The role of word-categories in trait-taxonomy: evidence from the Dutch personality taxonomy

Dick P.H. Barelds and Boele De Raad
Department of Psychology, University of Groningen, The Netherlands

We examined how the use of personality descriptive terms from word categories other than adjectives affect the factor structure. Use was made of the previously published (2008) Dutch trait structure comprising eight factors: (versions of) the Big Five factors, and three new factors, labeled Virtue, Competence, and Hedonism. This 2008 structure lends itself well to study the role of word categories, because it adopted an unrestricted approach in selection of trait-descriptors and included words from different word categories. Some differences were found between the eight factors in terms of the contribution from different word categories, but the meaning of the three new factors appeared to be determined mostly by trait adjectives. When analyzing the 953 typical adjectives only (N = 1,466), an eight factor solution was found that closely resembled the structure of the whole dataset, whereas analyzing a subset of 441 adjectives that had been used in the previous Dutch lexical study supported the Big Five. Additional analyses on an old dataset containing 1,203 adjectives (N = 400) yielded an eight factor structure that was highly similar to the new Dutch lexical structure. Together these results suggest that particularly the inclusion of a larger number of trait terms is responsible for finding the 2008 Dutch lexical structure.

Keywords: trait-taxonomy, word-classes, word-categories, psycho-lexical approach

For personality assessment communication and for the development of personality assessment instruments it is of great importance to be able to express behavioral observations and conclusions from behaviors as precise, detailed, and successful as possible. In order to reach this goal, the full potential of the different descriptive elements of language should be exploited as much as possible. Those elements comprise adjectives, nouns, verbs, adverbs, and other standard lingual units. The psycho-lexical approach to personality aims at mapping all those lingual units that have the "capacity …..to distinguish the behavior of one human being from that of another" (Allport & Odbert, 1936, p. 24). Its rationale, expressed as the *lexical hypothesis*, holds 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" (Cattell, 1943, p. 483). This hypothesis has internationally led to the conviction with many personality psychologists that the trait domain can be fully described (e.g., Almagor, Tellegen, & Waller, 1995; Angleitner, Ostendorf, & John, 1990; Church, Reyes, Katigbag, & Grimm, 1997; De Raad, Hendriks, & Hofstee, 1992; Goldberg, 1990; Hahn, Lee & Ashton, 1999).

That firm belief, however, has been operationally tested with a restricted elaboration of the lexical hypothesis, which is at odds with its animating principle, namely the restriction to the use of trait descriptive *adjectives*.

'Adjectival' primacy of trait-descriptors

Since Norman's (1963, 1967) call to re-embark on the enterprise to construct a taxonomy of the total pool of trait names in the natural language, psycho-lexical studies have mainly used trait-descriptive adjectives. The original Big Five model (Goldberg, 1981; Norman, 1963), its confirmations in other languages, and also the Six-Factor and Seven-Factor models were solely given shape through trait-adjectives. One could argue that adjectives are indeed the logical *lingual* class for trait description, because adjectives describe relatively stable attributes of objects, people, and events. Other types of words and expressions may, however, also function in an "adjectival" way (De Raad, 1994; De Raad & Ostendorf, 1996; cf. Saucier & Goldberg, 1996)[1]. If, for instance, a person frequently engages in a certain activity, a verb describing that activity obtains adjectival meaning. Items illustrating such adjectival meanings for verbs, but also for nouns, are "is someone who *anticipates* things" (verb), "is someone who *worries* a lot" (verb), "is a *braggart*" (noun), and "is someone who seeks *confrontation*" (noun). The lexical hypothesis does not preclude any word categories or expressions. Thus, to the extent that words or expressions function in an "adjectival" way they should be considered for trait-descriptive purposes, albeit under the condition that meaning is added to what is already captured by trait-adjectives. So, the

Correspondence to: Dick P.H. Barelds, University of Groningen, Department of Psychology, Grote Kruisstraat 2/1, 9712 TS Groningen, The Netherlands. E-mail: d.p.h.barelds@rug.nl

---

[1] The expression "psycho-lexical" has been used to express exactly this psychological use of lingual categories, instead of just "lexical" which would be more appropriate in linguistic or lexicographical contexts.

question then is whether nouns, verbs, adverbs, and other standard expressions that function in an adjectival way, do add semantics beyond what is contained in adjectives.

An excuse for *not* using word categories other than adjectives could be that each semantic root appears in all relevant forms, such as in *tolerant* (adjective), *tolerantly* (adverb), *tolerance* (noun), and *tolerate* (verb), and in *agreeable*, *agreeably*, *agreeableness*, and *agree*. Moreover, the different forms should not relate to a difference in the semantics they convey, as in *alert* (adjective) and *to alert* (verb), but only be allowed to differ in (linguistic) function. On the basis of an analysis made on common roots of words from categories of verbs, nouns, and adjectives (De Raad, 1992), it was concluded that words from two or three different word categories had less than twenty per cent common stems.

The psycho-lexical pioneers Allport and Odbert (1936) had an open eye for the different word categories constituting the personality vocabulary. Their criterion for inclusion was that terms should add meaning, and not just be different in form. Their list of 17,953 trait-names included adjectival and participial terms, adverbs, and nouns. Nouns and adverbs appeared where no corresponding adjective or participle existed, thus assuming the primacy of adjectives. Since the seminal work of Allport and Odbert (1936), however, only a handful of studies have used word categories other than adjectives to arrive at a structuring of traits.

In the discussion of those studies our interest is especially in what the use of other word categories may add to what is covered by adjectives. We accept the primacy of adjectives to fulfill the trait-descriptive role. Although other word categories are of interest primarily if they add trait-semantics, they may also be relevant if help to improve communication on traits.

Word category related findings and observations

A few studies on personality descriptive *verbs* (trait-verbs) have been conducted by De Raad, Mulder, Kloosterman, and Hofstee (1988), and by Hřebíčková, Ostendorf, Osecká, and Čermák (1999). Studies on personality descriptive *nouns* (trait-nouns) have been conducted by De Raad and Hoskens (1990), Di Blas (2005), Goldberg (1982), Henss (1998), and Saucier (2003). The main problem with these studies was that trait structures were investigated within that particular word category and comparisons with adjectives-based outcomes were mostly done by comparing contents of factors[2]. Although studies like those above give indications of effects of the use of different word categories on the final trait structure, there is lack of systematic research to sustain such effects.

De Raad (1992) and De Raad and Hofstee (1993) compared trait structures based on trait-adjectives, trait-nouns, and trait-verbs. Based on comparison of content, they concluded that whereas the Big Five factors could be identified more or less in both adjectives and nouns, the verb structure seemed to be quite different (e.g., De Raad, 1992). More specifically, for trait-verbs a two-dimensional factor solution seemed more appropriate (see De Raad & Hofstee, 1993), with the first factor combining aspects of

Agreeableness and Conscientiousness, and the second factor combining aspects of Emotional Stability and Extraversion. This factor structure was found to coincide well with the two-factor solution reported for trait-verbs in Czech by Hřebíčková and colleagues (1999). Both these trait-verb studies appeared to include quite a number of verbs referring to "underhandedness" and "betrayal" (e.g., *to rob, to swindle*). Such characteristics might be better captured in verbs than in adjectives.

With regard to nouns, Angleitner, Ostendorf, and John (1990) distinguished between type-nouns (e.g., *aggressor*) and attribute-nouns (e.g., *aggressiveness*; see Angleitner, Ostendorf & John, 1990). In a study on type-nouns, De Raad (1992) identified four factors, which were labeled as Extraversion (e.g., *entertainer, partygoer* versus *pessimist, coward*), Conscientiousness (e.g., *organizer, careerist* versus *lazy-bones, loafer*), Agreeableness (e.g., *humanist, reconciler* versus *nuisance, quarreler*), and Intellect (e.g., *philosopher, non-conformist* versus *chatterbox, gossiper*). In the Extraversion factor the pleasure-principle seemed to be particularly central. The corresponding type-noun factors reported by Henss (1998) and Saucier (2003) had a similar connotation. The Conscientiousness factor did not have a clear kin in the study by Saucier (2003), but it did to some extent in the study by Henss (1998). Agreeableness and Intellect were covered well in both Henss' (1998) and Saucier's (2003) study. A typical Neuroticism/Emotional Stability factor seemed to be absent in all three type-noun studies described here. A first study using attribute-nouns by Di Blas (2005) generally supported the main gist of the Big Five semantic material, with the exception of the Intellect domain.

Word category specialization and differentiation

The different studies using trait-adjectives, trait-verbs, and trait-nouns indeed suggest that there is a certain level of word-category specialization that somehow reflects the linguistic differentiation albeit not simply according to their linguistic functions. Trait-verbs, for example, seem to accommodate certain features of aberrant and deceptive behavior (cf., De Raad, 1999), not particularly well accounted for by trait-adjectives and trait-nouns (De Raad et al., 1988; Hřebíčková et al., 1999). Emotional Stability seems to be missing amidst type-nouns but not amidst attribute-nouns. While nouns are generally found to be more useful for oral communication, according to both Bolinger (1980) and Wierzbicka (1986), nouns give the impression one conveys a more definite character. Moreover, according to Wierzbicka (1986), the more extreme or resentful traits tend to be particularly communicated through nouns. It is imaginable that in certain cases nouns may form the descriptors par excellence to describe extreme traits. Verbs differ especially from nouns in terms of the permanency of human characteristics they reflect. According to Bolinger (1980), for example, verbs are least hospitable to bias, because of the relative transitory nature of what they name. While verbs seem to be descriptors par excellence to describe behavior in a neutral way, in an "adjectival" format they may even generally be given preference because they are less sensitive to evaluative connotation. In general, it

---

[2] Where we speak of "factors", as a rule we mean "components".

remains difficult to assess the additional value of the use of other word categories than adjectives, if one does not combine items originating in different word categories to be administered to a single sample of participants.

De Raad and Hofstee (1993) actually did combine trait-adjectives and trait-verbs to obtain self-ratings from the same 200 participants. As a reference frame, the adjectives-based Abridged Big Five Circumplex model (AB5C; Hofstee, De Raad, & Goldberg, 1992) was used. In this model the Big Five simple structure is integrated with the circumplex structure into a segmented system with both factor-poles and blends of pairs of factors represented in a fine-grained system including the Big Five factors and facets of the Big Five. The trait-verbs turned out to fill certain segments of the AB5C system that were not or barely filled with trait-adjectives. De Raad and Hofstee (1993) concluded that the lexical tradition had produced a trait structure that seemed to be *word class dependent*. Saucier (2003) confirmed this conclusion: "Personality taxonomies based on adjectives are unlikely to be comprehensive, because type-nouns have different content emphases" (p. 695). Yet, De Raad and Hofstee (1993) used a rather small sample of participants. Moreover, the study was not designed to investigate differential effects of items from different word categories; the emphasis was on the structure of personality verbs, and adjectives were used to form a reference system.

To summarize, studies performed on personality descriptors originating from different word-categories suggest a certain level of differentiation and a certain level of word-category dependency. Also, the combination of verbs and adjectives in a single study seems to allow a better coverage of certain semantic trait segments than adjectives alone can do. Moreover, from a linguistic viewpoint, words from different word-categories have a clearly different linguistic function, but it is unclear whether this directly relates to a differentiation of content or whether it merely relates to differentiation at the level of communication. Furthermore, the lexical hypothesis does not restrict to a single word-category; it is against the spirit of the psycho-lexical approach to exclude useful semantic categories of personality description beforehand. Finally, excluding certain descriptive words without a compelling line of reasoning, but done especially to achieve a list of terms of manageable length, conflicts with the psycho-lexical spirit as well.

A new taxonomy of personality descriptive traits

De Raad and Barelds (2008) reported on a taxonomy of Dutch personality descriptive traits, based on a comprehensive and unrestricted list of personality descriptors, including words from different word categories (e.g., trait-adjectives, trait-nouns, trait-verbs, expressions, and adverbs). The combined use of items from different word categories in a single sample, makes that this data-set form an unusually unique test-case for at least some of the questions concerning the differential role of items from different categories.

The structure, consisting of eight interpretable factors, was based on Principal Components Analysis of ratings (self- and other-ratings) obtained from 1,466 participants on 2,331 personality descriptive items (see De Raad & Barelds, 2008, for details). In this eight-factor structure, the Big Five, as they had previously been identified in the Dutch language (De Raad et al., 1992), were largely recaptured, with Intellect renamed as Conventionality. This "Intellect" factor –Conventionality-, at first sight seemed to be a typical representation of the previously reported Dutch fifth factor with the 'rebellious' and progressive connotation. Most of the typical items of the Intellect pole (e.g., *creative, versatile*), however, had higher loadings on another factor (Competence; see De Raad & Barelds, 2008). The majority of the items loading highest and distinctively on this new "Intellect" factor were found on the opposite pole, expressing Conventionality, with items such as *obedient, follows the rules, law abiding, plays it safe, docile*, and *meek*.

The Big Five did not appear as the first five of the eight factors; the three factors beyond the Big Five, Virtue, Competence, and Hedonism, explain more variance than the Big Five, and Virtue and Competence explain most of the variance. Virtue has much in common with factors identified as Social Desirability, Morality (e.g., Saucier, Georgiades, Tsaousis, &Goldberg, 2005), Honesty-Humility (Ashton et al., 2004), and (negatively) with Negative Valence (Almagor et al., 1995). From a meta-theoretical viewpoint, this factor might represent the Communion value as a more generic and theoretically encompassing construct (cf., Digman, 1997; Wiggins, 1991). Competence, a concept often used to refer to skills and capacities (cf., Roe, 2002), should explicitly be interpreted in the dispositional sense (cf., Spencer & Spencer, 1993). Competence might well represent values of the theoretical complement of Communion, namely Agency (Wiggins, 2003). Much of its substance represents the dynamic, active, striving, and domineering characteristics of leadership (cf., Hogan & Kaiser, 2005), and it turned out to relate strongly with Positive Valence (Almagor et al., 1995). The factor Hedonism contains many items that are typical for Sensation Seeking (e.g., Zuckerman, 2002). Many items of Hedonism are also consistent with characteristics that are typical of a hedonic lifestyle (e.g., Kunzmann, Stange, & Jordan, 2005).

The three new factors apparently covered a lot of ground beyond the Big Five, both in terms of explained variance and in terms of content. A simple conclusion could be that the additional three factors came about due to the comprehensive and inclusive procedure that was followed, in particular because of the use of word categories other than adjectives. A first tentative test performed in De Raad and Barelds (2008) suggested that Hedonism and Intellect were constituted to a lesser extent by verbs and more by adjectives. This tentative differential word-category effect is far from conclusive.

The present study

We set out to investigate the role of the separate groups of word category related items, with a particular emphasis on the three new factors Virtue, Competence, and Hedonism. For this purpose, all 2,331 trait descriptive items used by De Raad and Barelds (2008) were classified according to

word categories. Next, the relative contribution of each of the word categories to the final eight factor solution was examined. We expected that word categories other than adjectives would play an important role in the final solution, particularly with regard to the content of the three new factors.

It is not to be expected that, in case of a significant word category effect, the Big Five factors would straightforwardly and solely be constituted by adjectives, and that the three new factors would simply found to be linked to word-categories other than adjectives. For this reason, we investigated alternative explanations for the differences that are found between the earlier (e.g., De Raad et al., 1992) and more recent (De Raad & Barelds, 2008) Dutch lexical structures, beyond what could be caused by the use of different word categories. These explanations concern (1) the lapse of time between the data collections, (2) the analytic procedure (i.e., using ipsatized or non-ipsatized data), and finally, (3) we checked whether the data that gave rise to the earlier Big Five structure in Dutch (De Raad et al., 1992) and the original data set used by Brokken (1978) might have made those three new factors possible; were those new factors in fact "sleeping factors"?

Lapse of time
The new sample was collected about 30 years after the first Dutch lexical study (Brokken, 1978), and about 20 years after the first Dutch Big Five publications (e.g., De Raad, 1992; De Raad et al., 1992). In order to exclude the possibility that trait meanings might have shifted in the course of time to such an extent that it affects the factor structure drastically, the present study also examined to what extent the previously reported Dutch Big Five structure (e.g., De Raad et al., 1992) can be reproduced in the new data set (De Raad & Barelds, 2008), using a set of trait-adjectives that are available in both these lexical studies.

Analytic procedure used
In order to arrive at the 2008 Dutch eight-factor structure, raw (i.e., non-ipsatized) data were used, whereas ipsatization somehow has become common practice in lexical studies. The main reason to apply ipsatization was that it was supposed to result in a clearer structure, by removing idiosyncrasies in scale usage and response style. De Raad and Barelds (2008), however, reported that ipsatizing the data did not increase the clarity of the structure. Moreover, seven of the eight factors, including the new factors Virtue, Competence, and Hedonism, could be convincingly replicated using ipsatized instead of non-ipsatized data (see De Raad & Barelds, 2008, for details). The potential effects of not ipsatizing the data are therefore not subjected to further examination in the present study.

"Sleeping factors"
The question here is whether it is possible that both the data sets with the 551 trait variables (De Raad et al., 1992) that gave rise to the previous Dutch Big Five structure (or the Six factor structure for that matter, including Honesty) and the first data set with 1,203 trait adjectives in the Dutch lexical project by Brokken (1978) already contained not yet observed trait clusters that relate to these three new factors?

METHOD

Participants, materials, and procedure

For the present study we used data sets from three previously conducted studies. We describe them chronologically. The first data set has been used in Brokken (1978), the second data set has been used in De Raad (1992) and in De Raad et al. (1992), and the third and main data set has been used in De Raad and Barelds (2008).

The first data set
The first data set consisted of the ratings of 400 participants (mainly university students) on a set of 1,203 trait adjectives. Brokken (1978) had the items provided with indexes of, among other things, "evaluation", of "fundamentality", of "nature", and of "person". The "nature" characteristic indicates the extent to which an adjective would fit the sentence "He/she is [adjective] by nature". The "person" characteristic indicates the extent to which an adjective could be used to answer a question like "What kind of person is he/she?". The "fundamentality" characteristic indicates the extent to which an adjective can be considered fundamental as opposed to superficial.

The second data set
The previously published Dutch Big Five structure (De Raad et al, 1992) was based on ratings of 600 participants (mainly university students) on a subset of 551 trait adjectives drawn from the list of 1,203 trait-adjectives used by Brokken (1978). The reduction of the 1,203 adjectives to 551 adjectives, made in the De Raad (1992), was based on a number of criteria. First, all items that scored high on the above mentioned three item characteristics (fundamentality, nature and person), or high on two of these characteristics and middle on the third, were retained, leaving 567 adjectives. In addition, 16 low endorsement items were removed, leaving 551 adjectives (De Raad, 1992).

The third data set
The main sample ($N = 1,466$) consisted of 391 first-year students (307 females), who provided self-ratings, and 1,075 acquaintances of those students (family-members, friends, neighbors; 641 females), who provided ratings of the students. These participants answered all 2,331 items that were used to arrive at the 2008 Dutch trait structure. The 2,331 items originated from a list of 130,778 entries that was drawn from a computerized database of the Dutch language. In successive stages this list was reduced to 4,595 personality-relevant words, which all had been turned into brief phrases, with the personality relevant word as its kernel meaning. Words that had been removed were, among others, non-familiar, obsolete, artificial, or too difficult. The list of 4,595 personality-relevant sentences was further reduced on the basis of ratings of clarity and personality-relevance to a set of 2,365 trait descriptive sentences. A final reduction to 2,331 items was made on the

Table 1. *Items categorized by functional word classes*

	Functional word classes	*n*	Examples
1	Typical *adjective*	953	An *expressive* person A *cynical* person A *prudish* person
2	State-*adjective*	48	Someone who is easily *touched* Someone who often feels *unhappy* Someone who is easily *de-motivated*
3	Adjective turned into *adverb*	144	Someone who behaves *thoroughly* Someone who thinks *analytically* Someone who acts *inefficiently*
4	Typical *adverb*	18	Someone who speaks *freely* Someone who acts *thoughtlessly* Someone who acts *indifferently*
5	Typical attribute-*noun*	87	Someone with *vision* Someone with *self-confidence* Someone with *self-respect*
6	Typical type-*noun*	100	A *bighead* A *fixer* A *nit-picker*
7	Typical *verb*	592	Someone who *humiliates* people Someone who *idealizes* things Someone who *prostitutes* him/herself
8	Typical *verb* expression	389	Someone who *plays with fire* Someone who *keeps promises* Someone who *shows respect*

basis of means and standard deviations of ratings (for further details on the sample and on reduction procedure, see De Raad & Barelds, 2008). The list included all 1,203 adjectives originally used by Brokken (1978), from which a subset of 551 adjectives was used by De Raad (1992). Of these 551 adjectives, 441 were present in this third data set.

Word category related groups of items
In the process of reduction, no effort was made to arrive at a proportionate number of words or sentences per word category. Similar to Allport and Odbert (1936), we considered the adjectival form to be the more adequate form, and other types of words were selected if they would add meaning and if they could either constitute a phrase that obtained adjectival meaning or would function in an adjectival way. In formulating the phrases, the kernel word frequently shifted word category membership. The trait adjective *formal*, for example, turned into an adverb in the sentence "*someone who behaves formally*". Although the large majority of trait-adjectives could easily be put into an adjectival sentence of the type "an [*adjective*] somebody", for certain adjectives it deemed more natural to use them in a behavioral sentence of the type "someone who behaves [*adjective/adverb*]". A relatively small set of nouns was identified as type-nouns, as in "a macho". The large majority of the so-called attribute-nouns were not directly attributable to a person, but obtained such a function in a sentence. Examples are "someone who shows *affection*", "someone who seeks *confrontation*", "someone with *authority*", and "someone with *imagination*".

The trait-descriptive sentences therefore had to be reclassified in terms of word categories. In this classification we deviated from the linguistic distinctions and followed more psychological considerations. Eight word categories were distinguished (see Table 1), that can roughly be ordered into three groups. First, there were 1,001 adjectives, which included 953 typical adjectives (1; 40.9%), as in "an [*adjective*] person", and 48 adjectives (2; 2.1%) that referred to both states and traits, as in "often feels [*adjective*]". There were 162 adverbs identified, including 144 adverbs that originated from adjectives (3; 6.2%), and 18 typical adverbs (4; 0.8%), selected as such from the lexicon. These first four word categories formed the first of the three groups of word categories. Most taxonomies of trait-adjectives have been based on one or more of these four sets of words. Almagor et al. (1995), for example, explicitly included state-terms to allow the emergence of Extraversion and Emotional Stability as the complementary emotional temperament dimensions. Most or all of the adverbs usually appeared in adjectival form in trait studies.

The second group of word categories consisted of 87 attribute-nouns (5; 3.7%), and 100 type-nouns (6; 4.3%). These two categories of words contained relatively small numbers of items, compared to the numbers used by Di Blas (2005), De Raad and Hoskens (1990), and Saucier (2003). Apparently, the semantics of the nominal category of words was represented relatively well in the adjectival category, and possibly also in the verbal category. The third group of word categories contained verb-sentences, including 592 typical verb sentences (7; 25.4%), and 389

Table 2. *Composition of the factors in terms of word category percentages*

	Factors							
	1	2	3	4	5	6	7	8
Typical adjectives (n = 857)	44.9	43.2	33.0	28.2	33.9	40.4	41.0	42.9
State adjectives (n = 47)	0.4	0.4	13.1	3.8	0.0	1.8	0.0	0.0
Adverbial adjectives (n = 132)	6.8	5.0	4.1	3.8	17.4	6.4	4.0	10.7
Typical adverbs (n = 17)	0.9	0.9	0.4	0.0	1.7	0.0	2.0	0.0
Attribute nouns (n = 82)	1.7	9.6	2.2	1.5	2.5	1.8	1.0	3.6
Type nouns (n = 87)	5.5	1.4	1.1	2.3	7.4	13.8	4.0	7.1
Typical verbs (n = 533)	23.3	23.8	32.6	35.1	19.0	21.1	35.0	10.7
Verbal expressions (n = 344)	16.5	15.7	13.5	25.2	18.2	14.7	13.0	25.0

Note: 1 = Virtue, 2 = Competence, 3 = Emotional Stability, 4 = Agreeableness, 5 = Conscientiousness, 6 = Hedonism, 7 = Extraversion, 8 = Conventionality. The numbers in parentheses reflect the number of items within a word class with an absolute factor loading ≥ .30

Table 3. *Congruence coefficients between the final eight factor solution and corresponding factors in the other eight factor solutions after target rotation*

	Typical adjectives (953)	Previous plus state adjectives (1,001)	Previous plus adverbial adjectives (1,145)	Previous plus typical adverbs (1,163)	Previous plus attribute nouns (1,250)	Previous plus type nouns (1,350)	Previous plus typical verbs (1,942)
Virtue	.98	.98	.99	.99	.99	.99	1.00
Competence	.91	.91	.89	.90	.92	.92	.99
Emotional stability	.94	.95	.95	.95	.95	.96	1.00
Agreeableness	.63	.63	.63	.64	.65	.70	.98
Conscientiousness	.93	.94	.97	.97	.97	.98	.99
Hedonism	.87	.93	.94	.95	.95	.95	.99
Extraversion	.84	.83	.89	.90	.91	.92	1.00
Conventionality	.69	.77	.77	.77	.76	.80	.97

Note: The verbal expressions are not included in the table as a subsequent step, as this would mean that all items would be included, and congruencies with the final structure would be perfect (1.00) by definition.

verbal expressions (8; 16.7%), which were not specifically built around a kernel word that was personality relevant by itself, but rather built on a combination of words (often verbs and nouns).

RESULTS

The role of word categories

In order to find out about the role of word categories, we first examined the make-up of the eight factors in terms of the word categories listed in Table 2. For this purpose, we (somewhat arbitrarily) selected those items with primary factor loadings ≤ -.30 or ≥ .30 from the 2008 trait structure, and then calculated percentages for each of the word categories (based on these items) within factors, as a first indication of the relative contribution of the word categories to the eight factors (see Table 2). For example, of the items that had a primary factor loading ≤ -.30 or ≥ .30 on the Virtue (Factor 1), 44.9% were based on adjectives, 23.3% on typical verbs, 16.5% on verbal expressions, et cetera.

Trait-adjectives form the largest word category (953 sentences, of which 857 had a primary factor loading ≤ -.30 or ≥ .30), and it was therefore not surprising that for most factors adjectives were the dominant word category. There were, however, a few exceptions: the Agreeableness factor primarily consisted of typical verbs, followed by typical adjectives, and verbal expressions. Typical verbs also appeared to play an important role in Extraversion and Emotional stability, but clearly not in Conventionality.

State-adjectives were typically found in the Emotional stability factor, adverbial adjectives in Conscientiousness, type-nouns in Hedonism, and attribute-nouns in Competence. It appeared therefore, that the makeup of the eight factors differed slightly in terms of word categories. There were, however, no clear indications that the three new factors, Virtue, Competence, and Hedonism were represented better by other word categories than typical adjectives than the other five factors: for all three new factors, adjectives were clearly the most important word category.

To further examine the contribution of word categories to the final eight factor solution, we started by conducting a Principal Components Analysis (PCA; Varimax rotation), extracting eight factors, on the typical adjectives only (953 items). Then, one by one, the other word classes were added, and PCA's were again conducted, each time extracting eight factors. Congruence coefficients between these eight-factor solutions and the final eight-factor solution (based on all 2,331 items) were then computed (target rotation using the final eight-factor structure as the target; Kiers & Groenen, 1996). Because the number of variables differed between the respective factor structures, the congruence coefficients were computed based on the factor score matrices (see Table 3). Increases in the congruence coefficients after adding a word category give an indication of the importance of that particular word category to the final solution. Therefore, the order in which the word categories were added was not relevant in this context.

Surprisingly, when focusing on the three new factors, we found striking similarities between the eight-factor so-

lution for the items based on typical adjectives (953) only and the eight-factor solution based on all 2,331 items. More specifically, when using only the items based on typical adjectives, high congruencies were found for all three new factors (Virtue, Competence, and Hedonism), plus Emotional Stability, Conscientiousness, and Extraversion, with only the congruence coefficients for Agreeableness and Conventionality being clearly insufficient (e.g., Haven & Ten Berge, 1978; Lorenzo-Seva & Ten Berge, 2006). It can therefore be concluded that Virtue, Competence, and Hedonism, as new lexical trait factors, were also present in a rather similar form in the set of 953 typical adjectives only. The meaning of Agreeableness in the solution based on all items, however, appeared to be rather dependent on the presence of typical verbs, as did the meaning of Conventionality. For these two factors, there were clear changes in the congruence coefficients after adding typical verbs. Adding the other word classes seemed to have little effect on the trait structure (only small changes in the congruence coefficients). We can therefore conclude from these analyses that the new eight-factor structure was not as word category dependent as we had anticipated. Agreeableness and Conventionality seemed to draw a substantial part of their meaning from typical verbs, but the other six trait factors, including the three new factors, were found in a rather similar form when using typical adjectives only.

"Lapse of time" explanation: comparing the 1992 and 2008 Dutch trait structures

As was suggested above, the differences between the 2008 and 1992 lexical structures in Dutch, particularly in relation to three new factors (Virtue, Competence, and Hedonism) were not simply and straightforwardly explained by the use of different word categories. Before we can conclude to any role of word categories alone, in whichever way, we have to rule out the possibility that the "lapse of time" is at least partially responsible for any differences found between the 208 and 1992 structures.

The 1992 Dutch Big Five structure (De Raad et al., 1992) was based on ratings on a set of 551 trait adjectives, of which 441 were also used after the lapse of time in the 2008 data set (De Raad & Barelds, 2008). To examine whether the 1992 Big Five structure could be replicated in the 2008 sample using the same set of variables, the ratings of both the 1992 sample of 600 participants (De Raad et al, 1992), and the 2008 sample of 1,466 participants (De Raad & Barelds, 2008) on these 441 trait adjectives were analyzed (Principal Components Analyses with Varimax rotation). In both cases, five factors were extracted. Because the 1992 trait structure was based on ipsatized data, we ipsatized the data in both samples prior to the analyses (standardization per person). Considering the factor content, the five-factor structure (based on 441 items) of the 1992 sample turned out to be an almost perfect reproduction of the previously published Dutch Big Five structure (based on 551 adjectives). Moreover, the structure based on the 1992 sample also appeared to be highly similar to the structure found in the 2008 sample (based on 441 items). For further confirmation, we computed congruence coefficients between the corresponding factors from the

1992 and the 2008 sample (after orthogonal rotation of the 1992 structure to the 2008 one as a target; cf. Kiers & Groenen, 1996), and found the congruence coefficients for the five-factor structure to be as follows: Extraversion 0.89, Agreeableness 0.94, Conscientiousness 0.84, Emotional stability 0.89, and Intellect 0.81.

Especially the first four congruencies formed quite good indices of correspondence between factors (e.g., Haven & Ten Berge, 1978; Lorenzo-Seva & Ten Berge, 2006); the fifth indicated moderate congruence, which corresponds to small differences observed in the contents of the fifth factors found in the two samples. These results suggest, nonetheless, that the 1992 Dutch Big Five structure was satisfactorily replicated in the 2008 sample (using the 441 overlapping variables), and that the meanings attached to the trait terms have virtually not changed over the period of about 30 years. Moreover, when analyzing this subset of 441 variables in the new dataset, there were no indications for the existence of the three new factors (Virtue, Competence, and Hedonism), even when extracting more than five factors (up to ten factors were extracted and analyzed for this purpose).

"Sleeping factors" explanation

It is a serious possibility that due to the general understanding of the time of the previously collected psycho-lexically based trait matrices certain possible factors were not identified as intelligible factors. For this reason we re-addressed both the data set with 551 adjectives and 600 participants from 1992 and the data set with 1,203 adjectives and 400 participants from 1978 with the possibility of an eight-factor structure in mind.

The 551 set
We examined whether extracting eight factors in the previous Dutch lexical study, using 551 adjectives and ratings of 600 participants, would reveal one or more of the three new factors (Virtue, Competence, and Hedonism). Principal Components Analysis with Varimax rotation on both the raw data and on the ipsatized data resulted in the previously reported Big Five (e.g., De Raad et al., 1992), plus an additional Honesty factor (e.g., Ashton et al., 2004). Beyond these six, the ipsatized data gave two un-interpretable factors, and the raw data gave a split of the Agreeableness factor into one roughly representing the positive pole and one representing the negative pole, and one un-interpretable factor. It can therefore be concluded that Virtue, Competence, and Hedonism as such were not present in the 551 trait-adjectives used by De Raad et al. (1992), although there is substantial overlap between Virtue and Honesty.

The 1,203 set
Next we examined whether extracting factors in the first Dutch lexical study, using 1,203 adjectives and ratings of 400 participants, would reveal one or more of the new factors. The structure of this set of 1,203 adjectives was examined by means of raw scores PCA with Varimax rotation (similar to the procedure followed for the 2008 Dutch lexical structure by De Raad & Barelds), extracting eight

factors. These eight factors, much to our surprise, strongly resembled the eight factors that were found in the 2008 trait taxonomy. Table 4 lists characteristic adjectives for the eight factors found in the old Brokken data (1978; 1,203 adjectives), as well as percentages of variance explained (after Varimax rotation).

Factors that can be interpreted as Competence and Virtue appeared as the two largest factors in the solution, and Hedonism as the smallest. Compared to the 2008 Dutch trait structure, there appeared to be primarily a shift of the pure Intellect items, that in the Brokken data (1,203 items) still formed a factor together with the more conventional items of the Intellect factor, while in the 2008 Dutch trait structure these items shifted towards the Competence factor.

These results indicated that the 551 trait adjectives that De Raad and colleagues (1992) used resulted in a Big Five structure (or a Six factor structure including Honesty), whereas in the larger set of 1,203 items from which these 551 items were drawn, an eight factor structure was found, including Virtue, Competence, and Hedonism. This raises the question whether there were fundamental differences between the sets of adjectives that were used to arrive at the previously published Dutch Big Five structure (e.g., De Raad et al., 1992), and the remainder of the 1,203 adjectives (Brokken, 1978) that might explain these differences between the factor structures; that is a set of 652 trait adjectives (1,203 – 551).

Comparison of the 652 and the 551 sets of adjectives

For all of the 1,203 items used by Brokken (1978), ratings were available for a number of item characteristics (see De Raad, 1992; also see method section). In addition to the nature, person, and fundamentality ratings (see Method), Brokken (1978) also collected evaluation scores for each of the 1,203 adjectives in his study. Comparison of the 551 adjectives with the 652 adjectives (for the removal procedure of these 652 adjectives, see De Raad, 1992) showed significant and substantial differences with regard to the nature, person, and fundamentality characteristics (see the reduction procedure described by De Raad, 1992). For evaluation, a significant but non-substantial difference was found (see Table 5).

It is possible that adding adjectives with lower ratings on the nature, person, and fundamentality characteristics than the 551 adjectives used by De Raad (1992) had the ef-

Table 4. *Eight factors in the old Brokken data (1203 adjectives, 400 participants)*

Competence (6.8%)
(+) cheerful; pleasant; dependable; warm; happy; friendly; obliging; kind; cheerful; capable

Virtue (6.4%)
(+) pretentious; boastful; untruthful; suspect; abusive; malicious; insensitive; mean; cruel; evil

Emotional Stability (6.0%)
(+) insecure; sad; depressed; worrisome; indecisive
(-) self-confident; secure; stable; balanced; decisive

Agreeableness (4.0%)
(+) Fierce; intense; persistent; waspish; stubborn; grumpy; bossy; dominant; demanding; hot-headed

Conscientiousness (3.4%)
(+) accurate; precise; exact; conscientious; systematic; decent; punctual; secure
(-) sloppy; Inaccurate; undisciplined; irresponsible

Extraversion (2.2%)
(+) closed; silent; introverted; reserved; untalkative; still
(-) talkative; outgoing; chatty; spontaneous

Intellect (2.1%)
(+) philosophical; non-conformist; original; subtle; exciting; artistic; creative; complex
(-) conventional; law-abiding; conservative; obedient

Hedonism (1.2%)
(+) spoiled; materialistic; vain; lazy; prejudiced; arrogant; boastful; curious; haughty; greedy

Note: in parentheses are the percentages of explained variance after Varimax rotation

fect of producing factors that were, for example, less fundamental to the description of personality? To examine this, we calculated correlations between the ratings for nature, person, fundamentality, and evaluation, and the absolute factor loadings on the eight factors found in the set of 1,203 variables (PCA and Varimax rotation; also see Table 4). These correlations are listed in Table 6.

The correlations clearly showed that the first two factors (Competence and Virtue) had strong relations with evaluation (also see De Raad & Barelds, 2008). As shown in Table 6, this was, however, not the result of adding more evaluative terms to the 551 variables used by De Raad (1992). The correlations between the other three item characteristics and the factor loadings were all small (between -.15 and .14), meaning that the eight factors could not be differentiated well on the basis of the nature, person, and fundamentality characteristics

Table 5. *Nature, person, fundamentality, and evaluation ratings of the 551 De Raad (1992) items and the remaining 652 original Brokken (1978) items*

	551 items (De Raad, 1992)		652 items (Brokken, 1978)		F (1,1202)	η^2
Nature	14.49	(2.34)	10.39	(2.69)	791.81*	.40
Person	20.21	(2.70)	15.25	(3.74)	670.86*	.36
Fundamentality	280.60	(28.57)	237.44	(32.39)	590.28*	.33
Evaluation	239.29	(82.51)	220.18	(75.37)	17.60*	.01

* $p < .001$

Table 6. *Correlations between item characteristics and absolute factor loadings (eight factors and 1,203 variables)*

	Nature	Person	Fundamentality	Evaluation
Competence	.05	.12*	.14*	.80*
Virtue	-.11*	-.06	-.15*	-.74*
Emotional stability	.09*	-.00	.05	-.23*
Agreeableness	.14*	.05	.06	-.14*
Conscientiousness	.02	.04	-.11*	.18*
Extraversion	.07	.02	.03	.11*
Intellect	-.08*	.04	.04	.26*
Hedonism	.09*	.05	-.00	-.12*

* $p < .01$

DISCUSSION

The main aim of the present study was to examine the contribution of different word categories to the 2008 Dutch lexical trait-structure, particularly with regard to the three new factors (i.e., Virtue, Competence and Hedonism; De Raad & Barelds, 2008). Because these three new factors were not found in the previously published Dutch Big Five structure (based on adjectives only; e.g., De Raad et al., 1992), we expected that other word categories than adjectives would play a particularly important role in the emergence of these three new factors. It should be added here that the eight Dutch factors cover pretty well not only the Big Five, but also additional factors suggested in both the Six-factor model (Ashton et al., 2004) and the Seven-factor model (Almagor et al., 1995).

For most of the eight factors in the 2008 Dutch lexical structure, typical adjectives were found to be the dominant word category. This was not surprising, because typical adjectives were the largest word category in the dataset. Typical verbs were well represented in the Emotional Stability, Extraversion, and Agreeableness factors. For Agreeableness a substantial part of its meaning was also drawn from typical verbs. Typical verbs constituted only a relatively small portion of the Conventionality factor, but they did contribute to the meaning of this factor. Furthermore, some small differences were found between the factors regarding the contribution of the other word categories. State-adjectives, for example, were typically found in the Emotional stability factor, adverbial adjectives in the Conscientiousness factor, type-nouns in the Hedonism factor, and attribute-nouns in the Competence factor.

Contrary to our expectations we found no clear and definitive indications that the three new factors (Virtue, Competence, and Hedonism), more than was the case for the other five factors, were represented better by other word categories than adjectives. Rather, for these three new factors, adjectives formed clearly the most dominant word category. Moreover, we found that the eight-factor solution based on the full set of 953 typical adjective items included factors that strongly resembled the Virtue, Competence, and Hedonism factors found in the final eight-factor solution (based on all items from all word categories). We did find influence, however, from using typical verbs on the emergence of the Agreeableness and Conventionality factors. Those two factors only satisfactorily resembled the final factors after adding typical verbs to the analyses.

In sum, the 2008 Dutch lexical eight-factor structure proved not to be as word category dependent as we had anticipated. Virtue, Competence, and Hedonism consisted primarily of typical adjectives, and were all found in a similar form when analyzing the typical adjectives only, except for Agreeableness and Conventionality whose final make up was also formed by typical verbs. Adding the other word categories generally had little effect on the interpretation of the factors. These findings suggest that there are other reasons for the emergence of these three new trait factors.

We examined whether the difference in time between the first and the second Dutch lexical study (data were collected about three decades apart) might be responsible for the differences between the structures. For this purpose, we first compared the 1992 Dutch structure with the 2008 structure, based on a set of 441 trait adjectives that were present in both data sets (cf., De Raad & Barelds, 2008). The five-factor structure (based on 441 overlapping items instead of the original 551 items; cf. De Raad et al., 1992) of the 2008 sample closely resembled the previously published Dutch Big Five structure. These results suggested that the meanings attached to the trait terms did not shift in the course of time, at the least not to such an extent that it affected the factor structure. Moreover, when using the subset of 441 trait adjectives in the 2008 dataset, and extracting up to ten factors, there were no indications for the existence of the three new factors (Virtue, Competence, and Hedonism) beyond the Big Five.

Selection of variables

The present results showed that an analysis of the items based on the 441 adjectives, that the new study (De Raad & Barelds, 2008) had in common with the previously published Dutch trait study (cf., De Raad et al., 1992), resulted in a satisfactory replication of the 1992 Dutch Big Five structure. The larger set of 953 typical adjectives in the 2008 study, however, produced a structure with three new factors (i.e., Virtue, Competence, and Hedonism), that closely resembled the final structure (based on all items from all word categories). These results suggest that the unrestricted selection procedure (and limited reduction of variables) was possibly responsible for the emergence of the three new factors. We were partly able to examine this by analyzing the original dataset used by Brokken (1978), which consisted of a much larger number of items (i.e., 1,203 items based on adjectives) than used by De Raad et

al. (1992; 551 items). Surprisingly, the eight-factor structure in this 1978 dataset highly resembled the eight factors found in the new taxonomy (De Raad & Barelds, 2008). Competence and Virtue even appeared as the largest factors in that solution, whereas Hedonism was the smallest. The main difference with regard to the content of the factors found in the 1978 dataset, as compared to the 2008 dataset, was found for the Intellect/Conventionality factor. In the 1978 dataset, the pure Intellect items were still combined with the Conventionality items in a general Intellect factor, while in the 2008 Dutch trait structure the pure Intellect items were part of the Competence factor, leaving a narrower Conventionality factor (De Raad & Barelds, 2008).

Although we anticipated that particularly the inclusion of personality descriptive terms from different word categories might be one of the main reasons for the emergence of 2008 Dutch lexical structure, there now appears to be a more plausible alternative explanation: the inclusion of more items. In the previously published Dutch Big Five structure (De Raad, 1992), the larger item set selection of 1,203 items was reduced to 551 items, based on a number of criteria (nature, person, familiarity, and low endorsement; see method section; see De Raad, 1992). The inclusion of the remaining 652 items, that were rated, on average, substantially lower on the nature, person and familiarity characteristics, changed the structure from a Big Five structure to an eight factor structure with Virtue, Competence, and Hedonism. Additional analyses showed, however, that none of the factors in the eight-factor structure was substantially different from the others in terms of these item characteristics. Virtue and Competence were strongly related to evaluation, but the additional variables in the 1978 Brokken set were not rated as more evaluative than the subset used by De Raad (1992).

CONCLUSION

The main goal of the present study was to examine the role of word categories in the 2008 Dutch lexical structure. We found some evidence that some word categories other than trait-adjectives, played a role in some of the factors in the 2008 lexical structure, most notably trait-verbs. The 2008 Dutch lexical structure therefore was, to some degree, word category dependent. Similar to the findings in De Raad and Hofstee (1993), especially verbs, but also nouns to some extent, may help filling certain niches or segments of trait semantics, which is of great importance if one aims at constructing faceted personality inventories.

The use of different word categories did, however, not satisfactorily explain the emergence of the three new lexical factors beyond the Big Five (Virtue, Competence, and Hedonism). The 2008 lexical structure was also found when analyzing only the items based on trait-adjectives. It seems likely that the selection procedure (of the variables) is responsible for the structure found. It is possible that the inclusion of evaluative terms and state terms (e.g., Almagor et al., 1995; Benet-Martinez & Waller, 1997) in the 2008 Dutch lexical study was related to the emergence of the new factors. We did, however, not yet find compelling evidence for this suggestion. State terms were represented

relatively often in the Emotional Stability factor, but the items that were dropped in De Raad (1992) were not rated higher in evaluation than the items that were used.

Factor analyses conducted on the sets of 551 variables (De Raad, 1992) and 441 variables (overlapping variables between De Raad, 1992, and De Raad & Barelds, 2008) produced the Big Five, while the larger sets (1,203 adjectives, Brokken, 1978; 953 adjectives, and 2,331 items in total, De Raad & Barelds, 2008) produced an eight factor structure. The additional items from the Brokken (1978) study differed in some characteristics (nature, person, fundamentality) from the items used by De Raad (1992), but the factors in the eight factor structure were not convincingly related to those characteristics. Apparently, the additional items gave some clusters of variables more body, and, as a result, produced a different factor structure.

These findings have implications for lexical studies: not only may excluding word categories other than adjectives and excluding evaluative and state terms affect the final structure, but also (or primarily) the exclusion of terms in general. The sets of trait-terms that are used in lexical studies in other languages are usually relatively small (usually the long lists of adjectives are reduced to "more manageable" lists of about 300 to 400 variables; e.g., De Raad et al., 2010), and clearly much smaller than both sets used in the present study that produced the lexical eight-factor structure. This indicates that somewhere in the reduction process a substantial amount of information gets lost. It would be interesting to examine if the same selection procedure, and conservative elimination procedure, that was adopted by De Raad and Barelds (2008) would produce a similar factor structure in other languages as well.

REFERENCES

Allport, G. W., & Odbert, H. S. (1936). Trait-names: A psycho-lexical study. *Psychological Monographs*, *47* (Whole No. 211)

Almagor, M., Tellegen, A., & Waller, N. (1995). The Big Seven Model: A cross-cultural replication and further exploration of the basic dimensions of natural language of trait descriptions. *Journal of Personality and Social Psychology*, *69*, 300-307.

Angleitner, A., Ostendorf, F., & John, O. P. (1990). Towards a taxonomy of personality descriptors in German: A psycho-lexical study. *European Journal of Personality*, *4*, 89-118.

Ashton, M. C., Lee, K., Perugini, M., Szarota, P., De Vries, R. E., Di Blas, L., Boies, K., & De Raad, B. (2004). A six-factor structure of personality-descriptive adjectives: Solutions from psycholexical studies in seven languages. *Journal of Personality and Social Psychology*, *86*, 356-366.

Benet-Martinez, V., & Waller, N. G. (1997). Further evidence for the cross-cultural generality of the Big Seven model: Indigenous and imported Spanish personality constructs. *Journal of Personality*, *65*, 567-598.

Bolinger, D. (1980). *Language - the loaded weapon: The use and abuse of language today*. London: Longman.

Brokken, F. B. (1978). *The language of personality*. Unpublished doctoral dissertation. University of Groningen, The Netherlands.

Cattell, R. B. (1943). The description of personality: Basic traits resolved into clusters. *Journal of Abnormal and Social Psychology*, *38*, 476-507.

Church, A. T., Reyes, J. A. S., Katigbak, M. S., & Grimm, S. D. (1997). Filipino personality structure and the Big Five Model:

A lexical approach. *Journal of Personality*, *65*, 477-528.

De Raad, B. (1992). The replicability of the Big Five personality dimensions in three word classes of the Dutch language. *European Journal of Personality*, *6*, 15-29.

De Raad, B. (1994). An expedition in search of a fifth universal factor: Key issues in the lexical approach. *European Journal of Personality*, *8*, 229-250.

De Raad, B. (1999). Interpersonal lexicon: Structural evidence from two independently constructed verb-based taxonomies. *European Journal of Psychological Assessment*, 15, 181-195.

De Raad, B., & Barelds, D. P. H. (2008). A new taxonomy of Dutch personality traits based on a comprehensive and unrestricted list of descriptors. *Journal of Personality and Social Psychology*, *94*, 347-364.

De Raad, B., Barelds, D. P. H., Levert, E., Ostendorf, F., Mlačić, B., Di Blas, L., Hřebíčková, M., Szirmák, Z., Szarota, P., Perugini, M., Church, A. T., & Katigbak, M. C. (2010). Only three factors of personality description are fully replicable across languages: A comparison of 14 trait taxonomies. *Journal of Personality and Social Psychology*, *98*, 160-173.

De Raad, B., Hendriks, A. A. J., & Hofstee, W. K. B. (1992). Towards a refined structure of personality traits. *European Journal of Personality*, *6*, 301-319.

De Raad, B., & Hofstee, W. K. B. (1993). A circumplex approach to the five factor model: A facet structure of trait adjectives supplemented by trait verbs. *Personality and Individual Differences*, *15*, 493-505.

De Raad, B., & Hoskens, M. (1990). Personality-descriptive nouns. *European Journal of Personality*, *4*, 131-146.

De Raad, B., Mulder, E., Kloosterman, K., & Hofstee, W. K. B. (1988). Personality-descriptive verbs. *European Journal of Personality*, *2*, 81-96.

De Raad, B., & Ostendorf, F. (1996). Quantity and quality of trait-descriptive type nouns. *European Journal of Personality*, *10*, 45-56.

Di Blas, L. (2005). Personality-relevant attribute-nouns: A taxonomic study in the Italian language. *European Journal of Personality*, *19*, 537-557.

Digman, J. M. (1997). Higher-order factors of the Big Five. *Journal of Personality and Social Psychology*, *73*, 1246-1256.

Goldberg, L. R. (1981). Language and individual differences: The search for universals in personality lexicons. In L. Wheeler (Ed.), *Review of Personality and Social Psychology*, *Vol. 2 (pp. 141-165)*. Beverley Hills: Sage.

Goldberg, L. R. (1982). From ace to zombie: Some explorations in the language of personality. In C. D. Spielberger & J. N. Butcher (Eds.), *Advances in Personality Assessment*, *Vol. 1 (pp. 203-234)*. Hillsdale: NJ: Erlbaum.

Goldberg, L. R. (1990). An alternative description of personality: The Big-Five factor structure. *Journal of Personality and Social Psychology*, *59*, 1216-1229.

Hahn, D. W., Lee, K., & Ashton, M. C. (1999). A factor analysis of the most frequently used Korean personality trait adjectives. *European Journal of Personality*, *13*, 261-282.

Haven, S., & Ten Berge, J. M. F. (1978). *Tucker's coefficient of congruence as a measure of factorial invariance: An empirical study*. Unpublished manuscript. University of Groningen, The Netherlands.

Henss, R. (1998). Type nouns and the five-factor model of personality description. *European Journal of Personality*, 12, 57-71.

Hofstee, W. K. B., De Raad, B., & Goldberg, L. R. (1992). Integration of the Big Five and circumplex approaches to trait structure. *Journal of Personality and Social Psychology*, *63*, 146-163.

Hogan, R., & Kaiser, R. B. (2005). What we know about leadership. *Review of General Psychology*, *9*, 169-180.

Hřebíčková, M., Ostendorf, F., Osecká, L. & Cermák, I. (1999). Taxonomy and structure of Czech personality-relevant verbs. In I. Mervielde, I. Deary, P. de Fruyt & F. Ostendorf, F. (Eds.), *Personality Psychology in Europe (Vol. 7, pp. 51-65)*. Tilburg: Tilburg University Press.

Kiers, H. A. L., & Groenen, P. (1996). A monotonically convergent algorithm for orthogonal congruence rotation. *Psychometrika*, *61*, 375-389.

Kunzmann, U., Stange, A., & Jordan, J. (2005). Positive affectivity and lifestyle in adulthood: Do you do what you feel? *Personality and Social Psychology Bulletin*, *31*, 574-588.

Lorenzo-Seva, U., & Ten Berge, J. M. F. (2006). Tucker's congruence coefficient as a meaningful index of factor similarity. *Methodology*, *2*, 57-64.

Norman, W. T. (1963). Toward an adequate taxonomy of personality attributes: Replicated factor structure in peer nomination personality ratings. *Journal of Abnormal and Social Psychology*, *66*, 574-583.

Norman, W. T. (1967). *2,800 personality trait descriptors: Normative operating characteristics for a university population*. Ann Arbor, MI: Department of Psychology, University of Michigan.

Roe, R. A. (2002). Competenties − Een sleutel tot integratie in theorie en praktijk van de A&O-psychologie [Competences − A key towards the integration of theory and practice in work and organizational psychology]. *Gedrag & Organisatie*, *15*, 203-224.

Saucier, G. (2003). Factor structure of English-language personality type-nouns. *Journal of Personality and Social Psychology*, *85*, 695-708.

Saucier, G., Georgiades, S., Tsaousis, I., & Goldberg, L. R. (2005). The factor structure of Greek personality adjectives. *Journal of Personality and Social Psychology*, *88*, 856-875.

Saucier, G., & Goldberg, L. R. (1996). Evidence for the Big Five in analyses of familiar English personality adjectives. *European Journal of Personality*, *10*, 61-77.

Spencer, L. M., & Spencer, S. M. (1993). *Competence at work: Models for superior performance*. New York: Wiley.

Wierzbicka, A. (1986). What's in a noun? (Or: How do nouns differ in meaning from adjectives?). *Studies in Language*, *10*, 353-389.

Wiggins, J. S. (1991). Agency and communion as conceptual coordinates for the understanding and measurement of interpersonal behavior. In W. Grove & D. Cicchetti (Eds.), *Thinking clearly about psychology: Essays in honor of Paul E. Meehl (Vol. 2, pp. 89–113)*. Minneapolis: University of Minnesota Press.

Zuckerman, M. (2002). Zuckerman-Kuhlman Personality Questionnaire (ZKPQ): An alternative five-factorial model. In B. De Raad, & M. Perugini (Eds.), *Big Five Assessment (pp.377-396)*. Goettingen: Hogrefe & Huber Publishers