Big Five Factor Model, Theory and Structure

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Abstract

The psycholexical origin of the Big Five model is sketched, theoretical considerations that have guided the development of the model are given, different structural representations are described, critical notions reported, and cross-cultural findings and its usefulness reviewed. The importance of a paradigm for furthering the field is emphasized, and the lexical Big Five factors are compared with the questionnaire-based Five-Factor Model. Also alternative models are reviewed. Moreover, specifications of the Big Five model are described, both in terms of factor facets, and in terms of representation in the form of circular and hierarchical arrangements of personality traits.

Introduction

The 'Big Five' or Five-Factor Model (FFM) is the personality trait model constituted by the five factors or dimensions Extraversion, Agreeableness, Conscientiousness, Emotional Stability, and Intellect or Openness to Experience. This model emerged from applying the principles of the psycholexical approach to personality (De Raad, 2000). That approach theoretically started with the so-called lexical hypothesis, holding that *our common stock of words, our lexicon, embodies the distinctions, men have found worth drawing. Observations of individual differences that people have found of interest, utility, or importance get encoded by words and expressions into the substance of language*. This hypothesis has been expressed in different ways by the personality psychologists Cattell (1943) and Goldberg (1981), and independently by the philosopher of language Austin (1970), the poet and novelist Themerson (1974), and the psycholinguist Miller (1991).

The early success of the Big Five model was caused, among others, by Norman (1963), and by the seminal psycholexical project led by Goldberg (e.g., 1981). This made Costa and McCrae (1992a) add the two factors Agreeableness and Conscientiousness to their own model until then consisting of Neuroticism, Extraversion, and Openness to Experience (NEO): thus, the NEO-PI came into existence to measure the FFM dimensions. A host of new lexical studies in various languages, often supportive of the Big Five model, and the productive work of Costa and McCrae provided the grounds for McCrae and Costa (2008) to build their Five-Factor Theory, and for claiming that the Big Five factors have causal status.

The Importance of Paradigm and Taxonomy in Building Personality Theory

While the Big Five model is now shared in personality psychology (John et al., 2008), it received frequent criticism from perspectives presenting alternative structures (e.g., Ashton and Lee, 2007; Saucier, 2003; Zuckerman et al., 1993) and from studies focusing on cross-cultural replicability of trait factors (De Raad et al., 2010).

For long, personality psychology had been criticized for lack of a paradigm or a shared model. Eysenck (1991) argued that the development of a taxonomy is a prerequisite for furthering any scientific field. John et al. (1988), who defined taxonomy as "a systematic framework for distinguishing, ordering, and naming types and groups within a subject field" (p. 172), compared the importance of a taxonomy in personality with the Linnaean taxonomy that spurred the development of biology as a natural science. Stelmack (1997) paralleled the importance of personality taxonomy with Mendeleev's periodic system of elements in chemistry, stressing the predictive aspects of paradigmatic processes.

The rise of the Big Five model in the early 1990s was applauded as a possible solution regarding the lack of a shared model (Costa and McCrae, 1992a; Goldberg, 1993), yet with stern opposition especially from Eysenck (1992). Now, the Big Five model has secured its place as the dominant model in personality starting in the late 1990s (DeYoung et al., 2007; John et al., 2008). This could be concluded by the sheer number of publications, but, more importantly, by the models' significance in predicting many important life outcomes (Roberts et al., 2007).

Despite the accomplishments in organizing the scattered field of personality, the Big Five was criticized as an atheoretical approach (Block, 2010; Eysenck, 1992). While some claim that the theory underlying the Big Five model is still in development (DeYoung et al., 2010), McCrae and Costa (2008) presented their Five-Factor Theory, aiming to explain the genetic, biological, and causal underpinnings of each dimension. Regardless of the current status of Big Five theory, one can conclude that in just two decades, personality psychology came a long way from a disjointed field to taxonomy building, a shared model, and a prospective personality theory.

The Lexical Hypothesis in the Context of Everyday Differentiation

Everyday conversations relate for a large part to behavior and traits of self or other. Ideas about people are put into words, and when there is lack of words, new words are invented. The practical usage provides feedback on the effectiveness of such

words. Terms like *egoistic*, *aggressive*, or *shy* that have proven useful for their capacity to represent and communicate experiences may end up in the lexical storehouse. The more often a trait or disposition is observed in behavior, the greater the chance that the trait is labeled and that it becomes a communicative commodity.

That lexical archive with its enormous differentiating potential forms the rough material for the construction of a scientifically acceptable medium to describe personality traits. A problem is that everyday language is not a neutral language. The lingual elements that stood the survival test, are loaded in various respects.

Trait words are often contaminated by their context of development and application. For example, the meaning of *devout* and *compassion* is particularly articulated under the influence of Christian values. *Jovial* stems from astrology, *radical* has political connotation, and *neurotic* is from psychology. The extravert was once described as spiritually poor and superficial and the introverted as high and inwardly rich. Now, the introverted is rather the eccentric and individualistic and the extroverted is energetic and sociable. Some words are used only in specific contexts – they are region specific – belong to a certain jargon, or serve a fashionable purpose. As invectives words can become the verbal vitriol with which sometimes reputations are ruined and people are brought to stand apart. So, any effort in exploiting everyday language for scientific purposes needs to show awareness of the fact that many trait words are imbued with contextual information.

The Use of the Dictionary for the Development of a Shared Model of Personality

It took a long time for the scientific study of personality to recognize the value of natural language for the development of a shared model. The psycholexical approach usually involves the use of a dictionary as the tangible representation of the lexicon. The first who pointed to a dictionary as a valid resource was possibly Galton (1884), estimating that roughly 1000 words might be used to describe character. Allport and Odbert (1936) selected all (almost 18 000) personality-relevant words from Webster's unabridged dictionary, 50 years later. Those words were classified into four categories, differing in importance for the description of personality for everyday conversation and differentiation, thus taking into account the contextual issues mentioned above. Those categories were 'Neutral terms designating possible personality traits,' 'temporary moods or activity,' 'evaluations,' and a 'miscellaneous' category. The first group contained most clearly 'real' traits of personality (pp. 24–38).

Block (1995) criticized the ordinary language origin of the trait concepts. Earlier, Costa and McCrae (1992b) and Eysenck (1992) disputed the criteria to arrive at basic dimensions of personality. Much of these disputes relate to personality dimensions found elsewhere in the personality literature, and which were hardly visible in the Big Five framework. Some of those dimensions covered specific areas of interest, such as locus of control (Rotter, 1954) and ego development (Loevinger, 1976); other dimensions were part of alternative multidimensional systems.

John et al. (1988) summarized the main criticisms, including the laypeople origin, the contextual loading, and the additional complication of communicability across languages. Saucier and Goldberg (1996) agreed that the natural language has shortcomings, but they argued that it represents the best approximation of the total population of personality variables. Wiggins (1973) concluded that "we can hardly afford to ignore such a storehouse of accumulated wisdom as a natural starting-point for the study of behavioral attributes" (p. 329). In addition, the lexical approach minimizes a prestructuring of variables according to theorists' preconceptions of personality (Saucier and Goldberg, 1996; De Raad, 2000). Hofstee (2003) argued that one can dispute that ordinary language is not subtle enough for scientific purposes, yet, in studies with questionnaires built on expert language (e.g., Digman and Inouye, 1986), the Big Five were also recovered.

Working on Allport and Odbert's first category, the neutral or 'real' personality traits, including about 4500 terms, Cattell (1943, 1947) built a system with 16 intercorrelated primary factors. None of the later studies using Cattell's variables, however, was successful in replicating that many factors but rather arrived at a much simpler structure with five independent dimensions (see Norman, 1963). Since Norman's (1963) study, those five factors had been referred to as the 'Norman five,' but dubbed the 'Big Five' by Goldberg (1981) in whose work the fifth factor shifted labels from Culture to Intellect (Goldberg, 1993). In the late 1980s and 1990s, the lexically based taxonomy approach was followed in many languages, mainly in Europe, with the replication of the Big Five being most successful in Germanic and Slavic languages (Saucier, 2009).

Intellect or Openness to Experience: A Historical Difference of Opinion

John (1990) observed that there seemed to be no *single* Big Five. Referring to different Big Five studies, the variation in factor naming was striking, with the clearest differences for factor five, referred to as Intellect (or Culture), but also as Openness to Experience (Costa and McCrae, 1985). The Intellect label proceeded from lexical studies, and emphasized 'intellectual' traits such as intelligent and insightful, and Openness to Experience proceeded from a questionnaire approach and emphasized 'open' traits such as imaginative and artistic. The question about the precise meaning of the fifth factor had led to a special issue of the *European Journal of Personality* (De Raad and Van Heck, 1994), showcasing the difference in perspective of the lexical and the questionnaire approach.

The difference of opinion was about what should be considered as important differentiating traits. Costa and McCrae (1985) adopted Openness to Experience from Coan (1974), as the concept that should capture the contents of a cluster of traits in their own work, they had referred to as an Experiential Style dimension. Coan had developed the Openness to Experience scale on the basis of a study using a battery of existing instruments. Coan distinguished various facets for his Openness to Experience scale, and Costa and McCrae (1985) adopted six of those facets for their own purpose. That facet-differentiation for Openness to Experience seemed

to have dictated a similar extension for the other Big Five factors in Costa and McCrae's (1992c) instrument.

Although the difference in perspective between the proponents of the 'lexical Big Five' and the FFM are frequent and sometimes heated, the adoption by Costa and McCrae (1992b) of the two 'lexical' personality dimensions, Agreeableness and Conscientiousness, was incremental in popularizing the Big Five model and it can be construed as a test of its usefulness. The work of Costa and McCrae expanded the five factors from the domain of language and trait-descriptive words to the domain of questionnaires and led to accept the model by more researchers and ultimately formed a step forward to building a theory embedding the Big Five.

The questionnaire origin in Coan's work may be responsible for the expansion of semantics of factor five, in comparison to what the lexical approach had generated. In line of the above critics, McCrae (1990) argued that Openness to Experience is inadequately represented in natural language trait terms. However, Mulder (2006) demonstrated that, in Dutch (De Raad and Barelds, 2008), there is no problem finding a sufficient number of descriptors in the natural language to reliably define both the domain of Openness to Experience and the corresponding six facets.

Interestingly, DeYoung et al. (2009), who used the fMRI in relating working memory with Intellect and Openness, found that Intellect was correlated with working memory accuracy and brain activity, while Openness was not. Moreover, the authors interpreted the neural regions involved in the association between working memory and Intellect as a neural substrate of Intellect.

From Factor Model to Big Five Theory

Regarding the Big Five theoretical status today, there are two groups of thought: one sees that the transition from the Big Five model to theory is still in progress while the other finds that shift has already been achieved. For the Big Five framework to be considered a theory, the first group (e.g., DeYoung, 2010a; John and Naumann, 2010; Srivastava, 2010) specified conditions to be fulfilled, such as an explained evolutionary basis, an account of developmental aspects, an explanation of the underlying psychobiology, a specification of the hierarchy in the system, cross-cultural replicability, and more. The second group (e.g., McCrae, 2010; McCrae and Costa, 2008) postulated the Five-Factor Theory claiming all or most of the conditions above to be answered, with the five dimensions being universal, and with strong biological and genetic bases. Maybe their strongest claim is that traits constituting the five factors are not just descriptive, but represent causal influences that have effects on lives of all persons. The key components of their theory include the five factors as biologically based tendencies, characteristic adaptations covering the developmental aspects and learning experiences, the self-concept as a sort of derivation from the adaptations, and external influences. With the exclusion of the biological bases, these different components are assumed to be connected through dynamic processes.

One major criticism of the theory, as acknowledged by the authors (McCrae, 2010), concerns the dynamic processes that are so prominent in the theory, yet not explained in detail. In order to have a model to be shared by others, more substantial research regarding the major issues has to be undertaken. This has in fact begun in some areas such as personality neuroscience or linking the Big Five with the brain structure (e.g., Adelstein et al., 2011; DeYoung et al., 2010), and in the biology of traits (cf DeYoung, 2010b). Regarding developmental aspects, much research has been done already (cf Mlačić and Milas, in press), as well on the evolutionary basis of the five factors (cf Buss and Hawley, 2010).

The Big Five/FFM Dimensions and Lower-Level Constructs

Just as they were firm in claiming that the Five-Factor Theory is indeed a theory, Costa and McCrae (1992c) claimed that each of the Five Factors consists of exactly six facets, or lower-level constructs, thus forming a set of 30 facets. Openness to Experience, for example, comprises facets of Fantasy, Aesthetics, Feelings, Actions, Ideas and Values.

Contrary to FFM, the work on the lexical Big Five subcomponents or facets was far from being in agreement. The number of facets ranged from only a few to nine per dimension (Goldberg, 2014). Those nine facets came about in the work of Hofstee et al. (1992), generating a total of 45 facet-scales. Peabody and De Raad (2002) analyzed the psycholexical work in six languages and reported six facets for Extraversion, four for both Agreeableness and Conscientiousness, three for Emotional Stability, and five for Intellect. DeYoung et al. (2007) collected data on the 30 facet-scales from Costa and McCrae, and the 45 facets-scales originating in Hofstee et al. (1992), thus producing 15 facet-scales per Big Five factor domain. DeYoung et al. (2007) proposed a two-level hierarchy where the 15 narrower facets make 2 broader facets for each of the Big Five. For Openness to Experience, for example, these findings were roughly in agreement with Griffin and Hesketh (2004) and Mulder (2006), who distinguished a broader facet Openness to internal experiences (poetic, fantasy, and sensitive) and a second broader facet Openness to external experiences (ideas, broad interests).

Apart from such matters of detailing the Big Five domains, the contents of the Big Five factors may well be summarized as follows: Extraversion generally relates to the approach of the individual to the social and material world in an energetic manner (John and Srivastava, 1999). Agreeableness mostly relates to prosocial behavior (Graziano and Eisenberg, 1997). Conscientiousness mostly relates to impulse control and conformity (Hogan and Ones, 1997). Emotional Stability, representing the one pole of a dimension that has Neuroticism as the other pole, is the factor that is omnipresent in psychological research, especially in clinical psychology. De Raad et al. (2010) found that the Emotional Stability/Neuroticism factor appeared relatively weak in cross-cultural lexical studies, which contrasts with its historical prominence. It is possible that Emotional Stability has lesser representation in most natural languages, in comparison to clinical psychology, where its appreciation has led to many nuances of emotional experiences. Finally, the fifth of the Big Five relates to such traits as imagination, fantasy, creativity, and talent (cf Goldberg, 1993; John et al., 2008; Peabody and De Raad, 2002).

Big Five Alternatives

Because of its number of factors, the most obvious alternative for the Big Five seems to be Zuckerman's alternative five-factorial model (e.g., Zuckerman, 2002). This alternative started from the assumption that important traits are assumed to have a biological-evolutionary basis, and it had its origin in studies of temperament and of psychobiological studies. Some other studies with a similar origin are Eysenck's (1967) Giant Three (Extraversion, Neuroticism, and Psychoticism), and Strelau's (1983) Pavlovian theory-based model of temperament.

Assuming the comprehensiveness of the Big Five and their trait semantic coverage, an important question for competing systems is whether they account for more or less the same phenomena. According to Zuckerman (1984) human traits are best studied in comparison to animal behavior and he has made strong efforts in demonstrating that *sensation seeking* is a basic trait underlying both human and animal behavior. In a study using Costa and McCrae's five factors, Eysenck's Giant three, and Zuckerman's five factorial alternative, it turned out that those alternative factors had strong relations to the Big Five, except to Openness to Experience. Hogan (1983), who shares evolutionary elements with Zuckerman's model, combines it in his Socioanalytic theory with elements of interpersonal theory, focusing on interpersonal competence and effectiveness. In a study where seven Hogan Personality Inventory scales were combined with measures of the Big Five, the different measures covered largely the same field of trait semantics (Hogan and Hogan, 2002).

Cloninger (2009) listed 36 often cited, well-known personality theorists, such as James, Freud, Maslow, Kelly, Bandura, and Buss. This historical flock of theorists represent different theoretical perspectives from which many differential dimensions have been generated, such as achievement motivation, field dependence (dealing with information), sensation seeking, dispositional optimism, and locus of control (control over the environment). Some of those topics have faded away, and others were expected or even predicted to disappear from the stage, but reappear sometimes vigorously (cf Pervin, 1990). It is important to understand that the Big Five system does not tell the whole story of personality. It is a comprehensive and differential descriptive system that is understood to form a rich starting point for further specification. Issues, such as change, unconscious processes, and heredity of traits are not contained in the lexical trait vocabularies. Yet trait taxonomy helps to understand semantically the different features of those issues; moreover, empirical research around those issues often make use of instruments based on the Big Five.

Psycholexically Based Models Departing from the Big Five

Lexical Big Five models across languages are far from identical. Especially since Goldberg (1981) talked first of the 'Big Five,' lexical studies in other languages were usually undertaken with the expectation of the Big Five in mind. While names of Big Five factors showed variations on the same themes, explicit diversions occurred with different psycholexical ideas concerning coverage of the trait domain, different procedures in arriving at a full trait-vocabulary, and different cultures or languages.

De Raad and Szirmák (1994) reported on a six-factor trait structure for Hungarian, that included a factor Integrity (*veracious*, *just*, *trustworthy*) beyond the Big Five. A similar factor (called Trustworthiness) was found in Italian by Di Blas and Forzi (1999), and in Korean (Hahn et al., 1999). Ashton et al. (2004) found further support for this factor in French, Dutch, Italian, and Polish and thus proposed Honesty (capturing Integrity and Trustworthiness) to be the Sixth factor of personality. Almagor et al. (1995) untightened the rules of selection of trait terms that aimed to exclude evaluative terms and state terms. Following an unrestricted approach, they demonstrated the possibility of seven broad personality factors that included versions of the Big Five, and two additional factors called Negative Valence (e.g., *dangerous*, *vicious*, *malicious*) and Positive Valence (e.g., *refined*, *noble*, *brilliant*) (cf Benet and Waller, 1995). De Raad and Barelds (2008) virtually exhausted the (Dutch) lexicon using trait-descriptive adjectives, nouns, verbs, adverbs, and standard expressions, thus forming an extremely long list of 2365 trait-descriptive items. Principal Components Analysis yielded an eight-factorial structure in self- and other ratings, that included the Big Five or versions thereof, and three additional factors namely Virtue, Competence, and Hedonism.

In a psycholexical research program in Filipino (Church et al., 1997), seven factors were identified in two studies. Four of the factors were quite comparable to Big Five factors. In addition, Negative Valence was identified, Self-Assurance (most similar to Big Five Neuroticism), and Temperamentalness, which had a complex relation to different Big Five factors. A lexically based structure, most deviating from the Big Five was found in Hindi (Singh et al., 2013), where six factors were identified in self- and peer ratings. Three smaller factors had some relationship with the Big Five Extraversion, Agreeableness, and Conscientiousness. The larger three, however, had complex relations to Big Five factors, but were recognized especially to reflect a conception of personality that dates back far into history, but is still alive in everyday interactions, the so-called *triguna*.

Cross-Cultural Findings

Cross-cultural psychologists have often endorsed the universality of psychological characteristics, as can be seen in cross-cultural studies on dimensions such as achievement motivation, anxiety, and authoritarianism (Church, 2000). Mayer et al. (2011) studied the possibility of universality of personality conceptions in cultural traditions as different as Confucianism, Buddhism, and Judaism. They concluded that judging personality was an important aspect of all those different traditions.

The Big Five model has found cross-cultural support generally in two ways; these two are often linked to the distinction between emic and etic (Berry, 1969). The emic approach in this case aims at finding a trait structure that best summarizes the trait domain of a particular language or culture. Linked to this first approach has been the repeated finding that independent psycholexical studies in various

Western languages led to the Big Five structure. Studies comparing lexical Big Five structures from different languages and leading to the conclusion that the Big Five is replicable across those languages are often done through the analysis of the contents of the structures. Notwithstanding the recurrence of the Big Five, the structure is reproduced better in some languages than in others (Saucier and Goldberg, 2001).

The etic approach is typically followed by constructing a trait system (a questionnaire) in one language, and translate it to and apply it in another language or culture. Studies with the Five Factor Personality Inventory (FFPI; Hendriks et al., 1999) in 13 languages gave evidence of the FFPI to be a reliably and valid measure in a large variety of countries (Hendriks et al., 2003). Similarly, studies with the NEO-PI-R (Costa and McCrae, 1992c) showed replicability of the five factors in most cultures (McCrae et al., 2005). A lesson drawn by Allik et al. (2013) from studies like these was that it is apparently easy to transcend language barriers using such personality instruments. Notwithstanding such excellent cross-cultural findings, criticism has been expressed repeatedly, especially from the side of the cross-cultural methodologists (e.g., Berry et al., 2002). An important issue is that translated instruments tend to be relatively insensitive to detect individual differences of interest in the target language. Ashton and Lee (2001), for example, found that certain FFM-Openness to Experience facets were not well applicable in many Asian samples.

Cheung et al. (2011) proposed an approach that would combine etic and emic into an integrated approach. Such a combined approach can be found in De Raad et al. (2010), who compared 14 independently developed trait structures. For each structure, the starting-point was taken in the lexicon of the pertaining language. The trait terms of that language were used to obtain ratings, and those were factored to arrive at a trait structure meaningful to that language. The 14 taxonomies were pairwise compared, after finding a common part of the factor structures on the basis of acceptable translations of items into the languages of a pair. On average, the results indicated that not five, but rather three factors were well replicable across the languages under study. Beyond the first three factors (with traits that are typical of Extraversion, Agreeableness, and Conscientiousness, respectively) the equivalence of factors across languages tend to divert.

Dimensional, Circular, and Hierarchical Characteristics of the Big Five Model

Studies on the Big Five, but also studies of other trait models, are usually based on analyses that produce orthogonal, or independent factors. That structure is imposed upon the data through the application of the psychometric technique, most typically Principal Components Analysis. The underlying ideal that is pursued is the *simple structure*, in which each trait variable loads substantially on only one factor and the loadings on the other factors are close to zero. In such a conception, the factors are rather narrow in meaning, with high-internal consistency and a rather fixed angular position in the trait space (Hofstee, 2003). A simple conception of Big Five trait factors is thus the representation with five independent dimensions. Although there are trait variables like that, in practice, however, the vast majority of trait variables tend to have substantial loadings on two factors.

Because of the fact that clear and meaningful traits usually load on one or two factors, traits are well represented in two-dimensional arrangements. When all variables from a set of variables that load on a particular pair of factors are located in such a two-dimensional arrangement, using the pair of loading as coordinate values, a circular configuration occurs, called a circumplex (Guttman, 1954). In contrast to a simple structure understanding of traits with narrow meaning, a circular arrangement of traits demonstrates the breadth of semantic coverage through the dispersion of the trait items along the circle (cf Gurtman, 1997). Hofstee et al. (1992) integrated the Big Five model and the circumplex understanding of traits in a comprehensive representation.

Several researchers in the field of personality have emphasized the hierarchical representation (e.g., Cattell, 1947; Eysenck, 1970) with relations among traits running from more abstract to more specific. The behavior 'laughing at jokes' is more specific than 'being lively,' which in turn is more specific than 'Extraversion.' Most typically, hierarchies are studied in two ways, a bottom-up approach and a top-down approach (see Goldberg, 2006). The more traditional ones are the bottom-up hierarchies in which one starts with individual items, which are then clustered into semantic groups; those clusters in turn are clustered into larger groups of traits, until the highest level is reached. The more recently developed top-down approach has been applied in Principal Components analyses of traits, in which structures are considered with one factor or component, two factors, up to a structure with the maximum number of factors considered relevant. The factors from adjacent levels of factor extraction are then correlated yielding the hierarchical configuration (cf De Raad and Szirmák, 1994; Mlačić and Ostendorf, 2005; Zuckerman et al., 1988).

Nomological Network and Practical Usefulness of the Big Five

The Big Five model has led to the development of quite a number of instruments to measure the five dimensions, including the NEO-PI-R and the FFPI. An enormous number of studies have been performed relating the Big Five with other concepts. Of special interest here are the relationships that have been demonstrated between all or some of the Big Five factors and a great variety of criteria. Zeidner (2009), for example, concluded that Conscientiousness and Emotional Stability, and to a lesser extent also Openness to Experience, are predictors of learning and achievement (cf De Raad and Schouwenburg, 1996). Barrick and Mount (1991) studied the relationship of the Big Five factors with job performance. The strongest predictor across a range of occupational groups was Conscientiousness. Maladaptive variants of the Big Five (minus Openness to Experience) are argued to play an important role in relation to abnormal personality (Watson et al., 2008), especially also as a more adequate replacement of the categorical DSM-IV scheme. Roberts et al. (2007) reviewed the role of personality traits as predictors of

important life outcomes. Conscientiousness, Extraversion, and Emotional Stability were found to be related to longevity, and Neuroticism is a strong and consistent predictor of relationship dissatisfaction and divorce.

The availability of the Big Five conceptual system, especially in its integration with the circumplex configuration, forms a fine-grained system that can be used for the purpose of understanding the semantics of other conceptual systems. De Raad and Doddema-Winsemius (1999) used it successfully for the classification of a list of instincts. Kohnstamm et al. (1998) found that virtually all free descriptions of persons in their study could be classified in the Big Five system. Passakos and De Raad (2009) described the traits of the many characters in Homer's Iliad using the Big Five system. Johnson and Ostendorf (1993) used the facet-nuances of the Big Five system to clarify controversies regarding the interpretation of the Big Five Factors.

As described in previous paragraphs, the Big Five conceptual framework has played and still does play an important role in theory building. Digman's (1997) study is a good example where Big Five factors from various studies were factored leading to two higher order factors, which, in turn, permit linkage to various existing theoretical systems in personality (cf DeYoung, 2006). The Big Five as part of a hierarchy of factors enhances the cross-cultural understanding of personality traits (De Raad et al., 2014; DeYoung, 2006).

There is still growing potential for the Big Five as organizer in research and in applied fields. Further research on the separate Big Five factors is needed to sharpen their understanding. Critical approaches to the Big Five may turn existing issues resolved. Especially new psycholexical studies with a model, like the Big Five in mind in many nonexplored languages, may render certain concepts more important in the one culture than in the other. It also leads to new tests of the validity of the Big Five system.

Future Directions

The development of the Big Five model into a possible Big Five theory, outlined above, shows that, after a century of meandering, personality psychology, or at least the trait approach, is close in finding a common stream bed. Although the Big Five model has been criticized both within the lexical approach and from other competing approaches, and alternatives were offered, it was successful in surviving as a shared model in personality psychology for more than two decades. That kind of a consensus was rare in the last 100 years since personality psychology emerged as a scientific discipline. The Big Five successfully organized a scattered field pointed to the natural language as a source for the total space of personality variables, generated numerous publications and was linked to many important outcomes. The Big Five model was adopted by researchers and theorists, not just from the trait approach, and was proven nomologically and practically useful.

However, to be considered a theory in the full sense of the word, there are many bridges the Big Five has to cross. The most important pertain to the various levels of the hierarchy and to the consensus on facets and higher order factors, to longitudinal studies of personality in a life cycle perspective, to the brain-behavior connection, to the link between personality dynamics, traits and outcomes, etc. Last, but not least, since the Big Five is mostly the product of the Westernized world, future research should make an important step in conducting the large-scale studies in other cultures before reaching the conclusion on the universality of the model and the prospective theory.

See also: Agreeableness; Conscientiousness; Cross-Cultural Psychology; Cultural Psychology; Extraversion; Factor Analysis and Latent Variable Models in Personality Psychology; Five Factor Model of Personality, Assessment of; Five Factor Model of Personality, Universality of; Honesty and Humility; Indigenous Psychology; Neuroticism; Openness to Experience; Personality Assessment: Overview; Personality Assessment; Personality Changes During Adolescence Across Cultures; Personality Differences and Development: Genetic and Environmental Contributions; Personality and Adaptive Behaviors; Personality, Biological Models of; Personality, Evolutionary Models of; Personality, Trait Models of; Personality: Historical and Conceptual Perspectives; Sensation Seeking: Behavioral Expressions and Biosocial Bases.

Bibliography

Adelstein, J.S., Shehzad, Z., Mennes, M., DeYoung, C.G., Zuo, X.-N., Kelly, C., Margulies, D.S., Bloomfield, A., Gray, J.R., Castellanos, F.X., Milham, M.P., 2011. Personality is reflected in the brain's intrinsic functional architecture. PLoS ONE 6, e27633.

Allik, J., Realo, A., McCrae, R.R., 2013. Universality of the five-factor model of personality. In: Widiger, T.A., Costa Jr., (Eds.), Personality Disorders and the Five-Factor Model of Personality. American Psychological Association, pp. 61–74.

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

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

Ashton, M.C., Lee, K., 2001. A theoretical basis for the major dimensions of personality. European Journal of Personality 15, 327–353.

Ashton, M.C., Lee, K., 2007. Empirical, theoretical, and practical advantages of the HEXACO model of personality structure. Personality and Social Psychology Review 11, 150–166.

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

Austin, J.L., 1970. Philosophical Papers. Oxford University Press, London.

Barrick, M.R., Mount, M.K., 1991. The Big Five personality dimensions and job performance: a meta-analysis. Personnel Psychology 44, 1–26.

Benet, V., Waller, N.G., 1995. The Big Seven factor model of personality description: evidence for its cross-cultural generality in a Spanish sample. Journal of Personality and Social Psychology 69, 701–718.

Berry, J.W., 1969. On cross-cultural comparability. International Journal of Psychology 119–128.

Berry, J.W., Poortinga, Y.H., Segall, M.H., Dasen, P.R., 2002. Cross-cultural Psychology: Research and Applications. Cambridge University Press, New York.

Block, J., 1995. A contrarian view of the five-factor approach to personality description. Psychological Bulletin 117, 187–215.

Block, J., 2010. The five factor framing of personality and beyond: some ruminations. Psychological Inquiry 21, 2–25.

Buss, D.M., Hawley, P.H., 2010. The Evolution of Personality and Individual Differences. Oxford University Press, New York.

Cattell, R.B., 1943. The description of personality: basic traits resolved into clusters. Journal of Abnormal and Social Psychology 38, 476–507.

Cattell, R.B., 1947. Confirmation and clarification of primary personality factors. Psychometrika 12, 197–220.
Cheung, F.M., Van de Vijver, F.J.R., Leong, F.T.L., 2011. Toward a new approach to the study of personality. American Psychologist 66, 593–603.
Church, A.T., 2000. Culture and personality: towards an integrated cultural trait psychology. Journal of Personality 68, 651–703.
Church, A.T., Reyes, J.A.S., Katigbak, M.S., Grimm, S.D., 1997. Filipino personality structure and the Big Five Model: a lexical approach. Journal of Personality 65, 477–528.
Cloninger, S., 2009. Conceptual issues in personality theory. In: Corr, P.J., Matthews, G. (Eds.), The Cambridge Handbook of Personality Psychology. Cambridge University Press, Cambridge, pp. 3–26.
Coan, R.W., 1974. The Optimal Personality. Columbia University Press.
Costa Jr., P.T., McCrae, R.R., 1985. The NEO Personality Inventory Manual. Psychological Assessment Resources, Odessa, Fl.
Costa Jr., P.T., McCrae, R.R., 1992a. Normal personality assessment in clinical practice: the NEO personality inventory. Psychological Assessment 4, 5–1 3.
Costa Jr., P.T., McCrae, R.R., 1992b. Four ways five factors are basic. Personality and Individual Differences 13, 653–665.
Costa Jr., P.T., McCrae, R.R., 1992c. Revised NEO Personality Inventory (NEO-PI-R) and NEO Five-Factor Inventory (NEO-FFI) Professional Manual. Psychological Assessment Resources, Odessa, Fl.
De Raad, B., 2000. The Big Five Personality Factors: The Psycholexical Approach to Personality. Hogrefe & Huber Publishers, Göttingen.
De Raad, B., Barelds, D.P.H., 2008. A new taxonomy of Dutch personality traits base on a comprehensive and unrestricted list of descriptors. Journal of Personality and Social Psychology 94, 347–364.
De Raad, B., Doddema-Winsemius, M., 1999. Instincts and personality. Personality and Individual Differences 27, 293–305.
De Raad, B., Szirmák, Z., 1994. The search for the "Big Five" in a non-Indo-European language: the Hungarian trait structure and its relationship to the *EPQ* and the. PTS. European Review of Applied Psychology 44, 17–24.
De Raad, B., Van Heck, G.L. (Eds.), 1994. The fifth of the Big Five. European Journal of Personality, vol. 8 (special issue).
De Raad, B., Barelds, D.P.H., Levert, E., Ostendorf, F., Mlačić, B., Di Blas, L., et al., 2010. Only three factors of personality description are fully replicable across languages: a comparison of 14 trait taxonomies. Journal of Personality and Social Psychology 98, 160–173.
De Raad, B., Barelds, D.P.H., Timmerman, M.E., De Roover, K., Mlacic, B., Church, A.T., 2014. Towards a pan-cultural personality structure: input from 11 psycho-lexical studies. European Journal of Personality 28, 497–510.
De Raad, B., Schouwenburg, H.C., 1996. Personality in learning and education: a review. European Journal of Personality 10, 303–336.
DeYoung, C.G., 2006. Higher-order factors of the Big Five in a multi-informant sample. Journal of Personality and Social Psychology 91, 1138–1151.
DeYoung, C.G., 2010a. Toward a theory of the Big Five. Psychological Inquiry 21, 26–33.
DeYoung, C.G., 2010b. Personality neuroscience and the biology of traits. Social and Personality Psychology Compass 4, 1165–1180.
DeYoung, C.G., Quilty, L.C., Peterson, J.B., 2007. Between facets and domains: 10 aspects of the Big Five. Journal of Personality and Social Psychology 93, 880–896.
DeYoung, C.G., Shamosh, N.A., Green, A.E., Braver, T.S., Gray, J.R., 2009. Intellect as distinct from openness: differences revealed by fMRI of working memory. Journal of Personality and Social Psychology 97, 883–892.
DeYoung, C.G., Hirsh, J.B., Shane, M.S., Papademetris, X., Rajeevan, N., Gray, J.R., 2010. Testing predictions from personality neuroscience: brain structure and the Big Five. Psychological Science 21, 820–828.
Di Blas, L., Forzi, M., 1999. Refining a descriptive structure of personality attributes in the Italian language: the abridged Big Three circumplex structure. Journal of Personality and Social Psychology 76, 451–481.
Digman, J.M., 1997. Higher-order factors of the Big Five. Journal of Personality and Social Psychology 73, 1246–1256.
Digman, J.M., Inouye, J., 1986. Further specification of the five robust factors of personality. Journal of Personality and Social Psychology 50, 116–123.
Eysenck, H.J., 1967. The Biological Basis of Personality. Charles C. Thomas, Springfield, Il.
Eysenck, H.J., 1970. The Structure of Human Personality, third ed. Methuen, London.
Eysenck, H.J., 1991. Dimensions of personality. 16, 5 or 3? – criteria for a taxonomic paradigm. Personality and Individual Differences 12, 773–790.
Eysenck, H.J., 1992. Four ways five factors are not basic. Personality and Individual Differences 13, 667–673.
Galton, F., 1884. Measurement of character. Fortnightly Review 36, 179–185.
Goldberg, L.R., 1981. Language and individual differences. The search for universals in personality lexicons. In: Wheeler, L. (Ed.), Review of Personality and Social Psychology, vol. 2. Sage Publications, Beverly Hills, CA, str. 141–165.
Goldberg, L.R., 1990. An alternative "description of personality". The Big-Five factor structure. Journal of Personality and Social Psychology 59, 1216–1229.
Goldberg, L.R., 1993. The structure of phenotypic personality traits. American Psychologist 48, 26–34.
Goldberg, L.R., 2006. Doing it all bass-ackwards: the development of hierarchical factor structures from the top down. Journal of Research in Personality 40, 347–358.
Goldberg, L.R., 2014. International Personality Item Pool: A Scientific Collaboratory for the Development of Advanced Measures of Personality Traits and Other Individual Differences. http://ipip.ori.org/. Internet Web Site (accessed 18.02.14.).
Graziano, W.G., Eisenberg, N., 1997. Agreeableness: a dimension of personality. In: Hogan, R., Johnson, J.A., Briggs, S.R. (Eds.), Handbook of Personality Psychology. Academic Press, San Diego, pp. 795–824.
Griffin, B., Hesketh, B., 2004. Why openness to experience is not a good predictor of job performance. International Journal of Selection and Assessment 12, 243–251.
Gurtman, M.B., 1997. Studying personality traits: the circular way. In: Plutchik, R., Conte, H.R. (Eds.), Circumplex Models of Personality and Emotions, Washington, DC, pp. 81–102.
Guttman, L., 1954. A new approach to factor analysis: the radex. In: Lazarsfeld, P.F. (Ed.), Mathematical Thinking in the Social Sciences. Free Pres, Glencoe, IL, pp. 258–348.
Hahn, D.-W., Lee, K., Ashton, M.C., 1999. A factor analysis of the most frequently used Korean personality trait adjectives. European Journal of Personality 13, 261–282.
Hendriks, A.A.J., Perugini, M., Angleitner, A., et al., 2003. The five-factor personality inventory: cross-cultural generalizability across 13 countries. European Journal of Personality 17, 347–373.
Hendriks, A.A.J., Hofstee, W.K.B., De Raad, B., 1999. The five-factor personality inventory (FFPI). Personality and Individual Differences 27, 307–325.
Hofstee, W.K.B., 2003. Structures of personality traits. In: Millon, T., Lerner, M.J. (Eds.), Handbook of Personality, vol. 5. John Wiley & Sons, Inc, Hoboken, NJ, pp. 231–254.
Hofstee, W.K.B., De Raad, B., Goldberg, L.R., 1992. Integration of the Big Five and circumplex approaches to trait structure. Journal of Personality and Social Psychology 63.
Hogan, R., Hogan, J., 2002. The hogan personality inventory. In: De Raad, B., Perugini, M. (Eds.), Big Five Assessment. Hogrefe & Huber Publishers, Göttingen, pp. 329–351.
Hogan, R., 1983. A socioanalytic theory of personality. In: Page, M.M. (Ed.), 1982 Nebraska Symposium on Motivation. University of Nebraska Press, Lincoln, pp. 55–89.
Hogan, J., Ones, D.S., 1997. Conscientiousness and integrity at work. In: Hogan, R., Johnson, J.A., Briggs, S.R. (Eds.), Handbook of Personality Psychology. Academic Press, San Diego, pp. 849–870.
John, O.P., 1990. The "Big Five" factor taxonomy: dimensions of personality in the natural language and in questionnaires. In: Pervin, L.A. (Ed.), Handbook of Personality: Theory and Research. The Guilford University Press, New York, pp. 66–100.
John, O.P., Angleitner, A., Ostendorf, F., 1988. The lexical approach to personality. A historical review of trait taxonomic research. European Journal of Personality 2, 171–203.
John, O.P., Naumann, L.P., 2010. Surviving two critiques by block? The resilient Big Five have emerged as the paradigm for personality trait psychology. Psychological Inquiry 21, 44–49.
John, O.P., Naumann, L.P., Soto, C.J., 2008. Paradigm shift to the integrative Big Five trait taxonomy: history: measurement, and conceptual issues. In: John, O.P., Robins, R.W., Pervin, L.A. (Eds.), Handbook of Personality: Theory and Research. Guilford Press, New York, pp. 114–158.
John, O.P., Srivastava, S., 1999. The Big Five trait taxonomy: history, measurement, and theoretical perspectives. In: Pervin, L.A., John, O.P. (Eds.), Handbook of Personality Psychology: Theory and Research, second ed. Guilford Press, New York, pp. 102–138.
Johnson, J.A., Ostendorf, F., 1993. Clarification of the five-factor model with the abridged big five dimensional circumplex. Journal of Personality and Social Psychology 65, 563–576.
Kohnstamm, G.A., Halverson Jr., C.F., Mervielde, I., Havill, V.L., 1998. Analyzing parental free descriptions of child personality. In: Kohnstamm, G.A., Halverson Jr., C.F., Mervield, I., Havill, V.L. (Eds.), Parental Descriptions of Child Personality: Developmental Antecedents of the Big Five? Erlbaum, Mahwah, NJ, pp. 1–9.

Loevinger, J., 1976. Ego Development. Jossey-Bass, San Francisco.
Mayer, J.D., Lin, S.C., Korogodsky, M., 2011. Exploring the universality of personality judgments: evidence from the great transformation (1000 BCE-200 BCE). Review of General Psychology 15, 65–76.
McCrae, R.R., 1990. How well is openness represented in natural languages? European Journal of Personality 4, 119–129.
McCrae, R.R., 2010. The place of the FFM in personality psychology. Psychological Inquiry 21, 57–64.
McCrae, R.R., Costa Jr., P.T., 2008. The five-factor theory of personality. In: John, O.P., Robins, R.W., Pervin, L.A. (Eds.), Handbook of Personality: Theory and Research. Guilford, New York, pp. 159–181.
McCrae, R.R., Terracciano, A., et al., 2005. Universal features of personality traits from the observer's perspective: data from 50 cultures. Journal of Personality and Social Psychology 88, 547–561.
Miller, G.A., 1991. The Science of Words. Scientific American Library, New York.
Mlačić, B., Milas, G. Personality changes during adolescence and cultural variations. In: Wright, J.D. (Ed.), The International Encyclopedia of Social and Behavioral Sciences, second ed. Elsevier, Oxford, in press.
Mlačić, B., Ostendorf, F., 2005. Taxonomy and structure of Croatian personality-descriptive adjectives. European Journal of Personality 19, 117–152.
Mulder, B.F., 2006. Openheid Voor Ervaringen, Lexical Benaderd (Openness to Experience, Lexically Approached). thesis. University of Groningen.
Norman, W.T., 1963. Toward an adequate taxonomy of personality attributes. Replicated factor structure in peer nomination personality ratings. Journal of Abnormal and Social Psychology 66 (6), 574–583.
Passakos, C.G., De Raad, B., 2009. Ancient personality: trait attributions to characters in Homer's Iliad. Ancient Narrative 7, 75–95.
Peabody, D., De Raad, B., 2002. The substantive nature of psycholexical personality factors: a comparison across languages. Journal of Personality and Social Psychology 83, 983–997.
Pervin, L.A., 1990. A brief history of modern personality theory. In: Pervin, L.A. (Ed.), Handbook of Personality: Theory and Research. The Guilford Press, New York, pp. 3–18.
Roberts, B.W., Kuncel, N.R., Shiner, R., Caspi, A., Goldberg, L.R., 2007. The power of personality: the comparative validity of personality traits, socioeconomic status, and cognitive ability for predicting important life outcomes. Perspectives on Psychological Science 2, 313–345.
Rotter, J.B., 1954. Social Learning and Clinical Psychology. Prentice-Hall.
Saucier, G., 2003. An alternative multi-language structure for personality attributes. European Journal of Personality 17, 179–205.
Saucier, G., 2009. What are the most important dimensions of personality? Evidence from studies of descriptors in diverse languages. Social and Personality Psychology Compass 3 (4), 620–637.
Saucier, G., Goldberg, L.R., 2001. Lexical studies of indigenous personality factors: premises, products, and prospects. Journal of Personality 69, 847–879.
Saucier, G., Goldberg, L.R., 1996. The language of personality: lexical perspectives on the five-factor model. In: Wiggins, J.S. (Ed.), The Five-Factor Model of Personality. Theoretical Perspectives. The Guilford Press, New York, London, pp. 21–50.
Singh, J.K., Misra, G., De Raad, B., 2013. Personality structure in the trait lexicon of Hindi, a major language spoken in India. European Journal of Personality 27, 605–620.
Srivastava, S., 2010. The five-factor model describes the structure of social perceptions. Psychological Inquiry 21, 69–75.
Stelmack, R.M., 1997. Toward a paradigm in personality. Comments on Eysenck's view. Journal of Personality and Social Psychology 73 (6), 1238–1241.
Strelau, J., 1983. Temperament-Personality-Activity. Academic Press, London.
Themerson, S., 1974. Logic, Labels, and Flesh. Gaberbocchus, London.
Watson, D., Clark, L.A., Chmielewski, M., 2008. Structures of personality and their relevance to psychopathology: II. Further articulation of a comprehensive unified trait structure. Journal of Personality 76, 1545–1585.
Wiggins, J.S., 1973. Personality and Prediction: Principles of Personality Assessment. Addison-Wesley, Reading, MA.
Zeidner, M., 2009. Personality in educational psychology. In: Corr, P.J., Matthews, G. (Eds.), The Cambridge Handbook of Personality Psychology. Cambridge University Press, Cambridge, UK, pp. 733–747.
Zuckerman, M., 1984. Sensation seeking: a comparative approach to a human trait. Behavioral and Brain Sciences 7, 413–471.
Zuckerman, M., 2002. Zuckerman-Kuhlman personality questionnaire (ZKPQ): an alternative five-factorial model. In: De Raad, B., Perugini, M. (Eds.), Big Five Assessment. Hogrefe & Huber Publishers, Goettingen, pp. 377–396.
Zuckerman, M., Kuhlman, D.M., Camac, C., 1988. What lies beyond E and N? Factor analyses of scales believed to measure basic dimensions of personality. Journal of Personality and Social Psychology 54, 96–107.
Zuckerman, M., Kuhlman, D.M., Joireman, J., Teta, P., Kraft, M., 1993. A comparison of three structural models of personality: the Big Three, the Big Five, and the alternative five. Journal of Personality and Social Psychology 65, 757–768.