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Kernel structure of the combined English, Dutch, and Polish personality type-nouns, with a critical test against a type-noun based structure in Swahili

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ABSTRACT

We compared three trait-structures based on type-nouns, to find their common kernel structure. We used ratings from 607 participants on 372 English type-nouns, 800 participants on 571 Dutch type-nouns, and 1,325 participants on 454 Polish typenouns. PCA based factor structures were compared using congruence coefficients. SCA was applied on a joint matrix of type-nouns with ratings from a total of 2,737 participants on 331 type-nouns shared by all three languages. The resulting structure reflected versions of the Big Five, yet narrowed to their oratory role. Finally, the results were compared with a type-nouns based structure in Swahili.

The lexicographer Samuel Johnson had released "A Dictionary of the English Language" in 1755. Someone praised him because he had left out improper words. He replied: "I hope I have not soiled my fingers. I find, however, that you have been looking for them."

1. Introduction

Adjectives seem to form the obvious category of words to name traits, because adjectives describe qualities of objects and persons. The linguist Dixon (1982) described seven types of adjectives in English, one of which being called Human Propensities, capturing personality traits such as jealous, generous, and wicked. The use of comprehensive lists of such trait adjectives to obtain ratings from large samples of participants in a great number of studies have led to the development of the so-called Big Five model of traits, summarizing the trait domain in five broad clusters captured by the names Extraversion, Agreeableness, Conscientiousness, Emotional Stability, and Intellect (cf., Goldberg, 1981; De Raad, 2000). Communication on traits is, however, also possible through nouns (he/she is a comedian), adverbs (he/she behaves aggressively), and verbs (he/she influences people). Especially nouns have been approached with a certain amount of suspicion concerning the exploitation of their possible role as personality descriptors. In "From Ace to Zombie" Goldberg (1982, p. 230) summarized the skepticism towards the use of nouns in three points: (1) There are many more personality adjectives than nouns, (2) nouns tend to carry too much evaluative connotation relative to adjectives, and (3) there are many more colloquial and slang terms among nouns in comparison to adjectives, possibly because they are more used in oral communication.

Those differences in word classes were pointed out with respect to English. A comprehensive Dutch vocabulary of 4,595 personality descriptive words counted some 18 per cent nouns, 38 per cent adjectives, 33 per cent verbs, and some 10 per cent adverbs and expressions, thus confirming the English difference in numbers for Dutch (De Raad & Doddema, 1999). Dixon (1977), who had argued that there are languages that lack adjectives, later (Dixon, 2004) nuanced this by showing

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that all languages have a definable set of adjectives, but their number may range from very few to many. Swahili, for example, is such a language known to have a small number of adjectives. In a recent study on the structure of the Swahili personality vocabulary by Garrashi, De Raad, and Barelds (2023), a full set of 2,836 personality relevant terms culled from the lexicon consisted of some 7 per cent personality adjectives, 53 per cent nouns, and 40 per cent verbs. Shmelyov and Pokh'ilko (1993) started off with a large list of trait-descriptive nouns in Russian, which were turned into corresponding trait-adjectives. They structured those trait terms using "internal" (cf., Wiggins, 1973) analyses, namely expected co-occurrence of terms in a person, and obtained a clustering showing interesting similarity to the English adjectives-based Big Five structure of traits.

Evaluative connotation is indeed an important criterion in the selection of words for the neutral description of dispositional characteristics. Adjective-based dispositional descriptors without evaluative loading are, however, generally hard to find (cf., Brokken, 1978; Peabody, 1967). In order to be useful for personality description, it is vital that the descriptive-informational component is not too obscured by the evaluative component, and the chances for this obscuration are possibly even higher when dealing with nouns instead of adjectives. The use and function of person-relevant nouns have also been topic of study in person cognition, where the interest is in what they, in comparison to adjectives, enable to bring about in users (e.g., Carnaghi et al., 2008; Van der Cruyssen et al., 2016; cf. Bolinger, 1980). Especially in oral communication, nouns can be effective in touching or hurting a person because of their stronger evaluative loading. Words of abuse, for example, consist largely of the nominal type, as in *imbecile*, *lunatic*, or *bastard* (cf., De Raad, Van Oudenhoven, & Hofstede, 2005). People may differ in using evaluative words, depending on their emotional state and the heat of the moment, their sense of morality, their values, and their behavioral style.

All dictionaries present a selection from contemporary vocabulary. Because of space limits lexicographers avoid including words with extreme frequency, as well as derivatives, compounds, jargon, colloquial, slang, etc. A particular category of "avoidables" has been the group of words considered morally inappropriate (dirty or naughty words), and in certain times and cultures lexicographers have aimed to expurgate dictionaries (e.g., Uchida, 1997; cf., Pullum, 2018). Such "morally avoidable" words more often belong to the class of nouns than to other classes of words.

The descriptive component of personality nouns as selected from present-day dictionaries, however, seems to be as rich and diverse as the conventionally endorsed trait adjectives (cf., De Raad & Hoskens, 1990; Saucier, 2003). The present study forms a further test of the usefulness of nouns for the assessment of personality traits and the communication on them; should personality-related nouns be wholeheartedly embraced because of their enriching character (beyond that of adjectives), or rather avoided because of their troublesome characteristics (e.g., evaluative connotation, metaphorical meaning)?

There is a number of trait descriptive *adjectives* that have a metaphoric origin, such as soft, hard, straight, bright, sweet (see e.g., Asch, 1946; 1958); those words have entered the personality vocabulary, apparently because they have accrued functionality in effectively communicating on personality traits. They can thus be said to have enriched the personality trait vocabulary (cf., Robinson & Fetterman, 2014). Also, the class of *nouns* contains quite a few metaphors, some with an animal origin (chicken, weasel, snake), some derived from professional roles (philosopher, diplomat, clown), and quite a few that play a role in abusive talk (e.g. Hogeweg & Neuleman, 2022). The general problem with personality descriptors of a metaphoric nature is that their behavioral reference may often be relatively unclear, they may lose their meaning to the next generation, and they often do not translate well into other languages. Their employment in situations of personality assessment is best approached with great reserve.

John, Goldberg, and Angleitner (1984, p84) made the appropriate distinction between personality *type-nouns* (e.g., *cynic*, *altruist*) and personality *attribute-nouns* (*cynicism*, *altruism*), corresponding to the grammatical distinction between *count* nouns (referring to discrete, countable objects or persons) and *mass* nouns (referring to abstract undifferentiated substance that has no plural form), respectively. Di Blas (2005) studied the structure of personality traits in the Italian language using self-ratings on 447 attribute-nouns, resulting in a clear three-factor structure, representing Self-assertion (*energy*, *dynamism* vs. *insecurity*, *indecisiveness*), Agreeableness (*benevolence*, *generosity* vs. *wickedness*, *egoism*), and Conscientiousness (*industriousness*, *precision* vs. *eccentricity*, *madness*). These three factors clearly relate to three of the Big Five factors. Just a few studies have been performed on type-nouns, namely in Dutch (De Raad & Hoskens, 1990; De Raad, 1992), German (Henss, 1998), English (Saucier, 2003), and Polish (Ivanova et al., 2017), varying in sample perspective (self and/or peer ratings, male targets, female targets, and prominent persons as targets).

De Raad and Hoskens (1990) studied trait structure using self-ratings and peer ratings in Dutch and Belgian samples on 755 type-nouns, resulting in seven components summarized as Malignity-1 (*scoundrel*, *clodhopper*, *bully*), Extraversion (*buffoon*, *joker*, *merry-maker*), Anxiety (*scaredy-cat*, *chicken*, *waverer*), Antagonism (*pedant*, *obstructionist*, *braggart*), Culture (*philosopher*, *social reformer*, *non-conformist*), Perseverance (*workhorse*, *drudge*, *go-getter*), and Malignity-2 (*brute*, *toady*, *bugger*). De Raad (1992) re-analyzed this data-set, but removed nouns with extremely low means and standard deviations (all words with strongly negative meaning) to end up with a set of 571 nouns. Moreover, the available noun-ratings were ipsatized (standardized per person) to take away part of the idiosyncrasy in response style, and to remove part of the evaluative use that may be prompted by the word type. The resulting structure consisted of four components, namely Extraversion (*comedian*, *buffoon* vs. *chicken*, *grumbler*), Conscientiousness (*organizer*, *regulator* vs. *sluggard*, *lazy-bones*), Agreeableness (*philanthropist*, *humanist* vs. *nuisance*, *oppressor*), and Intellect/Openness (*satirist*, *philosopher* vs. *chatterbox*, *twaddler*).

Henss (1998), who investigated type-nouns in German using ratings of prominent persons on 192 nouns, concluded that his noun components are related to the Big Five, with an additional Physical Attractiveness component, which makes sense considering the stimulus persons that were rated (cf. De Raad & Ostendorf, 1996).

Saucier (2003) studied the structure of English type-nouns, using self- and peer-ratings on 372 nouns, yielding robust one- and two-component structures, and an eight-component structure, with a first component called Social Unacceptability (*trash*, *moron*), which is similar to the Malignity-2 component in Dutch. The second component, Autonomous Intellect (*philosopher*, *artist*), was similar to the Dutch Culture component, and the third component, Egocentrism (*know-it-all*, *show-off*), was related to the Dutch Antagonism. The seventh one, Liveliness (*joker*, *life-of-the-party*), was related to the Dutch noun component Extraversion. The sixth component, Attractiveness, was related to the German component with the same name. The remaining components, Masculinity, Delinquency, and Disorientation, seemed to be more specific to the English study.

Up to a certain extent, the Big Five factors seem represented in the type noun components of the different studies. Moreover, nouns conveying Negative Valence (Almagor, Tellegen, & Waller, 1995) such as *brute* and *moron* are identifiable in both the Dutch and English noun components, and Attractiveness (*beauty*, *knockout*, *ladies' man*) was identifiable in English and German.

In the present study, we aim to identify a kernel structure of type noun-based traits, common to the Dutch, English, and Polish type-noun taxonomies. Of the four type-noun taxonomies known to have been performed thus far, those three studies were the only ones that followed roughly the same principles of the psycho-lexical approach. Because the German study on type-nouns had a different focus in ratings of prominent persons, we did not consider to include that study in the comparisons. With respect to Polish, we make use of a recently developed type

noun taxonomy in the Polish language (Gorbaniuk et al., 2019; Ivanova et al., 2017). On the route towards that kernel structure, we briefly sketch the factor contents of the three individual (i.e., language-specific) type-noun structures, in order to enable establishing the extent to which the individual structures contribute to this kernel structure. Besides this kernel structure, we aim to establish more precise relations between the components from different individual structures, on a pairwise basis (i.e., two languages at a time). Finally, for reasons of critical comparison, we add results from a recently developed trait-taxonomy in Swahili (Garrashi, De Raad, & Barelds, 2023), where nouns form the main vehicle for communication on personality traits.

2. Method

2.1. Materials; personality-nouns in Dutch, English, and Polish

Dutch. From a lexical database built on two dictionaries, an initial set of 3,241 nouns was selected to contain candidates for the description of personality traits. This initial set was reduced by Belgian and Dutch judges using more stringent criteria of descriptiveness to a list of 755 personality nouns. This latter list was used to obtain self- and partner-ratings from 100 Belgian and 100 Dutch pairs (people who knew each other well) for the structuring of the type-noun domain (De Raad & Hoskens, 1990). The 200 Dutch participants were students (59 % females) with a mean age of 22.7 years (age range: 7–57). The Belgian participants (65 % females) were students with a mean age of 19.8 (age range: 17–29). De Raad (1992) undertook a further cleansing by removing extreme evaluative words, resulting in a list of 571 nouns. For the present study, we made use of the matrix of 800 (ratings) by 571 type-noun variables.

English. Starting with Goldberg's (1982) selection of 1,947 personality type nouns from American-English dictionaries, considered useful for the description of personality traits. Saucier (2003) reduced this list based on frequency-of-use ratings collected by Galvin (1993), to a set of 557 type-nouns, which set was further reduced mainly by removing nouns describing roles rather than personality attributes. The remaining list consisted of 372 terms on which ratings were collected from participants who described themselves (1/3), liked acquaintances (1/3) and disliked acquaintances (1/3), totaling 607 participants. The participants (68% females) were undergraduate psychology students with a mean age of 20. For the present study, we made use of this matrix of 607 participants by 372 type-nouns.

Polish. The noun-selection task was performed by two judges who examined the Universal Dictionary of Polish Language (Dubisz, 2008). Then three more judges revised this list in terms of usefulness to describe human properties and extracted 4,182 person descriptive type-nouns. In a second step, thirteen judges categorized the selected terms applying a classification system developed by Angleitner et al. (1990). For more details, see Gorbaniuk et al. (2019). Completion of the classification task resulted in a set of 483 personality type-nouns. Self-ratings were obtained from 592 students (51,5 % female), and peer-ratings were provided by a separate sample of 733 students (53,6 % female). Participants from the peer rating group were asked to describe a person they knew well for at least 2 years and either disliked (1/3), liked (1/3), or they had a neutral attitude towards the target (1/3). For each of these three "attitude" groups, care was taken to have the same gender proportion of the described person and the describing person. Prior to data analysis, 29 type-nouns that were unfamiliar to at least 11% of the participants of each data set (self- and peer-ratings, respectively) were eliminated. Thus, for the present study, we used 454 type-noun variables, on which ratings were collected from 1,325 participants. The total group of participants (female 52.7%) had a mean age of 22.06 (age range 17–57).

The sample sizes in the three languages all clearly exceed the recommended minimal number to arrive at stable correlations (e.g., Schönbrodt & Perugini, 2013; 2018).

2.2. Analyses

We briefly reviewed the contents of the individual data sets, on which Principal Components Analyses (PCA) followed by Varimax rotations were applied, analyzed pairwise comparisons, and then turned to the main interest, i.e., the contents and structure of the joint set of data. In all cases, orthogonal component structures were used in order to enhance comparability. Orthogonal structures have also been common practice in psycho-lexical studies using trait-adjectives. In order to study the joint structure, the ECP (Equal Cross-Products) variant of Simultaneous Components Analysis was applied (SCA-ECP; De Roover, Ceulemans, & Timmerman, 2012; Kiers & Ten Berge, 1994). In the SCA-ECP model, the components are uncorrelated, each having a variance of 1, for each individual subset of data (i.e., for each language).

In order to have a balanced and comparable view on the contents of the individual structures to be used for the main goal, we treated the three datasets in the same way by applying Principal Components Analyses to the data after ipsatization (standardization per person), followed by Varimax rotations. As a consequence, the results may deviate somewhat from what is reported in the introduction on the original publications. For more details on those studies, the reader is referred to De Raad and Hoskens (1990), De Raad (1992), Ivanova et al. (2017), and Saucier (2003).

3. Results

3.1. Individual sets

PCA was applied to the three data sets, followed by Varimax rotation. The first ten initial eigenvalues for the three languages are given in Table 1, together with their total amounts of variance, suggesting some four up to six components in the three languages; but to begin with, for explorative purposes, also rotated solutions with more components were attended to. Table 1 shows a striking difference between the first eigenvalue for Dutch on the one hand and those for Polish and English on the other hand. This may very well be due to a stronger emphasis on descriptiveness, especially to the explicit removal of strong evaluative words in the Dutch selection in comparison to the selections in English and Polish.

We extracted six factors for all three languages, which seemed appropriate in terms of eigenvalues; they also give a fair coverage of the factor semantics. The results for the three individual languages are summarized in Table 2, with each factor being represented by a maximum of around 10 items per factor pole, with loadings $\geq |0.30|$. These factor descriptions should be sufficient to identify conceptual relations to findings from the kernel structure. In further analyses, these factors are each represented by the highest positive and negative loading items, where possible.

Perusing Table 2, it seems relatively easy to identify traits that suggest the appearance of factors as contained in the Big Five, such as Extraversion in D6.3, E6.4, and P6.3, Conscientiousness in D6.2 and P6.6, Intellect in D6.6 and P6.2, and Neuroticism in E6.2 and P6.4. Finally, Agreeableness traits can be observed in D6.5 and P6.1. In all cases, it is hard to come to definitive conclusions about the Big Five categorizations of these noun-based factors, and Big Five related factors do not seem to emerge systematically in all three languages. For additional psychometric support to the factors' stability across the languages, we turned to pairwise comparisons and calculated Tucker's congruence coefficients (Tucker, 1951; Lorenzo-Seva & Ten Berge, 2006) between pairs of factors from two solutions at a time.

3.2. Pairwise comparisons (congruencies)

The 571 Dutch and 454 Polish type-nouns were translated into English, in part based on the English knowledge of the researchers, and by making use of translation dictionaries. The results of the translations

Table 1
Eigenvalues for ten components per language and their total amounts of variance explained.

	Numbers of components										
	1	2	3	4	5	6	7	8	9	10	Total amount of variance
Dutch	29.3	24.6	17.5	15.7	10.3	9.0	7.0	6.9	6.5	6.1	23.28
English	58.0	15.9	11.5	9.6	7.5	7.0	5.4	4.8	4.7	4.3	34.60
Polish	65.6	23.4	14.1	11.1	8.4	7.9	6.1	4.6	4.6	4.2	33.03

were discussed in case of doubt. After adding the English set with the 372 terms, common words were identified among the three sets of nouns, and some further translation correction was made when pairing the lists from the different languages. Dutch and Polish had 219 nouns in common, Dutch and English had 136 in common, and Polish and English had 126 in common. On average, this is about 40 per cent of the smaller language set in each comparison, which is relatively low when compared to common words among similar sets involving trait adjectives where that figure was about 50 per cent (e.g., De Raad, Perugini, & Szirmák, 1997). In order to calculate the congruencies, the rows with loadings for the common words were selected from the respective full matrices with loadings. Thus, for the Dutch-Polish comparison, the 219 common-noun rows were used, for the Dutch-English pair, the 136 common rows, and for the Polish-English pair, the 126 common rows. It should be noted that the loadings used for the congruencies are influenced by the results for the items that were not used for the comparison. This may not lead to the highest congruencies possible for the selected sets of common items, but the use of those selections seems to form a fair representation of the pertaining full loading matrices.

Even though, based on the observations at the individual data-sets, at best four to six factors could be expected across the three languages, we nonetheless calculated congruencies coefficients (Tucker, 1951) between pairs of components of solutions with 1 up to 7 components for each pair of languages. The congruencies turned out to be generally low, with a comparison of the structures with six components forming a good representation of the observed congruencies between the pairs of languages. These congruencies are given in Table 3.

Factors in one language often turned out to relate substantially to more than one factor in another language. In panel 1 of Table 3, for example, it is shown that the Polish P6.3 (loner/chatterer) has the highest congruencies with both D6.1 (coward/humorist) and D6.3 (loner/chatterbox); P6.3 is thus a combination of the Dutch 6.1 and 6/3, which is easily comprehended from the negative loading terms on the two factors in Table 2. The Dutch 6.4 (rioter/thinker) is a combination of the English 6.1 (jerk/friend) and 6.3 (lawbreaker/goody goody) in panel 2. A common typical marker noun is *troublemaker* (Table 2). In turn, the English 6.1 (jerk/friend) is a combination of the Polish 6.1 and 6.2 in panel 3.

In order to maximize the correspondence between components, congruencies were also calculated after orthogonal target rotation of the one structure (the source) in the pair to the other structure in the pair (the target, which is a Varimax rotated structure), and vice versa, where source and target had changed places. Per comparison and per factor solution, the congruencies resulting from the two directions of rotation were averaged. The results for solutions with one up to seven components are presented in Table 4 (panel 1). Strict correspondence between components would be found with a congruence of at least 0.95 and fair similarity with a congruence of at least 0.85 (cf. Lorenzo-Seva & Ten Berge, 2006), but because the comparisons were based on only a relatively small part of the full loading matrices, we took a lenient criterion of 0.80 as a reference point.

Table 4 (panel 1) shows that in both comparisons with Dutch, components can hardly be considered similar except for one component in the five-component-solution in the comparison with English. Between Polish and English only two components were similar in comparisons with five, six, and seven components. The remainder of the components in the various comparisons show decreasing congruencies. Straight structural similarities turn out to be difficult to find between component sets from the three languages. In studies with similar comparisons but based on adjective ratings, the congruencies were clearly higher. Compared to, for example, the average congruencies for the three languages for six components as given in Table 4 (panel 1), which are 0.80, 0.76, 0.73, 0.68, 0.64, and 0.50, the average *adjective*-based seven-component solutions from 14 taxonomies produced the following congruencies: 0.80, 0.82, 0.79, 0.76, 0.64, and 0.71 (see De Raad, Barelds, Levert, et al., 2010).

The congruencies were calculated using the subsets of loadings for the common nouns only, while their values were determined by the full datasets, which means that congruencies came about while dealing with an excess baggage. As a frame of comparison, and possibly indicating some upper boundary, the congruencies were also calculated using the loadings obtained after factoring the ratings for the common words only. This analysis was conducted according to the multiple-groups target rotation procedure described in detail in Fischer and Karl (2019). The two correlation matrices per pair of languages were averaged, thus forming a reference matrix as a basis for producing factor loading matrices to which the factors from the original two languages were rotated. The congruencies were calculated after these rotations and averaged again. The results, shown in Table 4 (panel 2), indicate that the factors in the comparisons start being dissimilar after solutions with some five or six factors.

Notwithstanding similar conclusions by De Raad and Hoskens (1990) and Saucier (2003), and in the findings for the Polish structure in the present study, namely that in type-noun based structures in the three pertaining languages the Big Five are easily identified, congruencies between the pairs of factors from the three languages do not confirm strong similarity between the factors when based on the selected sets of loadings, though they do show similarity when starting from factoring the restricted sets of ratings for the common sets of variables. This discrepancy, when compared to adjective based studies, might well be due to the fact that nouns, other than adjectives, are differentially associated with information of the pragmatic type, emphasizing the rhetorical function of nouns in interpersonal communication.

With the decision to use only the common sets of nouns in the pairwise comparison, a first tentative step was made towards finding what is common to the three languages. An upgrade of this operation is done in an analysis using all three languages at the same time.

3.3. Joint analysis

The main goal of the present study was in the joint analysis, to find the noun-ratings based trait structure that is common to the three languages, and to find out to what extent the individual, language-specific structures relate to such a common structure. Although the pairwise comparisons gave little perspective on a satisfactory degree of commonality of components among the three languages, and the individual structures suggest quite some recurrence of specific clusters of meaning across the languages, it is especially a joint analysis that should reveal what is common to the three noun-vocabularies.

Merging data sets. The three data sets (800 pp × 571 nouns, 1,325 pp × 454 nouns, 607 pp × 372 nouns) were merged to a combined data set with 2,732 participants who had provided ratings on 1,397 variables. Using the translations into English of the Dutch and Polish nouns, it turned out that the total set of unique (distinct) terms across the three

Table 2
Factor markers of six-factor solutions for Dutch, English, and Polish.

Dutch factors D6.1 to D6.6, based on ratings on 571 nouns	
D6.1	coward (0.50), grumbler, doubter, complainer, waverer, nag, worrier, pessimist, grumbler, cry-baby (0.43) humorist (-0.44), entertainer, joker, animator, leader, partygoer, pace-setter, daredevil, organizer (-0.35)
D6.2	sluggard (0.54), lazybones, sloth, sleepyhead, lay-about, procrastinator, latecomer, squanderer, shirker (0.31) worker (-,63), crammer, stayer, drudge, workaholic, perfectionist, go-getter, early-bird, pusher (-0.37)
D6.3	loner (0.49), hermit, introvert, individualist, cynic, skeptic, ascetic, theorist, navel-gazer, outsider (0.32) chatterbox (-0.61), babbler, talker, giggler, merrymaker, reveler, madcap, social animal, extrovert (-0.33)
D6.4	rioter (0.56), troublemaker, show-off, disruptor, agitator, spitfire, bigmouth, mischief-maker, rebel (0.36) thinker (-0.38), contemplator, diplomat, daydreamer, scholar, intellectual, romantic, ethicist, tactician (-0.30)
D6.5	smart ass (0.54), wiseacre, protester, quarreler, obstructionist, commander, egoist, busybody (0.33) philanthropist (-0.44), softy, peacemaker, reconciler, just person, everyone's friend, emotional person (-0.31)
D6.6	follower (0.40), one of the mob, conservative, materialist, creature of habit, conformist, mimic (0.30) social reformer (-0.57), utopist, idealist, nonconformist, philosopher, artist, anarchist, existentialist (-0.37)
English factors E6.1 to E6.6, based on ratings on 372 nouns	
E6.1	jerk (0.75), weasel, creep, phony, idiot, scum, trash, fake, jackass, dumbbell, dummy, snake, liar (0.61) friend (-0.79), sweetheart, individual, peacemaker, sympathizer, comforter, winner, good Samaritan (-0.66)
E6.2	klutz (0.46), scaredy-cat, whiner, chicken, worrywart, sissy, paranoid, coward, feminist, follower (0.33) ladies-man (-0.59), hunk, gentleman, lady-killer, sportsman, womanizer, master, hotshot, bigshot (-0.38)
E6.3	lawbreaker (0.59), rebel, delinquent, alcoholic, drunk, addict, troublemaker, psychotic, junkie, vandal (0.37) goody-goody (-0.57), conservative, traditionalist, conformist, disciplinarian, right-winger, virgin (-0.30)
E6.4	outcast (0.47), outsider, loner, introvert, geek, geezer, hick (0.32) chatterbox (-0.55), loudmouth, talker, blabbermouth, teaser, extrovert, pleasure-seeker, sexpot (-0.30)
E6.5	critic (0.52), cynic, know-it-all, crab, hardnose, stickler, pessimist, obsessive, antagonist, tightwad (0.31) knockout (-0.38), cutie, darling, plaything, playmate, charmer, love, sexpot, fox (-0.31)
E6.6	goof (-0.53), clown, joker screwball, wise-guy, dude, practical-joker, slacker, smart-aleck, lazybones (-0.34) –
Polish factors P6.1 to P6.6, based on ratings on 454 nouns	
P6.1	cheat (0.59), double-face, deceiver, manipulator, liar, poser, egoist, exploiter, show-off, hypocrite (0.50) friendly person (-0.66), just person, consoler, softie, altruist, sentimentalist, courageous person (-0.47)
P6.2	fool (0.72), booby, dummy, silly, moron, nitwit, dullard, idiot, duffer, goat, cretin, goof, imbecile (0.65) apt person (-0.47), intellectual, smarty, originator, talent, discoverer, rationalist, genius, diplomat (-0.38)
P6.3	misery (0.62), loner, wimp, introvert, pessimist, hermit, melancholic, sourpuss, sceptic, sluggard (0.36) chatterer (-0.53), joker, smooth talker, flirt, party animal, comedian, heartbreaker, reveller, torpedo (-0.43)
P6.4	neurotic (0.61), quarreller, grump, adventurer, loudmouth, blusterer, spitfire, capricious person (0.36) wise man (-0.31)
P6.5	brute (0.46), bully, beast, barbarian, fighter, risk-taker, Spartan, leader, Cossack, sadist, tyrant (0.30) alarmist (-0.49), sissy, whiner, cry-baby, sucker, weakling, klutz, hysteric, coward, clingy person (-0.31)
P6.6	layabout (0.58), messy person, good-for-nothing, sloth, slacker, loafer, idler, forgetter, flibbertigibbet (0.32) worker (-0.46), ant, pedant, crammer, bureaucrat, moralist, stickler for cleanliness, rigorist (-0.30)

Note: Per factor pole representative nouns are given, with loadings between those for the first and the last in the set; D, E, and P stand for Dutch, English, and Polish, respectively; zeros before decimal point are omitted.

languages (after translation) was 991 nouns. Out of these 991 nouns, 75 were common to three languages, 256 nouns were common to two languages, leaving 660 nouns that appeared in only one of the three languages. This matrix had a large amount of missing data; in order to increase the connectivity between the three sets of noun-variables, the 660 nouns that appeared in only one language were removed. The result was a final set of 331 type-nouns (the 75 nouns that were common to three languages, combined with the set of 256 nouns common to two languages), showing enough connectivity across the three languages to be suitable for further analyses.

A question to return to further on is whether the subsets of nouns selected to make up the 331 common set sufficiently represent the contents of the original full sets of nouns. For Dutch, 280 nouns contribute to the 331 set, for Polish that number of nouns is 270, and for English the number is 187. Another question to turn to further on is whether the removed 660 nouns would represent unique trait content not captured in the joint analysis.

SCA on the joint set. A Simultaneous Components Analysis (with the SCA model with equal cross-products: SCA-ECP) (Timmerman & Kiers, 2003) was applied to the data set with 331 type-nouns and 2,737 participants. In the SCA-ECP model, the components are orthogonal within each language, in order to ensure a proper comparison between the common structure obtained through SCA-ECP and the individual structures obtained with separate PCA's, which were orthogonal as well. Because the joint data-set with 331 trait variables lacks some trait variables for the individual languages, iterative imputation was used to handle missing data (De Roover, Ceulemans, & Timmerman, 2012).

The percentages of explained variance for the first 10 components of the SCA-ECP solution were 10.23, 4.81, 2.68, 2.35, 2.00, 1.63, 1.20, 1.12, 0.99, and 0.93. The SCA-total row in Table 5 (SCA-panel) gives the accumulated numbers. These values suggested two up to maybe six or

Table 3
Congruencies of pairwise comparisons of six-components structures from Dutch, English, and Polish.

	D6.1	D6.2	D6.3	D6.4	D6.5	D6.6
Panel 1 (219 common nouns)	coward humorist	sluggard worker	loner chatterbox	rioter thinker	smartass philanthropist	follower social reformer
P6.1 cheat/friend	0.17	0.38	−0.02	0.48	0.44	0.30
P6.2 fool/intellectual	0.31	0.46	0.00	0.44	0.01	0.32
P6.3 loner/chatterer	0.56	−0.08	0.69	−0.32	0.01	0.07
P6.4 neurotic/wise man	0.29	0.14	−0.21	0.44	0.33	0.00
P6.5 brute/alarmist	−0.66	−0.10	−0.04	0.20	0.10	−0.25
P6.6 lay-about/worker	0.08	0.71	−0.17	0.31	−0.02	0.05

	D6.1	D6.2	D6.3	D6.4	D6.5	D6.6
Panel 2 (136 common nouns)	coward humorist	sluggard worker	loner chatterbox	rioter thinker	smartass philanthropist	follower social reformer
E6.1 jerk/friend	0.42	0.37	0.06	0.50	0.25	0.45
E6.2 klutz/ladies' man	0.70	0.37	0.14	0.02	−0.16	0.15
E6.3 lawbreaker/goody-goody	−0.07	0.48	0.14	0.48	0.15	−0.42
E6.4 outcast/chatterbox	0.28	−0.03	0.63	−0.22	−0.16	−0.08
E6.5 critic/knockout	0.38	−0.07	0.51	0.01	0.47	−0.04
E6.6 goof	0.24	−0.36	0.27	−0.12	0.08	−0.09

	P6.1	P6.2	P6.3	P6.4	P6.5	P6.6
Panel 3 (126 common nouns)	cheat friend	fool intellectual	loner chatterer	neurotic wise man	brute alarmist	lay-about worker
E6.1 jerk/friend	0.77	0.83	0.21	0.40	−0.07	0.39
E6.2 klutz/ladies' man	0.13	0.37	0.41	0.11	−0.71	0.28
E6.3 lawbreaker/goody-goody	0.33	0.27	−0.05	0.36	0.31	0.53
E6.4 outcast/chatterbox	−0.25	0.14	0.58	−0.22	−0.01	−0.04
E6.5 critic/knockout	0.31	0.01	0.48	0.18	0.00	−0.13
E6.6 goof	−0.02	−0.26	0.18	0.04	−0.06	−0.35

Note: The letters D, E, and P in the listing of the components stand for Dutch, English, and Polish, respectively.

Table 4
Average congruencies after target rotation of one structure to the other and vice versa, for one up to seven components.

Panel 1: based on selections of loadings after factoring the two full sets

components	Dutch-Polish							Dutch-English							Polish-English						
1	24							44							**86**						
2	75	73						72	72						**86**	77					
3	77	70	63					71	70	35					**83**	76	49				
4	76	70	67	36				76	73	68	66				**84**	75	71	46			
5	76	71	70	68	56			**80**	75	73	71	69			**87**	**82**	77	72	56		
6	78	73	70	65	61	53		76	75	74	70	67	54		**86**	**81**	76	69	63	43	
7	77	72	70	67	65	58	38	77	74	70	70	69	62	59	**86**	**83**	78	73	70	41	30

Panel 2: based on loadings obtained after factoring the selections of ratings

1	52							**80**							**97**						
2	**90**	**93**						**92**	**94**						**97**	**95**					
3	**91**	**93**	**86**					**92**	**94**	**91**					**97**	**95**	71				
4	**95**	**94**	**88**	71				**94**	**93**	**87**	**89**				**97**	**93**	**91**	**89**			
5	**92**	**94**	**87**	**91**	76			**94**	**92**	**93**	**88**	**91**			**97**	**94**	**84**	**94**	**84**		
6	**90**	**94**	**90**	**93**	**84**	76		**95**	**92**	**81**	**94**	**90**	**91**		**97**	**95**	**93**	**88**	**86**	**89**	
7	**90**	**94**	**91**	**85**	**92**	75	57	**95**	**92**	**90**	**93**	**91**	**89**	**81**	**97**	**93**	**95**	**90**	**82**	**91**	74

Note: Decimal points omitted.

seven components. For the determination of the (number of) components for further use, we made use of interpretability of the components, of the amounts of variance explained, and of a hierarchy of component-solutions.

We inspected the hierarchy of components from different levels of extraction (cf., Goldberg, 2006), with one up to 10 components, and presented up to seven components in Fig. 1. The components F7.1 to F7.6 correlate strongly with components at the levels with eight, nine, and ten components. Component F7.7 (*poet*, *hippie*, *nonconformist*, & *extremist* vs *conservative*, *money-grubber*, *materialist*, & *conformist*) is virtually the same in terms of contents as corresponding components F8.7, F9.7, and F10.7, but it also has a split-off (0.49) in F8.3 (with only the terms *mocker*, *clown*, and *teaser* having their highest loadings, running from 0.34 to 0.44, on this component), where the latter splits further into F9.9 (*joker*, *humorist*, *comedian*, *jester*, *reveler*) and F9.3 (*wiseacre*, *encyclopedist*, *smart-ass*, *know-it-all*). The additional component F10.10 of the 10-component solution showed loadings running from 0.30 to 0.41 for *heartbreaker*, *lecher*, *seducer*, *pig*, *alcoholic*, *beast*, *libertine*, and *flirt*, a small but semantically consistent set of words. This component had no nouns with substantial loadings on the opposite pole, the strongest loading being -0.28.

With F7.7 showing in part contents also covered by F6.6 (r = -0.32), the components of the six-component solution, being all well interpretable, were taken to represent the kernel structure: they form a good view on the common trait differentiations made in these three languages. Table 6 gives the loadings for all nouns on the six SCA

Table 5
Accumulative percentages of variances for one up to ten components (331 variables).

	Number of components									
	1	2	3	4	5	6	7	8	9	10
SCA										
total	10.23	15.04	17.72	20.07	22.07	23.70	24.90	26.02	27.01	27.94
Dutch	2.68	6.99	9.34	11.48	13.11	14.57	15.86	16.83	17.66	18.62
Polish	13.45	18.79	21.79	24.17	26.31	28.13	29.24	30.39	31.49	32.40
English	14.97	19.09	21.43	24.14	26.41	27.74	29.04	30.38	31.38	32.29
PCA										
total	11.75	16.93	20.24	23.07	25.23	27.18	28.69	29.99	31.22	32.37
Dutch	5.15	9.85	12.83	15.73	17.72	19.67	21.14	22.48	23.77	24.97
Polish	14.22	19.84	23.21	25.99	28.12	30.09	31.54	32.71	33.82	34.87
English	16.99	21.73	25.48	28.33	30.95	32.80	34.63	36.22	37.71	39.08

components under the condition that a noun loads at least |0.30|) on a component. Table 6 also gives the variable names that were common to the two or three languages.

In the first five of the six factors in Table 6, the Big Five were easily recognized, with each of the positive poles representing the dimensions' negatively evaluative sides. The negative nouns in the positive poles apparently communicate consistently most of the differential information of the factors, in number of words and in higher loadings. The first, *Intellect* (-related) factor, clearly conveys, besides descriptive content, repudiation at the negative side (positive pole), reinforced by the solidifying nature of the noun (Bolinger, 1980, p. 79), as compared to, for example, through the use of adjectives. Moreover, the contents of this negative side seem to have narrowed down to a variety of expressions, but all pointing to mainly orally used communications referring to renditions of stupidity.

The second, *Neuroticism* (mixed with aspects of Agreeableness and of Extraversion) related factor, seems to cover a narrow domain putting on stage references to the grumpy coward (as opposed to the joking daredevil). Also the third, *Agreeableness* related factor, covers little more than a subdomain where the bigshot manipulator (as opposed to the consoling benefactor) is in action. Factor four, again covers narrow field of the *Extraversion*-Introversion possibilities, focusing on the Extroverted chatterer (as opposed to the introverted philosopher). Factor five, in this case, clearly covers *Conscientiousness* domain with the lazybones versus the worker. Factor six seems to add another aspect of the Intellect factor (*Conformism*), now with an emphasis on a blend of Intellect and Agreeableness, including the conservative conformist (versus the nonconformist rebel).

3.4. Relations between the joint structure and the individual structures

To examine the relations between the joint structure and the individual, language-specific structures, we first checked the amounts of variance the SCA approach explained for each language in comparison to the amounts of variance explained by the separate PCA solutions. The relevant percentages of variance are given in Table 5 (PCA panel). In total (see "total" rows in both the SCA and the PCA panel) the SCA solutions explain somewhat less variance in the individual sets than the PCA solutions do. The SCA structure explains less variance in the individual Dutch structure than in the individual Polish and English structures. This latter observation seems unrelated to the numbers of input variables used (i.e., 280, 270, and 187).

Next, we checked whether the contents of the original full sets of nouns are captured in subsets of nouns making up the common set of 331 nouns. Moreover, we checked whether the subsets of nouns (totaling 660 nouns) not being part of the common set do represent striking unique trait semantics not captured in that common set. We correlated components from six-component solutions based on the full original sets of nouns in the three languages with an equal number of components based on the subsets of 280, 270, and 287 that were *included* in the common set of nouns and with an equal number of components based on the *excluded* sets of 291, 184, and 185. The correlations are given in Table 7. In the Dutch case, the six original 571 traits-based components are all uniquely related to components based on the subset of 280 noun variables. Moreover, the rather substantial correlations between the components based on the original set and those based on the subset of 291 "excluded" nouns suggest good coverage of mutual meaning, suggesting that the excluded set is not expected to hide unique trait semantics. For Polish and for English, the conclusions are similar. The correlational patterns indicated that most of the trait semantic information represented in the original full sets of nouns is well captured in both the sets included in the joint analysis and the sets excluded from that analysis. The factors based on the subsets from the joint data agree very much with those based on the original full sets, especially for Dutch and Polish. The factors based on the excluded sets more often agree with more than one factor in the original sets.

Adjective-based psycho-lexical studies produced the Big Five structure, especially relevant in Western or European languages and cultures, and a Big two or Big Three structure, relevant internationally. The present three-language-based study using type-nouns does indeed support the salience of the Big Five, albeit with a strong oral functionality, but the relevance of this noun-based structure has yet to be established beyond European borders. Besides, nouns come in sorts, particularly in the form of the type-nouns or attribute-nouns. The study by Di Blas (2005), using attribute-nouns gives a tentative confirmation of Big Five related content. Certainly, communication on personality characteristics is not a privilege of a certain word-class, yet, due to their grammatical function, adjectives are generally given preference, especially when it concerns (written) summary-reports of someone's personality traits. Nouns, type-nouns in particular, play a stronger role in oral (rhetorical) contexts (cf. Bolinger, 1980; De Raad, 1985; Rodin, 1972). Communications, in general, do have both descriptive-informative and pragmatic (or performative) aspects (e.g., Austin, 1962; Searle, 1969), and repeated use of certain words for pragmatic effects augments the pragmatic connotation to the word. In an "evolutionary" sense: besides communicating a certain amount of informative-descriptive content, trait words also signal warnings of a possible threat. In terms of the ideas of Osgood, Suci, and Tannenbaum (1957), trait words also function to express more or less of the characteristics of Evaluation, Potency, and Activity: is it a bad person, is it a strong person, and does the person take action? In Dutch, these Osgood dimensions turned out to be rather independent from descriptive dimensions (Brokken, 1978). Cultural values may play a role in defining what is considered a threat.

In the next section, we put the findings concerning the three-language structure based on type-nouns in a critical context, by comparing the findings with those collected in a language that has virtually no adjectives to rely on for personality description, but in fact mainly uses nouns for that purpose, namely Swahili.

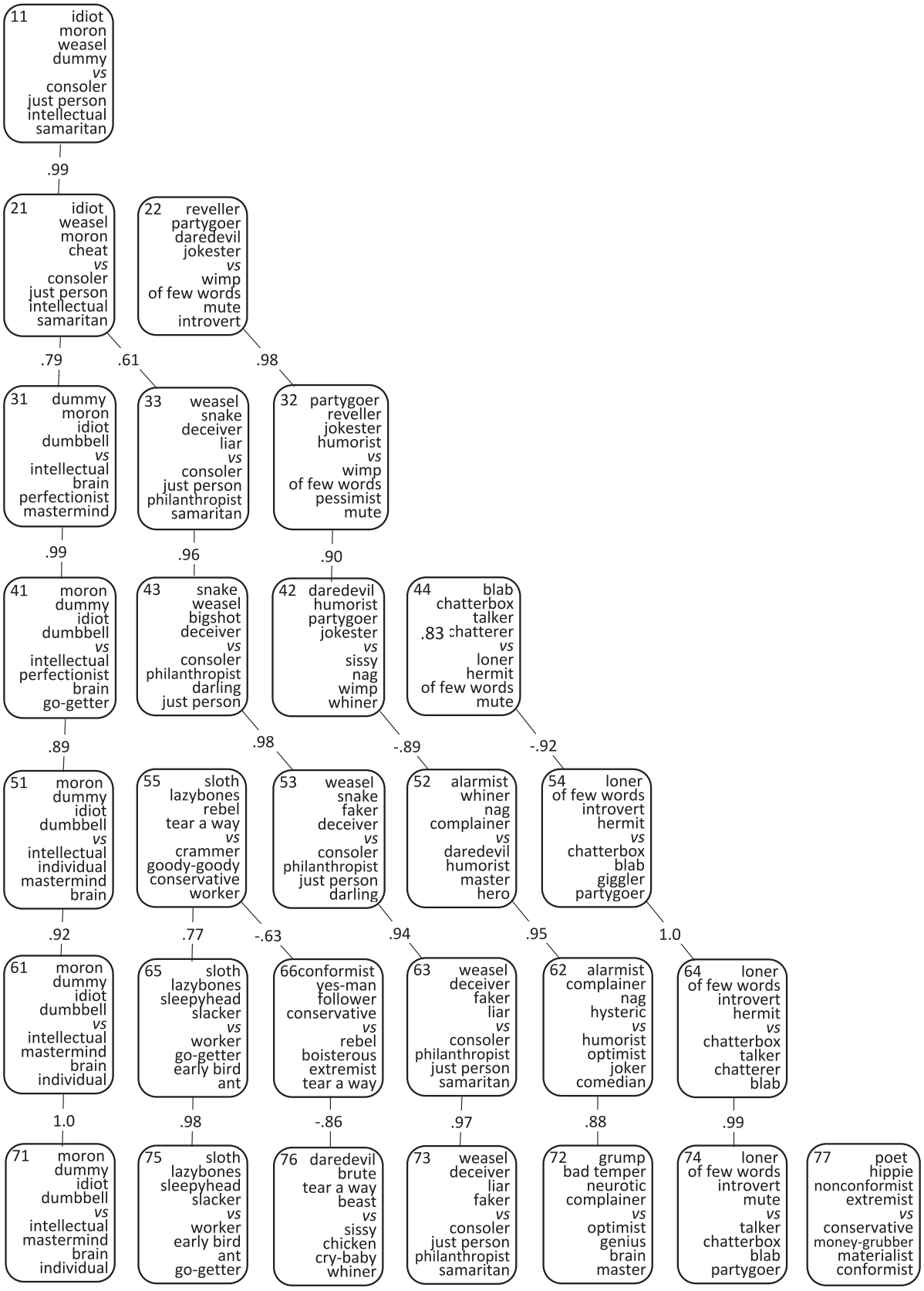

Fig. 1. Hierarchy of factor-solutions of the common set of Dutch-English-Polish trait descriptive type-nouns.

Table 6
Loadings on six SCA.

Languages			SCA components					
Dutch	Polish	English	F6.1	F6.2	F6.3	F6.4	F6.5	F6.6
			Intel	Neuro	Agree	Extra	Consc	Confo
	debil	moron	0.73	0.01	0.18	0.03	0.03	0.01
	głupek	dummy	0.73	0.05	0.10	0.01	0.04	0.03
	idiota	idiot	0.72	0.06	0.20	0.04	0.02	0.01
	matoł	dumbbell	0.69	0.02	0.05	0.05	0.04	0.01
	kretyn	twerp (cretin)	0.65	0.01	0.17	0.04	−0.03	0.05
	osioł	jackass	0.64	0.00	0.20	0.01	0.01	−0.01
	cymbał	booby	0.63	0.00	0.09	0.04	−0.02	0.01
	bałwan	blockhead	0.62	−0.04	0.15	0.05	0.07	0.03
	cielę	knucklehead	0.62	−0.01	0.09	0.06	0.06	0.10
sufferd	matołek	duffer	0.61	0.02	0.04	0.08	0.07	0.05
flauwerd	jełop	silly	0.61	0.02	0.08	0.06	0.00	0.06
dwaaskop	dureń	fool	0.58	0.06	0.09	0.02	0.04	−0.02
	frajer	loser	0.57	0.12	0.19	0.10	0.02	0.06
botterik	tępota	dullard	0.57	0.05	0.14	0.08	−0.05	0.01
mafkees	półgłówek	goofball	0.54	−0.09	0.10	−0.04	0.09	−0.02
flauwerik	ćwok	silly	0.53	0.04	0.16	0.03	−0.01	0.07
lafbek	ciołek	twit	0.52	0.10	0.10	0.08	0.00	0.09
nar	tuman	dingbat	0.52	−0.06	0.06	0.01	0.07	0.03
	nieuk	dunce	0.51	−0.04	0.02	0.00	0.22	−0.07
	kreatura	creep	0.47	−0.03	0.27	0.09	−0.04	−0.03
	głupiec	goof	0.46	−0.04	0.00	−0.07	0.13	0.01
warhoofd	tłuk	muddle-head	0.45	0.09	0.04	0.04	0.14	−0.03
klungel	partacz	bungler	0.44	0.08	0.11	0.05	0.20	0.08
snotneus		brat	0.41	0.15	0.14	−0.07	−0.02	−0.01
aartsschelm	drań	scoundrel	0.38	−0.12	0.23	0.00	0.03	−0.17
naieveling	głuptas	simpleton	0.36	0.14	−0.13	−0.06	0.12	0.06
olijkerd	łajdak	rogue	0.35	−0.13	0.16	−0.10	0.02	−0.04
	zacofaniec	stick-in-the-mud	0.35	0.14	0.05	0.19	−0.04	0.13
lastpost		nuisance	0.33	0.24	0.31	0.07	0.02	−0.01
bedotter	naciągacz	trickster	0.32	−0.04	0.29	−0.03	0.04	0.02
stijfhoofd	muł	mule	0.31	0.14	0.17	0.15	0.01	0.06
overbriever	kapuś	telltale	0.31	0.08	0.24	−0.04	−0.11	0.23
intellectueel	inteligent	intellectual	−0.49	−0.21	−0.25	0.24	−0.20	0.09
	umysł	mastermind	−0.46	−0.27	−0.23	0.20	−0.18	0.04
	mózgowiec	brain	−0.45	−0.25	−0.25	0.27	−0.27	0.11
	indywidualność	individual	−0.44	−0.16	−0.29	0.19	−0.07	−0.13
doordenker	myśliciel	deep thinker	−0.43	−0.09	−0.27	0.31	−0.05	0.04
denker	mędrzec	thinker	−0.42	−0.14	−0.22	0.27	−0.13	0.07
genie	geniusz	genius	−0.41	−0.32	−0.19	0.22	−0.20	0.05
bijdehand	bystrzak	smarty	−0.40	−0.21	−0.24	0.02	−0.17	0.05
geleerde	badacz	scholar	−0.38	−0.20	−0.20	0.25	−0.17	0.09
perfectionist	perfekcjonista	perfectionist	−0.38	0.02	−0.23	0.19	−0.37	0.12
idealist	idealista	idealist	−0.36	−0.02	−0.34	0.11	−0.09	0.02
verstandsmens	racjonalista	rationalist	−0.36	−0.15	−0.26	0.27	−0.22	0.11
diplomaat	dyplomata	diplomat	−0.35	−0.22	−0.24	0.15	−0.15	0.13
individualist	indywidualista	individualist	−0.35	−0.11	−0.15	0.31	−0.05	−0.11
aanvoerder	przywódca	leader	−0.34	−0.27	−0.04	−0.16	−0.28	−0.19
vernieuwer	innowator	innovator	−0.33	−0.24	−0.23	0.10	−0.12	−0.10
tacticus	taktyk	tactician	−0.33	−0.25	−0.16	0.21	−0.18	0.01
expert		expert	−0.32	−0.26	−0.01	0.14	−0.22	0.00
beschouwer	kontemplator	contemplator	−0.32	0.00	−0.25	0.27	0.02	0.09
estheet	esteta	aesthete	−0.31	−0.01	−0.24	0.18	−0.06	0.06
strateeg	strateg	strategist	−0.31	−0.30	−0.07	0.19	−0.20	−0.03
weetal	mędrek	wiseacre	−0.30	−0.04	0.20	0.09	−0.12	0.11
alweter	encyklopedysta	encyclopedist	−0.30	−0.10	0.03	0.19	−0.22	0.13
paniekzaaier	panikarz	alarmist	0.01	0.49	−0.08	−0.02	−0.03	0.10
klager	zrzęda	complainer	0.02	0.48	0.17	0.06	0.09	0.04
zeur		nag	0.14	0.48	0.11	0.01	−0.08	0.16
hystericus	histeryk	hysteric	0.13	0.48	0.04	−0.05	−0.05	0.01
brombeer	narzekacz	grumbler	0.02	0.46	0.14	0.07	0.02	0.05
jankerd	beksa	whiner	0.17	0.46	−0.07	−0.02	0.06	0.20
brompot	nerwowiec	grump	−0.03	0.43	0.09	0.06	0.00	−0.19
pessimist	pesymista	pessimist	−0.07	0.43	0.03	0.34	0.07	0.00
kniezer	jęczydusza	moaner	0.07	0.43	0.05	0.10	0.11	0.12
huilebalk	płaksa	cry-baby	0.12	0.43	−0.11	0.00	0.04	0.23
zwartkijker	czarnowidz	pessimist	−0.07	0.42	−0.01	0.32	0.10	−0.06
neuroot	nerwicowiec	neurotic	−0.01	0.42	−0.02	0.08	0.02	−0.24
neuroticus	nerwus	neurotic	−0.02	0.41	0.04	0.02	−0.04	−0.28
talmer	maruda	dawdler	0.04	0.41	0.04	0.12	0.19	0.08
zeurpiet	mazgaj	bellyacher	0.17	0.40	−0.01	0.03	0.02	0.20
driftkop	złośnik	bad temper	−0.02	0.38	0.18	−0.12	−0.06	−0.25

(*continued on next page*)

Table 6 (*continued*)

Languages			SCA components					
Dutch	Polish	English	F6.1	F6.2	F6.3	F6.4	F6.5	F6.6
			Intel	Neuro	Agree	Extra	Consc	Confo
	cykor	sissy	0.17	0.38	−0.05	0.13	0.09	0.33
kruidje-roer-mij-niet	obrażalski	touchy	0.03	0.37	0.09	−0.08	0.00	0.00
	strachajło	coward	0.17	0.34	−0.01	0.09	0.11	0.24
probleemkind	problemista	problem-maker	0.08	0.34	0.14	0.06	0.08	−0.03
paranoicus		paranoid	0.07	0.33	−0.02	0.15	0.11	−0.07
zuurkijker	zgorzknialec	sourpuss	0.11	0.33	0.20	0.27	−0.03	0.06
schijtebroek	tchórz	chicken	0.20	0.32	0.00	0.12	0.08	0.32
chagrijn	gderacz	grouch	0.09	0.32	0.23	−0.02	0.00	0.02
bekvechter	kłótnik	quarreller	−0.01	0.32	0.26	−0.16	−0.01	−0.24
zaniker		bore	0.25	0.31	0.11	0.22	−0.06	0.16
heethoofd	choleryk	choleric	−0.02	0.31	0.11	−0.10	−0.10	−0.25
	naiwniak	sucker	0.19	0.30	−0.13	0.05	0.13	0.20
humorist	komik	humorist	−0.21	−0.43	−0.24	−0.26	0.13	−0.07
moppentapper	żartowniś	joker	−0.18	−0.39	−0.25	−0.27	0.15	−0.04
komediant	kabareciarz	comedian	−0.14	−0.38	−0.17	−0.25	0.16	−0.05
durfal	śmiałek	daredevil	−0.15	−0.38	−0.16	−0.24	−0.09	−0.25
	mistrz	master	−0.33	−0.37	−0.21	0.09	−0.23	−0.06
grappenmaker	dowcipas	jokester	−0.14	−0.37	−0.26	−0.32	0.18	−0.06
clown		clown	0.13	−0.37	−0.04	−0.24	0.20	−0.10
grapjas	wesołek	joker	−0.11	−0.37	−0.31	−0.34	0.08	−0.02
gentleman		gentleman	−0.17	−0.36	−0.10	0.10	−0.14	0.14
held		hero	−0.26	−0.34	−0.20	−0.07	−0.11	−0.10
charmeur		charmer	−0.30	−0.32	−0.01	−0.31	0.08	0.06
komediespeler	komediant	comedian	−0.07	−0.30	−0.09	−0.26	0.14	−0.06
	krętacz	weasel	0.35	0.02	0.55	−0.09	0.11	0.00
	fałszywiec	deceiver	0.32	0.12	0.53	−0.06	0.01	0.17
	kanciarz	faker	0.29	0.00	0.53	−0.06	0.10	0.05
	kłamca	liar	0.31	0.09	0.53	−0.09	0.10	0.11
	żmija	snake	0.34	0.06	0.51	−0.05	−0.06	−0.01
	ważniaczka	bigshot	0.01	−0.07	0.51	−0.04	−0.11	0.08
	oszust	cheat	0.38	0.02	0.49	−0.06	0.05	0.05
egoist	egoista	egoist	0.07	0.15	0.47	0.10	0.03	0.11
	hipokryta	hypocrite	0.22	0.24	0.47	−0.04	0.08	0.16
manipulator	manipulator	manipulator	−0.03	−0.06	0.46	−0.13	0.02	−0.02
	zdrajczyni	traitor	0.40	0.09	0.44	−0.07	−0.07	0.14
bluffer	blefiarz	bluffer	0.05	−0.11	0.43	−0.09	0.09	−0.03
grootspreker	chwalipięta	boaster	−0.04	0.02	0.42	−0.24	−0.02	0.14
grootdoener	pyszałek	swagger	0.06	−0.04	0.42	−0.11	0.02	0.10
opschepper	szpaner	show-off	0.04	−0.13	0.42	−0.18	0.00	0.07
	oszukaniec	crook	0.34	0.03	0.41	−0.03	0.01	0.05
	sęp	predator	0.30	0.02	0.39	0.00	0.00	0.04
onruststoker	mąciciel	troublemaker	0.20	0.03	0.39	−0.10	0.04	−0.15
aansteller	pozer	poser	0.20	0.14	0.39	−0.11	0.03	0.14
opstoker	podżegacz	inciter	0.13	−0.03	0.39	−0.08	−0.07	−0.12
pocher	samochwała	boaster	−0.02	0.04	0.38	−0.13	0.04	0.13
onrustzaaier	mąciwoda	mischief-maker	0.20	0.06	0.38	−0.12	−0.03	−0.05
	ściemniacz	storyteller	0.12	−0.04	0.37	−0.18	0.13	0.07
treiteraar	dręczyciel	tormentor	0.28	0.02	0.36	−0.07	−0.02	−0.04
wijsneus	przemądrzalec	smart-aleck	−0.14	0.06	0.36	−0.06	0.00	0.15
simulant	udawacz	fake	0.23	0.14	0.35	−0.03	0.05	0.20
spotter	prześmiewca	mocker	−0.04	−0.06	0.35	−0.02	0.16	−0.09
aanstichter	podjudzacz	inciter	0.09	0.01	0.34	−0.10	0.01	−0.10
snob	snob	snob	0.20	0.08	0.34	0.01	−0.06	0.17
veelweter	zarozumialec	know-it-all	−0.09	0.01	0.34	0.05	−0.11	0.09
	donosiciel	telltale	0.30	0.18	0.33	−0.06	−0.11	0.26
provocateur	prowokator	provocateur	−0.02	0.04	0.33	−0.16	−0.02	−0.30
veinzer	pozorant	sham	0.12	0.11	0.32	−0.05	0.04	0.16
materialist	materialista	materialist	−0.03	−0.04	0.32	0.04	0.02	0.15
	kpiarz	teaser	0.00	0.01	0.32	−0.12	0.18	−0.13
hypocriet	obłudnik	hypocrite	0.29	0.02	0.32	0.01	0.01	0.15
dictator	dyktator	dictator	−0.07	0.05	0.31	−0.08	−0.23	−0.18
intrigant	intrygant	intriguer	0.03	−0.05	0.31	−0.09	−0.02	−0.04
jokkebrok	kłamczuch	fibber	0.19	0.04	0.31	−0.08	0.16	0.09
plaaggeest	szyderca	teaser	0.01	−0.01	0.30	−0.06	0.09	−0.10
	pocieszyciel	consoler	−0.38	−0.10	−0.62	−0.06	−0.08	0.10
mensenvriend	dobrodziej	philanthropist	−0.21	−0.13	−0.57	−0.04	−0.11	0.12
rechtvaardige	sprawiedliwy	just person	−0.32	−0.16	−0.55	0.11	−0.13	0.06
	samarytanin	samaritan	−0.34	−0.06	−0.52	0.06	−0.16	0.09
filantroop	dobroczyńca	philanthropist	−0.26	−0.11	−0.51	0.06	−0.10	0.09
	pieszczoch	darling	−0.32	−0.02	−0.51	−0.19	0.02	0.06
vredestichter		peacemaker	−0.21	−0.19	−0.50	0.05	−0.08	0.06
romanticus	romantyk	romantic	−0.32	0.05	−0.49	−0.09	−0.06	0.16

(*continued on next page*)

Table 6 (*continued*)

Languages			SCA components					
Dutch	Polish	English	F6.1	F6.2	F6.3	F6.4	F6.5	F6.6
			Intel	Neuro	Agree	Extra	Consc	Confo
gevoelsmens	emocjonalista	emotional person	−0.21	0.23	−0.47	−0.10	−0.02	0.10
goedzak	poczciwina	softy	−0.16	−0.09	−0.44	0.01	−0.04	0.15
beschermer		protector	−0.24	−0.09	−0.43	−0.06	−0.13	0.03
altruist	altruista	altruist	−0.22	−0.05	−0.43	0.11	−0.03	0.06
sentimentalist	sentymentalista	sentimentalist	−0.31	0.19	−0.42	−0.03	−0.04	0.14
optimist	optymista	optimist	−0.16	−0.39	−0.42	−0.21	−0.14	0.10
dromer	marzyciel	dreamer	−0.27	0.09	−0.41	0.00	0.16	0.10
weldoener	łaskawca	benefactor	−0.19	−0.07	−0.41	0.04	−0.09	0.10
enthousiasteling	entuzjasta	enthusiast	−0.27	−0.22	−0.41	−0.24	−0.14	0.03
engel		angel	−0.20	−0.09	−0.40	−0.04	−0.07	0.17
religieuze		believer	−0.14	−0.02	−0.40	−0.11	−0.16	0.13
eenling	samotnik	loner	−0.07	0.12	−0.07	0.58	0.07	0.03
stille	milczek	a man of few words	−0.04	0.14	−0.26	0.55	0.03	0.19
introvert	introwertyk	introvert	−0.13	0.13	−0.16	0.53	0.03	0.14
kluizenaar	pustelnik	hermit	0.00	0.06	−0.12	0.53	0.07	0.05
zwijger	niemowa	mute	0.01	0.10	−0.22	0.52	0.03	0.17
outsider		outsider	0.08	0.18	−0.02	0.45	0.10	−0.03
	sztywniak	wimp	0.13	0.24	0.06	0.41	−0.01	0.29
flegmaticus	flegmatyk	phlegmatic type	0.08	0.01	−0.04	0.41	0.09	0.18
stoicijn	stoik	stoic	−0.09	−0.12	−0.15	0.35	−0.06	0.11
scepticus	sceptyk	skeptic	−0.26	0.17	0.05	0.34	0.03	−0.05
filosoof	filozof	philosopher	−0.33	−0.07	−0.11	0.34	0.07	0.02
solitair		recluse	−0.04	0.07	−0.08	0.33	0.09	−0.04
asceet	asceta	ascetic	−0.02	0.01	−0.16	0.30	−0.18	0.09
kletskous	trajkotka	chatterbox	−0.02	0.11	−0.05	−0.56	−0.01	0.08
prater		talker	−0.11	−0.07	−0.02	−0.55	−0.07	0.03
babbelkous	katarynka	chatterbox	−0.07	0.05	−0.05	−0.55	−0.03	0.06
babbelaar	gaduła	chatterer	−0.09	−0.05	−0.12	−0.55	−0.04	0.05
flapuit		blab	0.08	0.22	0.05	−0.53	0.06	0.00
lachebek	chichotka	giggler	−0.04	−0.15	−0.30	−0.42	0.06	0.02
feestfiguur	balowicz	partygoer	−0.04	−0.21	−0.09	−0.41	0.17	−0.10
feestvierder	hulaka	reveller	0.06	−0.30	0.02	−0.38	0.25	−0.15
extravert	ekstrawertyk	extrovert	−0.14	−0.14	−0.12	−0.36	−0.04	−0.06
jongensgek(meisjes-)	flirciarz	flirt	−0.10	−0.19	0.05	−0.36	0.11	0.00
mooiprater	bajerant	smooth talker	−0.07	−0.19	0.15	−0.35	0.09	0.03
fuifnummer	hulajdusza	partygoer	0.03	−0.34	0.00	−0.35	0.24	−0.14
roddelaar	plotkarz	gossip	0.03	0.28	0.22	−0.35	0.09	0.20
schreeuwer	krzykacz	loudmouth	0.07	0.22	0.17	−0.33	0.01	−0.22
luiaard	leniwiec	sloth	0.05	0.05	0.06	0.10	0.55	0.06
aartsluiaard	arcyleń	lazybones	0.19	−0.02	0.09	0.11	0.52	0.02
slaapkop		sleepyhead	−0.04	0.09	−0.04	0.02	0.48	0.10
draler	obibok	slacker	0.21	0.06	0.08	0.12	0.47	0.07
lanterfanter	nierób	loafer	0.23	0.02	0.10	0.11	0.46	0.03
knoeier	bałaganiarz	messy person	0.06	0.02	−0.09	0.04	0.41	0.00
luierik	próżniaczka	sluggard	0.20	0.06	0.23	0.09	0.40	0.04
vergeetal	zapominalski	forgetter	0.00	0.06	−0.19	−0.06	0.40	0.03
telaatkomer	spóźnialski	latecomer	0.06	−0.02	−0.06	−0.10	0.39	0.02
nachtmens		night-bird	−0.14	−0.20	−0.02	−0.03	0.37	−0.10
flodderaar	niechluj	slob	0.26	0.00	0.08	0.04	0.34	−0.06
	roztrzepaniec	scatterbrain	−0.06	0.14	−0.17	−0.22	0.32	−0.11
plichtsverzaker	migacz	shirker	0.10	−0.03	0.22	−0.03	0.32	0.02
slons	niedbaluch	sloven	0.28	0.04	0.07	0.08	0.30	−0.03
werkbeest	pracuś	worker	−0.23	−0.04	−0.32	0.02	−0.52	0.05
doorzetter		go-getter	−0.24	−0.08	−0.31	−0.11	−0.47	0.01
ochtendmens		early bird	0.05	0.07	−0.21	0.03	−0.47	0.02
werkmier	mrówka	ant	−0.15	0.05	−0.28	0.04	−0.46	0.07
blokker	kujon	crammer	−0.22	0.04	−0.22	0.12	−0.43	0.25
	porządniś	goody-goody	−0.22	0.06	−0.31	0.01	−0.38	0.27
vechter	bojownik	fighter	−0.15	−0.08	−0.10	−0.05	−0.33	−0.32
bureaucraat	biurokrata	bureaucrat	−0.04	0.01	0.03	0.14	−0.31	0.20
autoriteit		authority	−0.29	−0.18	0.12	0.05	−0.30	−0.05
conformist		conformist	0.14	0.05	−0.02	−0.02	−0.17	0.39
jaknikker	potakiwacz	yes-man	0.14	0.14	−0.05	0.06	0.04	0.38
meeloper		follower	0.29	0.18	0.05	−0.02	0.05	0.38
behoudsgezinde		conservative	0.01	0.03	−0.11	0.04	−0.28	0.34
	podlizywacz	arselicker	0.09	0.08	0.32	−0.22	0.02	0.33
slappeling	słabeusz	weakling	0.23	0.23	−0.02	0.18	0.09	0.30
opstandeling	buntownik	rebel	−0.18	0.01	0.06	−0.01	0.10	−0.45
rumoermaker	wybuchowiec	boisterous person	0.02	0.17	0.07	−0.24	−0.02	−0.43
extremist		extremist	−0.07	0.15	0.04	0.08	0.03	−0.41
wilde	rozrabiaka	tearaway	0.09	−0.17	−0.01	−0.24	0.16	−0.39
rustverstoorder	łobuz	hooligan	0.16	−0.15	0.12	−0.17	0.12	−0.36

(*continued on next page*)

Table 6 (*continued*)

Languages			SCA components					
Dutch	Polish	English	F6.1	F6.2	F6.3	F6.4	F6.5	F6.6
			Intel	Neuro	Agree	Extra	Consc	Confo
	bestia	beast	0.23	−0.13	0.12	−0.05	−0.02	−0.36
wildeman	piekielnik	spitfire	0.17	0.02	0.13	−0.13	−0.06	−0.35
avonturier	awanturnik	adventurer	−0.09	−0.02	0.00	−0.21	−0.02	−0.35
waaghals	ryzykant	daredevil	−0.12	−0.28	−0.09	−0.23	0.02	−0.35
kabaalmaker		rowdy	0.14	−0.15	0.21	−0.30	0.07	−0.34
non-conformist		noncomformist	−0.22	−0.09	−0.10	0.26	0.12	−0.34
strijder	wojownik	fighter	−0.20	−0.12	−0.15	−0.04	−0.31	−0.32
spring-in-'t-veld	furiata	madcap	0.07	0.09	0.03	−0.14	0.05	−0.31
hippie		hippie	0.05	0.00	−0.18	0.16	0.12	−0.30
	brutal	brute	0.25	−0.16	0.20	0.05	−0.12	−0.30

Note: loadings ≥ |0.30| are given in bold; items with no loadings ≥ |0.30| are not presented; Intel = Intellect. Neuro = Neuroticism. Agree = Agreeableness. Extra = Extraversion. Consc = Conscientiousness. Confo = Conformism.

Table 7
Correlations between components based on original three data sets and those based on the subsets used in the joint analysis. and between the original sets and the remaining sets of nouns.

		included 280 as part of 331						excluded set of 291 (of 660)					
Dutch-571		1	2	3	4	5	6	1	2	3	4	5	6
	D6.1	**93**	19	00	−11	−09	10	**65**	**−68**	07	−02	04	−10
	D6.2	−16	**94**	02	09	15	−02	−26	−36	−07	**84**	−04	06
	D6.3	07	−03	**94**	16	−01	03	27	02	02	−02	−20	**88**
	D6.4	12	−04	−19	**92**	03	−05	−22	−02	**89**	05	08	13
	D6.5	13	−12	01	−03	**93**	−09	**59**	**53**	24	**40**	05	−21
	D6.6	−05	−02	−06	06	11	**95**	00	−07	−03	−04	**91**	13
		included 270 as part of 331						excluded set of 184 (of 660)					
Polish-454		1	2	3	4	5	6	1	2	3	4	5	6
	P6.1	**99**	03	02	00	02	01	**56**	06	−10	**73**	07	08
	P6.2	−02	**98**	00	09	05	−06	16	**92**	−02	−11	15	07
	P6.3	−02	−01	**95**	23	−05	06	01	03	**92**	09	18	−04
	P6.4	00	06	−06	01	01	**97**	**74**	−22	05	−35	−04	−20
	P6.5	−01	08	20	**−94**	07	02	−01	−17	−21	−05	**88**	00
	P6.6	−02	−04	02	08	**97**	02	−06	14	−09	07	00	**−89**
		included 187 as part of 331						excluded set of 185 (of 660)					
English-372		1	2	3	4	5	6	1	2	3	4	5	6
	E6.1	**96**	08	03	06	03	−22	**91**	18	−19	−09	−05	24
	E6.2	−03	**91**	10	16	−11	16	−04	−08	−07	**−89**	24	−18
	E6.3	19	−22	−04	−01	**−53**	**66**	−03	**86**	01	05	30	−31
	E6.4	03	13	**−94**	−13	12	08	−27	14	**−45**	−02	30	**64**
	E6.5	07	−13	−08	**69**	10	28	08	−21	**−70**	13	13	**−44**
	E6.6	−04	−07	01	**45**	**52**	09	19	−22	**40**	07	**70**	05

Note: Decimal points omitted.

3.5. *Swahili personality trait language*

For the study of the structure of the personality trait language in most languages adjectives are chosen as trait descriptors while other word classes (verbs; nouns) would also be available to convey valuable trait information (cf. De Raad & Barelds, 2008). Rodin (1972) has argued that those different word classes differ in informativeness, with verbs communicating most accurately, and nouns, especially those of a metaphoric type (e.g., "he is an injured alligator") communicating least accurately. Also, the context of use is different: nouns tend to be used more frequently in oral communication, in comparison to adjectives and verbs, and because they are thus more exposed to exchanges of the rhetorical type, they tend to be more contaminated with rhetorical functionality. That may be true for many or most languages, but some of this logic may lose footing when adjectives are hardly available. In certain languages the personality vocabulary indeed hardly contains adjectives. Swahili is such a language, and this language has recently been subjected to the psycho-lexical approach to personality (Garrashi et al., 2023). Self-ratings were collected from 480 participants, mainly university students (51% male, 42% female, 7% did not provide gender), with a mean age of 20.67 years (age range: 15–59) on 661 trait-descriptive items, of which 23 were adjective based, 199 were verb based, 189 were attribute-noun based, and 250 items were type-noun based. We used this last data set (based on the 250 type nouns) for purposes of comparison, because it is most comparable in terms of the word-class used. That does not mean that actual usage of nouns in Swahili is the same as in English, Dutch, and Polish.

The Swahili data were ipsatized, and subjected to PCA, followed by Varimax rotation of six factors. That number agrees with the scree in the eigenvalues suggesting around five factors. The eigenvalues for the first 10 components were 16.8, 7.4, 5.0, 4.3, 4.1, 3.6, 3.4, 3.3, 3.1, and 3.1, explaining 21.6 % of the total variance. The six type noun-based factors (explaining 16.5 % of the variance) are presented in Table 8, using variables that load substantially on the factors. It may surprise that many of the items in Table 8 are adjectives. This is the result of the translation process: not every word in one language has its direct

Table 8
Six type-noun based factors in Swahili.

6.1 Virtue	hospitable (0.56), obedient, composed, attentive, respectful, takes initiative, active, takes responsibility, patient, pious, truthful, weighs things up, good-humored, joyous, team player, humble, tidy, follows the fashion, trustworthy, does not give up, creative, forgiving, civilized, pleasant, confidential, quiet, honest, cheerful, courageous, kind, does not venture out (0.30) vs malignant (-0.40), boring, bandit (-0.33)
6.2 NV	mugger (0.52), rogue, idiot, bandit, dishonest, spreads rumors, breaks social norms, thick-headed, talks continuously, crazy, full of foul language, vexatious, sleepy brain, dissolute, provocateur, foolish, deceitful, crook, creates enmity between people, foolish, seducer, betrayer, slanderer, bad manners, envious, conservative, prostitute, chatterbox, likes strife, blockhead, fearless, loafer, ill-willed (0.31)
6.3 Imprudence	thief (0.48), feeble-minded, cons people, stupid, confused, foolish, childish, brainless, never appreciates, foolish, ruthless, imbecile, slanderer, sows discord between people, negligent, impudent person, ignoramus, lunatic (0.30) vs open-minded (-0.39), polemic, reserved, clever, persevering, good mannered, good conversationalist (-0.33)
6.4 *manipulation*	quarrelsome (0.48), saboteur, gossip-monger, monopolistic, fights for others, likes to get things without working for it, destructive, sows seeds of discord between people, mistreats others, shows favor to someone, oppresses others, steals small things, hooligan, law breaker (0.32)
6.5 Self-importance	boisterous (0.38), show-off, know-it-all, cunning, full of ruse, talebearer, coward, nonchalant, blabber (0.30) vs trusts others (-0.35), cultured, trustworthy (-0.33)
6.6 *interference*	takes interest in matters that do not concern them (0.42), careless, interferes in other people's affairs, confrontational, argumentative, never cheerful, annoying, creates confusion, causes strife, accuses falsely (0.31)

counterpart in another language; moreover, in general we sought for the best English approximation of the semantics of the Swahili original.

As an aid in the interpretation we added the hierarchical emergence of factors from solutions with one up to six factors, as presented in Fig. 2. Moreover, in order to establish the extent to which these six Swahili type-noun-based factors represent the six Swahili factors based on the full set of 661 Swahili trait descriptors, the two sets of factors were correlated. The correlations are given in Table 9.

The first unrotated factor in Fig. 2 represents the evaluative side of a large variety of trait words. That evaluative-moral content is further nuanced in the two-factor solution with the emergence of a Virtue factor and a Negative Valence factor. To these two, the three- and four-factor solutions subsequently add Imprudence and Self-importance. These four factors remain the same in solutions with five- and six factors, and they correlate substantially with the corresponding four factors based on the 661 set of Swahili trait descriptors.

The contents of the fourth (*manipulation*) and sixth (*interference*) factor of the six-solution are hard to distinguish from each other and are therefore tentatively provided with these two names, which are given some flesh through their strongest correlations (Table 9) with the 661-based factors Virtue and Attentive Conversation. *Manipulation* in both the five- and the six-solution seems to picture a kind of "double-headed serpent", combining a series of rather negative characteristics (*destructive, seeds discord*) with relatively positive ones (*fights for others*, *shows someone a favor*), thus conveying the manipulative character of people with a propensity to "divide and rule", a behavioral style aiming to keep control over the group consisting of people with different societal roles (both allies and opponents). The moderate correlation with Negative Valence makes sense given that interpretation. The 661-items based factor Deceptiveness does not return in the subset with type-nouns only, which should not surprise, given the finding that, in Swahili, the contents of this factor are mainly communicated through attribute nouns (Garrashi et al., 2023).

In conclusion, the Swahili type noun-based factors show little or no evidence of a Big Five structure, but five of the six factors do seem to exhibit the saliency of a broad domain of which Agreeableness forms the main symbol. Several Virtue traits (e.g., *hospitable*, *respectful*, *patient*, *truthful*, *team player*, *humble*) are typical of Agreeableness. Certain NV traits (e.g., *dishonest*, *breaks norms*, *deceitful*, *betrayer*, *bad manners*) display aspects of the negative pole of Agreeableness. Of the factors 6.4,

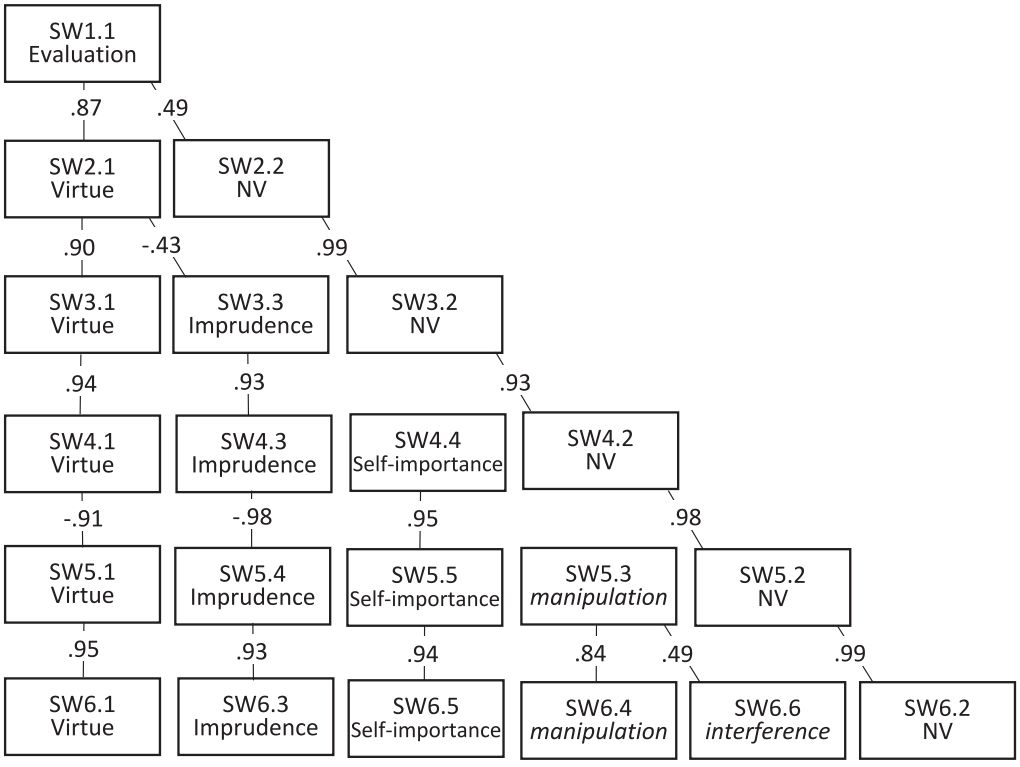

Fig. 2. Hierarchy of factor-solutions of Swahili trait descriptive type-nouns.

Table 9
Relations between the six type-noun based factors in Swahili and those based on the full set of 661 items.

		Swahili factors based on the 250 set of items					
		Virtue	NV	Imprudence	*manipulation*	Self-importance	*interference*
Swahili six. based on 661 items		F6.1	F6.2	F6.3	F6.4	F6.5	F6.6
Virtue	F6.1	**0.76**	0.14	-0.02	-0.25	0.02	-0.37
Imprudence	F6.2	-0.17	0.07	**0.81**	0.03	-0.19	-0.09
Negative Valence	F6.3	-0.08	**0.84**	-0.03	0.40	0.25	0.01
Self-importance	F6.4	-0.14	-0.10	0.08	-0.11	**0.72**	-0.21
Deceptiveness	F6.5	-0.13	-0.05	-0.03	0.07	-0.12	-0.01
Attentive Conversation	F6.6	-0.22	-0.00	-0.16	-0.05	-0.22	**-0.52**

6.5, and 6.6, several trait terms also connect to the negative pole of Agreeableness (e.g., *quarrelsome*, *mistreats others*, *boisterous*, *show-off*, *confrontational*, *causes strife*). But even the left-over factor (Imprudence) touches on Agreeableness with terms such as *cons people* and *sows discord* versus *polemic* and *good mannered*.

3.6. Relations between the Swahili factors and the cross-language six

Of the demonstrated Big Five related cross-language six, the first, Intellect-related, factor seems to find some kinship in the Swahili factor 6.3 (Imprudence), as is visible in the latter's opposite pole with terms such as *open-minded* to *good conversationalist*. The fifth Swahili factor (Self-importance) seems to relate to the cross-cultural factor 3, capturing both Agreeableness traits and Honesty-Humility traits. The manipulation-interference factors may be traced back to different facets at the negative pole of Agreeableness. Most striking in the comparison between the Swahili factors and the cross-language six, is the evaluation-morality coloring of the Swahili factors, especially through Virtue and Negative Valence, and the manipulation-interference traits of the Swahili factors four and six.

The differences between the cross-language type noun six and the Swahili six may have different explanations. The cross-language six are based on results from different languages and different (yet all Western) regions, and may therefore be considered to form a respectable hypothesis on what may be found in adjacent languages and cultures. The Swahili six has proceeded from a single study in a language from a collectivistic cultural context geographically distant from the individualistic Western culture. That cultural distinction is understood to represent different notions of what is considered important as characteristics in the individual (cf. De Raad, 2006; Markus & Kitayama, 1998). The cross-language six were found in languages all having also large vocabularies of adjectives forming the main vehicle to communicate human propensities. The Swahili six were found in a language without a similar adjective vocabulary. It seems that the effects of such linguistic differences on the ways people conceive of human propensities have yet to be established.

Apart from the use of the specific word-class of nouns for personality description, the comparison between the cross-language six and the Swahili six is that, notwithstanding the clear presence of Big Five related factors in the cross-language six, the Swahili study pointed at the possible boundaries of those results and rather oriented towards a stronger role of Agreeableness-related facets. That bearing of Agreeableness has emerged in other non-Western lexical studies (e.g., Fetvadjiev et al., 2017; Thalmayer et al., 2020), and has been referred to by Graziano and Tobin (2002) as "perhaps even the largest single dimension" of personality.

4. Discussion

In the search for finding a structure of personality descriptive type nouns that is common to the three languages Dutch, English, and Polish, we concluded to a six-factor structure with the first five factors representing type-noun versions of the Big Five plus a sixth factor –"Conformism"– seemingly representing in part a facet of the Big Five Intellect. These type-noun based factors have in common that most of their variance is accounted for by negative nouns, with the respective leading factor variables *moron*, *alarmist*, *weasel*, *loner*, and *sloth* having the highest loadings; of the sixth factor (*conformist* vs *rebel*) it is hard to determine which of the poles contains positive or negative terms. The greater emphasis on negative terms in general agrees with their more extensive oral utilization where those words are often employed for purposes of insult. So, on the one hand the structure of personality descriptive type nouns confirms the Big Five model of traits, and on the other hand they do not seem to compete with adjectives in case of assessment functionality because adjectives are generally saved from rhetorical usage.

The factors based on the original individual variable sets are represented rather well by the factors based on the respective subsets of variables used to arrive at the common cross-cultural solution. This is even true in case of the individual set variables not used for the common solution. Although for English, using the original full set of variables, for some factors non-Big Five labels were suggested (Masculinity-Femininity and Delinquency), those factors could also be considered as narrowed type-noun versions of Big Five Emotional Stability and Intellect, respectively.

When turning to languages without a rich portion of adjectives, as in the case of Swahili, it seems that the rhetorical-insultational function of utterances about personality is de-emphasized, and other, more neutral, functions of conversation on personality have taken over, such as correcting, instructing, edification, but also self-enhancing and manipulation. Such conversations take place in a context where cultural values and notions of morality are brought into play.

Looking for ways to reconcile the results such as these from the cross-cultural noun factors and the Swahili noun factors, it seems important to broaden the focus in psycho-lexical personality research to include parameters of language (e.g., language-related function of word-classes) and of culture (e.g., values, morality), with reference to the fueling context to the lexical hypothesis as worded in "…of most significance in the daily transactions of persons with each other…." (Goldberg, 1981, pp 141-142). Repeated interactions in which individual differences are discussed, leading to trait encodings in language, do not take place in a vacuum. Such interactions are of a great variety, running from casual meetings, to dinner-table talk, to café-talk, to talk in professional contexts. Chen et al. (2020) demonstrated that such interactions involving personality attributions may start at the early age of toddlers and preschool children. The goals in those situations may be often of a transient nature under the influence of culturally pertinent values, but in many cases the goals may be explicit as in professional settings where specific ethics may play a role.

De Raad (1985) referred to that general transactional ambience as situations of *person-talk* where people talk about self or others, which others, in turn, being present or absent (cf. De Raad & Caljé, 1990). An obvious reference to the absent case is gossip, defined as the "exchange of information with evaluative content about absent third parties" (Foster, 2004). Other examples of third-person talk situations are personality assessment discussions by practitioners (e.g., Hawkins, 1979)

and medical gossip as a learning tool (e.g., Rahmani, 2018). For a study on why people gossip, see Beersma and Van Kleef (2012). Self-talk takes place in for example reminiscing personal anecdotes (e.g., O'Rourke, King, & Cappeliez, 2017; Rathbone, Moulin, & Conway, 2008), in Self-disclosure (e.g., Mehr & Daltry (2022), and boasting (e.g., Tal-Or, 2008). Second-person talk is identified in for example insults (De Raad et al., 2005). Such person-talk studies tell that personality attributions do not take place on neutral ground, but they are embedded in often short-lived (everyday and professional) contexts, with pragmatic effects. The personality vocabulary that is built up in such contexts is connoted by their functionality, such as praising and blaming, instructing, correcting, understanding, edifying, etc.

A specific example of culture-related personality attributions is found in insults. Admittedly, the personality-relevant content of insults is extremely meager, but there is clear reference, most often through type nouns, to what is considered important in people, such as people's lack of normality, social inadequacy, sexuality, and family, and the insults always involve (often transient) qualifications of persons. The interest here is, however, not in what insults tell about traits, but rather about what different cultures tell about what is considered important in persons. De Raad, Van Oudenhoven, and Hofstede (2005) and Van Oudenhoven et al. (2008) recorded second-person utterances (terms of abuse) in three and eleven (Western) cultures (countries), respectively. Certain topics in the use of abusive language turned out to be more salient in one country than in the other. The dark and devilish side in people is an issue typical of Norway. References to virility is typical for Spain, and references to family honor is typical for both Croatia and Spain. References to lack of intelligence seem to occur in all cultures investigated. Is seems that in such emotionally-laden short-lived communications values, morality, and circumstances come together to do their trick. Collectivistic and individualistic orientations, religious themes, and historically recurrent themes such as references to diseases (The Netherlands), cleanliness (Germany), alternate on the stage of insults. Such a role of values, norms, and historical themes is probably also responsible for at least part of the differentiation of person-talk in general in different societies.

It seems rather presumptuous to think that the personality vocabulary built up in different Western languages would be evenly useful in those different languages, let alone that such a vocabulary could be comfortably put in practice in countries and societies distant from the West. With more than 7000 languages in the world, Europe counting not even 5% and Asia and Africa each counting 30 % or more of those languages, Western findings based on the use of personality vocabularies shall have to be treated with great reservation as to their cross-cultural applicability.

4.1. Strengths and limitations

Only in a few languages the use of type nouns has been investigated for its descriptive potential, in addition to what has been covered by the use of adjectives. For personality assessment it is crucial that the vocabulary of personality traits represents the full semantic potential to make assessments as accurate and adequate as possible, both for research purposes and for reports to professionals and individuals. The historically early dismissal of type nouns for that purpose on the basis of their presumed evaluative loading has been too categorical. The present study with Dutch, English, and Polish data, demonstrates that there is quite some commonality in semantic clusters shared by these first three languages under investigation, that the cluster contents is far from alien to what is communicated through the Big Five, and it provides information on the specific role of nouns in the communication about traits.

The exploitation of data from only three languages also forms clear limits concerning the generalizability of the findings. This is true for adjective-based trait taxonomies, and possibly more so for type-noun based taxonomies. It is reassuring, though, that the kernel structure contents align rather well with the psycho-lexically based Big Five structure, which generally resonates best in Indo-European languages in Western regions; when considering psycho-lexical studies in other than non-Indo-European languages, as in Asian regions, the Big Five starts showing signs of fallibility (e.g., De Raad et al., 2010; Saucier, 2009, p. 1609). Given these observations from adjective-based structural findings, one would hypothesize the present noun-based kernel structure having similarly limited validity. Beyond that, a variety of languages from other language-families and geographical regions shall have to be investigated to corroborate the ways type-nouns may add to enrich the personality-assessment vocabulary. The Swahili structure forms an interesting example in this respect.

The juxtaposition of the three-language kernel structure and the one from Swahili, actually puts this project in an excitingly new perspective. While most languages investigated for its personality structure used adjectives as the appropriate word-class, certain languages do not have a sufficiently toned set of adjectives, and Swahili, being one of those languages, uses nouns as the primary vehicle for communicating on personality traits. The presently used Swahili structure turned out to emphasize rather different dimensions of personality description. An intriguing question, in need to pursue in the near future, is in which way other adjective-poor languages deal with communication on personality traits.

5. Conclusion

Personality descriptive type nouns have long been kept away from personality trait taxonomies because of their presumed oratorical nature; this is because of their evaluative loading and their preponderant exploitation in everyday talk for pragmatic purposes. In three languages (Dutch, Polish, English), researchers followed the empirical path and independently structured the personality trait domain solely consisting of type-nouns. In the present study, the data from those three studies were used in a search for a kernel structure that is shared by those three languages. That common kernel structure turned out to be surprisingly similar to the Big Five trait structure, yet with dimensions that reflect the narrowed applicability of nouns in their oratory role. The evaluative character of the factors is striking, and possibly effective through their metonymical communication of values and beliefs.

A comparison with the results of a fourth study based on type nouns, Swahili, teaches some additional interesting lessons. The Swahili structure does not reflect the Big Five, but rather reflects what is exchanged in practical daily conversations about self and others, with more direct reference to values and beliefs. It should be noted that this comparison is one with multiple unknowns. Swahili is a language without adjectives, which may mean that the alternate use of type-nouns may relate differently to both the more standard "adjectival" trait-attribution and to the more typical type-noun loaded insults. Moreover, Swahili is spoken in a region that is geographically and culturally distant from European or Western languages, namely eastern and central Africa. A noticeable influential distinction is on the collectivistic-individualistic dimension.

The psycho-lexical approach to the structure of personality traits is far from complete. Big Five affiliated trait structures are found in Western languages; some Asian and African languages have demonstrated to give greater weight to concerns of interpersonal relatedness; there are more languages that do not have trait-descriptive adjectives. How do different cultures and languages verbalize and organize their conceptions of personality traits, if at all?

CRediT authorship contribution statement

Boele De Raad: Supervision, Conceptualization, Data curation, Formal analysis, Methodology. **Ana Volungevičienė:** Data curation, Investigation. **Petar Čolović:** Formal analysis, Conceptualization, Data curation. **Kim De Roover:** Formal analysis. **Harrun Garrashi:** Investigation, Validation. **Oleg Gorbaniuk:** Data curation, Investigation.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Data sharing: The original data stem from published studies; we can provide the combined partial sets used for the present study upon request. The sharing of the original raw data sets remains to the discretion of the original authors.

This research was not preregistered; the used data sets were collected for previously published studies.

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