factor matrixes and needs to be complemented by psychometric comparisons. In particular, rotations of the six factor structures to the American English solution might reduce the perception of divergency and form a more appropriate procedure to test the cross-cultural tenability of the Big Five factor structure.

STUDY 1: PSYCHOMETRIC COMPARISONS OF THE FIVE-FACTOR STRUCTURES

METHOD

Translations. For each of the other six languages, the best translation equivalents for adjectives in the American English list were identified. The procedure for finding these matches was not the same for the six pairs of languages. For the Dutch-English pair, the most elaborate procedure was followed. The Dutch and English terms were clustered into sets of mutually translatable words, and one-to-one translations within each set were selected, giving priority to a combination of literal translation and similarity of meaning (for details, see Hofstee et al., 1997). The number of matches found for Dutch-English was 275. For German-English we started with the best 126 German terms for the 275 Dutch-English pairs provided by Fritz Ostendorf in Hofstee et al. (1997). The resulting German-English set was amplified by using a rather complete list of potential English translations for the German set of 430 adjectives, made available by Ostendorf. For Hungarian, Italian, Czech, and Polish, the translations into English were done using roughly the same procedures. For each of the available trait lists in these four languages, the best matching translations were sought in the American English list of 540 trait adjectives. Szirmák (see De Raad, Perugini, & Szirmák, 1997) provided the translations for Hungarian, and the second, third, and fourth authors of this article provided the translations for Italian, Czech, and Polish, respectively. For some of the translations, a colleague/translator supported the selection of the final list of matches. In all cases, translation dictionaries were used to check translations and back-translations. Priority was given to literal translations if these were consistent with similarity in semantics.

The languages differed in the final number of translation equivalents that could be found. The number of matches was close to half of the smaller number of adjectives in each pair of languages. In addition to the set of 275

English-Dutch pairs, we identified 185 for English-German, 213 for English-Hungarian, 142 for English-Italian, 248 for English-Czech, and 182 for English-Polish.

Analyses. For each of the six pairs of five-factor solutions, congruence coefficients (Tucker, 1951) were calculated over the shared-trait variables before rotation and after target rotation. Congruence coefficients calculated before rotation serve to indicate the similarity between the factors as they have emerged in the different languages. The target rotations may indicate the extent to which the configuration in one language can accommodate the configuration in the other language. For the rotations, the American English matrix functioned as target. As a criterion of factor similarity, we used a congruence coefficient of .85 or higher (Haven & Ten Berge, 1977). Yet, the congruences to be reported are likely to be attenuated by various effects, such as differences in taxonomic procedures and the imperfect equivalence (i.e., matching) of the traits from different languages. Some empirical evidence supporting such an effect is provided by Hofstee et al. (1997), De Raad, et al. (in press), and De Raad et al. (1997).

RESULTS

Congruences before rotation. The congruence coefficients (Tucker, 1951) computed before rotation are shown in the left part of Table 3 (Best Translations). A first striking observation is that only 2 of the 30 congruences for the corresponding factors reached the level of 0.85. Given the probability of attenuation, for purposes of interpretation, we will discuss the congruences in more relative terms.

With the exception of Hungarian Factor V and Italian Factor IV, congruence was always highest between corresponding factors. Hungarian Factor V and Italian Factor IV had higher congruences with other factors. From the comparison between Dutch and American English, it can be seen that the Dutch Factor II is to be understood as a combination of American English Factors II (0.79) and IV (0.40). Similar relations can be identified in the comparisons with German, Hungarian, Czech, and Polish. The Dutch, German, Hungarian, and Czech Factors I can best be retraced to American English Factor I; Italian and Polish Factors I, with their dynamic, cheerful coloring, both need semantics of American English Factors IV (e.g., optimistic) and V (e.g., creative). American English Factor II has the best direct correspondence with Czech Factor II; for the other languages, some American English Factor IV semantics have to be added.

TABLE 3
 Congruence Coefficients Before Rotation Based on the Best
 Translations and Markers of the American English Solution

Language		American English									
		Best Translations					Markers				
		I	II	III	IV	V	I	II	III	IV	V
Dutch	I	<u>78</u>	22	-04	15	16	<u>85</u>	25	04	19	07
	II	-12	<u>79</u>	18	40	02	-13	<u>83</u>	19	39	-04
	III	-09	24	80	19	11	-04	25	<u>88</u>	19	11
	IV	33	-05	37	<u>64</u>	19	29	-02	39	<u>76</u>	09
	V	39	05	-02	12	<u>56</u>	42	10	-05	09	<u>65</u>
German	I	<u>76</u>	12	-09	10	23	<u>85</u>	14	-04	17	23
	II	-19	<u>80</u>	21	35	09	-14	<u>84</u>	23	27	07
	III	07	15	<u>78</u>	47	07	07	14	<u>82</u>	45	-01
	IV	09	-13	16	<u>57</u>	-03	06	-21	11	<u>71</u>	-12
	V	25	11	36	39	<u>77</u>	20	12	35	35	<u>81</u>
Hungarian	I	<u>76</u>	15	-06	03	29	<u>79</u>	16	-02	02	28
	II	-19	<u>70</u>	28	32	-01	-14	<u>80</u>	28	25	-01
	III	-05	29	<u>83</u>	31	18	00	30	<u>87</u>	33	15
	IV	33	06	33	<u>67</u>	35	39	06	33	<u>73</u>	34
	V	-17	-56	31	29	23	-20	65	31	31	<u>27</u>
Italian	I	<u>79</u>	14	12	37	32	<u>81</u>	18	19	45	31
	II	-20	<u>73</u>	25	51	11	-17	<u>74</u>	25	52	11
	III	-13	19	<u>85</u>	43	18	-07	22	<u>87</u>	44	18
	IV	01	-64	02	<u>28</u>	-18	06	-65	-05	<u>38</u>	-19
	V	30	-28	-31	10	<u>47</u>	15	-29	-38	14	<u>41</u>
Czech	I	<u>75</u>	13	04	04	25	<u>84</u>	17	02	-01	21
	II	-24	<u>64</u>	25	26	-03	-20	<u>74</u>	30	17	-07
	III	26	22	<u>71</u>	41	30	28	28	<u>80</u>	48	24
	IV	23	12	32	<u>68</u>	29	27	12	33	<u>72</u>	36
	V	31	16	45	19	<u>64</u>	28	19	48	20	<u>69</u>
Polish	I	<u>68</u>	00	21	41	31	<u>76</u>	-03	23	39	28
	II	-09	<u>72</u>	17	32	07	-03	<u>77</u>	26	35	10
	III	-18	26	<u>85</u>	35	15	-18	34	<u>90</u>	34	11
	IV	-46	08	34	<u>53</u>	-06	-46	10	34	<u>59</u>	-05
	V	27	13	30	35	<u>73</u>	29	14	27	33	<u>78</u>

NOTE: Decimal points are omitted. Coefficients larger than .30 (positive or negative) are in boldface; coefficients on the diagonal are underlined.

Congruences after target rotations. With American English as the referent structure, that structure functioned as the target configuration to accommodate each of the other structures. Orthogonal target rotations were carried out to maximize correspondence. The left part of Table 4 (Best Translations)

TABLE 4
Congruence Coefficients Before Rotation and After Rotation
Using the American English Solution as Target, Based on the
Best Translations and Markers of American English

<i>Language</i>	<i>Rotation</i>	<i>Best Translations</i>						<i>Markers</i>					
		<i>I</i>	<i>II</i>	<i>III</i>	<i>IV</i>	<i>V</i>	<i>Mean</i>	<i>I</i>	<i>II</i>	<i>III</i>	<i>IV</i>	<i>V</i>	<i>Mean</i>
Dutch	Before	78	79	80	64	56	71	85	83	88	76	65	79
	After	81	82	82	74	56	76	87	88	89	82	70	83
German	Before	76	80	78	57	77	74	85	84	82	71	81	81
	After	80	81	79	75	80	79	88	85	85	83	85	85
Hungarian	Before	76	70	83	67	23	64	79	80	87	73	27	69
	After	80	77	84	73	41	71	83	84	87	81	48	77
Italian	Before	79	73	85	28	47	62	81	74	87	38	41	64
	After	84	86	87	78	61	79	87	89	91	83	60	82
Czech	Before	75	64	71	68	64	68	84	74	80	72	69	76
	After	78	66	75	72	64	71	86	76	84	79	71	79
Polish	Before	68	72	85	53	73	70	76	77	90	59	78	76
	After	78	74	85	76	73	77	84	79	90	80	79	82
Mean	Before	75	73	80	56	57	68	82	79	86	65	60	74
	After	80	78	82	75	63	76	86	84	88	81	69	82

NOTE: Decimal points are omitted.

contains the congruence coefficients calculated after target rotations. Only the diagonal values are represented. For purposes of comparison, the corresponding congruence coefficients before rotation are given as well.

With the American English structure as target for the other language-dependent structures, it turns out that, on average, Italian and German structures find the best accommodation, and Hungarian and Czech fit the worst out of all six. On average, none of the factors in any of the six languages shows identity, in a strict sense, to the American English factors. Factor V deviates the most.

STUDY 2: COMPARISONS USING MARKERS OF AMERICAN ENGLISH BIG FIVE FACTORS

The advantage of using markers of factor structures instead of the best translatable terms is that congruences may be less attenuated by the various features of the different taxonomic procedures. Having a set of markers in one language and using the best translatable matches in another language may

provide a level of comparison that comes closer to, for example, those reported by Bond (1979) between American, Japanese, Hong Kong, and Filipino samples. Bond (1979) used 20 markers of the Norman (1963) five-factor model in these different samples and found, on the average, congruence coefficients above 0.85 for the first four of the Big Five factors.

METHOD

The comparisons in Study 1 involved subsets of the best translatable terms between American English and each of the other six languages. The best translatable terms are, however, not necessarily the best markers of the different structures. In Study 2, we try to optimize correspondence using markers of Big Five factors. There are two restrictions, of which the first is that markers are only found within the subsets of translatable terms. The second restriction is that markers are only sought in American English. The reason is that identifying markers within both translatable subsets of a pair would reduce the number of matching markers considerably, which in turn would produce an unstable basis for comparison.

Within the subsets of each American English-other language pair, possible markers for a factor were identified in the American English subset by selecting those trait adjectives that loaded highest on either of the two poles of the factor, with values $\geq .30$ and $\leq -.30$. Within the sets of possible markers, selections were made for the actual comparison on the basis of three rules: (a) preference is given to at least a few terms per factor pole if they can be identified as belonging to the list of 100 markers described by Goldberg (1992), (b) preference is given to those American English terms that were translatable to all of the six languages, and (c) approximately the same numbers of terms per factor pole in each of the languages was strived for. The total numbers of markers found in American English were 97 for the comparison with the Dutch language, 89 for German, 95 for Hungarian, 84 for Italian, 97 for Czech, and 93 for Polish. A table showing the numbers of terms selected for each factor pole in each language is available from the authors.

RESULTS

Congruences before rotation. Congruence coefficients were calculated between the factors of each of the six pairs of five-factor solutions, using the markers in American English and the matching translations in the other languages (right part of Table 3, labeled Markers). Overall, the similarity between the corresponding factors in the language pairs being compared is

higher than in the case of the total numbers of translations (see data under Best Translations heading, Table 3). Of the 30 congruences for the corresponding factors, 7 reached the level of 0.85. Also, the diagonal values are again highest with the exception of Hungarian Factor V and Italian Factor IV.

Congruences after target rotations. Again, American English served as target to each of the other languages. Orthogonal target rotations were performed to maximize correspondence. The right part of Table 4 (Markers) contains the congruence coefficients after target rotation. Again, only the diagonal values and corresponding coefficients obtained before rotation are given. Of the six comparisons, Hungarian and Czech are, on average, least accommodated in American English, thus supporting the earlier observation based on best translations. The best fit to American English is found in German with coefficients all close to .85. The first three factors of the six five-factor structures come, on average, close to strict similarity, with some flaws for the Czech and Polish Factors II. With an exception of German, the American English Factor V cannot be identified in closely similar form in any of the other languages. The situation for Factor IV is somewhat better than for Factor V.

GENERAL DISCUSSION

In the various studies taking part in the crusade for cross-lingual, personality-descriptive universals, it has become clear that researchers are unlikely to find the one and only canonical cross-culturally valid trait structure. Instead, the more realistic pursuit is trying to find acceptable counterparts of the Big Five factors in different languages. If these counterparts can be identified, can they also be considered as confirmations of the hypothesized Big Five factors? The present data confirm earlier findings that three or four of the hypothesized Big Five factors can, to a certain extent, be identified in different languages. The situation for Factor V remains troublesome. Even under relatively optimal conditions, created here in Study 2 by giving preference to translated English markers of the Big Five structure, confirmation of Factor V was not found in several of the languages.

A burning question is whether this means that it is time to dismiss the fifth factor and direct further energy on the articulation of a universal Big Four. We believe that there is reason to retain the hypothesis of a Big Five model of personality traits. One reason is that the corresponding Factors V are usually more congruent with each other than with other factors. Another

reason is that the present comparisons were restricted to the pairings with American English. De Raad et al. (1997) have provided congruence coefficients among five languages, using the mutually best translatable terms as input for the comparisons. From that study, it was suggested that comparisons of any European language with American English would produce lower congruences than comparisons among European languages, thus suggesting a cross-Atlantic cultural difference. Using Big Five markers in comparisons among European languages might well result in congruences for corresponding Factors V that are high enough to support the Five Factor model. A further reason is that all trait taxonomies have been restricted taxonomies in different respects. Only trait-descriptive adjectives were used; the use of nouns and verbs in one integrated investigation may provide a more adequate approach toward a representative trait lexicon and toward a test of the Big Five model. Relatively small sets of trait adjectives were used with relatively small samples of subjects.

A related problem is the connection with measured intelligence. Taxonomic studies have not included IQ measures; measures such as that could be removed from the Big Five variance. Moreover, theoretically, there is some ambiguity with respect to whether abilities should be seen as part of personality or of a different domain. This ambiguity needs to be scrutinized, particularly with respect to a further articulation of the trait concepts to be selected from the lexicon. At least some of the lower congruences between Factors V in the languages can be attributed to the inclusion versus exclusion of intellect terms. The German, Czech, and Polish taxonomies explicitly included ability terms. This explicit emphasis on abilities probably influences the semantics of the fifth factor. De Raad et al. (in press) provided some evidence in this respect.

The present situation in the psycholexical tradition, with taxonomies being developed not only in English, Dutch, German, Hungarian, Italian, Czech and Polish, but also in Chinese, Portuguese, Quechua, Russian, Romanian, Spanish, Filipino, and possibly more languages, forms an exciting junction that cries out for a standard of comparison. The present data form an intermediate step toward such a possible standard, if it is at all possible.

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