The Factor Structure of Lithuanian personality-descriptive adjectives of the highest frequency of use

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Abstract

Lexical studies of personality attributes have been highly generative and attracted the interest of psychology researchers worldwide. The purpose of that kind of studies is the identification of the most salient aspects of human personality, based on representations of these aspects in the lexicon of a language. Starting from the rationale of lexical hypothesis, discussion about the advantages and limitations of the lexical approach, we present the development of general taxonomy of personality traits - The Big Five. The present study reviews psycho-lexical studies in English and 14 other languages. Alternative competitor structures like one-, two-, three-, six- and seven-factor models are briefly described. In the present article the interest of the first time in English Lithuanian lexical study are presented. Lithuanian personality-descriptors – 194 adjectives - were factor analysed and clear version of the Big Five factor structure were found. These five factors were labeled: Extraversion, Agreeableness, Conscientiousness, Emotional Stability, and Intellect-Openness. The emic structure of Lithuanian personality-descriptors does not appear to be much different from that found in other languages and correlated well with imported Big-Five measure (BFI). With the help of the oldest Indo-European language – Lithuanian – lexical study the universality of the Big Five dimensions of personality in comparison with alternative competitor models was reached.
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Interest of Lithuanian research

According to Subacius G. (n.d.), Lithuanian is the official language of Lithuania and an official language of the European Union, spoken by about 4 million native Lithuanians. The Lithuanian name for the language is *Lietuvių kalba*. In older literature on Baltic languages, "Lithuanian" can sometimes refer to Baltic Languages in general. Before the first conquest attempts a thousand years ago, the Balts lived protected at the Baltic Sea. Therefore the Baltic languages remained some of the oldest and least changed Indo-European languages. They did have trade connections for thousands of years along the ancient amber roads.

As “Lietuva: šeimos enciklopedija” (2005) clames, the Baltic languages form one branch of the Indo-European language family. In this group there are two extant languages: the East-Baltic Latvian and Lithuanian, and many extinct languages, including the West-Baltic Old Prussian and Curonian. Today the Latvian language is considered younger than East Lithuanian, although that greatly changed from its first recording in the 16th century. A Lithuanian and a Latvian can only recognise a few words in each other's speech, and this is not enough to hold a conversation. Therefore, we can say that Lithuanian is a language that cannot be understood by a speaker of any other language who has not learnt it. The Baltic languages have for a long time been oral languages, the Balts did not use writing until fairly recently. The first books were published in 1547 in Lithuanian.

According to Zinkevičius (1996), during the Renaissance one similarity theory held that Lithuanian was simply a debased Latin, and we know that Latin was the most sacred language in the Catholic world. Genealogical studies of languages took on a scientific approach only in the 19th century. Traditionally, it was based on the history of sounds. Since the 19th century, when the similarity between Lithuanian and Sanskrit was discovered, Lithuanians have taken a particular pride in their mother tongue as the oldest living Indo-European language. To this day, to some Lithuanians their understanding of their nationality is based on their linguistic identity. It is no surprise then that they proudly quote the French linguist Antoine Meillet, who said, that anyone who wanted to hear old Indo-European should go and listen to a Lithuanian farmer.

As Sabaliauskas (2006) clames, the Lithuanian language still retains much of the original sound system and morphological peculiarities of the prototypal Indo-European language and therefore is fascinating for linguistic studies. Lexical studies of personality attributes have been
highly generative and attracted the interest of psychology researchers worldwide. Michael and Kibeom (2005) points out, that there is still debate regarding the optimal structure of personality characteristics and most researchers who investigate this topic have agreed that the solution must be derived, at least in large part, from lexical studies of personality structure. Saucier and Goldberg (2001) in their recent review of the lexical studies of personality attributes remark, that the purpose of that kind of studies is the identification of the most salient aspects of human personality, based on representations of these aspects in the lexicon of a language. Most lexical studies focus on a single language but the approach affords useful comparisons between languages. The studies reviewed outline that the Anglo-Germanic Big Five model is reproduced better in some languages than in others and is most predictably replicable, in exploratory factor analyses representing indigenous structures, when all of the following conditions are present: “A) the language has its origin in northern Europe, B) the variable selection is limited to disposition-descriptive terms, and C) the data consists of ipsatized self-ratings” (Saucier & Goldberg, 2001, p.870).

In this present article, we present for the first time in English a description of the Lithuanian lexical project and a report of its initial findings. According to Saucer and Goldberg (2001) review of lexical studies based on lexical hypothesis, Lithuanian is very old and interesting language, as mentioned above. This report reflects two broad aims. First, we seek to develop a scientific taxonomy of most frequently used personality descriptors in the Lithuanian language. The use of a dictionary for obtaining a comprehensive list of important personality descriptors is known today as the lexical approach. Second, we seek to address the universality of the Big Five dimensions of personality in comparison with alternative competitor models with the help of the oldest Indo-European language – Lithuanian – lexical study.

The Lexical Hypothesis

According to a great historical review of lexical approach research of John, Angleitnerm and Ostendorf (1988), in the beginning of XX century there were made a first effort to test the hypothesis that vocabulary supplies the basis for the full description of personality defining the factor space for basic personality variables. According to Goldberg (1990) Sir Francis Galton was among the first scientists to recognize explicitly the fundamental lexical hypothesis, telling
that the most important individual differences in human transactions will come to be encoded as single terms in some or all of the world's languages. As a result he distinguished capacity and intensity in human nature (Rombaut, n. d.). Combing the dictionary for all terms applying to personality in English language by Allport and Odbert (1936, ref. in Cattell, 1943) collated, from Webster's New Unabridged International Dictionary, 17,953 terms applied to human behavior. The words were classified in four groups: personal traits, temporary states, social evaluations, and metaphorical or doubtful terms. Then Allport and Odbert raised a doubt, that many traits never receive a name. Later Cattell (1943) argued that the majority of these silence traits in the language seems too narrow to deserve terms. A second doubt, as Allport and Odbert pointed out, is that among trait names formulated in the past are many distinctive to an age and a culture. The general proposition by Cattell (1943) was that “constitutional traits will change but little, whereas social mold and dynamic traits may come and go with superficial changes in the cultural and physical environment” (p.484). The objection of Allport and Odbert made sense to Cattell and he interpreted this as explanation that the new traits appearing in a rapidly changing culture cannot be handled in terms of labels from the past. Cattell (1943, 483p.) made an assumption that:

“all aspects of human personality which are or have been of importance, interest, or utility have already become recorded in the substance of language. <---The necessity for good predictions of behavior would tend to make the verbal categories accurate also in boundaries, properly adjusted to real behavior unities”.

According to this, the first property of vocabulary is that it covers all important areas of behavior and that factor analysis of the whole field of personality language will give an undistorted factor picture of basic human traits as they affect human society.

It has long been recognized that personality characteristics tend to become encoded in language as words. Goldberg, based on formulations by Allport and Odbert (1936, ref. in Cattell, 1943) and by Cattell (1943) formalized this phenomenon in the lexical hypothesis, which holds that:

“Those individual differences that are of most significance in the daily transactions of persons with each other will eventually become encoded into their language. The more important is such a difference, the more people will notice it
and wish to talk of it, with the result that eventually they will invent a word for it” (Goldberg, 1981, pp. 141–142, cited by Michael & Kibeom, 2005; see also Saucier & Goldberg, 2001).

It follows from the lexical hypothesis that researchers who wish to assess personality variables might ensure adequate representation of the personality domain by referring to the personality lexicon. Indeed, as Michael and Kibeom (2005) points out, that this idea has been the basis of much personality research during the past several decades that has relied on the lexical hypothesis as a guide to variable selection.

According to Saucier and Goldberg (1996a) a few important points should be clarified regarding the lexical hypothesis. First, the lexical hypothesis makes no assumption that the personality attributes encoded in the lexicon represent personality ‘traits’, at least in the sense of having long-term stability and a biological basis. Certainly, as Saucer and Goldberg (2001) remarks, that many researchers whose work is associated directly or indirectly with the lexical tradition would agree that those personality attributes generally do in fact represent traits. However, as Michael and Kibeom (2005) claims, the lexical perspective itself does not require this assumption. Second, the lexical hypothesis does not itself specify the parts of speech in which personality attributes will be encoded. Therefore, investigations of the personality lexicon might include nouns, verbs, adjectives, and adverbs. However, as discussed by Saucier and Goldberg (1996a), not all parts of speech are equally useful as objects of study in the context of personality description. More generally, Saucier and Goldberg (1996b, pp. 30–31) explained that:

“adjectives are the prototypical and central repositories of the sedimentation of important individual differences into the natural language. Person-description, as a description of the qualities and characteristics of an object, is inherently an adjective function, although it can be carried out using other word classes. Therefore, the lexical perspective on personality is properly focused on the adjective function. In most languages, this perspective will be adjective-centered, but lexical researchers need to be alert to potential variations: The adjective function of describing kinds of individual differences in certain languages may operate largely through nouns or even verbs.”
In other words, adjectives have a tendency to be well suited to describing individual differences in personality attributes.

As described above, the lexical hypothesis provides a foundation for identifying a variety of personality features to have been encoded in language. As Michael and Kibeom (2005) claim, the lexical hypothesis allows the researcher to develop a long list of the personality traits used by speakers of a given language. The main value of this work, based on the lexical hypothesis that provides a strategy for research aimed at identifying the major dimensions of personality variation, is finding main aspects along which people differ in their typical behavioral tendencies.

**The Lexical Approach**

Following the logic of the lexical hypothesis—which, as described in the previous section, holds that important personality differences should be encoded in language—one might obtain a representative sample of personality characteristics by finding the set of personality-descriptive terms of a language. As described in the previous section, these terms might potentially include any or all parts of speech, but adjectives are likely to be the most useful objects of study. As Saucer and Goldberg (2001) argued, the use of a dictionary for obtaining a comprehensive list of important personality descriptors is known today as the lexical approach.

According to Michael and Kibeom (2005), there are three main features that describe lexical approach and helps to understand it. First, to make systematic progress in understanding personality variation, it is important to identify a few large, independent dimensions of personality. If researchers can achieve an accurate consensus regarding the identity of these dimensions, then efforts to understand the origins and implications of personality will be undertaken much more effectively than would be the case if research were aimed haphazardly at many overlapping traits that might, despite their number, omit some large regions of the personality domain. Second, the lexical approach to personality structure provides a rationale for selecting a set of personality variables that will represent each of the major dimensions of personality, or at least, each dimension that has been of sufficient subjective importance to have been described by a variety of related words. In contrast, when personality variables are
generated on the basis of personality theories or on the basis of perceived practical utility, there is less reason to be confident that every dimension will be represented adequately and independently of the others. Thirdly, lexical approach to personality structure also provides a basis for identifying a set of dimensions that have, if not cross-cultural universality, at least a substantial level of cross-cultural generality. Because the personality dimensions recovered in lexical studies are indigenous to their languages rather than merely imported from another language, there are some confidence that widely replicated dimensions obtained in lexical studies do indeed represent the most important ranges of human personality variation.

Saucer and Goldberg (2001, pp.848-851) described eight key premises of the lexical approach:

1. Personality language refers to phenotypes and not genotypes.
2. Important phenotypic attributes become encoded in the natural language.
3. The degree of representation of an attribute in language has some correspondence with the general importance of the attribute.
4. The lexical perspective provides an unusually strong rationale for the selection of variables in personality research.
5. Person-description and the sedimentation of important differences in language both work primarily through the adjective function.
6. The structure of person-descriptions in phrases and sentences is closely related to that based on single words.
7. The science of personality differs from other disciplines in ways that make the lexical perspective particularly germane in this scientific context, yet not in others.
8. The most important dimensions in aggregated personality judgments are the most invariant and universal dimensions – those that replicate across samples of targets, targets of description, and variations in analytic procedures, as well as across languages.

According to these key premises, personality involves socially meaningful behavior patterns that tend to become represented in language. Lexical studies of personality attributes have as their purpose the identification of the primary aspects of personality, based on representation of these aspects in the lexicon of a language. As Saucer and Goldberg (2001, p.848) points out, “the lexical approach cannot be considered a form of ‘trait theory’“, but might be used to identify a
set of ubiquitous factors in personality description from independent emic studies in many languages.

During the past decade, researchers like John et al. (1988), Bandura, Block, Westen and others (ref. in Michael & Kibeom, 2005) have expressed criticisms of the lexical approach to personality structure on several grounds: concerns regarding the use of adjectives as personality variables, the use of lay observers of personality, the limited explanatory power of lexically derived personality dimensions, and the lack of any similar strategies used in other sciences. In Michael and Kibeom (2005) paper, these criticisms are addressed in detail and judged to be invalid. The methods employed in the lexical studies are different from those used in other sciences. In the words of Michael and Kibeom, to find an analogue for lexical approach to personality structure in other sciences, these pretenders needs to apply to a scientific problem involving the features like: lack of any a priori rationale for selecting a set of variables to be factor-analysed; a domain in which lay people routinely observe the variables and describe them using familiar adjectives; a vast array of variables that are thought to be manifestations of a small set of major dimensions whose identity needs to be determined via factor analysis. According to Michael and Kibeom there are no analogue to lexical approach to personality structure in any other science and all criticism to lexical approach is based upon false analogies. The truth is that the lexical approach to the study of personality structure usually involves the selection of personality-descriptive adjectives from the dictionary and the personality lexicon will not necessarily include an adjective that corresponds isomorphically to a given personality construct, but every important axis of personality variation will be represented by a large collection of correlated adjectives. This method thereby obtains a set of personality variables that are used by lay people in their everyday discussions of personality, and that have been consistently used over a long historical period. Experts may select variables in such a way that certain aspects of the personality domain are over- or under-represented, leading to a distorted factor-analytic result. As Michael and Kibeom points out, the lexical approach to personality structure is intended to find the major dimensions of personality variation across individuals, not within individuals or across groups. Individuals’ levels can be measured by self-report, peer report, or other methods, and this information can potentially be used to make predictions about individuals regarding a variety of criterion variables. One must acknowledge the fact that individuals may differ systematically across situations in their relative tendencies to perform a certain kind of behaviour.
is entirely consistent with ‘trait theories’ and with lexically based models of personality structure. For the defence of the lexical approach to the study of personality Michael and Kibeom remarks that the main aim of lexical approach is not to explain the processes that produce personality variation, but rather to identify the major dimensions of personality variation. It is a convincing remark leading lexical approach defenders to a suggestion that after these dimensions of personality variation have been discovered, researchers can then turn to the problems of finding the causes, development, evolution, and consequences of each dimension. It is hard to disagree with the remark to critics, that the obtained structure may then be used as the empirical standard against which competing theories of personality may be tested.

Criticisms discussed above are important for understanding the rationale behind the lexical approach. It is argued that the study of personality structure via the lexical approach is an important area of research. In fact, it is highly doubtful that any domain of variation is nearly as well represented in language as is the domain of personality. This is a good reason why the lexical approach to personality structure is unique in science.

**Discovery of The Big Five**

According to Funder (2001), personality has been conceptualized from a variety of theoretical perspectives, and at various levels of abstraction. Each of these levels has made unique contributions to our understanding of individual differences in behavior and experience. As John and Srivastava (1999) points out, the problem is the number of personality traits, and scales designed to measure them, escalated without an end in sight. After decades of research, the field is approaching consensus on a general taxonomy of personality traits, the “Big Five” personality dimensions. These dimensions do not represent a particular theoretical perspective but were derived from analyses of the natural-language terms people use to describe themselves and others. Rather than replacing all previous systems, the Big Five taxonomy serves an integrative function because it can represent the various and diverse systems of personality description in a common framework.

One of the most influential scientists, in the words of Goldberg (1990), to apply empirical procedures to the task of constructing a personality taxonomy was Raymond B. Cattell. He used the Allport and Odbert person-descriptive word list as a starting point for his multidimensional
model of personality structure. Cattell (1943) reduced the 4,500 trait terms to a set of 35 bipolar clusters of related terms. That is, Cattell eliminated more than 99 percent of the terms list. According to John and Srivastava (1999), using this small set of variables, Cattell conducted several oblique factor analyses and concluded that he had identified 12 personality factors, which eventually became part of his 16 Personality Factors (16PF) questionnaire. Reanalyses of Cattell's own correlation matrices by others have not confirmed the number and nature of the factors he proposed. When Cattell's variables were analyzed by orthogonal rotational methods, only five factors proved to be replicable (John et al., 1988).

It is widely accepted that Cattell's pioneering work, and the availability of a relatively short list of variables, stimulated other researchers to examine the dimensional structure of trait ratings. Starting with Fiske's (1949) constructed much simplified descriptions from 22 of Cattell's variables and the factor structures derived from self-ratings, ratings by peers, and ratings by psychological staff, with the result unable to find evidence for anything more complex than a five factor solution. As Digman (1990) remarks, that Tupes and Christal went on to reanalyze Cattell's earlier work and Fiske's correlations, finding all of them in rather good agreement in terms of five factors: Surgency, Agreeableness, Dependability, Emotional Stability, and Culture. According to Digman, unfortunately the Tupes and Christal study was published in an obscure Air Force technical report and remained unknown to virtually all personality researchers, appears to have had little effect on the development of the three systems so commonly found in personality textbooks, that is, the systems of Eysenck, Guilford, and Cattell. Later more investigators were involved in the discovery and clarification of the Big Five dimensions: Norman W.T., Borgatta E.F., Digman J.M. and Takemoto-Chock N.K. (Digman, 1990; Goldberg, 1990; John et al., 1988; John & Srivastava, 1999). In the words of Digman (1990), the domain of personality attributes had been successfully analyzed, not just once, but by five competent, independent investigators, all of whom came to the same general conclusion: that the domain could be adequately described by five superordinate constructs. Then as now some difference of opinion existed about the interpretation of these constructs.

As Goldberg (1990) claims, these factors eventually became known as the “Big Five”. The title for factors was chosen not to reflect their intrinsic greatness but to emphasize that each of these factors is extremely broad and each dimension summarizes a large number of distinct,
more specific personality characteristics. According to John and Srivastava (1999) factors have traditionally been numbered and labeled as follows:

I. Extraversion or Surgency (talkative, assertive, energetic)
II. Agreeableness (good-natured, cooperative, trustful)
III. Conscientiousness or Dependability (orderly, responsible)
IV. Emotional Stability versus Neuroticism (calm, not neurotic, not easily upset)
V. Culture (Openness to experience or intellect).

According to Digman (1990), while suitably good agreement was developing concerning the number of necessary dimensions, there is no unity on their meaning. Digman points out that there is general agreement that Dimension I is Eysenck’s Extraversion/Introversion and Dimension IV is usually referred to as Neuroticism versus Emotional Stability. Dimension II has generally been interpreted as Agreeableness. It appears to involve humanity- altruism, caring, and emotional support at the one end of the dimension, and hostility, indifference to others, self-centeredness, spitefulness, and jealousy at the other. The essence of Dimension III has proved no less difficult to capture. To many writers this has suggested Conscientiousnes. Dimension V has been variously interpreted as Intellect, intelligence and openness, culture.

According to Goldberg (1990), due to the fact that the Big-Five factor structure was originally discovered in studies using Cattell's 35 variables, some critics have argued that these five factors have not been sufficiently generalized beyond that initial set of variables. As John, et al. (1988, p.184) clames, Cattell “did not concern himself with the details necessary to ensure the replicability of his empirical findings”. It was important to test the comprehensiveness and generality of the Big Five in more comprehensive variable sets. As John, et al. (1988) clames, an exhaustive list of personality descriptive terms has been compiled by Norman in 1967. The aim of three representative studies, maid by Goldberg (1990), has been to provide sufficient evidence to alleviate any qualms about the generality of the Big-Five structure. For Study 1, as Goldberg (1990, p.1217) remarks, he used Norman’s “the most comprehensive pool of English trait-descriptive adjectives ever studied empirically”. It was 1,431 trait terms grouped into 75 semantic categories. Using Norman’s listing, Goldberg (1990) constructed an inventory of 1,710 trait adjectives that participants could use to rate their own personality. He then scored Norman’s semantic categories as scales and factor analyzed their intercorrelations in the self-rating data. The first five factors represented the Big Five and replicated across a variety of different
methods of factor extraction and rotation. Moreover, Goldberg demonstrated that the first five factors remained virtually invariant when more than five were rotated. Goldberg’s conducted two additional studies. There aim was to ensure independence from any a priori classification, using shorter sets of more common terms. In study 2, Goldberg obtained self and peer ratings of 475 very common trait adjectives which he had grouped into 131 sets of “tight synonym” clusters. The results paralleled those from the analyses of the 75 Norman categories in Study 1: the five original factors remained virtually invariant. For the most important part, none of the additional factors replicated across the four samples. Later Study 3 was used to provide independent evidence of the five factor structure. Goldberg used 100 revised clusters from the original 133 synonym clusters, based on 339 trait adjectives. The study 3 provided essentially the same factor structure for self-descriptions as for descriptions of liked peers. The factors displayed were nearly perfect examples of the Big-Five. Conclusion of all three Goldberg studies discussed above suggests that analyses of any reasonably large sample of English trait adjectives can be viewed as composites of the Big-Five factor structure.

According to John, et al. (1988), Wiggins have constructed second most comprehensive taxonomy in English. Wiggins’ taxonomy differs from Norman’s and Goldberg’s primarily in its inclusiveness and in the strategies used to structure its domain. Wiggins began with Goldberg’s list of 1,710 trait adjectives but then divided that domain further into six subdomains - interpersonal traits, material traits, temperamental traits, social roles, character, and mental predicates - and limited his taxonomy to one such subdomain, the interpersonal traits. As John, et al., clames, Norman had chosen a hierarchical model, whereas Wiggins adopted Foa and Foa’s circumplex model of interpersonal behaviour as a theoretical framework. Circumplex requires a circular arrangement of variables in a two-dimensional space: Status (or Dominance) and Love (or Warmth). Wiggins adopted these two dimensions as the major axes of his circumplex, so that the relations between one interpersonal trait and any other can be specified with reference to these two axes. Cattell and Goldberg had both aimed at discovering a structure and therefore used sorting and factoring procedures from which the taxonomy emerged gradually. Wiggins, in contrast, had already selected an a priori structure and needed to identify terms whose properties fit the constraints imposed by that structure. Wiggins included in his specification of the interpersonal domain those 817 of the 1,710 trait adjectives that referred to interpersonal behaviours. Based on correlational analyses of self-ratings on these traits, the terms were
assigned to 16 categories, arranged in the form of a circumplex. Successive refinements of these categories eventually led to 16 scales, each consisting of eight single adjectives. As John, et al., remarks, these scales quite closely approximate the postulated circular structure and provide a comprehensive framework which has brought some order and integration to the vast array of models and measures in the domain of interpersonal behaviour.

As John and Srivastava (1999) claims, most important evidences for “Big Five” model, were the results from the search for replicable additional factors. In a more recent study, Saucier and Goldberg (1996b) selected 435 trait adjectives rated by subjects as highly familiar terms. In order to assess the robustness of the Big Five in this lexical data set, the factor scores from the first five factors were correlated with those from separate principal-components analyses of two adjective inventories of the Big Five: Goldberg’s unipolar Big-Five inventory with 100 marker adjectives (all except neat) and Goldberg’s 100 clusters, based on 339 adjectives that had been administered to the present samples. A factor analysis of these adjectives closely replicated the Big Five. When more than five factors were rotated, the first five large factors remained nearly invariant. The analogous results were present in other representative study of Saucer (1997). To isolate effects of variable selection on factor structures, 500 of the most familiar English person descriptors were identified. Four different variable selections were represented. To relate the solutions to the Big Five factor structure, adjectives correlations were examined with the varimax rotated factor scores from a principal-components analysis of the 40 Mini-Marker adjectives and of the two other five-factor measures: Goldberg's Big Five markers and the Revised NEO Personality Inventory (NEO-PI-R). Findings highlight the stability of three factor solutions in all variable selections. In the two widest variable selections, the seven-factor solutions also appeared noticeably stable, whereas five factors demonstrated comparative stability in the two disposition selections. As Saucer points out, adult self-rating results showed a stable Big Five structure when disposition terms, or combined disposition and state terms, were analyzed. A thorough search for factors beyond the Big Five showed that the Big Five were the only consistently replicable factors (Saucier, 1997).

The results reviewed so far suggest that the Big Five structure provides a replicable representation of the major dimensions of trait description in English. The five-factor structure seems to generalize reliably across different types of samples, raters, and methodological variations when comprehensive sets of variables are factored. Generalizability across languages
and cultures is another important criterion for evaluating personality taxonomies. As Goldberg (1990) remarks, given that the Big-Five structure seems to characterize the relations among English trait adjectives, it is reasonable to try to discover its generality to other languages. Next chapter will review lexical studies of personality attributes across cultures.

**Cross-Language and Cross-Cultural Studies**

As John, et al (1988) claims, one way to overcome some of the subjectivity and heterogeneity in taxonomic methods and procedures is to ensure, at every step, that the postulated structure is generalizable across data sources, judges and, ideally, cultures and languages. According to John and Srivastava (1999), the existence of cultural universals would be consistent with an evolutionary interpretation of the way individual differences have become encoded as personality categories into the natural language: if the tasks most central to human survival are universal, the most important individual differences, and the terms people use to label these individual differences, would be universal as well. Similarly, if cross-cultural research reveals a culturally specific dimension, variation on that dimension may be uniquely important within that culture’s particular social context (Saucer & Goldberg, 2001). Although central from the vantage point of the lexical approach, cross-language research is difficult and expensive to conduct, and until the last decade it was quite rare. In the initial comprehensive taxonomic studies, English was the language of choice, primarily because the taxonomers were American (see John et al., 1988); later studies have been conducted in a broader range of languages. In this section, we present a review of research based on the lexical approach. We review a number of issues in cross-language and cross-cultural research on personality structure. We look to several candidate structural models that should be compared with the Big Five in future studies.

**Review of research based on the lexical approach**

There are good reviews of emic and etic lexical research studies were studies are summarized, discussed and compared. These reviews are very useful for understanding and evaluating cross-language and cross-cultural studies of personality attributes. De Raad, Perugini,
Hrebickova and Szarota (1998b) compared seven different indigenous trait taxonomies (American English, Dutch, German, Hungarian, Italian, Czech, Polish) derived using principles of psycholexical research. The procedures for selection of trait adjectives from various lexicons and construction of representative samples of trait terms were compared. Subjects and materials were discussed. Factor structures within those languages were used for comparison. Peabody and De Raad (2002) presented the review of six trait taxonomies (Italian, Hungarian, Roman, Dutch, Polish, Czech) which were used to develop a taxonomy of content categories and extended their analysis with seven other studies (Hebrew, Spanish, Filipino, Korean, French, Turkish). Saucer, Hampson and Goldberg (2000) reviewed lexical studies in English and 12 other languages, and examined their fit with Big Five. More specifically, Saucer and Goldberg (2001) recent lexical studies of personality attributes review classify the studies and languages reviewed into two groups, based on their five-factor solutions: Those with (a) an Anglo-Germanic Big-Five pattern of grouping the clusters, and (b) an alternative pattern with Agreeableness subdivided into two large factors. They separately consider those studies that employed very wide variable selection conditions. Authors compare lexical studies in English and 12 other languages and don’t include ongoing projects, or projects which reports are not yet published (French, Portuguese, Quechua, Romanian, Greek, Chinese, Norwegian, Slovak). According to Saucer (1997), studies featuring indigenously derived personality-relevant adjectives can be sorted into three groups on whether five or seven factors were judged to be optimal for comprehending the data and based on variable-sampling tactics: first group of studies with disposition descriptors that includes those conducted in Dutch, Italian, and Hungarian; second group of studies includes those conducted in German, Czech and English; third group of studies which used an alternative set of tactics for variable selection, beginning with a page sampling of a dictionary. In this section, the presentation of lexical studies will be based on the reviews presented above. First, in short will be described lexical studies. Later, will be presented comments and comparison of these studies.

**Lexical studies. Greek** is a member of Indo-European language family. Lexical study (Saucier, Georgiades, Tsaousis & Goldberg, 2005) used German method for extraction of 3302 personality-relevant adjectives from a dictionary by three judges. New set of judges (N=7) rated the adjectives with respect to their clarity of meaning, leaving 2245 adjectives on the list. The new set of judges (N=7) rated the last set of adjectives on their degree of frequency of use for description of a person. Considering all three variable selections- the 400 most frequent
descriptors, the 400 highest clarity descriptors, and the 248 descriptors high on both – each of three samples used one of three sets of terms. The students (N=991) rated themselves on one of three variable sets. One- and 2-factor structures were the most stable across variable selections and subsamples and replicated such structures found in previous studies. Among models with more moderate levels of replication, recently proposed 6- and 7-lexical-factor models were approximately as well replicated as the Big Five. Correspondence of Greek structures with the Big Five was only moderate because of the tendency to fuse Intellect and Self-Assurance/Extraversion content into a single Prowess/Heroism factor. An emic 6-factor structure showed relative stability; these factors were labeled Negative-Valence/Honesty, Agreeableness/Positive Affect, Prowess/Heroism, Introversion/Melancholia, Even Temper, and Conscientiousness. According to Saucer et al. (2005), the Greek results are not very supportive of the cross-cultural generalizability of structures at the five- to seven-factor models.

**Germanic languages**

*German* lexical studies have a long genealogy summarized in Saucer, Hampson and Goldberg (2000). According to Saucer and Goldberg (2001) Ostendorf studied 430 German adjectives that had been classified as either “abilities and talents” or “temperament and character traits”. Over 400 adult participants completed self-reports using these adjectives and imported measures of the American-English Big Five, and 95% of these participants were described by their acquaintances. As De Raad et al. (1998b) claims, analyses of the results from self-ratings and peer ratings from sample of 802 participants generated five highly reliable factors, their correlations with the corresponding factors from the measure of Big Five averaged over 0.70. The German factor IV, Emotional Stability, was smaller and covers more temperamental aspects than American-English, and factor V, Intellect, is the emphasis on competence and being talented. The three-factor solutions were even more replicable.

*Dutch* lexical studies are summarized in Saucer et al. (2000). At that time it was the only taxonomy not based on English, the one developed by Hofstee and Brokken at the University of Groningen in the Netherlands. According to John, et al. (1988), from a large dictionary 8690 person descriptive adjectives were extracted and later reduced to 6055 stable traits by judges. The Dutch taxonomy team developed two operational definitions to retain personality descriptive adjectives. The first of these, the Nature criterion, read: ‘He (She) is … by nature’. A second Person criterion was formulated: ‘What kind of person is Mr. (Mrs.) X?’ The resulting set was of
1,203 adjectives that fit into the sentences. In a study of 200 pairs of subjects who described either themselves or their friend, was factored the correlations among all 1,203 terms based on either the self or the peer ratings. Six factors were extracted from each of the two data sets to a position of maximum congruence. Analysis was repeated after combining the ratings of several terms into more reliable scales. Goldberg’s trait taxonomy was used to sort the 1,203 Dutch adjectives into 96 clusters. A factor analysis of the clusters yielded seven factors, five of which corresponded to the Big Five. The two additional factors were labeled Aggression (Irritation) and Conservatism. According to De Raad et al. (1998b), additional Dutch lexical study used 551 of the 1203 trait adjectives and got self and peer ratings from 200 student pairs. Four, five and six factors were rotated. As Saucer and Goldberg (2001) points out, in each of these solutions the first four factors included Extraversion (I), Agreeableness (II), Conscientiousness (III) and Emotional Stability (IV) from the Big Five. As Saucer et al (2000) remarks, the factor V was especially broad, contrasted intellectual autonomy and independence with conventionality, and was interpreted as Intellect of the Big Five. As John, et al. (1988) clames, the comprehensive analyses in Dutch have provided the strongest cross-language evidence for the Big Five. In the words of Saucer and Goldberg, the Dutch studies supported the Big Five.

**Slavic languages**

Polish lexical study is summarized in Saucer et al. (2000). Most recent lexical study of Szarota, Ashton and Lee (2007) is the first in which an investigation of the Polish personality lexicon has been described in detail. Classification system of 1839 adjectives was adopted from the German study. Researchers examined the structure of final set of 290 adjectives in self-ratings from 350 respondents. A sample of 369 peer ratings remained too. In addition to the adjective rating form, the NEO-FFI questionnaire was also administered in self-rating format. The Polish five-factor solution contained three factors that could clearly be interpreted as Big Five Conscientiousness, Agreeableness, and Intellect, containing little Imagination and no Unconventionality content. Two other factors mainly resembled Big Five Extraversion and Emotional Stability, but the content of these Polish factors was somewhat different from that of those two Big Five dimensions. A six-factor solution closely resembled the cross-language HEXACO structure (but with ‘Intellect’ rather than ‘Openness to Experience’). Analyses of 369 peer ratings revealed five- and six-factor solutions nearly identical to those of self-ratings. According to De Raad et al. (1998b), five factors were identified and the structure of them
seemed to be representative version of the Big Five. As Peabody and De Raad (2002) clames, factor IV, Emotional Stability, was concentrated on Irritability rather than Anxiety/Fearfulness content.

*Czech* is other Slavic language lexical study that is summarized in Saucer and Goldberg (2001). Hrebickova, Ostendorf and Angleitner used 366 adjectives that the majority of six judges had classified as dispositions were used for self-rating by 397 persons. Factor solutions with five and more factors were examined and interpreted with respect to the Big Five. According to De Raad et al. (1998b), factor IV, Emotional Stability, was related to Agreeableness and Intellect, and factor V, Intellect, contains some Conscientiousness traits such as efficient and thoughtful, and has a culture coloring. Generally, Czech study provides substantial support for the Big Five structure.

*Russian* (Shmelyov & Pokhil’ko, 1993) depends to Slavic language group too. Their lexical studies were carried out in two waves: in 1983-1984, examined the relations among 1530 trait-descriptive terms; and in 1986-1987, examined the relations among 1650 such terms. Their recent Russian personality lexicon includes 2090 trait terms, of which includes 666 nouns and 1424 adjectives. Findings from both cluster analyses and factor analyses of these Russian terms are rather concordant with those of Goldberg (1990), using English trait adjectives. It was necessary to rotate more than five Russian factors in order to recover each of the English Big-Five factors. Specifically, when five factors were rotated, there was no equivalent to Factor IV (Emotional Stability), suggesting that this Big-Five factor may be weaker than the other four. It is noticeable unclearness in Russian lexical studies concerning subjects and materials of the empirical data that lets researchers to analyse factorial structure of adjectives. As Saucer at al. (2000) points out, Russian studies are difficult to compare with those from other studies, due to their exclusive use of internal rather then external data, and the lack of evidence about the nature of factors. Despite that, Saucer et al. clames, all three Slavic languages discussed above supports the Big Five and indicate possibly lower replicability for the Emotional Stability factor.

*Croatian* is a member of the South Slavic subgroup of languages, and it is the first South Slavic language to be examined in a lexical study (Mlačić & Ostendorf, 2005). Personality-descriptive terms were organized in three studies. In the first study three judges searched through a dictionary for person-descriptive terms using German method. In the second study, personality-
descriptive adjectives (N=3881) were classified by seven judges into 13 different categories. Two samples of participants were recruited for the third study: the first sample provided self-ratings (515 University of Zagreb students) and the second sample of participants (513 students’ best acquaintances) provided peer ratings. The raters were given those 483 adjectives that the majority of judges in the second study classified as dispositions. Self- and peer ratings were factor analysed separately. The three-factor solution of Croatian adjectives approximated the Big-Three factors (broad versions of Agreeableness, Conscientiousness, and Extraversion). The additional factor that emerged at the fourth-factor level was primarily defined by adjectives from the Big-Five factor (V), Intellect, and some adjectives that typically load on factor (IV)-Emotional Stability. If five factors were rotated, the Intellect/Emotional Stability components of the factor divided into separate factors. It is important to point Peabody and De Raad (2002) remark, that examining the content of the Croatian Factor Emotional Stability, this factor obviously showed a lack of Fearfulness and Instability descriptors. As Saucer (1997) clames, this could be due to the methodology employed in the present study, that some of the Emotional Stability terms were classified by the judges as prototypical members of non-disposition categories such as Temporary States. In conclusion, the Croatian emic lexical factors from both data sets were interpreted to be similar to the Big-Five factors: Agreeableness, Extraversion, Conscientiousness, Intellect, and Emotional Stability. The inspection of factor content of the Croatian emic factors and their relation to imported Big-Five measures revealed high correspondences for all five Croatian factors. As Mlačić and Ostendorf claims, the present taxonomy of Croatian personality descriptive adjectives provides substantial support to the generalizability of the Big-Five structure.

Romance languages

Italian lexical studies are summarized in Saucer and Goldberg (2001). Two independent Italian taxonomic projects were conducted: “Roman” project with the example of the Dutch adjective selection procedures and “Trieste” project with the German adjective selection procedures. In Rome 8,532 person-descriptive adjectives were selected and later reduced by fore experts and 22 lay judges to the number of 492 terms. These terms were administered to 274 participants for self-ratings. According to De Raad, Blas and Perugini (1998a), five-factor structure were presented and labeled as Extraversion/Energy (I), Quietness/Irritability (II), Conscientiousness (III), Selfishness/Altruism (IV) and Conventionality (V). According to Saucer
et al. (2000), this fifth factor resembled the factor V in Dutch. In Trieste the team of five judges extracted 3,780 person-descriptive adjectives that were abridged till 1586 most personality-relevant, frequently used, least ambiguous. University students group classified these adjectives into the 13 categories of the German system. A set of 314 adjectives were administered to 427 persons for self-ratings and 277 secondary school students for ratings of someone they knew well. Self or other ratings produced comparable three factor solutions that were similar to factors I, II and III of the Big Five factors (a Big Three). In five factor solutions, Extraversion and Agreeableness each split into a pair of more specific factors. No factor resembling Intellect emerged until at least seven factors were rotated. Later the study was replicated including some adjectives that can be used as type-nouns and excluding very skewed terms. Again the five-factor solution failed to yield the Big Five, whereas the three-factor solution yielded a Big Three. According to Saucer et al., Italian projects differ with regard to the nature of Extraversion and the identification of Intellect factor comparable to the Big Five. De Raad et al. (1998b) points out, Roman studies involved Dutch distinctive method of generating person-descriptive adjectives. This method leads to a relatively smaller representation of variables for factor V (Intellect) and that is confirmed by these results.

*Spanish* study of Benet-Martinez and Waller (1997) extracted personality-descriptors from dictionary as all other discussed lexical studies. Page-sampling method (every fourth page scanned) was used and 299 adjectives were selected from 1666 page dictionary. These terms were administered to 894 students for self-ratings with the translated from English Big Five and Big Seven questionnaires. The analysis revealed seven indigenous personality dimensions that resembled the Big Seven with some notable differences in the structuring of affect terms and important cultural-specific differences. Replicating previous lexical work with American-English personality descriptors, the Spanish Big Seven includes two prominent Positive and Negative Valence factors. As Saucer et al. (2000) points out, seven-factor solution corresponded with a Big Three and Positive Valence and Negative Valence. Five-factor solution included Agreeableness, Conscientiousness, Conventionality and Negative Valence factors. Extraversion factor was very broad and mixed with Positive Valence, Positive and Negative Emotionality. In the words of Saucer et al., Big Five or Big Seven models may be limited because of the page-sampling procedures. As Peabody and De Raad (2002, p.990) clames, Spanish studies are
“admittedly an “imposed etic” design and so does not provide really independent evidence” for a Big Seven model.

Non-Indo-European languages

Hebrew is a member of Semitic language group. The lexical study is summarized in Saucer et al. (2000). Dictionary was studied using page-sampling (every fourth page) technique as that used in the Spanish study described above. From 1600 page dictionary every first person-descriptive adjective, verb, noun was encountered from every fourth page. The resulting 326 terms were reduced to 252 after removing synonyms. The set of terms were administered to 637 university students for self-descriptiveness. Seven-factors were extracted and compared with a Big Seven model by observing the factor loadings of translated from English Big Seven markers traits. According to Saucer and Goldberg (2001), The Hebrew factors labeled Agreeability (II) and Dependability (III) and Negative Valence, which was very broad, including content of Integrity/Sincerity, were equivalent to Big seven, and similar to corresponding Big Five factors. The terms with the highest loadings on Positive Valence factor all related to Intellect. As Peabody and De Raad (2002) points out, the Hebrew results include no Conventionality factor, instead there are two Positive Emotionality factors. This leads to possibility that there should have been fewer then seven factors so that one factor was forced to split. In the words of Peabody and De Raad, the Hebrew results fail to produce plausible version of the Big Seven factors.

Filipino, a member of the Austronesian language family, was the first and only lexical personality study in tropical region, summarized in Saucer and Goldberg (2001). From a dictionary were extracted 6900 person-descriptive adjectives and classified into the categories using German system. The 682 most familiar of these adjectives were used for self-ratings by college and high school students. According to Saucer et al. (2000), when five factors were rotated, four of them included content found in the Big Five (based on the correlations between these dimensions and two translated measures of the Big Five), but rearranged into factors and labeled Gregariousness, Socialization, Perceived Competence and Egoism. The fifth factor, Negative Valence, was composed entirely of pejorative terms. In the six-factor solution, a Temperamentalism factor split apart from Perceived Competence. The recent Filipino study (Church, Katigbak & Reyes, 1998) performed a replication study with 740 college students. Participants rated their personalities using a revised set of 502 terms and on translations of Big
Five marker scales. Using factor analysis was replicated the seven Filipino personality dimensions identified in a previous study. At least seven factors were needed to identify dimensions resembling all of the Big Five. When positive- and negative- evaluation terms were included a Negative-Valence dimension was found, but positive- evaluation terms blended with Intellect terms rather than identifying a distinct dimension. Thus, the cross-cultural generalizability of the Big-Seven model is not completely supported. Correlation analyses consistently show good one-to-one correspondence between the Filipino Gregariousness, Concern for Others versus Egotism, Conscientiousness, and Intellect dimensions and Big-Five Extraversion, Agreeableness, Conscientiousness, and Intellect, respectively. The Filipino Temperamentalness and Self-assurance dimensions, although moderately correlated with Neuroticism, are multidimensional in terms of the Big Five. As Saucer et al. (2000, p.20) clames, “Filipino structure was the least like that found in English and other northern Europe (Germanic, Slavic) languages and do not replicate the Big Five model. However, a Big Seven and Negative Valence dimensions replicated similar factors found in English, Spanish and Hebrew. Saucer and Goldberg (2001) agree, that Filipino structure seems similar to the Hebrew structure and points out, that as in Polish, Irritability content formed a factor separate from other Agreeableness clusters. As in the Italian (Trieste) and Korean studies, the Sociability clusters was on a different factor than the Assertiveness, Adventurousness and Confidence clusters. According to Peabody and De Raad (2002), Filipino studies provide only incomplete support for the Big Five.

The Turkish language, a member of the Altaic group, was studied by Somer and Goldberg (1999). Eight month the team of five native speakers compiled an initial set of 2200 person-descriptive adjectives. Omission of terms resulted in 1300 adjectives set of all terms and were judged for familiarity as person descriptors by 150 university students. At this stage 474 familiar adjectives were retained. First study used 358 synonym clusters arranged as 179 pairs of variables. Ratings of self, liked pears and disliked pears were obtained from 232 university students. Three, five and seven factor solutions were clearly defined. Second study reduced 358 terms to a smaller set of 235. Self and pear ratings were obtained from 945 university students. Three and five factor rotations provided sensible solutions. Common to both studies was an unambiguous replication of the same five factors previously obtained in such Indo-European languages like English and German, except factor V, Intellect, in both cases appeared as a blend of Openness, Imagination, Attractiveness. According to Saucer and Goldberg (2001) third
Turkish lexical study conducted a follow-up study with clearly related to personality traits, Big Five factors were obtained, with again the factor V blending Intellect with Unconventionality, Modernism/Progressivism. It is reasonable to assume the doubt of Peabody and De Raad (2002) about the factor interpreted as (IV) Emotional Stability which includes many Assertiveness, Irritableness and variables, and Fearfulness variables are shared with a factor (I) Extraversion. According to Saucer et al. (2000), evidence for Big Five is now strengthened by its emergence in tree separate Turkish studies of non-Indo-European language, with some cultural particularities for factor V.

Hungarian (Szirmak & De Raad, 1994) is one of the Finno-Ugric languages. Of the total number of 8738 personality-relevant terms, 3914 adjectives were used further contraction. Personality descriptiveness ratings were obtained from a group of five judges. On the basis of these ratings, a manageable set of 624 adjectives was selected for a rating task. Self-ratings were provided from 400 paid participants on the 624 adjectives. On the basis of the means and standard deviations of the ratings, the set of 624 was further reduced to 561 adjectives. The four-factor solution represents a clear demonstration of the first four factors of the Big Five: Extraversion (I), Agreeableness (II), Conscientiousness (III) and Emotional Stability (IV). According to Saucer and Goldberg (2001), similarities to Italian structures have been noted as in five-factor solution Agreeableness variables split into two factors (calmness versus irritability and the other emphasizing egoism-related variables). The six-factor solution added an Intellect criterion. As De Raad et al. (1998b) points out, five-factor solution is special of the factors II and V structure. These two factors are related in content. As Saucer et al. (2000, p.17) clames, “the Hungarian studies support the Big Three and Big Four (The Big Five minus Intellect) models and also, by a loose rather than stringent criterion, the Big Five model.”

Korean (Hahn, Lee & Ashton, 1999) personality adjectives were collected from each of the following two sources. First, 1020 high school and university students each provided free descriptions of personality for two liked males, two liked females, two disliked males, and two disliked females. Second, another set of personality-relevant was adjectives from a table of the frequency of occurrence of Korean words in printed media, including magazines, newspapers, and textbooks. About 1000 terms from both sources were reduced to 785 by four judges and rated for frequency of use by 125 students, and 406 terms of high familiarity were selected. Undergraduate students (N=435) from three universities rated themselves on the 406 adjectives.
In the three-factor solution a Big Three were found. The results indicated a strong correspondence between the Korean factors of the four-factor solution and the classic Big Five (Extraversion, Agreeableness, Conscientiousness, and Emotional Stability), as measured by markers selected a priori from the pool of 406 adjectives. A five-factor solution was investigated, in an attempt to recover an Intellect factor. As Saucer et al. (2000) clames, Korean personality factors were quite similar to The Big Five with some divergences with respect to the axis locations of several factors. The five varimax-rotated factors corresponded closely to the classic Big Five, but with a minor difference in the rotation of the Conscientiousness and Intellect factors. Solutions involving six and seven factors were also investigated, and these solutions produced a Truthfulness factor similar to some previously discovered lexical factors like factor Integrity identified in Hungarian study (Saucer et al., 2000). As Peabody and De Raad (2002) clames, the Korean study provides exceptional clarity examples of the influence of the Big Five, however, the authors are seeking a representative of Big Five factor IV (Emotional Stability).

**Comparisons among languages.** According to John and Srivastava (1999), the first two non-English taxonomy projects involved Dutch and German languages that were closely related to English. As De Raad et al. (1998a) clames, the most extensively described trait structures are those in the Germanic languages: American English (Goldberg, 1990), Dutch (De Raad, Hendriks and Hofstee, 1992), and German (see Saucer, Hampson and Goldberg, 2000). Apart from details, it is generally accepted that these Germanic taxonomies support the Big-Five factor model. As regards the taxonomic procedures, particularly the Dutch and German taxonomic enterprises strike most by their differences in definition of person relevant characteristics and in operational features. These differences are often used to explain certain differences in the respective trait structures, particularly relating to the content and relevance of factor V (Intellect) of the Big-Five model.

According to De Raad et al. (1998a), the German taxonomers used an explicit definition of trait descriptors, distinguishing among 13 different categories of person attributes, such as dispositions, attitudes, physical characteristics, appearance, abilities and other. The system used, of 13 categories, forced judges to distinguish adjectives in terms of these 13 categories, not just in terms of relevant or irrelevant dispositional traits, as in the Dutch case. The use of, for example, a separate dispositional category Abilities and Talents, next to the dispositional
category for Traits, enables a relatively larger catch of terms with that content. Since the final German set of terms used for ratings was taken to be the sum of the most typical Dispositional Traits and Talents, compared to the final Dutch selection the German selection is probably more satiated with Talent terms.

A comparison of Big-Five structures of personality traits in Dutch, English, and German were made later (Hofstee, Kiers, De Raad, Goldberg & Ostendorf, 1997). In the Dutch set, there were relatively few terms pertaining to intelligence and capacities, as a consequence of a selection criterion that emphasized temperamental traits; in the German set, intelligence and capacity terms were expressly included. With the exception of the Dutch Factor V (this factor replicates only if ability terms are included, as was the case in the German and English trait sets) the Big-Five factors recur across languages in a relative but not in a strict sense. Differences in the positions of the axes were uncovered. By applying a split-sample technique to the three data sets, there were verified that these differences do not arise through unreliability. As authors claim, few trait terms appear to have the same precise meaning across these three languages; such labels therefore cannot serve as anchor concepts for an international language of personality.

Two existing selection procedures distinguished above, exemplified in the Dutch and German trait taxonomies. The characteristic features of the two approaches are identified in two independently constructed Italian taxonomies. Comparisons among two Italian (Trestien and Roman) and between Italian and Germanic trait taxonomies were made by De Raad et al. (1998a). They tested the two approaches for their effects on the resulting trait structures and place the findings against the background of the established Germanic trait structures in four subsequent studies. The main results proceeding from the two Italian taxonomies are compared with each other, both in terms of selection procedures (Study 1- selection procedures were scrutinized and the resulting lists of trait descriptors were compared) and in terms of trait structures (Study 2- compared both in terms of the trait descriptors they have in common and in terms of their unique sets). Study 3, is a further comparison of the two Italian trait structures in terms of congruences between the corresponding factors from the two trait structures are calculated before rotation, after target rotation, and after joint rotation. In Study 4, congruences between the two Italian structures and three Germanic structures, namely American English, German, and Dutch, were investigated. Studies conclude that the trait selection procedures are
evidently distinct, but that the two Italian structures are overwhelmingly similar. They show higher similarity to each other than either of them shows to the Germanic trait structures. The two Italian trait taxonomies show marked differences in starting materials (dictionaries, selection procedures, sets of trait descriptors) and in their first separately derived trait structures. However, the separate trait structures can be considered remarkably similar. This brings to the conclusion that, given the focus on trait-descriptive adjectives, the differences in the procedures described (the Dutch and German selection procedures) do not have a major impact.

Saucer (1997) and De Raad et al. (1998b) includes Hungarian lexical study together with Dutch and Italian studies referring that variable selection emphasis on stable traits only and judges provide utility or personality-relevance ratings (e.g., fit to sentence stems like X is a … person and X is … by nature). Retained terms apparently included relatively few referring to abilities or talents. Each of these three studies found rather clear replicas of the first four of the Big Five: Extraversion, Agreeableness, Conscientiousness, and Emotional Stability. As Saucer et al. (2000) points out, the fifth factor has totally different semantic. The Dutch factor emphasized attributes like critical and rebellious and the Italian factor emphasized unconventionality. The Hungarian counterpart was labeled Integrity, although the rotation of six rather than five factors led to an additional factor interpretable as Big Five Intellect. Saucer and Goldberg (2001) include Hungarian, Italian and Korean in the one group of studies were Agreeableness clusters found on two different factors in the six-factors solutions.

Saucer (1997) and De Raad et al. (1998b) includes English, German, Czech and Polish taxonomies to another group. These studies can be distinguished from the first group by a greater inclusion of categories referring to temperament and abilities as their final pool of dispositional terms. The German, Czech, and English studies produced fairly similar Big Five factor structures, including a fifth factor clearly interpretable as Intellect. Saucer and Goldberg (2001) include English, German, Czech, Polish, Turkish and Dutch to the group of Anglo-Germanic Big Five studies based on their five-factor solutions. It is quite right to include other two Slavic languages – Russian and Croatian- that both supports the Big Five structure even with a lower replicability for Emotional Stability. Compared with results of many other taxonomies the discrepancies between the Croatian and the standard Big-Five factors are relatively small.

For all studies in both of these two groups most terms classifiable as either social evaluations or temporary states were excluded. Moreover, when the selected variables were
analyzed in data based on large samples each study found the Big Five, with cross-language divergence most apparent for the fifth factor. Saucer and Goldberg (2001) separately considered their third group of lexical studies, like Spanish, Hebrew and Filipino studies, that cast a wider variable-selection net. According to Saucer (1997), a third group of studies used an alternative set of tactics for variable selection, beginning with a page sampling of a dictionary. Terms referring to social evaluations and temporary states were not systematically excluded. The prototype study was that of Tellegen and Waller summarized by Saucer (1997). The seven factors were deemed to correspond to the Big Five, plus Positive Valence and Negative Valence. Variants of the prototype study were conducted with Spanish and Hebrew person-descriptors. In the Spanish study, the indigenous seven-factor solution clearly reproduced the first three of the lexical Big Five factors, as well as Positive and Negative Valence. In the Hebrew study, there was some correspondence between the indigenous seven-factor solution and the Big Seven. The Filipino structure seems similar to Hebrew structure. According to Saucer (1997) and Saucer and Goldberg (2001), this third group of studies showed that when lexical studies using large samples of descriptors and of participants use a wider variable selection, including social evaluation and temporary state terms, the resultant factor structure does not fall entirely into the Big Five pattern, not even when exactly five factors are rotated.

Should one prefer three, five, or seven factors? As Saucer (1997) points out, for the choice between five and seven factors, much seems to depend on how wide one prefers to extend the variable selection. For the choice between three and a larger number of factors, much may depend on one's preferred level in the hierarchical organization of attributes. Personality descriptors tend to coalesce into three large factors similar to Extraversion, Agreeableness, and Conscientiousness—the same three factors most invariant across the studies.

Whether the Big Five are in fact universal? A review of De Raad et al. (1998b) has compared many of the European studies, using translations to estimate factor similarity quantitatively. The congruences show replicability of the first four Big Five factors. All of the structures have one or more factors with specific semantic colorings. Most generally, factors similar to the Big Five have been found in many other languages but often, more than five factors needed to be rotated and sometimes two indigenous factors corresponded to one of the Big Five. The best example is studies of Filipino samples. As Saucer et al. (2000) remarks, content from each of the Big Five factors can be found among person-descriptors in all of the
languages studies. Only studies of Germanic and Slavic languages have found a relatively clear Big Five structure in five factor solutions. According to Peabody and De Raad (2002), the effort to achieve Big Five universality has been overextended. Factors IV (Emotional Stability) and V (Intellect) frequently do not appear as cohesive factors. In the words of De Raad et al. (1998b), it has become clear that researchers are unlikely to find the one and only canonical cross-culturally valid trait structure. The more realistic is trying to find acceptable counterparts of the Big Five factors in different languages.

In summary, the cross-language research suggests that the Big Five can be replicated in different languages but is not completely supported. According to Saucer and Goldberg (2001, p.870), Anglo-Germanic model is most predictably replicable, when all of the following conditions are present: “(a) the language has its origin in northern Europe, (b) the variable selection is (at least predominatly) limited to disposition-descriptive terms, and (c) the data consists of ipsatized self-ratings. As John and Srivastava (1999) points out, the evidence for non-Western languages and cultures is more complex yet encouraging and Factor V generally shows the weakest replicability.

**Main issues in cross-language and cross-cultural research on personality structure**

According to Saucer and Goldberg (2001, p.851), “The Big Five is commonly proffered a candidate for a set of ubiquitous lexical dimensions”. This model represents five broad factors that describe major personality differences that are typically numbered and labeled as follows: (I) Extraversion, (II) Agreeableness, (III) Conscientiousness, (IV) Emotional Stability, (V) Intellect. This model was most clearly identified in studies of the related languages of English and German (see Saucer & Goldberg, 2001; De Raad et al., 1998a). However, lexical studies have only partially replicated the Big Five across languages, samples, and methodology. John and Srivastava (1999) formulated the most important issues in cross-language and cross-cultural research on personality structure.

**Underestimates of cross-language congruence.** Translation inequivalence and factor instability are one of the difficulties in cross-language research. Researchers working within their indigenous languages have to translate their concepts into English to communicate their findings but not being bilinguals themselves. Then much slippage occurs in the translation. Later was
noticed the advantage of bilingual designs. In that case sample differences can be controlled and translation checks can be made because the same subject provides descriptions in both languages. As John and Srivastava (1999) points out, that several carefully made translations, using standardized back-translation procedures, were inadequate. What this means is that mistranslations, undetected in monolingual investigations, can lead to severe underestimations of cross language generality. It is reasonable to assume that even within each language sample factor structures are never perfectly stable. It is hard to disagree with John and Srivastava, that translation-based comparisons across languages are heuristically useful but should not be interpreted in terms of absolute effect.

*Rules for including trait terms.* Differences in factor structure depends a lot from the different inclusion rules followed by the taxonomy teams in different studies. It is a common problem when, the diverse range of traits are included under one factor in a study, whereas different traits included under the same factor in other study. Dutch and German lexical studies, reviewed by John and Srivastava (1999), serves as example of that kind of problem. The Dutch selection criterion favored terms related to temperament, excluded terms related to intellect, talents, and capacities, and included a number of extremely negative evaluative terms, such as perverse, sadistic, and criminal. The German team explicitly included intellect and talent descriptors but omitted attitudes and evaluative terms, which were included as categories separate from traits. Given the diverse range of traits included under the fifth factor, it is thus less surprising that the German factors shared the intellect components whereas the Dutch factor included some imagination-related traits but otherwise emphasized unconventionality and was thus interpreted initially as a “Rebelliousness” factor. It is doubtful whether the factor structures of these studies could be compared and interpreted as parallel and discussing the same factor.

*The imposed-etic design.* According to Saucer and Goldberg (2001) cross language studies of five-factor framework have used both etic (imported framework which is tried out in the new culture to see how well it fits there) and emic (indigenous framework represents sample of the language’s person-descriptive adjectives that are analyzed) procedures. The problems with differences among investigators in how they reduce the large pool of descriptors from the dictionary, leading to differences in variable selection that are difficult to specify. According to John and Srivastava (1999), this has led researchers to prefer the etic-imposed design to ask questions about the cross-cultural (rather than cross-language) generality of the Big Five. This
perspective leads John and Srivastava (1999, p.13) to remark, that “cultural specificity would mean that the covariance structure among traits differs across samples drawn from different cultures, and this claim is different and separate from that of lexical invariance which claims that the most important traits in any language factor out to generate the Big Five”. Etic analyses using translations of English Big Five instruments, such as the NEO questionnaires and the BFI, have now been performed across a wide range of different language families and are generally quite supportive of similar underlying covariance structures.

**The combined emic-etic approach.** According to Saucer and Goldberg (2001), in most lexical studies investigators use an emic approach to identify the indigenous factors of personality description, and then use an etic measure to compare these dimensions with ones found in other languages. As John and Srivastava (1999) clames, the best studies are those that combine the emic and imposed-etic designs, thus allowing the researchers to establish empirically the similarity of indigenous factors to the factors established in other languages and cultures.

It is important to add Saucer et al., (2000) concerns, that a difference in factor representations between languages can reflect not only true cultural difference but some methodology or other artifacts as well. It could be the methods of selecting an initial set of terms, the nature of the final variables chosen to use, the size and nature of the subject sample, rating scales, the methods of data analysis and many other differences among studies. As De Raad et al. (1998b) remarks, starting sets of personality-relevant trait adjectives vary substantially in number and a varying set of reduction criteria applied in the different taxonomies. It is virtually impossible to assess precisely the effects of the various reduction principles in the different taxonomies. Every difference is important in cross-language studies.

**Several candidate structural models that should be compared with the Big Five in future studies**

According to Saucer et al., (2005), lexical studies have only partially replicated the Big Five across languages, samples and methodologies. As Saucer and Goldberg (2001) points out, only about half of the relevant lexical studies, mostly form Indo-European languages in Europe, have actually found the Big Five in the five-factor solution. As Saucer et al., point out in their review of lexical studies, there are alternative lexical models, found in studies with more stringent criterion for replicability.
Several studies, including the most recent Greek study (Saucer, Georgiades, Tsaousis & Goldberg, 2005), have reported evidence for one-factor or two-factor structures in their data (Saucer, 1997; Saucer et al., 2000). As Saucer et al. (2005) claims, single factor contrast a desirable attributes at one pole with a undesirable attributes at the other and can be labeled Evaluation. Two-factor solution represents attributes associated with positively valued dynamic qualities and individual ascendancy in first factor, whereas the second factor includes attributes associated with socialization, social propriety, solidarity and community cohesion.

As Peabody and De Raad (2002) suggests, that the Big Three might come closer to cross-cultural generality. According to De Raad and Peabody (2005), the three-factor results confirm that a variety of European cases support the Big Three: Conscientiousness, Extraversion and Agreeableness. As Saucer and Goldberg (2001) suggests, there are three reasonable objections to a Big Three: (1) emission of Emotional Stability and Intellect, that are presumably uncorrelated with Big Three, restricts the behavioral reference; (2) the degree of replication of the Big Three in variable selections, that include noun and verb descriptions is not clear; (3) it is not yet clear whether three-factor structures always include Conscientiousness factor.

An alternative lexical model has been derived by focusing on six-factor solutions. According to Ashton and Lee (2007), the new model is cold HEXACO by the first letters of every six factors and consistent with the cross-culturally replicated finding of a common six-dimensional structure containing the factors Honesty-Humility, Emotionality, Extraversion, Agreeableness, Conscientiousness, and Openness to Experience. Three of the six HEXACO factors correspond very closely to dimensions of the Big Five, whereas the other three HEXACO factors bear a more complex relation with the remaining two dimensions. Also, the HEXACO model predicts several personality phenomena that are not explained within the Big Five. In the words of Ashton and Lee, the clearest evidence in favor of the six-factor model representation has emerged from investigations that have employed the same strategy of variable selection and measurement as did the investigations that produced the Big Five structure.

Other alternative model involves seven factors. According to Almagor, Tellegen and Waller (1995), the result of Tellegen and Waller reexamination of the number and the nature of major lexical English language dimensions indicated the presence of seven major factors- The Big Seven. Two of these factors are evaluative dimensions: Positive Valence and Negative
Valence. The others have clear counterparts in the Big Five. The follow-up findings of a study of Hebrew (Almagor et al., 1995) attest to the robustness of the Big Seven. As Saucer et al. (2005) claims, this structure of seven-factors could be called “Big Five Plus Two”.

Saucer and Goldberg (2001) suggested six empirically induced rules about possible factor structures from lexical studies.

Rule 1. If only one factor is extracted this is the single largest global evaluation factor. It can be labeled Evaluation—the contrast between socially desirable and undesirable.

Rule 2. If two factors are extracted and rotated, they are Dynamism (combination of activity and potency) and Social Propriety (reflects a set of favorably evaluated attributes that are not extreme in either activity or potency).

Rule 3. If three factors are extracted and rotated, these factors approximate a Big Three—broad version of Extraversion, Agreeableness, Conscientiousness (limited to data consisting of ratings of persons by others).

Rule 4. As more factors are extracted, a combination of no rotated factors includes any of the following: (a) Sociability, (b) Warmth and Generosity, (c) Orderliness and Industriousness, and (d) Anxiety—Fearfulness (These appear to be most cross-language generalizable nuclei of the factors).

Rule 5. An additional factor is found (among the first seven extracted and rotated) that includes at least one of the following clusters: Intellect, Imagination or Unconventionality.

Rule 6. To the extent that a substantial number of relevant variables are included and as many as seven factors are retained, a separate factor including the Negative Valence items will be found (this rule is stated tentatively because only a minority of studies have included relevant variables).

As Saucer and Goldberg (2001) claims, the studies to date indicate that these rules appear to be more generalizable than the Big Five structures found in English and German. The recent review of lexical studies demonstrates that even studies that have generated widely different five-factor structures have still conformed to these organizing rules. Even if the Anglo-Germanic version of a Big Five structure is incompletely supported, a considerable evidence of the construct accrued in studies of many languages. On the other hand, in support of the Saucer and Goldberg (2001) suggestion, we should avoid premature consensus on a potentially suboptimal model.
Making sense of the findings

After decades of research of personality, the field is approaching consensus on a general taxonomy of personality traits – the Big Five personality dimensions. These dimensions were derived from analyses of the natural-language terms people use to describe themselves and others. The rationale for lexical studies rests on the assumption that the most meaningful personality attributes tend to become encoded in language as single-word descriptions. Lexical studies of personality attributes focus on a single language with the approach that affords useful comparisons between languages. The Big Five is commonly proffered as a candidate for a set of ubiquitous lexical dimensions and that has been most often tested in lexical studies of indigenous personality factors. Most recent reviews of lexical studies points out, that factors similar to the Big Five have been found in many different languages but often, more then five factors needed to be rotated and sometimes two indigenous factors corresponded to one of the Big Five. Evidence is least compelling for the fifth factor (Intellect). The cross-language research suggests that the Big Five can be replicated in Germanic languages. The evidence for non-Western languages is more complex. Lexical studies have some issues like underestimation of cross-language congruence, different rules for including trait descriptors, differences between emic and etic design studies. A lot of differences in the variable selection, methods for selecting terms, size and representativeness of selected terms, the targets of description, rating scales and many other differences may influence the results of lexical studies. The Big Five provides a descriptive taxonomy that organizes the natural-language and scientific trait concepts into a single classificatory framework. The present study of Lithuanian person-descriptors come at a critical juncture, when there is a need for studies to compare the replicability of the Big Five structures with alternative competitor structures like two, three-, six- and seven-factor models. To build the basis for such comparisons this study developed a collection of the most frequently used personality descriptors in the Lithuanian language. Studies 1 and 2 involved the refinement of such a collection of key variables – adjectives. In Study 3 were derived en emic Lithuanian factor structure from these variables and compared this structure to the Big Five and alternative models with the help of the BFI (Big Five Inventory) measure employed in the study to ensure an adequate interpretation of the emic factors. To address the universality of the Big Five structure of personality was used a combined emic-etic approach (an empirical comparison
between the Lithuanian emic personality dimensions and imported Big Five measure (BFI)). The Lithuanian language remains some of the oldest and least changed Indo-European languages and therefore is fascinating for linguistic studies. Lithuanian lexical study should be very interesting and useful for the support of the universality of the Big Five dimensions of personality in comparison to alternative models.

**Study 1: Selection of Representative Set of Lithuanian Personality Adjectives**

Our primary aim was to develop a scientific taxonomy of most frequently used personality descriptors in the Lithuanian language. The newest edition of *Lithuanian-English Dictionary* (2006), with about 50,000 words in 682 pages, was examined by one judge - the author of the study. Adjectives were selected and listed with their translations into English. Later two other dictionaries - *English-Lithuanian Dictionary* (Armalyte, Pazusis & Tekoriene, 2000) and computerized Lithuanian-English and English-Lithuanian dictionary -“Alkonas” (1998) - were used to check translations and back-translations, giving priority to a combination of literal translation and similarity of meaning. For extraction of person-relevant adjectives from the dictionary there was used two-stage strategy. First, a scanning of the entire dictionary for personality-descriptive adjectives, but narrowed to adjectives that are highly related to personality attributes- stable traits. To come down to a smaller number of items there were not counted all adjectives that might potentially be personality relevant. The judge extracted all adjectives that are considered personality relevant on the basis of a set of criteria. The criteria stated that the term should:

1. fit into a sentences such as “He/she is [adjective] by nature” and “What kind of person he/she is? - [adjective]. As en example of lexical study in Dutch (Brokken 1978, cited by Saucer & Goldberg, 2001).

2. Excluded should be terms in any of categories:
   a) nondistinctive and applicable for all individuals (e.g., human).
   b) referring to geographical origin (e.g., Athenian), to nationality (e.g., Lithuanian), or to professional or job-related identities (e.g., student).
   c) referring to only a part of the person (e.g., shining eyes).
   d) having personality implications that are both metaphorical and tenuous (e.g.,
mouse, rose).

3. Study included some more criteria from Turkish study (Somer & Goldberg, 1999) that had a set of criteria that a lot of other lexical studies used. Excluded should be terms in any of these categories:
   a) describing physical characteristics and appearance (e.g., tall, thin)
   b) mere evaluations (e.g., good)
   c) social attitudes (e.g., racist)
   d) special abilities (e.g., good dancer)
   e) overly slang terms.

A set of 435 personality-relevant adjectives was collected. These adjectives served as the pool for more detailed evaluation. Second stage reduced the number of words by eliminating antonyms, words that had better synonyms, words that had big doubts fitting all the criteria. A comprehensive set of 245 potentially personality-relevant adjectives was collected.Comparable lexical studies have most often used frequency of use as the main criterion for variable reduction. This was the main aim of Study 2.

**Study 2: Initial Ratings of Frequency of Use to Describe a Personality**

According to Greek study (Saucier, Georgiades, Tsaousis & Goldberg, 2005), the findings of some variable-selection effects gives a big reason to concentrate on the frequency of adjectives used to describe a personality in subsequent analyses. Frequency was judged in Italian lexical study (De Raad, Blas & Perugini, 1998), in Hungarian (Szirmak & De Raad, 1994), in Korean (Hahn, Lee & Ashton, 1999). In this study a group of 24 judges rated the adjectives on the list developed in Study 1, with respect to the adjective’s frequency of use describing a personality. All judges were Lithuanians with different age (from 25 till 58 years), sex (8 men and 16 women) and education (lawyers, informatics, teachers, engineers, mechanists, an accountant, a biologist, salespeople, people with secondary education). Each judge provided a rating on each of the 245 adjectives from Study 1. Frequency of use for description of a personality in Lithuanian speech generally was rated on a 5-point scale: 1 (*this word is never used for describing of a person*), 2 (*rarely used*), 3 (*sometimes*), 4 (*often*), 5 (*extremely often*). Selected terms for further study were those that obtained ratings of 3 or more from at least 18 of
24 judges (three quarters). On the basis of this criterion, 51 adjectives were omitted from consideration, leaving 194 adjectives on the list.

**Study 3: The factor structure of Lithuanian Descriptors in Self-Ratings**

*Questionnaires and Participants*

In this study, we used two questionnaires. First, The 194 High Frequency Descriptors (194-HFD) included the top 194 Lithuanian adjectives in terms of rated frequency of use, using 7-point Likert rating scale. Second, translated into Lithuanian The Big Five Inventory (BFI) constructed by John, Donahue, and Kentle (1991, cited in John & Srivastava, 1999) included all 44 BFI items, using original 5-point Likert scale. Participants received a booklet with a random listing of 194 personality-descriptive adjectives, BFI test and written instructions. The feedback was promised for students for their participation. We gathered self-ratings from one sample which included 212 participants (initially 213 participants were tested including 56 men and 157 women, mean age = 20,7 years, standard deviation = 1,3years, min = 18years, max=25 years. One participant was excluded from the remaining data analyses because of too many omitted responses). Research participants were students from the Vytautas Magnus University (Kaunas, Lithuania) and University of Siauliai (Lithuania).

*Results*

The second aim of the study was to provide a preliminary analysis of the five-factor structure of Lithuanian language of personality based on a representative list of most frequently used Lithuanian personality-descriptive adjectives and to address the universality of the Big-Five structure of personality by means of an empirical comparison between the Lithuanian emic personality dimensions and imported Big-Five measure (BFI).

*Emic-Structure Factor Analyses.* The important findings of Saucer (1997), using a large set of highly familiar English person-descriptive adjectives, suggest that for comparing structures across samples of participants, variables, languages we should always examine factor solutions at different hierarchical levels, at least in the range from three to seven factors. In the present study, we examined the first unrotated principal component (FUPC) and compared varimax
orthogonal) rotations of two, three, four, five, six and seven components. Findings are based on the original responses.

Figure 1. Eigenvalues for the first 15 factors.

The first 15 eigenvalues, expressed as percentages of total variance explained, are depicted in Figure 1. First 10 eigenvalues of this data matrix were 11.9, 8.1, 5.6, 3.7, 2.9, 2.5, 2, 1.9, 1.8 and 1.6. Figure 2 depicts the pattern of factor emergence for original data and provides the complete structure of varimax-rotated factors, across seven hierarchical levels. The values in the figure are the correlations of the factor scores at each level with those immediately above and below them; correlations below .35 are omitted. Factors are identified by their hierarchical level (1 through 7) and by their size (and their order); thus 5/2 refers to the second largest factor in the five-factor solution. When the factors can be easily identified, they are also labeled by their Big Five factor numbers: I (Extraversion), II (Agreeableness), III (Conscientiousness), IV (Emotional Stability), V (Intellect-Openness).

Table 1 (see appendixes) presents the factor loadings from five-factor solution, with the factors ordered by their relative size (IV, V, I, II, III). The five factors explained 32.2 % of the total variance. The five-factor solution presents a clear demonstration of five factors of Big Five. Included in the table are both the Lithuanian variable labels and our best approximations of the corresponding English translations.
Figure 2. The seven-level hierarchical structure for original data.

Note: FUPC = first unrotated principal component; N.V. = Negative Valence; P.V. = Positive Valence; I = Extraversion; II = Agreeableness; III = Conscientiousness; IV = Emotional Stability; V = Intellect-Openness.

We next offer a few comments on the overall pattern of factor emergence. In accordance with the results from previous taxonomic studies (Saucier & Goldberg, 2001), the first principal
component contrasted socially desirable and undesirable attributes of persons and was therefore called Evaluation; high-loading terms include vital, pleasant, gladsome and cheerful versus phlegmatic, abominable, unhappy, and sullen. The two-factor structure consists of one factor emphasizing Dynamism (including high-loading terms cheerful, communicative, enthusiastic, and active versus oppressed, phlegmatic, slow, and silent) and another factor emphasizing combination of Negative valence and Social Propriety (including high-loading terms cruel, sarcastic, hostile and egoistic versus peaceful, compassionate, decent and tolerant). The three-factor solution is similar to the factors I (Extraversion), IV (Emotional Instability - reversed version of Emotional Stability), III (Conscientiousness) in the Table 1, with the factors somewhat broader; the correlations between the corresponding factor scores from the three- and five-factor solutions were .64, .94, .65 for factors I, IV and III respectively. At the four-factor level Agreeableness factor was added. At the six-factor solution small Negative Valence factor was added (including high-loading terms revengeful, envious, insultive versus single adjective optimist) and Intellect-openness factor become clearer. At the seven-factor level small Positive Valence factor was added (including terms spontaneous, independent, courageous etc.). The terms in Negative and Positive Valence factors were unipolar in seven-factor solution.

**Etic- Structure Factor Analyses.** The Principal Component Analysis was applied for BFI. Five varimax (orthogonal) rotated factors were extracted from 15 BFI parcels. The BFI 44 items were correlated with the BFI parcel five factors what in fact gives the factor loadings for the items in BFI parcel five-factor space. The parcels are based on theory and previous research and they seem to function well with this data. The parcel analysis helped to stabilize the PCA (Principal Component Analysis) factors in small sample because it reduced the number of items from 44 to 15. Theoretic classification matched the data very well except item nr.41 which was not translated correctly and was excluded from later data analyses. The internal consistencies of the imported marker scales (coefficient alpha values) was 0.70, 0.69, 0.72, 0.74 and 0.78 for factors I, II, III, IV and V respectively. Reliability values were smaller than proposed by BFI authors (Extraversion 0.88, Agreeableness 0.79, Conscientiousness 0.82, Emotional Stability 0.84, Openness 0.81).

Pearson correlations were calculated between factor scores derived from the emic dimensions and the BFI measure employed in the study to ensure an adequate interpretation of the emic factors. The five factors of both inventories were clearly interpretable as Extraversion,
Table 2. Correlations of Lithuanian adjectives Emic five-factor structure with BFI sum scores, and Emic five-factor structure with Etic five-factor structure.

<table>
<thead>
<tr>
<th>Emic 5 factor structure</th>
<th>BFI</th>
<th>Etic 5 factor structure</th>
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<tr>
<td></td>
<td>I</td>
<td>II</td>
</tr>
<tr>
<td>I</td>
<td>.64**</td>
<td>.06</td>
</tr>
<tr>
<td>II</td>
<td>-.24**</td>
<td>.53**</td>
</tr>
<tr>
<td>III</td>
<td>-.12</td>
<td>-.07</td>
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<tr>
<td>IV</td>
<td>-.09</td>
<td>-.46**</td>
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<tr>
<td>V</td>
<td>.40**</td>
<td>-.03</td>
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</table>

Note: Correlations over .40 are in bold font. I=Extraversion, II=Agreeableness, III=Conscientiousness, IV=Emotional Stability and V=Intellect-Openness. p**<0.01 (2-tailed), p*<0.05 (2-tailed).

Agreeableness, Conscientiousness, Emotional Stability (Neuroticism in BFI) and Intellect-Openness (Openness in BFI) with correlations from .40 till .64 and presented in Table 2. Factors I, II and III had moderate correlations and represented their selves as solid and clear Lithuanian adjective factors. The moderate negative correlation of emic factor IV and BFI factor II indicates that Lithuanian Emotional Stability factor combines variables from Emotional Stability and from Agreeableness factor. Emic Intellect-Openness factor was clearly combined factor because it correlated with all BFI factors except Agreeableness. All the other correlations between the non-corresponding factors were lower. The convergent as well as the divergent correlations between the factors confirmed our initial interpretation of the emic factors well.

According to Hofstee, De Raad and Goldberg (1992), trait descriptors do not fit perfectly into simple-structure models, which provide the rationale for procedures such as varimax rotation. Trait names tend to represent blends of factors. Consequently, the factor loadings are unstable, and unequivocal interpretive labels are hard to find. The Circumplex models, by their nature, provide much more opportunity for identifying clusters of traits that are semantically cohesive. We applied the Abridged Big Five Dimensional Circumplex (AB5C) procedure to our data. First, the 5 rotated BFI factor scores were correlated with Lithuanian adjectives; which is the same as the adjectives factor loadings in BFI five-factor space (etic five factor structure).
Based on these correlations the adjectives were classified into BFI-AB5C space. As an example of Hofstee, De Raad and Goldberg (1992), there were used the algorithm for assigning adjectives to segments staring with the varimax-rotated loadings of the variables: 1) loadings > .20 were significant; 2) If only one loading was significant the item (adjective) was assigned to the pure-factor (if the primary loading is at least 3.73 as large as the second loading); 3) If two loadings were significant, they were classified into AB5C with the highest loading as primary factor; 4) If more than two loadings were significant the item was complex (Exception: If the two largest loadings are much higher than the rest, they were classified into AB5C); 5) If there were no significant loadings, the item did not fit into AB5C: either the item was bad (was used in many different ways by the respondents) or it was used in a consistent manner - but in such a way that the consistency does not correlate with consistencies inside the Big Five Model. The same procedure was made for Lithuanian adjectives in emic five-factor structure.

Of the 194 etic terms - 23 adjectives and of the 194 emic terms - 44 adjectives were not included in the AB5C analysis, because loaded less than .20 on all varimax factors or were complex. The 90 AB5C unipolar facets listed in Table 3 can be grouped into 45 bipolar facets, each of which were difficult to label by antonym pair with the highest average loading, as usually was done, because a lot of facets were insufficiently defined. The main aim of classifying adjectives into AB5C facets was to compare emic and etic five-factor structures. Factor I has 17 (31.5%) common adjectives: 11 (64.7%) are from etic I+I+ facet and, what is the most interesting, contains all 9 adjectives (vital, communicative, garrulous, passionate, naughty, energetic, artful, popular, spontaneous) from emic I+IV+ facet, 5 (29.4%) are from etic I-I- facet and 3 of them (slow, restrained, reserved) are in the same emic facet, 1 (5.9%) adjective (friendly) are in the same I+II+ facet for emic and etic structure. Factor II has 17 (30.9%) common adjectives: 12 (70.6%) are from etic II+II+ facet and 9 of them are in the same emic facet (obliging, reasonable, conformist, submissive, generous, obedient, credulous, selfless, compassionate), etic and emic facets II+I+ contains the same 1 (5.6%) adjective (prepossessing), etic and emic facets II+III- contains the same 1 (5.6%) adjective (indulgent), etic facet II-II- contains 2 (11.8%) adjectives from emic factor II (selfish, pitiless), etic facet II+V+ contains 1 (5.9%) adjective from emic II+IV (tolerant). Factor III has 18 (41.9%) common adjectives: 14 (77.8%) are from etic facet III+III+ with 5 of them in the same emic facet (industrious, consistent, orderly, punctual, pedant) and all 7 adjectives from emic facet...
III+V+ (dutiful, diligent, responsible, reliable, consistent, fair, thorough), 4 (22.2%) adjectives are from etic facet III-III- with 2 of them in the same emic facet (careless, remiss) and 2 are from emic III-IV+ (light-headed, inconstant). Factor IV has 16 (32.7%) common adjectives: 7 (43.8%) are from etic facet IV+IV+ with 3 adjectives in the same emic facet (panicky, intemperate, fastidious) and 2 adjectives in emic facet IV+I+ (irascible, envious), 6 adjectives (37.5%) are from etic facet IV+II- with 1 adjective (spoil) in the same emic facet and 5 adjectives in emic facet IV+IV+ (hysterical, nervous, eggy, irritable, unsatisfied), 3 adjectives are from etic facet IV+I- with 2 adjectives in the same emic facet (unhappy, passive). Factor V had 9 (21%) common adjectives: all 9 adjectives are in emic facet V+V+ with 4 adjective in the same etic facet (perceptive, discerning, creative, inventive), 3 adjectives from etic V+III+ (wise, intelligent, social), 1 adjective (quick-witted) form etic facet V+I+, and 1 adjective form etic facet V+IV- (gifted).

We do not presume that the results of Lithuanian AB5C model are comprehensive and definitive, but they are helpful to compare emic and etic Lithuanian five-factor structure. Main adjectives from Big Five Model are the same in emic and etic factors. Etic factors I, II and III are very similar with emic factors I, II and III, and also have stable and clear structure. Most interesting is that emic factor I is reversed version of etic factor I (etic I+I+ and emic I+IV+ facets share the same 9 adjectives: vital, communicative, garrulous, passionate, naughty, energetic, artful, popular, spontaneous). Reversion features can be noticed in Emic factor III also: 7 adjectives from etic facet III+III+ are in emic facet III+V+ (dutiful, diligent, responsible, reliable, consistent, fair, thorough). Emic and etic facors IV and V structure are similar and represents them as the biggest two factors in five-factor solution that are combined from the rest factors. Emic Emotional Stability(IV) are combined with a lot of aggression-meaning adjectives and incorporate adjectives from etic Agreeablenes (II) like: agresive, egoist, savage, cross-gained, mordant, angry, hostile, wrathful, hypocritical, sarcastic, revengeful, suspicious, mutinous. Emic Intellect-Openess (V) factor are combined from factors I, III, IV, and takes adjectives from etic Extraversion (independent, assured, self-contained, independent, influential, active, persistent, witty, free, genius, courageous, interesting, nifty, enthusiastic, fearless), etic Conscientiousness (rational, progressive, persevering, observant, respectable, volitional), etic Emotional Stability (intellectual). Moderate correlations (form .40 till .69) between emic and
etic five-factor structures are presented in Table 2, and demonstrates a lot of similarities and strong coherence between corresponding factors.

**Discussion**

The main aim of this study was to develop a scientific taxonomy of most frequently used personality descriptors in the Lithuanian language and to address the universality of the Big-Five structure of personality by an empirical comparison between the Lithuanian emic personality dimensions and imported Big-Five measure (BFI). Also make a comparison with alternative competitor models. Our factor analysis of the 194 most frequently used personality-descriptive adjectives of the Lithuanian language produced a personality structure very similar to the solutions obtained in European languages. The results supported The Big Five and six empirically induced rules about possible factor structures from lexical studies suggested by Saucer and Goldberg (2001).

Lithuanian adjectives emic five-factor solution represented a clear demonstration of five factors of Big Five: Extraversion (I), Agreeableness (II), Conscientiousness (III), Emotional Stability (IV) and Intellect-Openness (V). Factors I, II, III and IV were strong and clear factors. Agreeableness factor contained a lot of positive femininity adjectives (for example those with the biggest loadings: obliging, submissive, obedient). It lost some its negative and masculinity adjectives (for example: savage, cruel, despot) to other factors because they had complex loadings. It could be explained with a fact of a small number of men in the sample (74% women from 212 participants). Small correlation between factor II and factor I could indicate a little reversion of those two factors that was also noticed in NEO system of Costa P.T. and McCrae R.R. (cited by John and Srivastava, 1999). Factor IV was the biggest factor in Lithuanian emic structure and contained traditional person-descriptive adjectives representing outgoing and ingoing emotions of Emotional Stability. Adjectives with the highest loadings on this factor (hysterical, nervous, irritable) represented classical Emotional Instability that was a reversed version of Emotional Stability factor in Big Five Model. The biggest factor IV in Lithuanian five-factor structure contained a lot of anger and aggression-meaning adjectives and correlated with Agreeableness. That could be explained because of the big size and strong negativity of
Emotional Stability factor: the emic factor IV contained some negative adjectives (*aggressive, egoist, cruel, sissy, pitiless, uncertain*) from factor II, which had complex loadings.

Emic Intellect-Openness (V) factor are second biggest factor in Lithuanian five-factor structure and are combined from factors I, III, IV. It does not take pure adjectives form other factors, rather those representing leadership and positiveness, and which has complex loadings in other factors. Intellect-Openness takes adjectives from etic Extraversion, etic Conscientiousness, etic Emotional Stability. Lithuanian factor V contains some Conscientiousness traits such as *efficient* and *considerate*, as was also noticed in Czech study (2001). Interestingly, the highest-loading terms on the fifth (Intellect-Openness) factor were clearly Intellect terms: the highest-loading terms were Intellectual (.62), Quick-witted (.59) and Gifted (.58), a pattern very similar to that found in Ostendorf’s (1990, cited by Saucier & Goldberg, 1996) analyses of 430 German disposition adjectives. Variance related to the Intellect factor was also apparently better represented in the Korean (1999) five-factor solution than in the previous Dutch, Italian, or Hungarian studies. As Saucer et al (2000) remarks, In Dutch study the factor V was especially broad, contrasted intellectual autonomy and independence with conventionality, and was interpreted as Intellect of the Big Five. Lithuanian factor V seems to encompass a broad range of intellectual, creative, openness inclinations, preferences, and skills found foremost in highly original and creative individuals. It could represent good leadership traits.

As Somer and Goldberg (1999) claim, a comparison between factor structures derived from different languages are limited by possible differences in the selection of variables from different lexicons. Neither this Lithuanian study can be exempted from this general rule. In pairs of languages in which the indigenous factor structures appear to differ in some substantial way, it is never clear whether that difference really reflects something of cultural significance or is merely an artifact of different strategies for sampling the two lexicons.

The five-factor model of personality has repeatedly emerged from lexical studies of natural languages. When adjective-based factor scales are correlated with other personality measures, the adequacy and comprehensiveness of the five-factor model are demonstrated at a broad level. In order to assess the robustness of the Big Five in this lexical data set, we correlated the factor scores from the Lithuanian first five factors with those from principal-components analyses of BFI.
As John and Srivastava (1999) claim, the best studies are those that combine the emic and imposed-etic designs, thus allowing the researchers to establish empirically the similarity of indigenous factors to the factors established in other languages and cultures. The availability of so many different instruments to measure the Big Five makes clear that there is no single instrument that represents the gold standard. The potential difference involves the fifth factor. In college student samples, preliminary BFI items intended to measure liberal versus conservative values (for the Values facet) and behavioral flexibility (for the Action facet) failed to cohere with the other items on the BFI Openness scale (John et al., 1991, cited in John & Srivastava, 1999). That can explain small correlation with Lithuanian factor V, which contains a lot of Intellect adjectives, and BFI Openness factor. Usually, Factor V as Intellect is related to Conscientiousness, as we can see from this study results also. As was expected, BFI moderated negative correlation between Emotional Stability and Intellect-Openness. Intellect-Openness correlated well with BFI Extraversion, because it contained a lot of adjectives from etic Intellect factor. All correlations between Lithuanian five factors and BFI was medium (from .40 till .69) and results indicated a good correspondence between the Lithuanian factors of the five-factor solution and the classic Big Five. The empirical similarity was strengthened when the emic and etic five-factor structures had a lot of similarities and moderate correlation between corresponding factors (from .40 till .69). Reliability of BFI items were smaller than authors suggested. It can be the result of some items that do not translated well. Maybe by using 7-point scales we could expect slightly better reliability. The advantages of the BFI in this study were its efficiency, taking only about five min. of administration time and its short-phrase item format that provides more context.

The Lithuanian study results supported six empirically induced rules about possible factor structures from lexical studies suggested by Saucer and Goldberg (2001).

**Rule 1. If only one factor is extracted this is the single largest global evaluation factor. It can be labeled Evaluation- the contrast between socially desirable and undesirable.** The Lithuanian one-factor solution produces an Evaluation factor contrasting a desirable attributes at one pole with an undesirable attributes at the other.

**Rule 2. If two factors are extracted and rotated, they are Dynamism (combination of activity and potency) and Social Propriety (reflects a set of favorably evaluated attributes that are not extreme in either activity or potency).** The Lithuanian two factor solution produced
Social Propriety factor that included attributes associated with socialization, social propriety, solidarity and community cohesion, and Dynamism factor associated with positively valued dynamic qualities and individual ascendance. These factors do seem to have a high degree of cross-cultural generalizability. Several studies, including the most recent Greek study (Saucer, Georgiades, Tsaousis & Goldberg, 2005), have reported evidence for one-factor or two-factor structures in their data (Saucer, 1997; Saucer et al., 2000). According to Digman (1997), analyses of correlations of the Big Five, obtained from child, adolescent, and adult samples, imply the presence of two higher-order factors. Estimated factor correlations from 14 studies supported the Big Five and two higher-order factors were clearly evident in all studies.

**Rule 3. If three factors are extracted and rotated, these factors approximate a Big Three – broad version of Extraversion, Agreeableness, Conscientiousness.** The Lithuanian tree-factor solution produced Extraversion, Consciousness and Emotional Stability. According to De Raad and Peabody (2005), the three-factor results confirm that a variety of European cases support the Big Three: Conscientiousness, Extraversion and Agreeableness but it is not yet clear whether three-factor structures always include Conscientiousness factor. This rule was not completely supported with The Lithuanian study, because Emotional Stability emerged instead of Agreeableness, even if there was a Conscientiousness factor. The biggest Lithuanian emic factor Emotional Instability is a reversed version of classical Emotional Stability and represents a lot of anger and aggression-meaning adjectives, incorporate adjectives from emic and etic factor Agreeableness.

**Rule 4. As more factors are extracted, a combination of no rotated factors includes any of the following: (a) Sociability, (b) Warmth and Generosity, (c) Orderliness and Industriousness, and (d) Anxiety-Fearfulness.** Korean (1999) and Hungarian (1994) studies produced evidences for this rule. The Lithuanian four-factor solution added Agreeableness factor near Extraversion, Conscientiousness and Emotional Stability. The rule was supported by this study, because Extraversion factor contained a lot of adjectives reflecting sociability, Warmth and Generosity were presented in Agreeableness, Orderliness and Industriousness defined Conscientiousness, Emotional Stability was reflect with anxiety and fearfulness adjectives but mostly was concentrated on Anger and Irritability rather than Anxiety/Fearfulness content. As Peabody and De Raad (2002) clames, the same was noticed in Polish (2007) factor IV.
Rule 5. An additional factor is found (among the first seven extracted and rotated) that includes at least one of the following clusters: Intellect, Imagination or Unconventionality. When the first five components were rotated by the varimax procedure, they produced factors clearly representing the Big-Five factors, demonstrating generally moderate correlations with BFI. The Lithuanian five-factor emic and etic structures have a lot of similarities and moderate correlation between corresponding factors. Additional factor extracted was Intellect-Openness near Emotional Stability, Agreeableness, Conscientiousness and Extraversion. The Intellect-Openness factor had a more moderate correlation, due to its mixed nature of intellect, openness to experience and creativity components of Factor V. According to McCrae (1990), this is a phenomenon that may occur commonly with the lexical Intellect factor.

Rule 6. To the extent that a substantial number of relevant variables are included and as many as seven factors are retained, a separate factor including the Negative Valence items will be found (this rule is stated tentatively because only a minority of studies have included relevant variables). At the Lithuanian six-factor solution small Negative Valence factor was added. At the seven-factor level small Positive Valence factor was added. The results were in favor for the rule six and other alternative model called “Big Five Plus Two” by Saucer et al. (2005). According to Almagor, Tellegen and Waller (1995), two of these factors are evaluative dimensions: Positive Valence and Negative Valence. The others have clear counterparts in the Big Five. The follow-up findings of a study of Hebrew (Almagor et al., 1995) also attest to the robustness of the Big Seven.

As Saucer and Goldberg (2001) calms, the studies to date indicate that these rules appear to be more generalizable than the Big Five structures found in English and German. The recent review of lexical studies demonstrates that even studies that have generated widely different five-factor structures have still conformed to these organizing rules.

Table 4. Order of factors in six different languages.

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<th>Italian*</th>
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* From Caprara and Perugini (1994).
A finding of interest, noticed in Hungarian study (1994), was the order of the factors as they emerge from the factor analyses. Taking the American-English order as a reference point, the orders for five languages with Lithuanian have a few things in common (see Table 4). Factors I, II and III most often are among the first three factors extracted (concur with Lithuanian factor II), and with the exception of German, Factors III and V are always among the last three factors extracted (concur with Lithuanian factor III). Lithuanian factors I, II and III represented their selves as solid and clear adjective factors. Lithuanian differs from other languages in the factor order: factors I is the last one, and the factors IV and V are among the first factors extracted. That could be explained with a fact that Emotional Stability is combined with Agreeableness factor and Intellect-Openness are combined from all other factors except Agreeableness. On the questionable assumption that the selection of variables in the different languages has been done in a comparable way, these figures suggest that the different languages differentially emphasize certain trait spheres. According to Saycer et.al.(2005), structures and extent of that trait spheres may differ from one language to another, although there may be similarities among groups of languages with similar linguistic, cultural, or geographic/historical backgrounds.

Conclusions

The study demonstrated that a variant of Big Five factor structure could be obtained from a broad assay of the Lithuanian personality-descriptive lexicon. The emic structure of Lithuanian personality-descriptors does not appear to be much different from that found in other languages and correlated well with BFI factors. The Lithuanian five-factor emic and etic structures have a lot of similarities and moderate correlation between corresponding factors. The results of our study therefore support the view that universal features of the structure of personality can be discovered via the lexical approach. Their was an unambiguous replication in the Lithuanian language of the same five-factors previously obtained in such Indo-European languages as English and German. Evidence for the Big Five factor structure has now been strengthened by its emergence in its clear five-factor version in the oldest Indo-European language- Lithuanian.
References


Appendixes
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Note. N=212. The highest factor loading of each variable is indicated by boldface type. Other loadings of .30 or more are italic type and underlined. Other loadings of .10 or less are excluded. I= Extraversion, II= Agreeableness, III= Conscientiousness, IV= Emotional Stability, V= Openness-Intelect.
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Note. N=212. The projection length $h = a^1\cos(30^\circ) + a^2\cos(60^\circ)$, with $a^1$ and $a^2$ being absolute values of the primary and secondary varimax-rotated factor loadings (loadings above .20 are significant) of the variable, respectively. Variables whose projections are below a threshold of .20 on their segment bisectrix are omitted. Adjectives from Emic and Etic five-factor solutions are indicated by boldface type if they are in the same factor, and are marked by boldface type and underlined if they are in the same AB5C Facet. I= Extraversion, II= Agreeableness, III= Conscientiousness, IV= Emotional Stability, V= Openness-Intellect.