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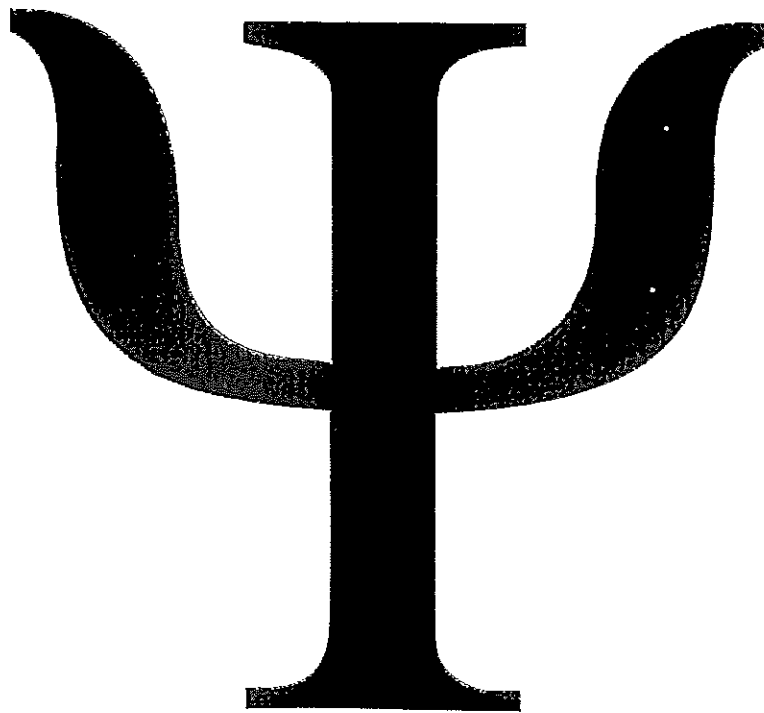
THE LEXICAL APPROACH TO PERSONALITY DESCRIPTION IN THE CZECH CONTEXT[1]

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ABSTRACT

In this article, I will present an overview of the lexical studies in the Czech context. First, I will introduce the structure of Czech personality-relevant adjectives and the validity of the Big Five factor structure in Czech language. Then, I will compare the Czech five-factor structure with other national five-factor structures. In the next part, the way to integrate the five-dimensional simple-structure and circumplex models of personality will be documented. At the end of this article the taxonomy and structure of the Czech personality-relevant verbs will be introduced.

Key words:

lexical approach,
Five-Factor Model,
taxonomy
structure,
personality-descriptive adjectives,
personality-descriptive verbs,
AB5C model

One of the most dynamic areas of personality research during the past two decades has been that of personality structure. The structure of personality characteristics has been examined using the lexical strategy in order to find major personality dimensions. The rationale for lexical studies rests on the assumption that meaningful personality attributes are encoded in language as single-word descriptors (Galton, 1884; Goldberg, 1990). Based on this rationale, a number of studies have been conducted examining a factor structure of mainly adjectival descriptors, which were extracted from dictionaries. The results of many studies in the field have supported the validity of the „Five-Factor Model" with factors identified as (1) SURGENCY or EXTRAVERSION *(talkative, assertive, energetic)*, (2) AGREEABLENESS *(good-natured, co-operative, trustful)*, (3) CONSCIENTIOUSNESS *(conscientious, responsible, orderly)*, (4) EMOTIONAL STABILITY or its opposite NEUROTICISM *(calm, neurotic, not easily upset)*, (5) CULTURE, INTELLECT or in one inventory representation OPENNESS TO EXPERIENCE *(cultured, intellectual, unconventional)*. Because the Five-Factor model has been proved to be robust across a diversity of studies, the five factors have been also called the Big Five. In the framework of the Big Five Model two approaches are usually differentiated: lexical (taxonomic) and dispositional (questionnaire). The name Big Five emerged from the psycholexical tradition and refers to the lexically based five-factor structures. Five Factor Model (FFM) refers to the Five-Factor Model as developed by the Costa and McCrae team.

The first stage of a lexical analysis of personality descriptors is a construction of a comprehensive list of personality-relevant terms as possibly included in a dictionary (in codified form) of a particular language. The aim of the second stage is to reduce the list and in the case of adjectives, to distinguish dispositions or traits (relatively stable characteristics of personality) from other characteristics used e.g. for a description of temporary mental states, physical symptoms, attitudes or appearance. In these two first stages, two different but related methodologies, are used. The terms are either classified into categories (Ostendorf, 1990; Szarota, 1996; Hřebíčková, 1997) or judgments of utility for describing personality are applied in order to reduce the list of the terms (De Raad, 1992; Caprara, Perugini, 1994).

In the third stage of a taxonomic project, a final list of traits is given to subjects for self-rating and/or peer-rating. Using factor analysis, traits are usually grouped into five factors, which can be interpreted in a similar way, only with minor deviations across different languages and cultures.

The lexical projects have been first pursued in American English (Allport, Odbert, 1936; Norman, 1967, Goldberg, 1982) and afterwards spread to Europe and Asia. The lexical studies of per-

sonality descriptors systematically extracted from the lexicon have now been published for about 15 languages[1].

Results of most lexical studies have supported the validity of the Big-Five model previously identified in English (Ostendorf, 1990; DeRaad, 1992; Somer, Goldberg, 1999; Schmelyov, Pochilko, 1993; Szarota, 1996; Mlačić, Ostendorf, 2004; Hřebíčková, 1997). However, results that differ more or less from the original Big Five structure are to be found (Di Blas, Forzi, 1998; Benet-Martínez, Waller, 1997; Boies, Lee, Ashton, Pascal, Nicol, 2001; Almagor, Tellegen, Waller, 1995; Almagor, Tellegen, Waller, 1995; Hahn, Lee, Ashton, 1999; Church, Katibak, Reyes, 1996).

In this article, I will present an overview of the lexical studies in the Czech context. First, I will introduce the structure of Czech personality-relevant adjectives and the validity of the Big Five factor structure in Czech language. Then, I will compare the Czech five-factor structure with other national five-factor structures. In the next part, integreting the five-dimensional simple-structure and circumplex models of personality will be documented. Abridged Big Five Dimensional Circumplex (AB5C) taxonomy was applied to data consisting of 397 self-ratings on 358 Czech representative personality trait adjectives. At the end of this article the taxonomy and structure of the Czech personality-relevant verbs will be introduced.

I. TAXONOMY AND STRUCTURE OF THE CZECH PERSONALITY-RELEVANT ADJECTIVES

At the end of the last century Professor Alois Angleitner from the University of Bielefeld coordinated a number of research projects aimed at verification of the Five-Factor Model of personality in several languages including Czech. Lists of Czech potential personality-relevant adjectives (*talkative, polite*), type (*altruist, scrooge*) and attributive (*sensitivity, secretiveness*) nouns, and verbs (*lie, ponder*) were formed in the first phase of the lexical project. The lists of personality-relevant adjectives and verbs were reduced in the second phase. In the third phase, a structure of a personality relevant lexicon in the two above mentioned linguistic categories was derived.

A taxonomic procedure starts with creating an exhaustive list of personality descriptors. From the Dictionary of Standard Czech (Academia, 1989), containing approx. 28,000 adjectives, all potentially person-descriptive adjectives were excerpted. Four thousand one hundred and forty-five potential personality relevant adjectives were selected using a German classification system (Angleitner, Ostendorf, John, 1990). The German classification system contains five superordinate categories (1. *Dispositions*, 2. *Temporary conditions*, 3. *Social and reputational aspects*, 4. *Overt characteristics and appearance*, 5. *Terms of limited utility*). The five super ordinate categories were split into two to four subcategories (together 13 subcategories). In a classification task, six judges assigned the 4,145 terms to the 13 categories. The Interjudge agreement was evaluated by means of Cronbach Alpha (Category 1, *Dispositions*; a = 0.81); the stability of the judgements was assessed on the basis of random sample of 100 terms, was r = 0.73 for Category 1. (Hřebíčková, 1995; Hřebíčková, 1997).

Only those adjectives assigned to the category of *Dispositions* by a majority of the judges were chosen to represent the given domain of trait terms. This procedure resulted in selecting 366 adjectives.

To examine the structure of Czech personality language, the 366 representative trait descriptors were used as variables in a self-rating task. The representative set of Czech trait adjectives was presented to 397 subjects, 17 – to 81 age-bracked (M = 31.3 years; SD = 14.4 years) in unipolar five-point rating scales. Eight adjectives were discarded from the data set because at least 25% of the judges were not familiar with them. The factor analysis was applied to 397 self-ratings on 358 adjectives. To minimize potential effects of response biases, each subject's responses were first standardized. A principal component analysis was performed on the matrix of 397 subjects and 358 personality descriptors. The plot of the first 150 eigenvalues showed five dominant principal components. These five components were rotated according to Varimax.

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[1] German (Ostendorf, 1990); Dutch (Brokken, 1978; DeRaad, 1992); Italian (Di Blas, Forzi, 1998; Caprara, Perugini, 1994), Spanish (Benet-Martínez, Waller, 1997); French (Boies, Lee, Ashton, Pascal, Nicol, 2001), Hungarian (Szirmák, De Raad, 1994), Turkish (Somer, Goldberg, 1999; Goldberg, Sommer, 2000), Hebrew (Almagor, Tellegen, Waller, 1995), Korean (Hahn, Lee, Ashton, 1999), Filipino (Tagalong) (Church, Katibak, Reyes, 1996), Polish (Szarota, 1996), Russian (Schmelyov, Pochilko, 1993), Croatian (Mlačić, Ostendorf, 2004), Czech (Hřebíčková, 1997). For more details see Saucier, Hampson, Goldberg (2000).

The first five representative factors could be interpreted as Big Five. Table 1 shows the first 20 variables with highest loadings on both poles of the factor I − V. A Conscientiousness factor explained most of the variance (24.2%), factor Intellect 19.6 %, Surgency or Extraversion 22.9%, Agreeableness 18.45% and et least variance explained factor Emotional Stability (14.9%).

Validity of the Czech five-factor structure

In order to prove the validity of the Czech five-factor structure, three criteria were used. First, prototypicality indices (internal structure) of the 366 Czech representative trait adjectives for the five factor model reported by Normans' representative Big Five structure in English (1963) were collected. In addition Osgood's (1957, 1975) three dimensions of affective meaning and the constructs of the Wiggin's circumplex model of the interpersonal characteristics (1980) were used to prove the construct validity of the Czech five-factor structure. Seven experts were asked to rate prototypicality of each adjective for the five Norman factors, for sixteen facets of Wiggin's circumplex model and for three Osgood's dimensions.

The varimax structure of the Czech prototypicality ratings for Norman FFM resulted in five factors, which could be interpreted as the Norman five-factor model. The outcomes of the analysis have shown that Czech personality language contains just a few terms for describing Emotional stability or Neuroticism. The majority of facets from the Wiggin's circumplex model correlated with Norman factors Surgency − Extraversion (SU) and Agreeableness (AG), the facet Submissive − Dominant correlated additionally with Norman factor Emotional Stability (ES). The facet Ambitious − Lazy of the Wiggin's circumplex model correlated with Norman's factor Conscientiousness (CO). The evaluation from Osgood's three dimensional model correlated with three Norman's factors (AG, CUlture, CO), Activity with three factors (CO, SU, CU) as well and Potency correlated with four factors (CO, ES, CU, SU).

Another strategy employed to test the validity of the Czech five-factor structure was a comparison with translated Big Five markers and with a NEO Five-Factor Inventory. The 171 rating scales previously published by Norman (1963), Goldberg (1983), McCrae and Costa (1987), Peabody (1987, 1984), Peabody and Goldberg (1989) and John (1983) as Big Five markers were translated into Czech. Four hundred and fifteen Czech subjects were asked to rate themselves on the 171 bipolar adjective scales. A principal components analysis with Varimax rotation was performed and the five factors were rotated according to Varimax. The five-factor solution represents a clear demonstration of the Big Five factors.

The NEO Five-Factor Inventory by Costa and McCrae (1992) was applied as a further validity criterion. The NEO-FFI includes 60 self-report items (12 per scale) measuring the personality dimensions of Neuroticism (with an alternative label Emotional Stability), Extraversion, Openness to Experience[2], Agreeableness and Conscientiousness[3].

To evaluate the convergent and discriminant validity of the Czech representative five-factor structure across different instruments, correlations of the representative Czech five-factor structure with the factor scores from the 171 bipolar rating scales (translated Big Five markers) and NEO-FFI were calculated. The scores for the first three factors (SU, AG, CO) correlate highly, the scores for factor Intellect (IN) showed low correlation. The correlation of the NEO-FFI scales with factors derived from the 358 representative self-rating scales and 171 bipolar self-rating scales are generally lower, especially for the factor V (Intellect), which conceptually differs from Openness to Experience.

Structure of the Czech trait adjectives: Five- till eight-factor solution

In a five-factor solution, a high correspondence between the pattern of loadings and the prototypicality indices (internal structure) was detected for four factors ($r = 0.81 − 0.88$). The pattern of loadings of Factor IV Emotional Stability showed less correspondence with the appropriate prototypicality ratings of the adjectives according to Norman's system ($r = 0.69$). Despite this low correlation among the factor pattern and the prototypicality indices, the fourth factor could

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[2] Openness to Experience is not rooted in the psycholexical tradition. Open individuals are curious about both inner and outer world, and their lives are rich. They are willing to entertain novel ideas and unconventional values, and they experience both positive and negative emotions more extremely than do closed individuals (Costa, McCrae, 1992, p. 15).
[3] Professional Manual of the Czech version of the NEO Inventories (NEO-FFI and NEO-PI-R) is available for Czech psychologists (Hřebíčková, Urbánek, 2001; Hřebíčková, 2004).

Table 1. Representation of the Czech five-factor structure

I	+	*loquacious (řečný), voluble (výřečný), talkative (hovorný), chatty (mluvný), lively (temperamentní), eloquent (výmluvný), sociable (společenský), energetic (energický), communicable (sdělný), communicative (sdílný)*
	−	*close (uzavřený), taciturn (málomluvný), silent (tichý), incommunicative (nemluvný), untalkatve (mlčenlivý), solitary (samotářský), shy (plachý), sheepish (ostýchavý), diffident (nesmělý), unsociable (nedružný)*
II	+	*kind-hearted (dobrosrdečný), benign (dobrotivý), affable (přívětivý), fair (poctivý), hearty (srdečný), forbearing (snášenlivý), upright (charakterní), moral (mravný), polite (zdvořilý), good-natured (dobromyslný)*
	−	*domineering (panovačný), pugnacious (útočný), revengeful (pomstychtivý), hard-hearted (necitelný), having a tendency to expand (rozpínavý), despotic (despotický), aggressive (agresivní), rough (drsný), authoritarian (autoritářský), intolerant (nesnášenlivý)*
III	+	*thorough (důkladný), consistent (důsledný), sedulous (pilný), conscientious (svědomitý), conscionable (pečlivý), purposeful (cílevědomý), hard-working (pracovitý), emphatic (důrazný), systematic (systematický), persistent (vytrvalý)*
	−	*indolent (lenošný), lazy (lenivý), unconscientious (nesvědomitý), unpersistent (nevytrvalý), chaotic (chaotický), unstable (nestabilní), dawdling (loudavý), inattentive (nepozorný), indecisive (nerozhodný), lax (laxní)*
IV	+	*calm (klidný), composed (vyrovnaný), handy (zručný), courageous (odvážný), collected (duchapřítomný), skilful (dovedný), dextrous (obratný), self-assured (sebejistý), resistant (odolný), proficient (umný)*
	−	*gets easily agitated (rozrušitelný), nervous (nervní), inflammable (vznětlivý), easily excitable (lehkovznětlivý), irritable (popudlivý), labile (labilní), touchy (vztahovačný), restless (neklidný), anxious (úzkostlivý), angry (zlostný]*
V	+	*clever (chytrý), intelligent (inteligentní), bright (bystrý), well-educated (vzdělaný), intellectual (intelektuální), gifted (nadaný), knowing (znalý), talented (talentovaný), sharp-witted (důvtipný), receptive (chápavý)*
	−	*fatuous (přihlouplý), silly (blbý), half-witted (přiblblý), unintelligent (neinteligentní), idiotic (idiotský), doltish (hlupácký), daft (pitomý), stupid (hloupý), ungifted (nenadaný), untalented (netalentovaný)*

Note. Table 1 gives the representative terms from the five-factor solution. The factors are presented using ten trait variables for each factor pole (+, -). These terms were the highest loading terms per pole ($\leq$ .30). I = Extraversion-Surgency, II = Agreeableness, III = Conscientiousness, IV = Emotional Stability, V = Intellect

be interpreted as Emotional Stability (see Table 1). In addition, variables that loaded on the positive pole of Factor V according to the prototypicality ratings (e.g. *skilful, dextrous, handy, proficient*), and the negative pole of Factor II (e.g. *egotistic, angry*) showed significant loadings on Emotional Stability. In summary, the factors of the Czech five-factor structure are labeled as Extraversion – Surgency, Agreeableness, Conscientiousness, Emotional Stability, and Intellect provide a fairly typical version of the Big Five. In comparison with other six representative Big Bive structures emerged that the Czech factor Intellect has a "Culture" coloring (Norman, 1963), expressed by the combination of well-educated, knowledgeable, educable, and understanding (De Raad, Perugini, Hřebíčková and Szarota, 1998).

A six-factor solution showed that the factor Intellect split into two factors, the first one representing Intellect, and the other could be interpreted as an Achievement Ability factor. Adjectives that loaded on the Achievement Ability factor were *nimble, skilful, agile, inventive* vs. *clumsy, unskilful, slow, uncreative*. The interpretation of the factor was stable also in seven- and eight-factor solutions.

The seventh factor in a seven-factor solution was a combination of the factors Agreeableness and Emotional Stability. Loading patterns of the seventh factor correlated with prototypicality ratings for factors Agreeableness $r = 0.59$ and Emotional Stability $r = 0.55$. Other significant correlations with prototypicality ratings were to be found in the case of facets Agreeable – Quarrelsome ($r = 0.65$) and Unassuming – Arrogant ($r = 0.57$). Adjectives that loaded highest on the factor were *calm, composed, harmonious* vs. *easily excitable, irritable, angry* and *contentious*.

In an eight-factor solution one factor was interpreted as a Submissivity factor (e.g. *manipulable, submissive, adaptable, and fearful* vs. *seditious, pugnacious, intractable, self-assured* and *indepen-dent*). The factor Submissivity correlated with prototypicality rating for Wiggins' facet Submissive – Dominant and with prototypicality ratings for three of the Big Five factors (Surgency – Extra-version $r = 0.32$, Agreeableness $r = -031$, Emotional Stability $r = 0.38$). The eighth factor could be interpreted as a facet of Intellect (e.g. *thoughtful, dreamy, curious* vs. *unmusical, realistic, modest.* The factor was called Fantasy.

Cross-cultural comparisons of the five-factor structures

The Czech five-factor structure has been used in cross-cultural comparisons. De Raad has insti-gated several studies comparing five-factor structures in different languages (De Raad, Perugini, Szirmák, 1997; De Raad, Di Blas, Perugini, 1998; De Raad, Perugini, Hřebíčková, Szarota, 1998). In one of the studies De Raad, Perugini, Hřebíčková and Szarota (1998) compared seven langua-ges (English, Dutch, German, Hungarian, Italian, Polish and Czech). Within each language, terms that had clear English equivalents in the Goldberg list (1992) of 540 trait-descriptive adjectives were identified. Furthermore, these languages congruence coefficients were calculated using the American English solution as a benchmark. The results showed that Italian and German structures find the best accommodation with the American English structure, and Hungarian and Czech fit the worst out of all six languages.

Peabody and De Raad (Peabody, De Raad, 2002; De Raad, Peabody, 2005) chose another strate-gy for comparing the five-factor structures across languages. They used a qualitative examination looking carefully at a content of the factors derived from the five-factor structures in different languages. The qualitative examination showed a universal validity of the factor Conscientiousne-ss in all six structures under study (Czech, Dutch, Hungarian, Polish and two independent Italian taxonomies). The content of the first factor Extraversion resembled in all of the six structures as well. The second factor Agreeableness split and connected with characteristics of the fourth factor Emotional Stability in three taxonomies (Hungarian and two Italian). So far, a questionable content of the fifth factor has been extensively discussed. The fifth factor differs in particular national studies and is also labeled differently (e.g. Intellect, Culture or Integrity). Peabody and De Raad found out that neither factor IV (Emotional Stability) appears to be cohesive. The above mentioned findings suggest that the Big Three structure comes closer to cross-cultural generalizability.

II. ABRIDGED BIG FIVE CIRCUMPLEX MODEL (THE AB5C)

In order to classify the structure of personality traits, two taxonomy models are usually used – a dimensional model and a circumplex model. Big Five represents such a dimensional model, which consists of five bipolar dimensions. In a circumplex model, the traits are defined by their position on axes created by two independent dimensions. E.g. in the well-known Wiggins' interpersonal circumplex, eight interpersonal trait clusters are arranged in a circular ordering around the under-lying coordinates of Dominance and Nurturance. (Wiggins, 1980).

According to Osecká (2000), an advantage of the circumplex model is the possibility to identify semantically close and cohesive trait-clusters. A disadvantage of a two-dimensional circumplex model is that it covers only a certain part of personality traits e.g. just interpersonal characteristics in the Wiggins' interpersonal circumplex. Hofstee, De Raad and Goldberg (1992) thus attempted to connect the dimensional Big Five model to a circular ordering and created the Abridged Big Five Dimensional Circumplex (AB5C). Generally, it would be possible to construct a five-dimensional circumplex for the Five Factor Model. However, the authors constructed an „abridged" five-dimen-sional model relying on the findings from several lexical studies in which the majority of traits do not correlate with more than two factors significantly. The model consists of 10 circumplexes, the ten pairs of factors each constituting a circumplex plane, with a single circumplex accommodating only those trait-variables that have their highest two loadings on the factors of that circumplex.

Another salient problem in a circular ordering of personality traits represents the question of how many parts should the circle be divided, in other words, how many pieces should the cake be cut (De Raad, 2000). In the AB5C model, each two-dimensional circumplex is divided into 12 segments. The segments are separated by lines at 30° of the twelve factors or vectors. The segment I+I+ represents traits that have only substantial loadings on the plus-pole of factor I; the segment I+II+ contains the traits that have primary positive loadings on Factor I and secondary positive loading on factor II, II+I+ contains traits that have primary positive loadings on factor II and se-condary positive loadings on factor I, etc.

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The algorithm for assigning traits to segments starts with the Varimax-rotated loadings of the variables. Only the two highest loadings of a variable are considered. If the primary loading is at least 3.73 as large as the secondary, the variable is assigned to the pure-factor segment associated with the primary loading. For example *voluble*, with its highest loading of .71 on Factor I and its highest secondary loading of .09 on factor V, would be assigned to the I+I+ segment. The remaining traits are assigned to mixed factor segments according to their primary and secondary loadings. For example *dominant* with its primary loading on .31 on Factor I and its secondary loading of -.27 on Factor II, is assigned to the I+II- segment. *Pugnacious* has its primary negative loading -.48 on factor II and secondary positive loading .28 on factor I and therefore is assigned to I-I+ segment.

The extent to which the trait is represented by the model is indexed by the length of its projection on the bisectrix of the segment. The angle between the bisectrix and the factor on which the variable has its primary loading is 30°, and it is 60° with the secondary factor. Accordingly, the projection length h is: $h = a_1 + \cos(30°) + a_2\cos(60°)$, with a_1, a_2 being the absolute values of the primary and secondary loadings, respectively.

We applied the AB5C procedure to data from the Czech representative five-factor structure (matrix of 397 self-ratings on 358 Czech personality trait adjective).

The application of the AB5C principles optimizes the use of the factor matrix. The result is a fine-grained portrait of traits, ordered in ten circumplexes (Hřebíčková, Ostendorf, 2005). An alternative representation of the AB5C results is in Table 2. It is the full-blown AB5C-model, economically represented in 10 x 10 matrix format, of which both the columns and the rows represent the ten poles of the five factors. Table 3 should be read vertically. Adjectives in the cells have their primary loading on the column factors and their secondary loading on the row factors. The cells of the matrix correspond to the 90 distinct segments of the ten circuplexes (opposite poles of the same factor do not produce existing blends; those cells are empty by definition, marked by xxxx in the Table 2). No more than three adjectives with the highest projection are presented in the cells, the number in each cell reports the amount of adjectives in a particular segment.

The empirical analyses using AB5C methodology was applied in several trait adjective structures (Hofstee, De Raad, Goldberg, 1992; De Raad, 2000; Johnson, Ostendorf, 1993; Hřebíčková, Ostendorf, 2005) and verbs structures (De Raad, Hofstee, 1993).

In all three mentioned studies, adjectives expressing sociability and communicativeness belong to the pure segment (I+, I+). In the Czech study, two adjectives (*benign, conciliatory*) are to be found in segment II+ II+. In the Johnson and Ostendorf's study, three adjectives (*acquiescent, gentle, softhearted*) are to be found in the same segment. Hofstee and his colleagues introduced the highest number of traits belonging to pure segment (*sympathetic, kind, warm, understanding, sincere, compassionate, cordial, accommodating*).

Previous studies have confirmed that characteristics of the Agreeableness factor are evaluated as socially desirable. Simultaneously, the relation between these characteristics and femininity was proven (John, 1990). This fact also corresponds to findings from three independent studies employing the AB5C methodology.

In the pure segment III+ III+, adjectives like *consistent* or *principled* represent the third factor Conscientiousness. More adjectives enter this segment in both foreign studies. According to Johnson and Ostendorf, adjectives in this segment characterize a disciplined, meticulous person who likes things to be ordered and is focused on details. In the study of Hofstee et all., this segment could be interpreted in a similar way. Adjectives that semantically correspond to a usual interpretation of this factor like single-mindedness and concentration on accomplishing tasks are not to be found in the unambiguous segment (III+ III+). An interpretation of the fourth factor based on adjectives from the segment IV+ IV+ is rather problematic as there were no adjectives to be found in the Czech study. Hofstee et all. found only one trait descriptor (*unenvious*) in this segment as in the case of Johnson and Ostendorf's study (*calm*). Johnson and Ostendorf assume that the core of the fourth factor is the absence of negative emotions. In both foreign studies, meaning of the segment V+ V+ can be interpreted as creativity. It contains the adjectives *artistic, creative,* and *imaginative*. In the Czech study, the pure segment V+ V+ contains only an adjective (*educated*) and therefore the segment could be rather interpreted in accord with a Norman's (1963) definition of the fifth factor as Culture.

The already mentioned pure segments contain prototypic characteristics for each factor of the five-factor structure. However, the characteristics comprised in mixed factor segments are also important for defining each factor. The outcomes from the AB5C methodology show that the scales designed to measure the five dimensions of personality are not defined by the traits that belong to pure segments, but rather by traits from mixed factor segments. The only exception represents the Extraversion dimension. Hofstee et al. (1992) mention the natural „promiscuity" of the

Table 2 AB5C model: A periodic system of Czech personality traits

	Extraversion		Agreeableness		Conscientiousness		Emotional Stability		Intellect	
	I+	I-	II+	II-	III+	III-	IV+	IV-	V+	V-
I+	loquacious voluble talkative 6	XXXXXXX	kind-hearted hearty helpful 4	pugnacious go-ahead quick-tempered 10	emphatic decisive active 5	instinctive 1	courageous dextrous self-assured 7	inflammable easily excitable hot-tempered 4	shrewd inquisitive 2	0
I-	XXXXXXX	close taciturn silent 7	restrained unaggressive non-violent 4	hard-hearted guileful 2	precise pedantic prudent 3	lazy indolent irresolute 10	Calm 1	fearful pessimistic skeptical 3	contemplative reflective 2	untalented ungifted indocile 10
II+	sociable communicable communicative 5	demure gentle unpassionate 3	benign conciliatory 2	XXXXXXXX	conscientious sedulous conscionable 11	dreamy 1	0	anxious 1	receptive educable perceptive 4	uncreative 1
II-	combative dominant bellicose 3	solitary unapproachable stingy 3	XXXXXXXX	unsubmissive 1	0	unconscientious unstable selfish 6	0	irritable angry irascible 5	sapient strategic 2	0
III+	energetic assertive bold 8	serious reserved 2	upright fair disciplined 16	dogged strict 2	consistent principled 2	XXXXXXXX	composed harmonic handy 5	0	ambitious thoughtful provident 4	0
III-	spontaneous reactive 2	shy diffident infirm 11	good-natured adaptable 2	revangeful malevolent egoistic 10	XXXXXXX	0	carefree adventurous 2	Gets easily agitated nervous labile 8	curious 1	fatuous half-witted simple-minded 12
IV+	fast casual flexible 5	0	forbearing tolerant optimistic 4	rough cold-blooded insidious 4	self-reliant self-sufficing efficient 8	0	XXXXXXXX	XXXXXXXX	clever intelligent bright 20	week-minded analphabetic illiterate 3
IV-	impulzive 1	suspicious 1	emotional compassionate submissive 6	domineering argumentative conflicting 7	meticulous punctilious 2	chaotic rash-headed unpersistent 13	XXXXXXXX	sentimental 1	0	awkward unskilful 2
V+	passionate 1	reflective 1	affable 1	authoritarian egocentric unyielding 5	through purposeful systematic 13	jealous 1	collected skilful proficient 7	0	XXXXXXX	educated 1
V-	0	unsociable undynamic sedate 4	unselfish unassuming 2	unfeeling brutal sadistic 7	0	unstable unsystematic irrational 8	0	0	XXXXXX	silly unintelligent idiotic 7

factors. According to them, some factors copulate with each other and have many offspring together. Johnson and Ostendorf inspired by chemistry introduce another metaphor. According to them, the factors defined by the characteristics from pure segments represent chemical elements, whereas the characteristics from the combination of various segments resemble chemical compounds.

An extension of the simple dimensional trait structure to its circumplex ordering in accordance with the AB5C methodology provides a relational frame for clearing up the relations and distinctions among various approaches towards defining the dimensions (factors) of the five-factor model and its particular characteristics. Only a few trait descriptors can be classified into pure segments. The majority of trait descriptors is placed in mixed segments and gets the meaning's shade from another factor. Only 8% of the Czech personality-relevant traits could be assigned to a poor segment and 92% of traits are a combination of positive or negative pole of the factors of the five-factor structure. The AB5C methodology is also employed by a construction of psychodiagnostic methods e.g. Five Factor Personality Inventory – FFPI, Hendriks, 1997; International Personality Item pool –IPIP, Goldberg et all, 2006).

III. TAXONOMY AND STRUCTURE OF CZECH PERSONALITY-RELEVANT VERBS

Until recently, most taxonomies were based on analyses of personality descriptive adjectives. The reason probably rests on the assumption that adjectives describe stable personality characteristics, thus doing a better job in assessment of personality traits than other linguistic categories. Verbs, on the other hand, which are typically used to describe specific patterns of behavior in specific situations, are probably more adequate for description of states like observable activities (e.g. *to talk*) and experiential states (e.g. *to hate*). However, in the past, verbs have received less research attention.

The first systematic and comprehensive taxonomy of personality descriptive verbs was provided by De Raad and co-workers for Dutch language (De Raad, 1992; De Raad, Mulder, Kloosterman, Hofstee, 1988). De Raad (1992) obtained a robust solution with two factors labelled Agreeableness and Emotional Stability. The general aim of the Czech taxonomy project was to examine whether the Big-Five factors can be identified in another linguistic category, namely the domain of Czech personality-relevant verbs.

Our lexical study was the first attempt to select all personality-relevant verbs from the Czech lexicon (Hřebíčková, Ostendorf, Osecká, Čermák, 1999). The resulting comprehensive and representative list of Czech personality-relevant verbs can serve as a tool for the development of taxonomy, dimensional analyses, and the future construction of personality assessment instruments. Such a comprehensive taxonomy of personality-relevant terms provides a common framework for research led by different theoretical orientations and could guide the selection of variables for research (John, Angleitner & Ostendorf 1988). First the representative and exhaustive list of personality-descriptive verbs was constructed. From the eight-volume Dictionary of Standard Czech (Academia, 1989), containing about 119, 000 separate entries, all verbs that can be used „to distinguish the behavior of one human being from that of another" (Allport, Odbert, 1936) were extracted. 2,374 potentially personality-relevant verbs (7% of all verbs) were found in the dictionary. In the next step the list was reduced by semantic and syntactic criteria. All verbs from the list that were marked as archaic, bookish, rarely used, dialectal, poethical in the dictionary were excluded. Furthermore, the imperfective verbs were left in the list, while the perfective verbs (175) were excluded. Finally, verbs with prefixes were excluded in cases where these verbs had the same meaning as their basic forms. After applying all these criteria, the list was reduced by 844 verbs. The final version of the personality-relevant verbs list contained 1,530 items.

However, taxonomy of personality-relevant verbs must provide more than an alphabetical listing. A useful taxonomy should provide a systematic framework for distinguishing, ordering, and naming individual differences in people's behavior and experience (John, 1989). Therefore, in the second stage of the lexical project, we continued with a further reduction. Semins and Fiedler's classification system was used to reduce the comprehensive list of Czech personality-relevant verbs (Semin, Fiedler, 1988). Their four-level classification distinguishes between personality-relevant verbs and adjectives. Verbs are sorted into three major domains: „Descriptive action verbs" (referring to neutral, concrete description of an action with clear beginning and end of an action, e.g. *to call, to kiss, to talk*), „Interpretative action verbs" (referring to rather general classes of behavior with positive and negative semantic connotations, which interpret the behavior, e.g. *to help, to cheat, to cheer*), and „State verbs" (refer to mental or emotional states, which have no clear definition of beginning and

end of an action, they are in fact abstract statements that usually cannot be verified objectively by an observer, e.g. *to like, to hate, to trust*). The four linguistic categories are organized along a continuum of concreteness – abstractness (from descriptive action verbs to adjectives). The advantage of this taxonomy lies in the fact that its classes discriminate between verbs that describe actions, verbs that interpret actions, and verbs that refer to mental or emotional states. „Interpretative action verbs" are more situation-specific, whereas „State verbs" are more person-specific.

Ten independent judges were recruited for the classification task. The judges rated their familiarity with the meaning of each verb and the personality relevance of the verb defined by the question „If someone (verb) more often than others then that behavior shows his/her personality". When a verb passed the „Clarity of meaning" and „Personality relevance" criteria, the judges classified the verb into one of the three Semins' and Fiedler's categories. To obtain a measure of the degree to which a verb fitted into a particular taxonomic category, a prototypicality score reflecting the number of judges who classified the verb as belonging to a given category was computed. Reliability with which the judges used each category was evaluated in terms of internal consistency (Coefficient Alpha) and stability of the prototype scores assessed at two different times for a subsample of 100 terms (after twelve months). The Alpha and the stability coeficient were higher for the verbs from the category „Descriptive action verbs" than for the „Interpretative" and „State verbs". This finding seems to support the assumption that verbs from the latter categories in fact describe more abstract classes of behavioral acts and internal conditions. A verb that can be considered as a prototypical example of a category should be classified into a given category by majority of the judges (it means by 6 or more judges). Using this criterion, we found that 578 of the 1,530 verbs (37,7%) could be considered as prototypical members of one of the three verb classes.

The largest category, accounting for 25% of the total pool, was „Interpretative action verbs", followed by „Descriptive action verbs" with 8%, and „State verbs" with 4%. Only those verbs that were assigned by the majority of the judges to the „Interpretative" and „State" verbs categories were included in the final list of 289 personality-descriptive verbs.

Finally we examined the major dimensions of personality description that would result from a factor analysis (Varimax rotation) of the reduced set of 289 verbs in a sample of 475 self-reports. The two to six factor solutions were performed. Because of space limitation only short descriptions of the four factor solutions, which is more comparable with Big-Five, is presented. The first factor covered affiliant, nurturant and emphatic behavior on the positive pole (e.g., *to love, to associate with a person*) which was supplemented by two facets: Self-Reflection (*to contemplate, to ponder*) and Positive Experiencing (*to become enthusiastic, to hope*). The negative pole of the first factor was defined by dominant, hostile or even aggressive behavior. This pole covered particular verbs expressing aggression (*to make fun of a person, to oppress*). The meaning of this pole also included another facet – Irresponsible Behavior (*to slack about*). The second factor comprised verbs expressing the experience of anxiety, uncertainty, negative emotions, and submission (*to be afraid, to be in despair*) on its positive pole. The negative pole was defined by characteristics that seemed to be related to the construct of Sensation-Seeking (Zuckerman, 1979): expressing showing off, excitement, and fun seeking. In the third factor, there are verbs characterizing negative emotional reactions and direct aggression on one pole but the opposite pole had a different meaning. It included verbs expressing empathy (*to associate with a p., to encourage, to imagine oneself in the position of sb.*). The fourth factor comprised verbs expressing carelessness (*to loiter, to do a t. badly*) on one pole and verbs describing ambition (*to toil, to commit oneself, to aspire, to excel*) on the opposite pole. In Table 3, the four-factor solution is represented by the 20 verbs that showed the highest loadings for each pole of the Varimax-rotated factors.

In certain respects, the structure of personality descriptive verbs resembles the structure of adjectives found in the personality lexicon. In all the solutions reported, the first verb factor refers to characteristics that are summarized by the Big-Five Factor II (Agreeableness) in the domain of adjectives. The second verb factor includes characteristics of the Big-Five factors Emotional Instability, Introversion, and Extraversion, and the fourth verb factor of the four-factor solution seems to parallel Conscientiousness, the well known Big-Five Factor III. The most important difference between the structures of the two word classes seems to be that there is no verb factor covering the content of Big-Five Factor V, Intellect or Openness to Experience.

Furthermore, there are striking similarities between the three-factor solutions in Czech and Dutch. In both languages, the first verb factor corresponding to the Big-Five Agreeableness splits into two. In a four-factor solution, a third version of Agreeableness is added in Dutch, a result that parallels our findings in the domain of trait adjectives (see also Ostendorf, 1990). The characteristics related to work, as is usual for the Conscientiousness factor in the Big Five can be found in the the four-factor solution in Czech. The factor Conscientiousness in the five-factor solution was

Table 3. The four-factor structure of Czech personality descriptive verbs

I	+	to oppress (utlačovat), to toady to a p. (podlézat), to make fun of a p. (posmívat se), to betray (zradit), to tyrannize over a p. (tyranizovat), to také revenge (mstít se), to endanger (ohrožovat), to bully (šikanovat), to force (násilnit), to enslave (zotročit)
	−	to have compassion on a p. (soucítit), to soothe (konejšit), to enjoy together (spoluprožívat), to console (chlácholit), to get sentimental (rozcitlivět se), to contemplate (rozjímat), to care about (pečovat), to brood over (zadumat se), to meditate (meditovat), to ponder (hloubat)
II	+	to be shy (ostýchat se), to be ashamed (stydět se), to get frightened (plašit se), to get anxious (zneklidňovat se), to be in despair (zoufat si), to get scrupulous (úzkostlivět), to get sorrowful (smutnět), to worry (strachovat se), to be afraid (obávat se), to get distressed (neklidnět)
	−	to flirt (flirtovat), to loosen up (odvázat se), to seduce (svádět), to be out on a spree (flámovat), to dazzle (oslnit), to dally (laškovat), to joke (vtipkovat), to impress (zapůsobit), to be impertinent (dovolovat si), to provoke (provokovat)
III	+	to fire up (rozohňovat se), to vituperate (láteřit), to berate (hartusit), to hold a grudge against somebody (nevražit), to get angry (dohřát se), to become enemies (znesvařovat se), to contend (svářit se), to get depressed (trudnomyslnět), to vaunt (holedbat se), to grumble (reptat)
	−	to imagine oneself in a position of sb. (vciťovat se), to associate with a p. (přátelit se), to confine to a p. (svěřovat se), to be frank (otevírat se), to tolerate (tolerovat), to inform against a p. (donášet), to love (milovat), to have a compassion on a p. (soucítit), to encourage a p. (povzbuzovat), to make a p. happy (obšťastňovat)
IV	+	to loiter (lajdačit), to do something carelesly (odflinfnout), to slack about (flákat se), to trapes (lajdat se), to do soemting in slovenly way (odfláknout), to be naughty (darebačit), to shirk (ulejvat se), to idle away (lenošit), to get lazy (lenivět), to get villanous (lotrovatět)
	−	to persecute (perzekuovat), to moralize (moralizovat), to excel (excelovat), to get conservative (konzervativnět), to toil (dřít se), to become wise (zmoudřet), to commit oneself (angažovat se), to aspire (aspirovat)

Note. Table 3 gives the representative terms from the four-factor solution. The factors are presented using ten trait variables for each factor pole (+, -). These terms were the highest loading terms per pole (≤ .30).

I+ Hostility vs. I- Affiliation, Self-reflection, II+ Anxiety, Emotional Instability vs. II- Showing off, Excitement, III+ Negative Emotional reaction, direct aggression vs. III-Empathy, Affiliation, IV+ Carelessness vs. IV-Ambition

also found in Dutch.

In summary, we have found relations between the domain of personality-descriptive verbs and the domain of personality-descriptive adjectives, the latter one being adequately described by the Big-Five personality factors Surgency – Extraversion, Agreeableness, Conscientiousness, Emotional Stability, Intellect. However, our inspection of the verb and adjective factors also indicated that the structures of both word classes were not fully equivalent. In addition, the AB5C model of Czech personality traits brings better understanding of the content of the Czech five-factor structure.

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