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THE CIRCULAR MODEL OF PERSONALITY TRAITS STRUCTURE IN LEWIS GOLDBERG'S PROPOSAL[1]

Abstract

The Five-Factor Model (FFM) of personality (Digman, 1990) is one of the most prominent taxonomies of traits. Many empirical studies supporting FFM led McCrae (2009) to the comparison of FFM to the physics of personality. However, researchers have faced some problems in relation to FFM, both theoretical and methodological. The main reason of those problems could refer to the organization of lower-level personality traits. FFM assumes the hierarchical structure of traits. It means that all five basic personality dimensions have their own facets, independent from each other. The Abridged Big Five-Dimensional Circumplex (AB5C) proposed by Hofstee, de Raad, and Goldberg (1992) is a competitive model describing the personality traits structure as circularly organized. Lower-level traits are characterized by loadings on a subset of two from five factors in AB5C model. Each pair of the Big Five factors shape a circumplex that incorporates facets (lower-level traits). In this way, AB5C model consists of 10 twodimensional circumplexes that could be treated – in a metaphoric language – as a kind of "periodic table" of personality traits (Hofstee, de Raad, & Goldberg, 1992). The article presents the main assumptions of AB5C model operationalized by IPIP-45AB5C questionnaire, with the emphasis on differences between hierarchical and circular models of personality traits structure.

Keywords: hierarchical and circular organization of facets

1. BIG FIVE PERSONALITY TRAITS

The Five-Factor Model (FFM) of personality is currently the dominant recognition of basic dimensions of personality. The number of studies verifying FFM led McCrae (2009) to compare this model to universal physics of personality. Despite its universality, however, FFM raises many doubts among many personality researchers. Criticism is formulated from various theoretical and methodological positions (cf. Borsboom, 2006; Jarmuż, 1994; Oleś, 2000; Strelau, 2002b, 2006; Szarota, 2008; Zawadzki, 2008; Zawadzki, Strelau, Szczepaniak, & Śliwińska, 1998). One of the main areas of dispute is the number and structure of distinguished personality factors. While in the 1990s the discussion between the supporters of the Big Five and the Eysenck's Giant Three (Costa & McCrae, 1992a, 1992b; Eysenck, 1991, 1992) was the loudest one, in recent years proposals have been formulated to increase the number of dimensions to six (HEXACO model, Ashton & Lee, 2007; cf. Szarota, 2008; Szarota, Ashton, & Lee, 2007), or, on the contrary, to reduce them to two higher-order traits (Alpha and Beta, Digman, 1997; or Stability and Plasticity, DeYoung, 2006) or even to one general personality factors (GFP – General Factor of Personality; Musek, 2007; Rushton, Bons, & Hur, 2008; Rushton & Irving, 2009). This article is a presentation of the personality model, which is competitive in relation to Costa and McCrae's FFM in a different way. This model accepts the assumption about five basic traits and does not offer to reduce them, however, it differently understood the lower-order organisation of personality traits, i.e., the structure of facets that constitute or are manifestations of these five basic dimensions. This model is the Abridged Big Five-Dimensional Circumplex (AB5C) of Hofstee et al. (1992). The AB5C model has several variants, as discussed below. In our presentation of the model we focus on Goldberg's version (1999).

Even though the terms *Big Five* and *Five Factor Model* are used interchangeably today, they stem from two different research traditions. The former refers to lexical traction, the latter to the psychometric approach (de Raad & Perugini, 2002; John & Srivastava, 1999; cf. Siuta, 2006; Siuta & Beauvale, 2008; Strelau, 2002b, 2006; Zawadzki et al., 1998). From both these traditions emerges a relatively consistent picture – these five basic dimensions of personality are: Extraversion, Agreeableness, Conscientiousness, Emotional stability (vs. Neuroticism), Intellect or Openness to experience (cf. de Raad & Perugini, 2002; Digman, 1990; Goldberg, 1990; John, 1990; McCrae & Costa, 2005). At present, the term Big Five is usually used in a more general sense and refers to the above-mentioned basic personality traits. It is worth adding that the term Big Five was introduced by Goldberg (1981; cf. Strelau, 2002b; 2006; Szarota, 1995) within a lexical approach. In turn, the concept of Five Factor Model of personality is a term that implies a construct of lower-order traits. Usually, in a specific mental shortcut, FFM means a hierarchical (or simple) organization of lower-order traits (Barbaranelli & Caprara, 2002; DeYoung, Quilty, & Peterson, 2007; McCrae & Costa, 2005; Siuta, 2006).

The five above-mentioned traits will be called *basic traits* or *basic dimensions of personality*. The concept of a *trait* is juxtaposed with an additional term to increase precision and distinguish it from traits at other levels of personality structure – lower and higher. A descriptive term *higher-order trait* will be used to determine a higher level of personality structure. Traits with a lower personality level will be called *lower-order traits* or *facets*. Table 1 shows the concepts we offer and use.

Table 1

Terms used to describe different orders of organisation for personality traits

Lower-order traits	Basic traits	Higher-order traits
aspects (facets);	basic dimensions;	meta-dimensions;
lower-order factors; (e.g., gregariousness, dutifulness)	basic factors; (Big Five, e.g., extraversion)	higher-order factors (e.g., alpha, beta)

We have decided to introduce the term *aspekt* in Polish version, although in Polish literature the English word *facet* was also translated as *składnik* (eng. 'Component'; Siuta, 2006, 2009; Zawadzki et al., 1998). Although in Costa and McCrae's hierarchical model both the term *component* and *facet* seem to be equally appropriate, the term *component* is not appropriate in a circumplex model. As the word *facet* is used in the English literature to describe both models, we decided consistently to translate it as *aspekt* when describing both models.

The word *component* is synonymous with the word *fragment*. It implies some sort of additive structure, in which the subsequent, separate *components* make up a larger whole. The word *facet*, on the other hand, suggests that a given object should be presented from different perspectives, in different variants. In addition, the term *facet* can also be understood as a *manifestation*, and this in turn corresponds well with the understanding of lower-order traits as manifestations of the basic ones. In empirical verification of the theoretical model, the component model is a rather *formative* model, while the aspective model is closer to the *reflective* one according to the distinction made by Bollen and Lennox (1991), which is a generally accepted measurement model in psychology.

The term *factor* will appear as a synonym for the word *trait*. It is a term related to the context (inherent for the Big Five model) of empirical verifications carried out by means of factor analysis (exploratory and then confirmatory). We will therefore use it primarily when the analyses concern the context of statistical verification of personality trait models or when this context is particularly relevant. The *confirmatory factor analysis* (CFA) also uses the term *second-order factor*, which is a technical term for the level of latent variables created by other latent variables. The term *second-order factor* may therefore refer to the level of basic factors (where latent variables are lower-order factors) or higher-order factors (where latent variables are basic factors).

2. HIERARCHICAL MODEL OF PERSONALITY TRAITS STRUCTURE

In accordance with the hierarchical Five Factor Model, each of five basic personality factors has its own lower-order factors, independent of other basic factors. These relations are presented in Figure 1.
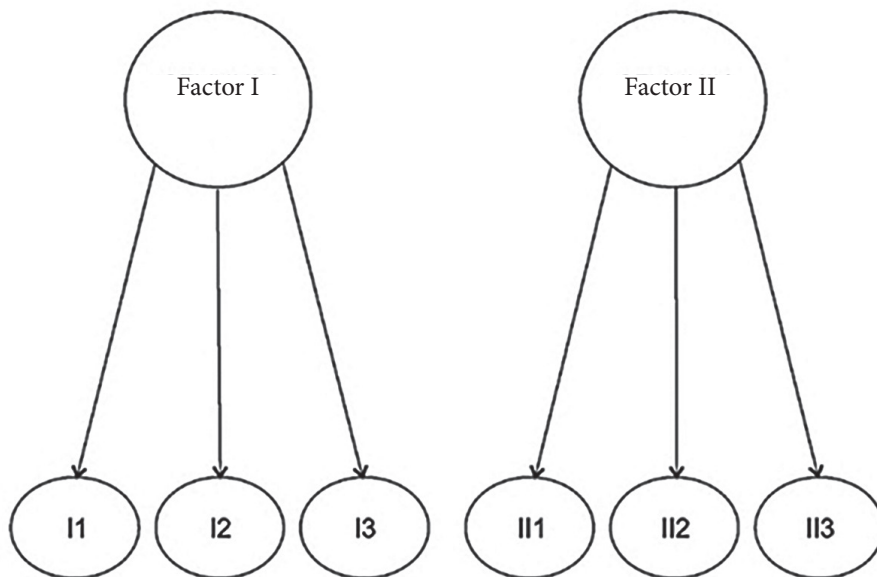
Figure 1. Diagram of a hierarchical model of organisation of personality traits.

The most popular version of FFM today is McCrae and Costa's one (2005). They assume the existence of 30 *facets*, six for each basic factor. The NEO Personality Inventory Revised (NEO-PI-R) is used to measure them. The test of Costa and McCrae's FFM hierarchical model is therefore a test of the NEO-PI-R measurement model. The basic traits and their constituent lower-order traits are listed in Table 2.

Table 2
Facets of the five basic personality factors in the FFM model by Costa and McCrae (2005)

Factor	Symbol	Lower-order traits
Neuroticism	N1	Anxiety
	N2	Angry Hostility
	N3	Depression
	N4	Self-Consciousness
	N5	Impulsiveness
	N6	Vulnerability
Extraversion	E1	Warmth
	E2	Gregariousness
	E3	Assertiveness
	E4	Activity
	E5	Excitement-Seeking
	E6	Positive Emotion

Factor	Symbol	Lower-order traits
Openness to experience	O1	Fantasy
	O2	Aesthetics
	O3	Feelings
	O4	Actions
	O5	Ideas
	O6	Values
Agreeableness	A1	Trust
	A2	Straightforwardness
	A3	Altruism
	A4	Compliance
	A5	Modesty
	A6	Tender-Mindedness
Conscientiousness	C1	Competence
	C2	Order
	C3	Dutifulness
	C4	Achievement Striving
	C5	Self-Discipline
	C6	Deliberation

Note. Polish translation of the facets' names according to Zawadzki et al., 1998; Siuta, 2006.

In this view, each of the basic traits, i.e., Neuroticism, Extraversion, Openness to experience, Agreeableness and Conscientiousness is specific averaging of *their* six lower-order traits. Such a structure would be extremely elegant in its simplicity if it were confirmed empirically.

The hierarchical model is a model that can be tested by a second-order confirmatory factor analysis. In this analysis: (1) NEO-PI-R items are observable variables; (2) 30 lower-order traits are latent variables; (3) five basic factors are latent variables – second-order factors formed by 30 latent variables (lower-order factors). Figure 2 presents a fragment of the NEO-PI-R measurement model.
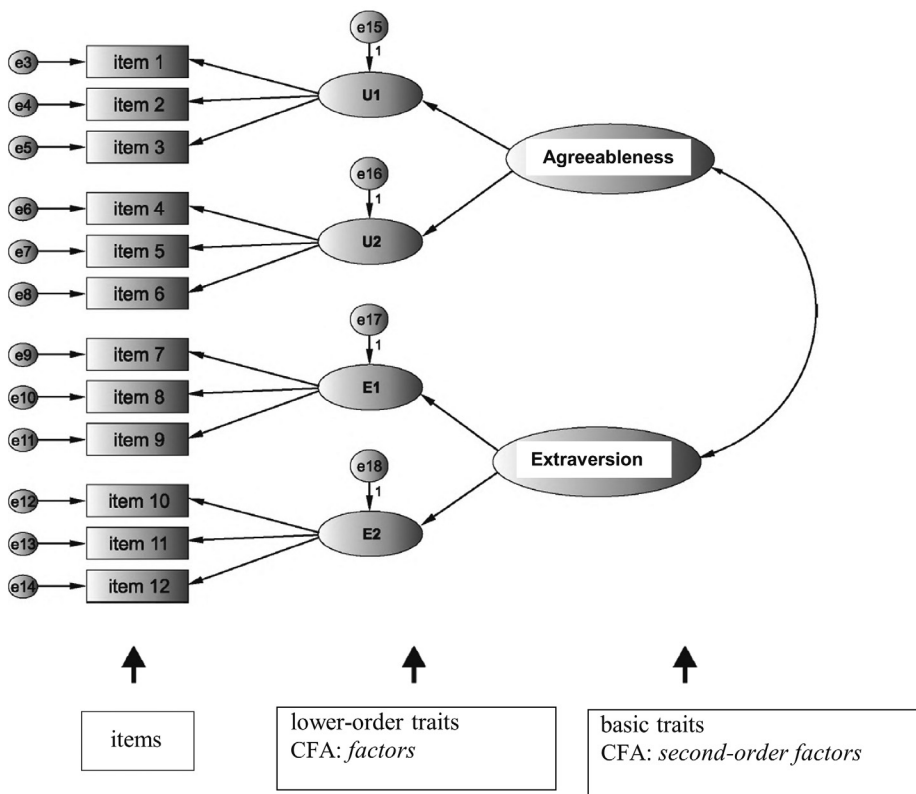
Figure 2. Fragment of a measurement and hierarchical model of personality traits (a second-order confirmatory factor analysis).

Figure 2 includes only: (1) two basic factors (there are five in the FFM); (2) each of them is made up of two lower-order factors (in the FFM, each factor is made up of six lower-order factors); (3) each of the lower-order factors is made up of three items (in NEO-PI-R, it is made up of eight items).

The research shows that the assumption of hierarchy of the structure of traits can rarely be considered as satisfactorily fulfilled. The main problem are cross-loadings of *lower-order traits*. Many of them have high loadings in more than one (own) basic factor. This leads to significant correlations of certain basic factors (cf. e.g., de Raad, 1998; DeYoung et al., 2007; McCrae & Costa, 2005; McCrae, Zonderman, Costa, Bond, & Paunonen, 1996; Siuta, 2006).

Cross-loadings in the FFM factor analysis are a problem because they contradict the hierarchical structure of the model. However, different conceptualisation of lower--order traits in a different model of their structure treats cross-loadings as one of theoretically justified rules that precisely describe the organisation of traits at a lower level of personality structure.

3. Circumplex Model of Personality Traits Structure

Cross-loadings are treated as a principle of circular organization of personality traits (cf. Peabody & Goldberg, 1989; Wiggins, 1979), provided, obviously, that their arrangement is precisely defined by the theoretical model. In the Abridged Big Five-Dimensional Circumplex (AB5C) model by Hofstee et al. (1992), the lower-order traits are characterised as being dependent on two out of five basic factors. Basically, however, it could be assumed that they depend on all five factors. Nevertheless, this model would be extremely complicated, which is why Hofstee et al. (1992) proposed an *abridged* model of the dependences of lower-order traits on only two basic dimensions. The authors call their model using the abbreviation AB5C, in which the first letter A means that it is an *abridged* model; B5 means a Big Five model; C means a *circumplex* model.

Faithful to the original, Polish translation of the AB5C model name is quite troublesome. In the Polish literature, Strelau (2002b, 2006) used the phrase *skrócona, pięciowymiarowo-kołowa taksonomia osobowości* to translate *Abridged Big Five-Dimensional Circumplex*. However, we finally decided to use a different term, less literal, but reflecting the essence of the model – *Kołowy Model Wielkiej Piątki* (Big Five Circumplex Model), or use the abbreviation proposed by the authors – AB5C.

The dependence of the lower-order traits on two basic factors is shown in Figure 3.
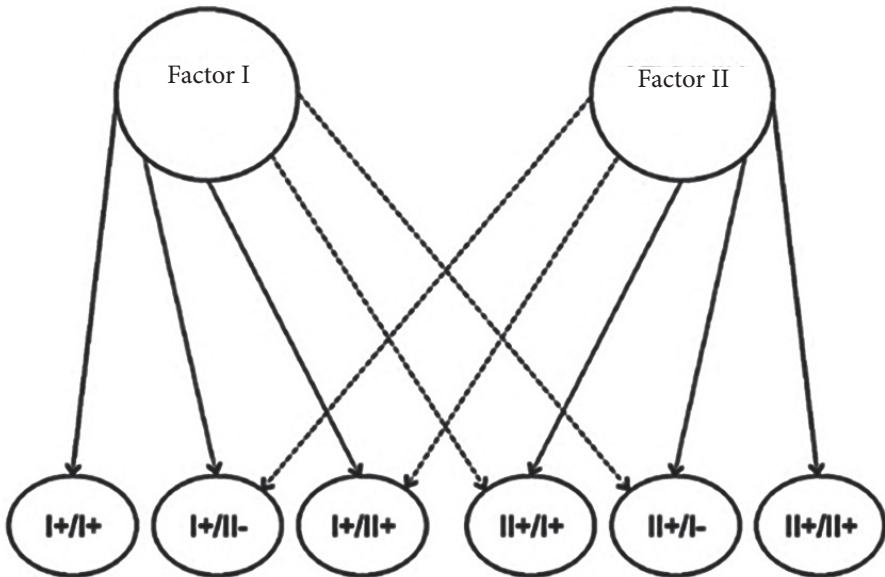

Figure 3. Diagram of a circumplex model of organisation of personality traits.

This approach to the relationships between the lower-order factors, as well as between lower-order factors and basic ones, makes it possible to distinguish the titular circumplexes, each of which is a two-dimensional space determined by two orthogonal Big Five factors, as shown in Figure 4.
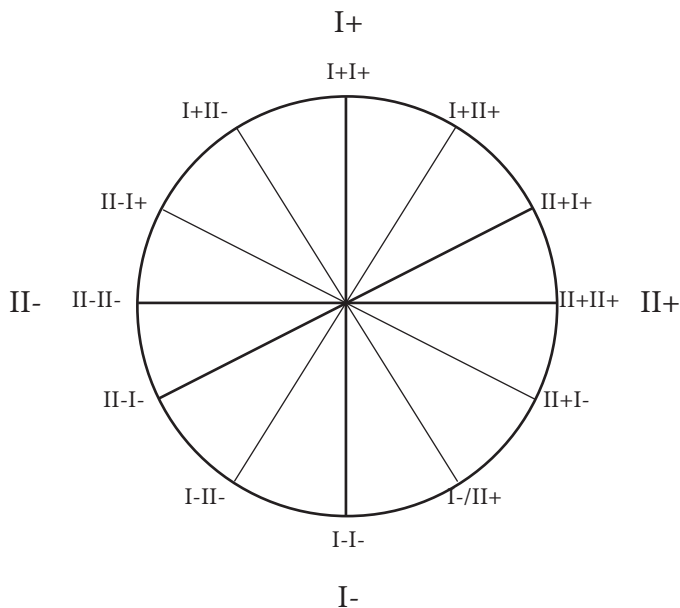
Figure 4. Circular organization of lower-order traits – the example of the circumplex formed by basic factors: I and II.

Thus, the AB5C model assumes that at the lower level of the trait organization there are systematic links both between the facets and between them and the basic five factors. Hence, Hofstee et al. (1992) integrated the five-factor model and the circumplex model (Wiggins, 1979) of personality traits.

The AB5C model derives from the lexical tradition, and the main assumption concerning the circularity of the lower-order traits structure is a fundamental difference in relation to the competitive hierarchical FFM. In the AB5C model, each of the five basic factors has nine facets. In each of the nine facets of a given factor, one is independent from other factors (the so-called *core facet*), while the remaining eight ones are dependent on a positive or negative pole of another factor. There are 45 facets in total, including five *core* ones and 40 linked simultaneously to two basic factors – so called *blend* facets. However, it should be remembered that the given numbers are valid under the assumption that facets have the nature of bipolar traits. There would be twice as many unipolar facets.

The AB5C model is detailed in 10 circumplexes, which covers the number of possible combinations of trait pairs out of the five basic ones. Each of the two basic factors in a given circumplex is represented by:

1) its core facet (in Figure 4 these are traits marked I+I+ vs. I-I- and II+II+ vs. II-II-). The core facet can be described either as one bipolar dimension or as two unipolar traits (in Figure 4, the facet I+I+ vs. I-I- can be described as two facets: I+I+ and I-I-; the facet II+II+ vs. II-II- can be described in analogous way);

2) two facets resulting from the relationship with the other factor (of this two). In Figure 4 these are therefore the lower-order traits: I+II+ vs. I-II- (facet of factor I dependent on the positive pole of factor II) and I+II- vs. I-II+ (facet of factor I related to the negative

pole of factor II). Analogously, for the second basic factor these include II+I+ vs. II-I- and II+I- vs. II-I+. If these four lower-order traits are treated as unipolar dimensions, the number of lower-order traits increases twice, as each pole of the bipolar facet can be described as a separate lower-order trait. The facet I+II+ vs. I-II- falls into two facets: I+II+ and I-II-.

A similar procedure can be performed for each facet. It should be added that facets were treated traditionally in the AB5C model as unipolar traits. In turn, the recognition of personality traits as bipolar dimensions is in line with the tradition of the trait theory in personality psychology (cf. e.g., Cattell, 1957; Eysenck, 1990); this approach was also proposed by Goldberg, whose version of the AB5C model is presented below. A fragment of a circumplex model of personality traits is presented in Figure 5.
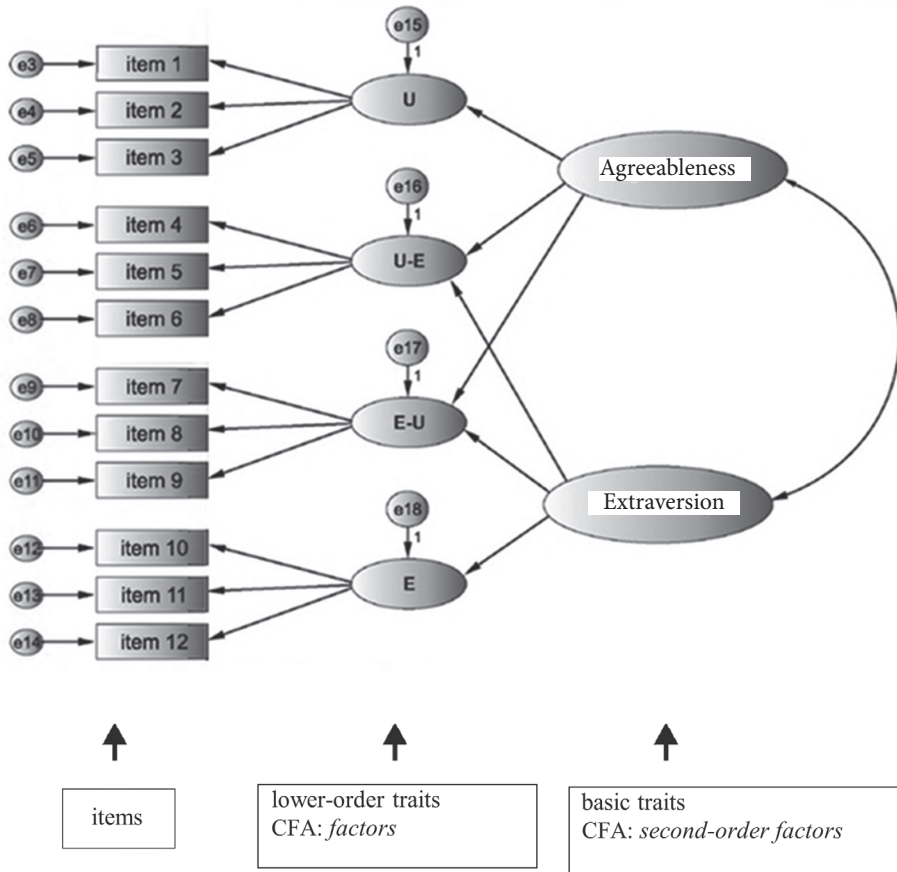

Figure 5. Fragment of a circumplex model of personality traits (a second-order confirmatory factor analysis).

In the measurement model of confirmatory factor analysis (CFA), U and E facets are core ones. The U-E facet is Agreeableness trait with a blend of Extraversion, while the E-U facet is Extraversion trait with a blend of Agreeableness. Two issues should be noted: (1) cross-loadings are not random, but precisely defined by a system of theoretical relations;

(2) cross-loadings are introduced at the level of the relationship between lower-order factors and second-order ones (basic factors). The relations between the observable variables (items) and first (lower) order factors do not change.

The assumptions presented above are immanent properties of the AB5C model. Another situation is in case of the names of particular facets and their psychological meaning. There are at least a few different versions here.

The AB5C model is not a new proposal. It was published in the early 1990s (Hofstee et al., 1992). A verification of the model at the time used lexical material (adjectives). Other research conducted in the early 1990s used the model in terms of a specific interpretation framework for the discrepancies among various versions of the five-factor models and their measurement instruments (Johnson, 1994a, 1994b; Johnson & Ostendorf, 1993). Such clarifying analyses provided empirical support for the AB5C model itself. There were also empirical premises for naming particular facets (cf. also de Raad & Hofstee, 1993). However, the establishment of the facets names was not objective of any research then. As the lexical material (mainly adjectives) still played a key role in these studies, the function of the facet label was then usually fulfilled by adjectives with the highest loading. As a result, the psychological meaning of particular facets changed in various researchers (cf. Backstrom, Larsson, & Maddux, 2009).

Nevertheless, there was still no instrument specifically designed to measure the traits assumed by the AB5C model. It was not until the end of the last century when, together with creation of the International Personality Item Pool (www.ipip.ori.org, Goldberg, 1999; cf. Saucier & Goldberg, 2002; Polish version: www.ipip.uksw.edu.pl), such a tool – IPIP-45AB5C questionnaire – was created (Goldberg, 1999; Goldberg et al., 2006). In a certain sense, this tool integrates psycholexical and questionnaire (psychometric) approaches in the study of basic dimensions of personality and, most importantly, opens new possibilities for verification of the AB5C model (Backstrom et al., 2009), also in Poland. The IPIP-45AB5C questionnaire has recently been adapted to Polish conditions as well (Strus, Cieciuch, & Rowiński, 2011).

In connection with development of the IPIP-45AB5C, Goldberg formulated names for all 45 bipolar facets in the AB5C model, giving them psychological meaning. Thus, he created his own version of the AB5C model. It should be also noted that even before the AB5C model was published, Goldberg had proposed both a hierarchical structure of traits (Goldberg, 1990, 1993) as well as a three-dimensional, *double circumplex* model created by Extraversion, Agreeableness and Conscientiousness (Peabody & Goldberg, 1989).

4. PERSONALITY TRAITS IN THE GOLDBERG'S AB5C MODEL

In the lexical approach, the basic Big Five traits are attributed to the following symbols of Roman numbering:
I – Extraversion
II – Agreeableness
III – Conscientiousness
IV – Emotional stability
V – Intellect.

As mentioned above, in AB5C model, each of the five big factors has nine bipolar facets: one core and eight blends. Table 3 presents these facets in Goldberg's proposal (1999).

Table 3

Facets of the five basic personality factors in the Goldberg's version of AB5C model

Factor	Symbol	Lower-order traits
	I+/I+ vs I-/I-	Gregariousness
	I+/II+ vs I-/II-	Friendliness
	I+/III+ vs I-/III-	Assertiveness
	I+/IV+ vs I-/IV-	Poise
FACTOR I	I+/V+ vs I-/V-	Leadership
Extraversion	I+/II- vs I-/II+	Provocativeness
	I+/III- vs I-/III+	Self-Disclosure
	I+/IV- vs I-/IV+	Talkativeness
	I+/V- vs I-/V+	Sociability
	II+/II+ vs II-/II-	Understanding
	II+/I+ vs II-/I-	Warmth
	II+/III+ vs II-/III-	Morality
	II+/IV+ vs II-/IV-	Pleasantness
FACTOR II	II+/V+ vs II-/V-	Empathy
Agreeableness	II+/I- vs II-/I+	Cooperation
	II+/III- vs II-/III+	Sympathy
	II+/IV- vs II-/IV+	Tenderness
	II+/V- vs II-/V+	Nurturance
	III+/III+ vs III-/III-	Conscientiousness
	III+/I+ vs III-/I-	Efficiency
	III+/II+ vs III-/II-	Dutifulness
	III+/IV+ vs III-/IV-	Purposefulness
FACTOR III	III+/V+ vs III-/V-	Organization
Conscientiousness	III+/I- vs III-/I+	Cautiousness
	III+/II- vs III-/II+	Rationality
	III+/IV- vs III-/IV+	Perfectionism
	III+/V- vs III-/V+	Orderliness
	IV+/IV+ vs IV-/IV-	Stability
	IV+/I+ vs IV-/I-	Happiness
	IV+/II+ vs IV-/II-	Calmness
	IV+/III+ vs IV-/III-	Moderation
FACTOR IV	IV+/V+ vs IV-/V-	Toughness
Emotional stability	IV+/I- vs IV-/I+	Impulse Control
	IV+/II- vs IV-/II+	Imperturbability
	IV+/III- vs IV-/III+	Cool-Headedness
	IV+/V- vs IV-/V+	Tranquillity

	V+/V+ vs V-/V-	Intellect
	V+/I+ vs V-/I-	Ingenuity
	V+/II+ vs V-/II-	Reflection
	V+/III+ vs V-/III-	Competence
FACTOR V	V+/IV+ vs V-/IV-	Quickness
Intellect	V+/I- vs V-/I+	Introspection
	V+/II- vs V-/II+	Creativity
	V+/III- vs V-/III+	Imagination
	V+/IV- vs V-/IV+	Depth

The symbols of facets in AB5C model traditionally denote the affiliation to a given basic factor (first Roman numeral) and the contribution of a trait described by the specific pole of the second basic factor (second Roman numeral). For example: Friendliness (I+/II+ vs I-/II-) is a facet of Extraversion (I) that depends on the positive pole of Agreeableness (II), while Provocativeness (I+/II- vs I-/II+) is a facet of Extraversion (I) with a low level of Agreeableness (II). Self-Discipline (III+/IV+ vs III-/IV-) and Perfectionism (III+/IV- vs III-/IV+) are facets of Conscientiousness (III), while the former is related to Emotional Stability

(IV) and the latter with Neuroticism. Intellect (V+/V+ vs. V-/V-) is a core facet of its factor, as is suggested by the name itself. Other core facets include Gregariousness (I+/I+ vs I-/I-), Understanding (II+/II+ vs II-/II-), Conscientiousness (III+/III+ vs III-/III-) and Stability (IV+/IV+ vs IV-/IV-).

The number of facets for each of the basic dimensions is not arbitrary, as in a hierarchical structure, but is directly derived from the assumptions of the AB5C model. The meanings of particular facets of the Big Five traits, expressed by their labels, are theoretically justified.

As mentioned above, Goldberg (1999) includes facets as bipolar traits, but each of the lower-order traits (as well as each of the five basic dimensions) can be considered both as a bipolar trait, or two unipolar ones. In the first case only the positive pole of a given trait is usually described, in the second one both poles of this dimension must be described. An example of such possibility is shown in Table 4 – our proposal to describe the negative poles of Emotional stability facets.

Table 4

Facets of neuroticism in the AB5C model – author's proposal of names for negative poles of emotional stability facets (factor IV) in Goldberg's version of AB5C model

Symbol	Author's proposal of a name for the negative pole	Symbol	Name of the positive pole
IV-/IV-	Imbalance	IV+/IV+	Stability
IV-/I-	Worrying	IV+/I+	Happiness
IV-/II-	Angry Hostility	IV+/II+	Calmness
IV-/III-	Uncontrollability	IV+/III+	Moderation
IV-/V-	Vulnerability	IV+/V+	Toughness
IV-/I+	Impulsiveness	IV+/I-	Impulse Control

IV-/II+	Tearfulness	IV+/II-	Imperturbability
IV-/III+	Compulsiveness	IV+/III-	Cool-Headedness
IV-/V-	Emotional differentiation	IV+/V-	Tranquillity

In lexical studies (Goldberg, 1992), also those conducted in Poland (Szarota, 1995), there is a significant imbalance in the number of terms describing the positive and negative poles of Emotional stability. The large number of words describing Neuroticism is accompanied by a small number of terms referring to Emotional stability. Therefore, the names of the facets relating to the positive pole of Factor IV do not always accurately reflect their meaning. This is the most evident with Imperturbability (IV+/II- vs IV-/II+), Cool-Headedness (IV+/III- vs IV-/III+) and Happiness (IV+/I+ vs IV-/I-).

By proposing translations of Goldberg's names as well as our own names of the negative pole of dimensions, we took equal care of the precision of the translation as well as its theoretical validity. Our goal was to create such a label that would convey the meaning of a given lower-order trait, resulting from a circular arrangement of relationships. Some of our proposals may come as a surprise at first reading. However, they are always theoretically grounded. For example, let us consider the name *Równowaga* (balance) as the equivalent of the English noun *happiness* that we have adopted. In psychology, there is quite an established the viewpoint that positive emotionality and negative emotionality (Watson, Clark, & Tellegen, 1988) are independent personality dimensions and that the former one depends on Extraversion/Introversion and the latter one on Neuroticism/Emotional Stability (cf. McCrae & Costa, 2005). Happiness (IV+/I+ vs. Worrying IV-/I-) in the AB5C model is an aspect of Emotional stability (vs. Neuroticism) and refers to negative emotionality. Moreover, the literature points out to a mislabelling of this aspect (DeYoung et al., 2007), and the analysis of the items of the scale measuring it in the IPIP-45AB5C questionnaire, as well as the scale of the adjacent facet in the circumplex of factors I and IV (i.e., facet I+/IV+; see Figure 8), prompted us to propose such a name.

5. Circumplexes of Personality Traits

The structure of the Big Five facets, presented in Table 3, is a circular structure. Figures 6–15 present those facets in the arrangement of 10 circumplexes. Each circumplex is formed by two basic factors. In a given circumplex a factor is represented by its core facet and two other (blend) facets related to the positive and negative pole of the second basic factor. Thus, there are six facets in each circumplex (two core and four blends). It is noteworthy that particular circumplexes concern different spheres of human personality (cf. Costa & McCrae, 2000). The following presentation will be complemented by an interpretation indicating possible links between the given circumplexes of the AB5C model and different areas of the personality functioning.

5.1 Circumplex no. 1: Extraversion and Agreeableness

In the circumplex formed by factors I and II, there are three aspects of Extraversion: Gregariousness (core aspect), Provocativeness and Friendliness; and the three aspects of Agreeableness are Understanding (core), Warmth and Cooperation. The first circumplex, discussed now, is shown in Figure 6.
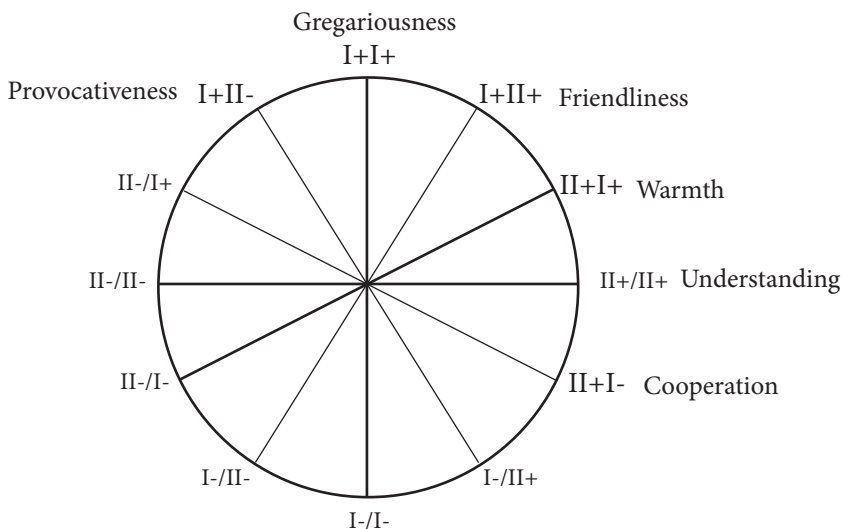

Figure 6. A circumplex of personality traits created by basic factors: I (Extraversion) and II (Agreeableness).

This circumplex describes the sphere of interpersonal relations (Wiggins, 1979, 1995) or styles of interactions with other people (Costa & McCrae, 2000). It is also a central element of the best-known circumplex model of personality traits – a concept of interpersonal traits (behaviours) by Wiggins. Although the Interpersonal Circumplex of Wiggins has an octant structure, and its basic dimensions are Dominance and Love (orthogonal axes rotated by 45 degrees in relation to Extraversion and Agreeableness), it creates a space very similar to that of the circumplex created by factors I and II of the AB5C model (Trapnell & Wiggins, 1990; cf. Klinkosz, 2004). Thus, Extraversion combined with a high level of Agreeableness appears to be a kind of friendliness, open-heartedness, and interpersonal warmth. In turn, Extraversion, together with low Agreeableness is dominance, rivalry, and expansiveness. Introversion plus high Agreeableness is manifested by modesty and willingness to cooperate and even submissiveness, while Introversion combined with low Agreeableness is cold and secretive.

5.2 Circumplex no. 2: Extraversion and Conscientiousness

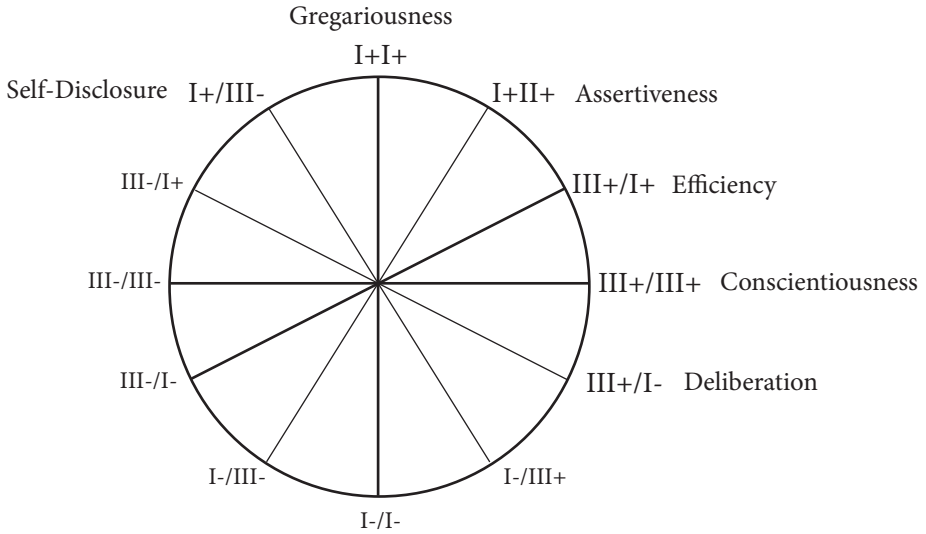Figure 7 presents a circumplex created by factors I (Extraversion) and III (Conscientiousness).

Figure 7. A circumplex of personality traits created by basic factors: I (Extraversion) and III (Conscientiousness).

Self-Disclosure (I+/III- vs I-/III+) is a facet of Extraversion with a blend of low Conscientiousness. It is related to easiness of expressing information about self. Then, moving clockwise in the circle, there is Gregariousness (I+/I+ vs I-/I-) and Assertiveness (I+/III+ vs I-/III-) – an aspect of Extraversion with the participation of high Conscientiousness. In turn, Efficiency (III+/I+ vs III-/I-) is an aspect of Conscientiousness with a mixture of high Extraversion. Then, there is the core aspect of Conscientiousness (III+/III+ vs III-/III-) as well as Deliberation (III+/I- vs III-/I+), which is an aspect of Conscientiousness with a blend of Introversion. This circumplex seems to be related to the preferred style of action or activity (Costa & McCrae, 2000). Extraversion determines the level of energy, while Conscientiousness determines the level of organization of individual activity (cf. Peabody & Goldberg, 1989).

5.2 Circumplex no. 3: Extraversion and Emotional Stability

The third circumplex, constituted by Extraversion (I) and Emotional stability (IV) is shown in Figure 8.
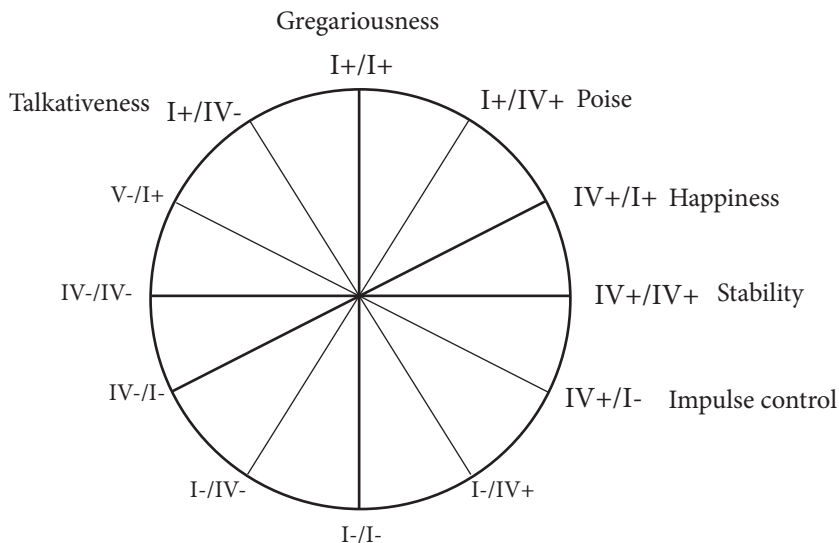

Figure 8. A circumplex of personality traits created by basic factors: I (Extraversion) and IV (Emotional stability).

The facets presented in this circumplex can be considered as temperamental properties, while the circumplex itself seems to be mostly related to the sphere of temperament out of all of AB5C circumplexes. Extraversion and Neuroticism (the negative pole of Emotional stability) are often considered to be exactly those Big Five factors that can be considered as temperamental traits (Eysenck, 1990; Grey, 1987; Hofstee, 1991; Strelau, 2002a, 2002b; Zawadzki & Strelau, 2010; Zawadzki et al., 1998). They are usually assumed to be orthogonal dimensions. It is worth noting that Eysenck who compared them with the ancient typology of temperament by Hippocrates–Galen, suggested at the same time a circular structure of lower-order traits (Eysenck & Eysenck, 1985). Moreover, the orthogonal dimensions of Extraversion and Neuroticism by Eysenck (1990) can be placed on the 30 degrees rotated orthogonal axes of impulsiveness and anxiety – two basic dimensions of temperament in the BIS/BAS theory (Behavioural Inhibition System and Behavioural Activation System) by Gray (1987, 1999). Then we get a space very close to the circumplex I/IV in the AB5C model. It may be added that the dispositions in the discussed circumplex refer particularly clearly to emotional functioning (negative and positive emotionality; Watson et al., 1988; cf. Costa & Mc-Crae, 2000; Russell, 1980; Yik, 2010; Yik, Russell, & Barrett, 1999). However, all this becomes clear only after taking into account the negative poles of the facets included within the circumplex I/IV (see Table 4).

As shown in Table 4, the negative pole of the facet IV+/I+ vs. IV-/I- (Happiness) is called Worrying (another possibility is simply Anxiety), while in the case of the aspect

IV+/I- vs IV-/I+ (Impulse Control), the negative pole was called Impulsiveness. On the other hand, based on theoretical premises and an analysis of the content of the items of appropriate scales of the IPIP-45AB5C questionnaire, we can state that the negative pole of the aspect I+/IV+ vs I-/IV- (Poise) could be called Shyness, while the negative pole of the aspect I+/IV- vs I-/IV+ (Talkativeness) – Reserve.

5.3 Circumplex no. 4: Extraversion and Intellect

The last circumplex with factor I (Extraversion) is a combination of Extraversion and Intellect. The circumplex is shown in Figure 9.
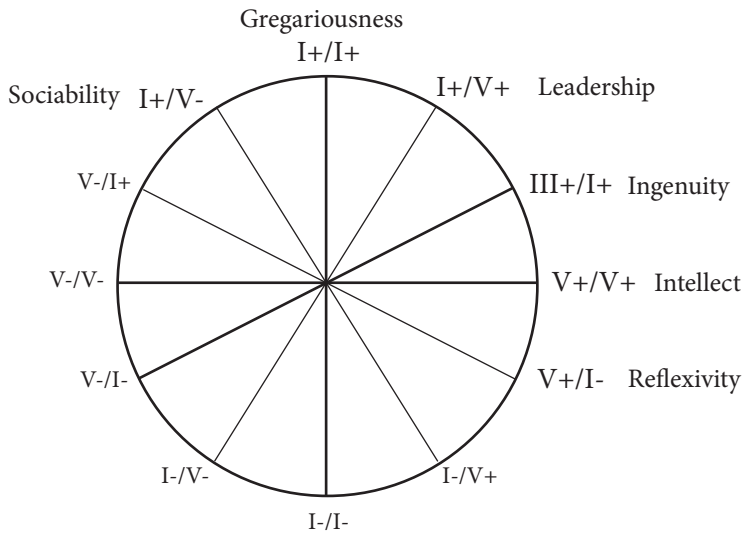
Figure 9. A circumplex of personality traits created by basic factors: I (Extraversion) and V (Intellect).

Depending on the level of Intellect, Extraversion takes the form of Sociability (I+/V- vs. I-/V+) or a tendency to Leadership (I+/V+ vs. I-/V-). The extravert intellect, on the other hand, manifests itself in Ingenuity (V+/I+ vs. V-/I-), while the introvert in Reflexivity (V+/I- vs. V-/I+) or a tendency to introspection. Therefore, the circumplex I/V refers to ways of cognitive functioning among people or styles of interest (cf. Costa & McCrae, 2000).

5.4 Circumplex no. 5: Agreeableness and Conscientiousness

The next circumplex is the space determined by the dimensions of Agreeableness (II) and Conscientiousness (III). It is shown in Figure 10.
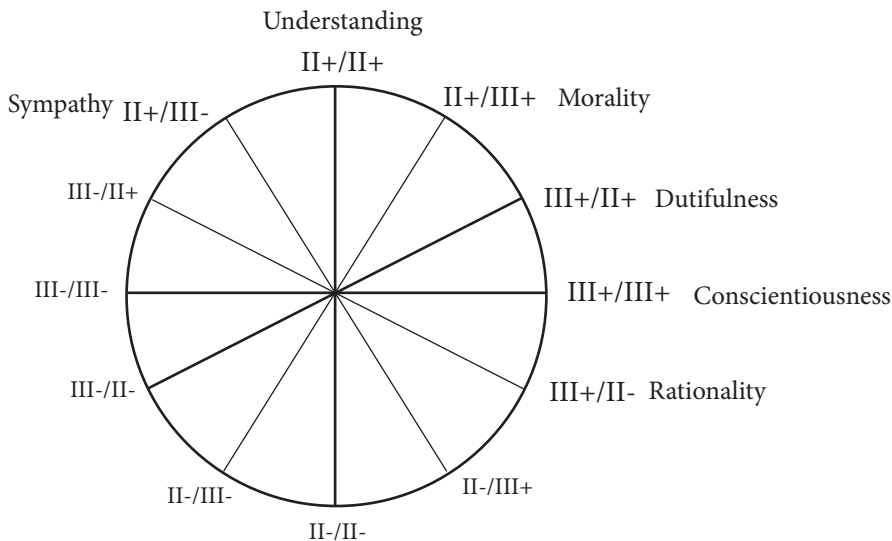

Figure 10. The circumplex of personality traits created by basic factors:
II (Agreeableness) and III (Conscientiousness).

As we can see, Morality (II+/III+ vs II-/III-) is an facet of Agreeableness with a blend of a high degree of Conscientiousness, while Dutifulness (III+/II+ vs III-/II-) is an aspect of Conscientiousness with a blend of a high degree of Agreeableness. The circular structure predicts, of course, a high positive correlation between those two facets. There is an equally high but a negative relationship in the model between Sympathy (II+/III- vs II-/III+) and Rationality (III+/II- vs III-/II+). The core facets of Understanding (II+/II+ vs II-/II-) and Conscientiousness (III+/III+ vs III-/III-) are unrelated in the model.

The circumplex II/III seems to refer to the sphere of morality; on the one hand, to the attitude to social norms and altruistic behaviour, and on the other hand through indifferent pragmatism to anti-social tendencies. This domain can also be called styles of character (Costa & McCrae, 2000; cf. Peabody & Goldberg, 1989).

5.5 Circumplex no. 6: Agreeableness and Emotional Stability

The circle formed by factors II (Agreeableness) and IV (Emotional stability) is shown in Figure 11.
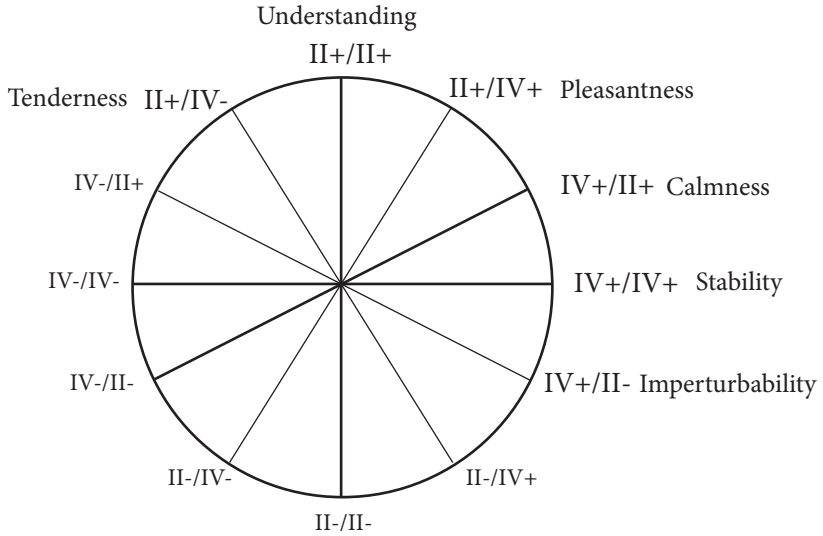

Figure 11. The circumplex of personality traits created by basic factors: II (Agreeableness) and IV (Emotional stability).

It describes emotional sensitivity towards other people, trust in them, and control of anger. In the interaction of Agreeableness and Emotional stability (Neuroticism), there are lower-level features revealed such as Tenderness (II+/IV- vs II-/IV+) or Imperturbability (IV+/II- vs IV-/II+), Pleasantness (II+/IV+ vs II-/IV-), and Calmness versus Angry Hostility (IV+/II+ vs IV-/II-).

5.6 Circumplex no. 7: Agreeableness and Intellect

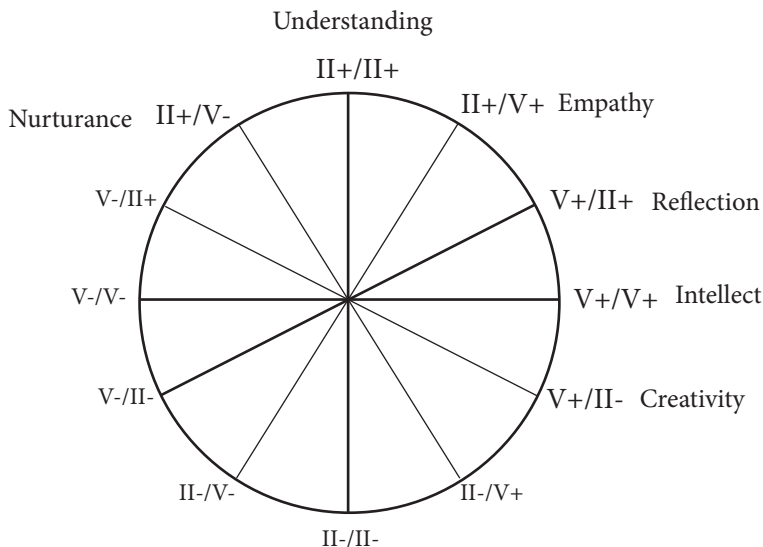Figure 12 presents a circumplex created with factors II (Agreeableness) and V (Intellect).

Figure 12. A circle of personality traits created by basic factors: II (Agreeableness) and V (Intellect).

The circumplex refers to the sphere of believes and attitudes, world-view orientations, or general attitude in terms of values. Openness to beauty as well as the needs and arguments of others vs. closure in the world of own believes and interests; critical originality and independence vs. strong socialization and conventionality – those are the main orientations that we obtain in the interaction of Agreeableness and Intellect.

5.7 Circumplex no. 8: Conscientiousness and Emotional Stability

The combination of Conscientiousness (III) and Emotional Stability (IV) forms the circumplex shown in Figure 13.
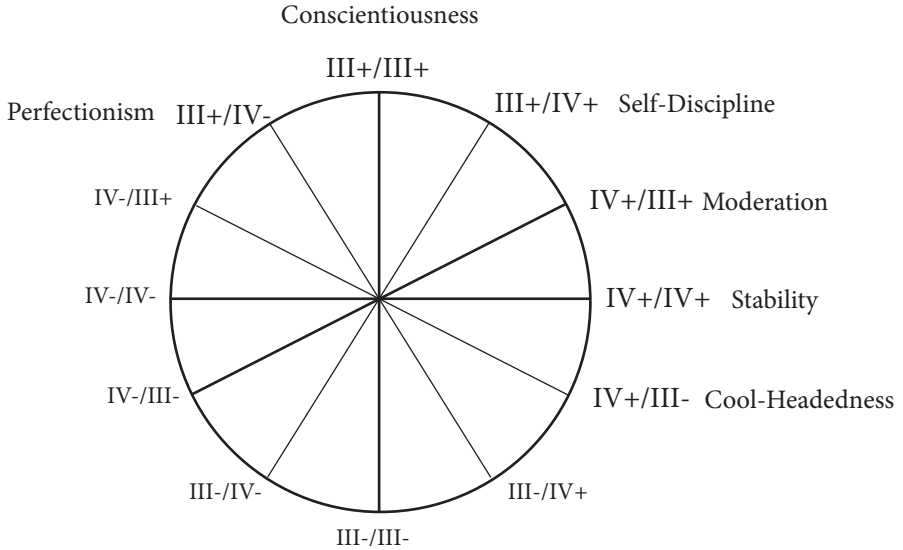

Figure 13. A circumplex of personality traits created by basic factors:
III (Conscientiousness) and IV (Emotional stability).

This circumplex describes self-regulation – its level and various aspects. On the one hand, self-control, control of one's emotions and behaviour (IV+/III+ vs. IV-/III-), tolerance to frustration, perseverance in pursuing one's goal and self-motivation skills (III+/IV+ vs. III-/IV). On the other hand, perfectionism, excessive control and rigidity (III+/IV- vs III-/IV+) or even proneness to obsessive-compulsive behaviour (negative pole of aspect IV+/III- vs IV-/III+). Of course, on the opposite poles of these personality traits lie the uncontrollability, lack of regulation of one's own emotions and desires, distractibility, or Cool-Headedness (IV+/III- vs IV-/III+), relaxation and leniency towards oneself.

5.8 Circumplex no. 9: Conscientiousness and Intellect

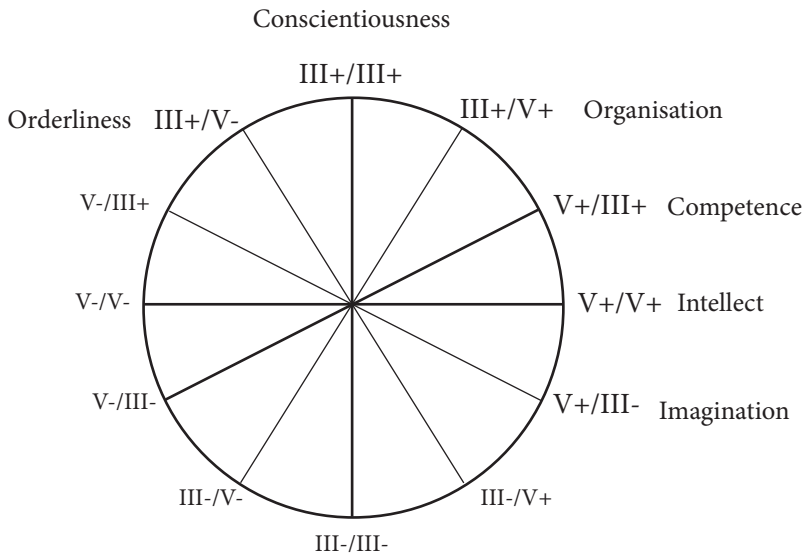Figure 14 presents a circumplex formed by factor III (Conscientiousness) and factor V (Intellect).

Figure 14. A circumplex of personality traits created by basic factors: III (Conscientiousness) and V (Intellect).

The interaction of Conscientiousness (III) with Intellect (V) seems to include an attitude toward the tasks performed and the acquisition of new knowledge and skills (cf. Costa & McCrae, 2000). Imagination (V+/III- vs V-/III+) is an facet of Intellect involving low Conscientiousness, whereas Orderliness (III+/V- vs III-/V+) is a trait that is the result of reverse configuration. In turn, the combination of high Conscientiousness with intellectual openness manifests itself in such closely related aspects as Organisation (III+/V+ vs III-/V-) and Competence (V+/III+ vs V-/III-).

5.9 Circumplex no. 10: Emotional Stability and Intellect

Figure 15 presents the last, 10th circumplex constituted by factors IV (Emotional stability) and V (Intellect).
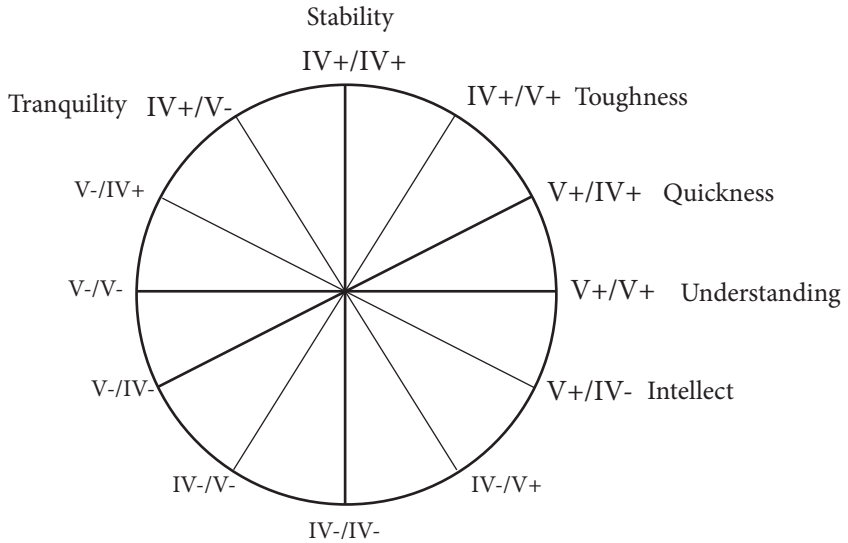

Figure 15. A circumplex of personality traits created by basic factors: IV (Emotional stability) and V (Intellect).

This circumplex describes functioning under the conditions of stimulus and information overload. From the combination of Emotional Stability (IV) and Intellect (V) factors, such properties emerge as e.g. effectiveness of cognitive functioning despite stressful conditions (V+/IV+ vs. V-/IV- Quickness), and efficacy of coping with stress (IV+/V+ vs. IV-/V- Toughness). But the IV/V circumplex refers not only to the functioning under stress and defensive styles (Costa & McCrae, 2000), but also to a kind of cognitive insight (V+/IV- vs V-/IV+) and the richness of emotional experiences (negative pole of IV+/V- vs IV-/V+).

6. The AB5C Circumplexes as the Mendeleev's Periodic Table in Personality Psychology

Hofstee et al. (1992) suggested that the AB5C model could be treated as the periodic table of elements in personality psychology. This metaphor seems to be interesting if we take into account the system of particular circumplexes – assumed in the AB5C model – that capture different spheres of human personality. It should be stressed out that the above interpretations of the meanings of particular AB5C circumplexes referred, among others, to the proposal of Costa and McCrae (2000; see Jankowski, Oleś, Bąk, & Oleś, 2009; Klinkosz & Sękowski, 2009), who also presented ten schemes of pairs of basic personality factors, as defining different areas (and, within them, styles) of

functioning. However, these schemes did not contain any facets and are only intended to help with the interpretation of the results in individual diagnosis, since the idea of mutual relations between the basic factors and between their facets contradicts the hierarchic model of the personality traits organisation.

The proposal of ten circumplexes covering separate areas of personality manifestation also provides opportunities to integrate multiple, more specific concepts of personality and temperament into one model of basic dimensions of human personality. The most obvious examples include the aforementioned concept of the Interpersonal Circumplex of Wiggins as well as Eysenck concept of Neuroticism and Extraversion, together with Gray's BIS/BAS theory. On the other hand, the AB5C model also includes circumplexes whose content range has not yet been the focus of any theory or concept and which can be treated as interesting areas of future personality research.

The Abridged Big Five-Dimensional Circumplex model is an interesting counterproposal in terms of the structure of personality traits in relation to the Five Factor Model. However, the superiority of the AB5C model must be determined by an empirical test, concerning both structural and external validity (e.g., predicting specific behaviours, cf. Grucza & Goldberg, 2007). Goldberg's proposal (a version of the AB5C model with an operationalising instrument) is an important step for the empirical verification of the model. The studies conducted so far using IPIP-45AB5C are very promising (Backstrom et al., 2009; Strus et al., 2011), although they also indicate the need to modify the meaning of some facets in Goldberg's version of the AB5C model.

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