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### Big-Five and Subjective Well-Being: The mediating role of Individualism or Collectivism beliefs and the moderating role of life periods

**Abstract:** Subjective Well-Being is related to the Big-Five and to Individualistic and Collectivistic beliefs of Polish adolescents. In the present study, we examined whether Individualism and Collectivism beliefs mediate between the Big-Five and Subjective Well-being among adolescents, young and middle-aged adults. Adolescents ( $N = 174$ , 36% men, aged 14–18), young ( $N = 254$ , 45% men, aged 19–24) and middle-aged adults ( $N = 252$ , 54% men, aged 40–55) completed the NEO-FFI, the Ind-Col20, and measures of Subjective Well-being. The three groups differed on all dimensions. Adolescents reported the highest Neuroticism, the lowest Agreeableness, Conscientiousness, the highest Individualism and Collectivism beliefs and lowest SWB. Among adolescents, SEM analyses indicated that Subjective Well-being was negatively related to Neuroticism and Agreeableness, positively to Extraversion, Conscientiousness, Horizontal Individualism, Horizontal and Vertical Collectivism. Among young and middle-aged adults Subjective Well-being was negatively related to Neuroticism and Horizontal Collectivism, positively to Openness, Conscientiousness, Horizontal and Vertical Individualism. Beliefs partially mediated the effects of traits. Relationships were different for cognitive and affective Subjective Well-being indices.

**Keywords:** personality, Big-Five, horizontal and vertical individualism or collectivism, happiness

The pursuit of happiness is a universal human goal (Diener & Diener, 1996). Researchers and lay people understand happiness (or well-being) in many different ways (Bojanowska & Zalewska, 2016a; Diener, Scollon, & Lucas, 2003; Ryff, 1989; Keyes, 2002; Seligman, 2011; Waterman et al., 2010). In this paper we focused on the conceptualization of happiness labeled Subjective Well-Being (SWB) but we present it in a broader context of the various approaches to happiness.

A significant proportion of research on the antecedents of Subjective Well-being focused on personality dimensions (Diener, 1984; Diener, Suh, Lucas, & Smith, 1999; Lyubomirsky, 2001). It has been determined, that individual differences in components of Subjective Well-being (Life satisfaction, Positive and Negative Affect) are related to individual differences in personality traits (“happy personality” – Costa & McCrae, 1980; DeNeve & Cooper, 1998), temperament traits (Bojanowska & Zalewska, 2017) and to configurations of temperament traits (types)

responsible for stimulation control (“happy temperament” – Bojanowska & Zalewska, 2016b).

There are also some findings showing that socio-cognitive personality constructs mediate relationships between basic traits and Subjective Well-Being (e.g. Brygoła, 2018, in this issue; Finogenow, 2008; Joshanloo & Afshari, 2011; Morteza, Mohsen, Sahar, & Simin, 2016; Wang et al., 2014; Zawadzka, Kościelniak, & Zalewska, 2018, in this issue; Zalewska & Surawska, 2018 submitted; Zhang, 2016). Such mediations have been suggested by McCrae (1996; McCrae & Costa, 1999, 2003; McCrae, Gaines, & Wellington, 2012) in the Five Factor Theory of Personality (FFT) and in the New Big Five Theory of Personality proposed by McAdams and Pals (2006). Both of these theories include two approaches to personality: traits and socio-cognitive constructs. The latter express individual differences that develop in the course of the lifespan. These socio-cognitive constructs, labeled “characteristic adaptations” result from external impacts

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and personal experiences (McAdams & Pals, 2006; McCrae & Costa, 1999, 2003). Additionally, McAdams and Pals (2006) suggest, that relationships between two levels of personality and well-being can be also moderated by various components included in their model.

Most research so far analyzed characteristic adaptations that could be interpreted as components of eudaimonic happiness (self-esteem, self-efficacy, life-engagement). In this study, we included characteristic adaptations which are not expressions of eudaimonic well-being, but which express self-construal beliefs and which may be related to Subjective well-being. These dimensions are: Horizontal and Vertical Individualism and Collectivism beliefs.

In the present study we analyzed how Subjective Well-being is related to five basic traits (the Big-Five) and to four characteristic adaptations (Horizontal and Vertical Individualism and Collectivism beliefs). The Subjective Well-being (SWB) was based on six biographical elements (Life and Need Satisfaction, Subjective Happiness, Pleasure, Energy and Tension). Taking into account the relations between these biographical elements we extracted one general SWB appraisal and three mood components (Pleasure, Energy and Tension). We then analyzed how traits and characteristic adaptations predict each of the Subjective Well-being components and whether characteristic adaptations mediate the relationships between the Big-Five traits and Subjective Well-being components. We also examined whether period of life moderates the relationships between personality (traits and beliefs) and Subjective Well-being. All this allowed us to test the theoretical models proposed by McAdams and Pals (2006) and by McCrae (1996).

### Subjective Well-Being and other conceptualizations of well-being

Well-being is a complex and polysemous phenomenon. Veenhoven (1988) distinguished objective, subjective, and mixed approaches to well-being. In the objective approach well-being is evaluated in terms of the desired, objective life conditions (welfare) and desired individual or societal properties (virtues, values or advantages). This is a normative and evaluative approach – it determines life conditions which constitute the highest quality of life or the “authentic” happiness. Conditions and properties closer to the desired pattern are interpreted as higher well-being, regardless of the subjective feelings of the individual. In the subjective approach, individuals evaluate the quality of their own lives using their own criteria. These evaluations are expressed in affective (e.g. happiness) and cognitive appraisals (e.g. life satisfaction). Research in this area tends to focus on the determinants and outcomes of these appraisals. In the mixed approach well-being is referred to objective criteria (objective conditions and virtues) but people are asked to estimate to what extent they are contented with meeting these criteria.

People are naturally motivated to enjoy optimal experience. “Optimal” can be defined in many different ways, but the two most widely acknowledged definitions

come from the hedonic and eudaimonic philosophical perspectives. In the hedonic approach, rooted in philosophical concepts of Aristippus of Cyrene and Epicurus, striving for pleasure and avoiding pain or displeasure is treated as the highest good and a source of “authentic” happiness (Ryan & Deci, 2001; Ryff & Singer, 2008). In the eudaimonic approach derived from Aristotle’s *Nicomachean Ethics*, well-being and happiness are defined in terms of striving toward excellence based on one’s unique potential. This approach includes self-realization, growth, human fulfillment and permanent effort to achieve the best that is within us. It focuses on meaning and living how one ought to live “in a manner consistent with one’s ‘daimon’ or ‘true self’” (Waterman et al., 2010).

According to Ryff (1989; Ryff & Singer, 2008) the eudaimonic concept of Psychological Well-Being consists of six dimensions: self-acceptance, autonomy, personal growth, positive relationship, environmental mastery, and purpose in life. These dimensions are considered to be objective virtues (e.g., self-esteem, locus of control), and their presence determines if someone is healthy, well, and fully functioning, regardless of her or his subjective feelings. Ryff’s concept of Psychological Well-being (1989) falls within the category of the objective approach. Subjective feelings of happiness are not considered to be the ultimate target.

Mixed approaches to well-being have been expressed in three renowned conceptions: Eudaimonic Well-being (Waterman et al., 2010), Mental Health Continuum (Keyes, 2002, 2013) and the PERMA model (Seligman, 2011). Waterman and colleagues’ (2010) Eudaimonic Well-being includes objective criteria and subjective appraisals. Objective virtues (e.g. self-discovery, perceived development of one’s best potential, a sense of purpose and meaning in life) are accompanied by the subjective experience of Eudaimonia (e.g. a sense that activities express a person’s personality). Keyes’ Mental Health Continuum conception (2002, 2013) includes three sets of measures for flourishing or languishing mental health: psychological, social and emotional well-being. Finally, Seligman’s (2011) PERMA model lists 5 dimensions: Positive emotions, Engagement in life, Relations with others, Meaning or purpose in life and Achievements.

In general, Subjective Well-being is defined as the extent to which people feel good and satisfied with their lives. The concept of Subjective Well-being introduced by Diener (1984) refers to a broad spectrum of phenomena, including affective and cognitive evaluations of one’s own life. Affective appraisals may refer to events (expressed in momentary emotions, e.g. joy, anxiety) or they may reflect more long-term moods (Diener et al., 1999). Cognitive evaluations may express domain satisfaction, general life satisfaction or other global life judgments, such as a sense of meaning or fulfillment (Diener et al., 2003). These components are interrelated and they can be merged into a superordinate complex construct of “Subjective Well-Being” or “Happiness” (Diener et al., 2003; Lyubomirsky, King, & Diener, 2005). However, each

of these components may have its own unique antecedents (Diener et al., 1999), so they also need to be assessed and examined separately.

Some researchers equate Subjective Well-being with Hedonistic Well-being (see: Ryan & Deci, 2001; Ryff & Singer, 2008). Others stress that cognitive global life judgments, especially those expressed in Satisfaction with Life (Diener, Emmons, Larsen, & Griffin, 1985) are strongly related to Psychological Well-being and that they constitute a common factor of Psychological Well-being (Diaz, Stavraki, Blanco, & Gandarillas, 2015). Waterman and colleagues (2010) have also found that Subjective Well-being indices are related to Eudaimonic Well-being, Psychological Well-being, successful functioning (e.g. self-esteem) and to health (e.g. depression). Consequently, if the criteria that people use to report on their Subjective Well-being are not established, it may not be possible to determine whether a particular appraisal of life, happiness or satisfaction represents Hedonistic Well-being, sensory pleasure or Eudaimonic Well-being. In other words, joy, happiness, and satisfaction may be hedonic (e.g. sensory pleasure) or eudaimonic (e.g. may come from the realization of one's potential).

Subjective Well-being is mostly represented by life satisfaction, frequency or intensity of positive and negative emotions (Diener et al., 2003; Zalewska, 2003), frequency or intensity of positive and negative affect (Bojanowska & Zalewska, 2017; Diener, 2000). In this paper we analyze general appraisals (Life and Need Satisfaction, Subjective Happiness) and three affective indices of mood (Schimmack & Grob, 2000) – frequency of Pleasure, Energy and Tension.

### **The Integrative Model of Personality and Subjective Well-being**

Two contemporary theories, The Five Factor Theory of Personality (FFT) by McCrae (1996; McCrae & Costa, 1999, 2003; McCrae et al., 2012) and the New Big Five theory by McAdams and Pals (2006), integrate two approaches to personality: dispositional traits and socio-cognitive constructs. These two core components constitute two basic levels of personality. In both theories traits are located at the first level and they express basic, biologically conditioned dispositions. Socio-cognitive constructs are located at the second level and they include values, beliefs about the world, other people and oneself (personal myths, self-schemes such as self-esteem). They regulate behavior, mind-set, interpretations of life experiences and affective reactions. These characteristic adaptations develop throughout the lifespan on the foundation of traits, external (cultural, social, situational) impacts and experiences resulting from a person's activities, behaviors and emotions (biographical elements). McCrae & Costa (1999, 2003) claim that traits influence biographical elements indirectly, while characteristic adaptations mediate between traits and other dimensions: behavior and emotions. The theory proposed by McAdams and Pals (2006) differs from the Five Factor Theory at

least in two aspects. McAdams and Pals (2006) added "Integrative Life Narratives" (personal life stories) to the model, and these narratives constitute the third level of personality. They also assumed that the relationships between all three levels of personality and between these three levels and biographical elements (e.g. developmental tasks) are complex and reciprocal. This last assumption justifies the investigations of relationships between levels of personality and well-being with the inclusion of possible mediators and moderators within the model (e.g. traits, characteristic adaptations, Subjective Well-being indices or other biographical elements).

### **Traits and their relations with Subjective Well-being**

In the present study basic dispositions are represented by the Big-Five traits (Costa & McCrae, 1992): Neuroticism, Extraversion, Openness to experience, Agreeableness, and Conscientiousness. Neuroticism means the sensitivity to negative stimuli and the tendency to experience negative emotions and stress. Extraversion expresses the tendency to engage in tasks and social interactions and to experience positive emotions. Openness to experience reflects the tendency to seek out new experiences. Agreeableness reflects the tendency for cooperation and a positive attitude towards others. Conscientiousness expresses self-discipline and goal-directed behaviour. Although the 'happy personality' (Costa & McCrae, 1980) consists of low Neuroticism and high Extraversion, the results of meta-analyses conducted by DeNeve and Cooper (1998), as well as by Steel, Schmidt, and Shultz (2008) showed that Subjective Well-being represented by Life satisfaction, Positive and Negative Affect (Diener, 2000) are also related to other Big-Five traits: Openness to experience, Agreeableness, and Conscientiousness. These findings suggest that the Big-Five traits are related to general cognitive and affective Subjective Well-being indices (H1).

### **Characteristic adaptations – Horizontal and Vertical Individualism and Collectivism beliefs**

Concepts of Individualism and Collectivism were introduced by Hofstede (1980). He found that various cultures and nations occupy different positions on the Individualism-Collectivism continuum. He stated that the United States was an individualistic country, China a collectivistic one, and Poland was located somewhere in the middle, and that it has gradually been moving toward Individualism for the 20 years before his publication in 2000 (Hofstede, 2000).

Individualism-Collectivism dimension can be treated as one of the *cultural syndromes* (Triandis, 2000). It refers to the degree to which needs and desires of individuals are respected and valued in a given culture beyond the needs and desires of the group (Matsumoto & Juang, 2007). In the individualistic cultures personal goals are considered more important than the goals of the group (Wojciszke, 2011). In the collectivistic cultures, individuals are willing to give up the pursuit of their own goals for the common good and the

satisfaction of common needs (Markus & Kitayama, 1991; in: Matsumoto & Juang, 2007).

Triandis (1995; Singelis, Triandis, Bhawuk, & Gelfand, 1995) offered a multidimensional definition of individualism and collectivism that contrasted the one-dimensional concept proposed by Hofstede (1980). This multidimensional approach lists four components of cultural orientation: Horizontal (equality) and Vertical (hierarchy), Individualism and Collectivism. In this conception Individualism is defined by four attributes: independent self-construal; rationality and exchange relationships; attitudes that determine social behavior; and personal goals. Collectivism is also defined by four attributes: interdependent self-construal; relatedness and communal relationships; norms that determine social behavior; and in-group goals. Triandis and Gelfand (1998) proposed four patterns that combine the four components of cultural orientation:

- Horizontal Individualism (HI) expressed through self-independence, freedom and equality, striving to be distinct without the desire for special status (e.g. social democracy in Australia or Sweden);
- Horizontal Collectivism (HC) highlights self-interdependence, equality but not freedom, collaboration and empathy (e.g. the Israeli kibbutz);
- Vertical Individualism (VI) stresses competition, freedom but not equality, striving to be distinct with the desire for special status (competitive capitalism and market economies such as in the United States);
- Vertical Collectivism (VC) highlights interdependence and competition with out-groups, neither equality nor freedom is valued (traditional societies with strong leaders).

Individualism-Collectivism dimension, Horizontal and Vertical Individualism or Collectivism can be examined at a culture-level and at an individual-level. Culture-level analyses use indicators that define whole populations, such as Gross Domestic Product per citizen, average life expectancy or the percentage of national income devoted to environmental protection (Triandis, 2000). In individual-level analyses personal beliefs or orientations are considered. They refer to the way the person defines herself or himself (self-construal) in relation to culture or to the social context (Matsumoto & Kupperbusch, 2001).

Triandis (2000) noted that the research conducted at the culture and at the individual levels yields different results. He therefore proposed two alternative concepts, *idiocentrism* and *allocentrism*, to describe personalities corresponding to individualism and collectivism. Verkuyten (1995) showed that while in the individualistic cultures idiocentrism and allocentrism are negatively correlated, in the collectivistic cultures they are independent of one other. The study presented in this paper was conducted in one culture and we will analyze data only at an individual level. However, we will use the terms of individualism and collectivism similarly to Robert, Probst, Martocchio, Drasgow and Lawler (2000), Górnik-Durose (2002) or Shavitt, Lalwani, Zhang and Torelli (2006).

In individual-level analyses, Horizontal and Vertical Individualism or Collectivism beliefs are considered to

be expressions of socio-cognitive personality constructs (self-construal), which develop in the course of the lifespan as a result of social impacts and individual experiences (Matsumoto & Kupperbusch, 2001). Because they are self-construal, they can be treated as examples of self-concept within characteristic adaptations (McCrae & Costa, 1999, 2003; McAdams & Pals, 2006).

### Horizontal and Vertical Individualism or Collectivism beliefs and their relationships with traits

There is little data about the relationships between the Big-Five traits and Individualism or Collectivism, possibly because these beliefs are mostly believed to be shaped by culture and independent of personality traits (Triandis, 1995; Church, 2000). This assumption was confirmed among students in South Africa (Vogt & Laher, 2009). If this is true, findings may not get published when they fail to show significant correlations. A lack of significant correlation does not prove a lack of relationship, but it may discourage investigators from studying them further.

Nevertheless, in a culture-level analysis across 49 countries McCrae and Terracino (2005) found positive correlations between Individualism and three Big-Five traits: Extraversion, Openness to experience and Agreeableness (respectively: .51, .33 and .38). These traits were also positively related to Subjective Well-being. In an analysis across 33 countries Hofstede and McCrae (2004) found strong correlations between Extraversion and Individualism (.64). An individual-level analysis conducted in Estonia, a rather individualistic country, showed that general Collectivism was predicted negatively by Openness and positively by Agreeableness (above 30% of variance; Realo, Allik, & Vadi, 1997).

The above findings suggest that Openness (a tendency to seek out new experiences) is positively related to Individualism and negatively to Collectivism (H2). Inconsistent data on relationships of Extraversion (tendency to engage in tasks and social interactions) and Agreeableness (tendency for cooperation and a positive attitude towards others) with Individualism and Collectivism suggest that the functions of these traits for individual beliefs (individualism or collectivism) depend on the cultural context (Church, 2000, 2010). Traits and their relationships with beliefs may be more significant in individualistic than in collectivistic cultures (Markus & Kitayama, 1998). In the present study, we analyze the relationships between the Big-Five traits and Horizontal and Vertical Individualism and Collectivism. We then examine which of the Big-Five traits predict these specific beliefs in groups of Poles representing different periods of life.

### Horizontal and Vertical Individualism and Collectivism beliefs and their relationships with Subjective Well-being

Cross-cultural research indicates that individualistic cultures are happier than the collectivistic ones (Diener & Diener, 1995). The sense of happiness has also been found to be anchored in different cues across cultures –



in individualistic cultures happiness is more closely linked to individual psychological attributes (e.g. self-esteem, optimism) than in collectivistic cultures (Suh & Oishi, 2002). In collectivistic cultures it is additionally dependent on social norms (Suh, Diener, Oishi, & Triandis, 1998) and social appraisals (Suh, Diener & Updegraff, 2008).

Analyses at an individual-level showed that the relationship between individualism and Subjective Well-being is negative (Diener & Diener, 1995). According to Triandis (1995) higher Vertical Individualism can lead to lower Subjective Well-being because a strong tendency towards rivalry causes stress. Similarly, higher levels of Horizontal Individualism can lead to lower Subjective Well-being because Horizontal Individualism is associated with loneliness and lower levels of received social support. There may also be a positive link between allocentrism and Subjective Well-being among minorities in the Netherlands (Triandis, 2000) and among American students (Battencourt & Dorr, 1997).

However, Subjective Well-being can also be affected by the person–culture fit. If personal characteristics are congruent with the characteristics of the cultural setting, then the self-esteem is higher and this leads to higher Subjective Well-being (Triandis, 2000). For example, in North America individuals with higher Individualism index (in individualistic culture) manifested higher Subjective Well-being, but this was not the case in Korea (Suh, 2002). According to Suh (2002) the influence of the four beliefs on Subjective Well-being may depend on the extent to which they are accepted in the society and on the congruence between the self and what the culture regards as valuable.

As mentioned before, Poland falls somewhere in the middle of the collectivism-individualism continuum (Hofstede, 2000). The four beliefs may not be equally important in Poland, but certain configurations of orientations may be favored more. Studies conducted among working adults in Poland showed that Poles had high indices of Horizontal Individualism and Vertical Collectivism (Maczynski, Jago, Reber, & Boehnisch, 1994; Robert et al., 2000), while Polish students had higher indices of Horizontal Individualism and Horizontal Collectivism (Górnik-Durose, 2002). High indices on Vertical Collectivism combined with high Horizontal Individualism, as well as high indices of Horizontal Individualism accompanied by high Horizontal Collectivism, suggest that Poles value collectivism as well as individualism or that there is a high intra-cultural diversity – different beliefs may be important in different social groups and in different developmental periods.

Recent data collected among Polish adolescents (Zalewska & Zawadzka, 2016) showed that the patterns of relationships between Individualism and Collectivism in this group were similar to those observed in collectivistic cultures (Verkuyten, 1995). This was surprising mostly because Poland seems to be steadily moving towards individualism. Moreover, in this sample higher Vertical Individualism predicted lower Subjective Well-being, while higher Horizontal dimensions (Horizontal Individualism

and Horizontal Collectivism, both stressing equality) and higher Collectivism (Horizontal Collectivism and Vertical Collectivism, both stressing interdependent self-construal) predicted higher Subjective Well-being (Zalewska & Zawadzka, 2016).

All of this indicates, that Collectivism and Individualism are approved in the Polish society. Consequently, all beliefs can be positively associated with Subjective Well-being (H3). However, the changing nature of Polish society suggests that relationships between Subjective Well-being and Collectivism and Individualism may need to be examined with reference to specific periods of life.

### **Relationships between Personality and Subjective Well-being: the moderating role of Periods of life**

In this study three life periods are taken into account: late adolescence, early and middle adulthood. People representing these three life periods may differ in terms of personality traits, beliefs and Subjective Well-being indices, but they may also differ in terms of the relationships between personality (traits and beliefs) and Subjective Well-being. These differences may stem from developmental changes and changes in socio-political and economic conditions.

Basing on data on developmental dynamic of personality, we expect (H4a) that people representing these three periods differ in the levels of personality traits (Caspi, Roberts, & Shiner, 2005). We expect Neuroticism to be highest among adolescents, Extraversion and Openness to experience to be highest among early adults, Agreeableness and Conscientiousness to be highest among middle-aged adults.

We also expect adolescents to report lower Subjective Well-being (consistently with higher Neuroticism, lower Agreeableness and Conscientiousness) than young and middle-aged adults (H4b), while young adults to report lowest Collectivism associated with highest Openness (H4c).

If Poland is steadily moving towards individualism, we can suppose that the younger groups will manifest stronger individualistic beliefs – they will be highest among adolescents and lowest among middle-aged adults (H4d).

As mentioned above, there is a shortage of data on the relationships between the Big-Five and beliefs. We therefore examine them thoroughly in the three age groups. However, we also expect varying configurations of beliefs to be related to Subjective Well-being in each group (H5). We assume that Subjective Well-being correlates positively with Horizontal Individualism and Vertical Collectivism among middle-aged adults; Horizontal Individualism and Horizontal Collectivism among students (representing young adults); Horizontal Individualism, Horizontal Collectivism and Vertical Collectivism among adolescents. We also assume that personal beliefs will mediate relationships between Big-Five traits and SWB, but period of life will moderate the relationships, the relations will be different in each group representing a given life period.

## Method

### Participants and Procedure

Adolescents ( $N=174$ , 112 women – 64%) aged 14–18 ( $M=16.1$ ,  $SD=1.41$ ), university students from different majors ( $N=254$ , 140 women – 55%) aged 18–24 ( $M=20.0$ ,  $SD=1.13$ ) and employed adults working various jobs ( $N=252$ , 115 women – 46%) aged 40–55 ( $M=48.2$ ,  $SD=4.11$ ) participated in the study. All the participants were informed, that the study was anonymous and voluntary. All participants provided informed consent. For the underage adolescents additional parental consent was obtained. Among adolescents and students the data were collected in groups, during classes. Adults filled out questionnaires at their workplace. We followed all ethical standards and the study was approved by the local ethical committee.

### Measures

Participants filled out the following questionnaires: The Five Factor Inventory, the Horizontal and Vertical Individualism and Collectivism Questionnaire (H-V-In-Col 20), Satisfaction with Life Scale, Subjective Happiness Scale, Ladder of Need Scales, Mood Questionnaire.

The Five Factor Inventory (NEO-FFI, Costa & McCrae, 1992) consists of 12 items for each trait (Neuroticism, Extraversion, Openness to experience, Agreeableness, Conscientiousness) with a 5-point response scale (1 = definitely don't agree to 5 = definitely agree).

Horizontal and Vertical Individualism and Collectivism Questionnaire (H-V-In-Col 20, Triandis & Gelfand, 1988) consists of 4 subscales, each with 5 items with a 7-point scale (1 = I strongly disagree to 7 = I strongly agree):

- Horizontal Individualism (HI) expresses equality, freedom and autonomy; it assesses the extent to which individuals strive to be distinct without desiring special status (e.g. I often “do my own thing.”);
- Horizontal Collectivism (HC) means relationship-orientation and harmony; it assesses the extent to which individuals emphasize interdependence but also equality (e.g. The well-being of my co-workers is important to me);
- Vertical Individualism (VI) expresses self-interest and competition; it assesses the extent to which individuals strive to be distinct and desire special status (e.g. It annoys me when other people perform better than I do);
- Vertical Collectivism (VC) means priority of group goals, respect for elders and authorities; it assesses the extent to which individuals emphasize interdependence and competition with out-groups (e.g. I would sacrifice an activity that I enjoy very much if my family did not approve of it).

Satisfaction with Life Scale (Diener, Emmons, Larson, & Griffin, 1985; Jankowski, 2015) consists of 5 items (e.g. In most ways my life is close to my ideal) with answers from 1 (I strongly disagree) to 7 (I strongly agree).

Subjective Happiness Scale (Lyubomirsky & Lepper, 1999) consists of 4 items (e.g. “In general, I consider

myself:”) with scales ranging from 1 to 7 with varying meanings ascribed to the scales (e.g. 1 – not a very happy person; 7 – a very happy person). The fourth item is reversely coded.

Ladder of Need Scale measures satisfaction with 5 universal needs (basic existence needs, health, affiliation and love, respect, self-actualization) with 0–10 scales, the sum of scores is an index of needs satisfaction.

Mood Questionnaire by Zalewska (2011) has three subscales for measuring frequency (from 0 – not at all to 6 – everyday) of affective reactions connected with three dimensions of mood: pleasure (e.g. happy, sad), energy (e.g. lively, tired) and tension (e.g. composed, stressed). Each subscale consists of 8 items (4 are reverse coded).

Although we measured six components of Subjective Well-being in our research, in the present paper we will examine four indices distinguished as four factors (with eigenvalue > 1) in Principal Components Analysis (Oblimin rotation with Keiser normalization). We will analyze the index of the superordinate construct of (a) Subjective Well-being: a composite of Need and Life Satisfaction, Subjective Happiness conceptualized as “happiness” or a general judgment of one's life (Oishi, Diener, & Lucas, 2007) and three indices for affective dimensions of mood: (b) Pleasure, (c) Energy and (d) Tension.

The reliability (*Cronbach's alphas*) and inter-correlations of the measured variables are presented in Tables 2–4. The reliability indices in each group were at least sufficient.

## Results

Firstly, we compared the three life periods in terms of the main variables. We then conducted correlational and regression analyses. Finally we designed SEM models and tested them in each group.

### Comparisons across periods of life

Table 1 shows that the three groups differed on all measures.

Neuroticism was highest among adolescents and lowest among middle-aged adults. Agreeableness and Conscientiousness were lowest among adolescents and highest among middle-aged adults. Extraversion and Openness were higher among early adults than among the two other groups. Basing on the findings, the groups can be characterized as following:

Adolescents reported the highest Neuroticism, lowest Agreeableness and Conscientiousness, the highest level of all Individualism and Collectivism beliefs, the highest frequency of Tension, the lowest Energy, lower Pleasure and cognitive appraisals of Subjective Well-being than the middle-aged adults.

Young adults reported the highest Extraversion and Openness to experience, a medium level of Neuroticism, Agreeableness and Conscientiousness, Horizontal Individualism and Vertical Individualism, the lowest Vertical Collectivism, the highest Energy, medium level of Pleasure, lower cognitive appraisals of Subjective Well-being than middle adults and lower Tension than adolescents.

**Table 1. Differences in examined variables between adolescents, early and middle-aged adults – results of ANOVAs**

Group	Adolescents (n = 174) – 1		Early adults (n = 254) – 2		Middle-aged (n = 252) – 3		F	p	Eta2
	M	SD	M	SD	M	SD			
N	<b>25.22<sup>23</sup></b>	5.68	17.00 <sup>13</sup>	4.72	11.65 <sup>12</sup>	3.72	436.38	.001	.563
E	29.93 <sup>2</sup>	4.90	<b>32.41<sup>13</sup></b>	4.40	30.13 <sup>2</sup>	4.02	22.95	.001	.063
O	24.01 <sup>2</sup>	4.08	<b>28.30<sup>13</sup></b>	4.85	23.57 <sup>2</sup>	4.03	86.66	.001	.204
A	27.72 <sup>23</sup>	4.44	30.11 <sup>13</sup>	4.17	<b>31.49<sup>12</sup></b>	2.97	49.35	.001	.127
C	29.26 <sup>23</sup>	6.32	33.20 <sup>13</sup>	4.03	<b>36.44<sup>12</sup></b>	4.11	118.32	.001	.259
HI	<b>25.87<sup>23</sup></b>	4.93	23.17 <sup>13</sup>	2.69	18.58 <sup>12</sup>	1.96	284.56	.001	.457
VI	<b>22.17<sup>23</sup></b>	6.22	19.14 <sup>13</sup>	2.07	17.93 <sup>12</sup>	1.63	75.99	.001	.183
HC	<b>25.32<sup>23</sup></b>	4.67	19.31 <sup>1</sup>	2.01	19.52 <sup>1</sup>	1.87	269.24	.001	.443
VC	<b>24.33<sup>23</sup></b>	5.14	16.97 <sup>13</sup>	1.73	18.33 <sup>12</sup>	2.30	306.27	.001	.475
G-SWB	73.89 <sup>3</sup>	15.85	73.65 <sup>3</sup>	12.69	<b>79.59<sup>12</sup></b>	11.07	15.97	.001	.045
PF	30.82 <sup>3</sup>	7.74	32.23	3.50	<b>32.92<sup>1</sup></b>	4.54	8.28	.001	.024
EF	24.62 <sup>23</sup>	6.84	<b>34.30<sup>13</sup></b>	5.16	29.67 <sup>12</sup>	3.75	180.10	.001	.347
TF	<b>21.10<sup>23</sup></b>	7.29	16.20 <sup>1</sup>	3.89	16.96 <sup>1</sup>	4.96	48.07	.001	.124

Note. N = Neuroticism, E = Extraversion, O = Openness, A = Agreeableness, C = Conscientiousness, H = Horizontal, I = Individualism, V = Vertical, C = Collectivism. G-SWB – general SWB appraisal, F = frequency of: PF = Pleasure, EF = Energy, TF = Tension.

Numbers in appendix indicate groups that differ from a given group.

Middle-aged adults reported the lowest Neuroticism, but the highest Agreeableness and Conscientiousness, lowest Horizontal Individualism and Vertical Individualism, a medium level of Vertical Collectivism and Energy, the highest cognitive appraisals of Subjective Well-being, higher Pleasure and lower tension than adolescents.

**Correlations within age groups**

Differences between age groups suggested that relationships between variables need to be examined separately for each of these groups. The correlations are presented in Tables 2–4.

As indicated in Table 2, among adolescents Vertical Individualism was relatively independent of Collectivism

**Table 2. The reliability (Cronbach’s alpha on the diagonal) and inter-correlations of the measured variables among adolescents**

N=174	N	E	O	A	C	HI	VI	HC	VC	GSWB	PF	EF	TF
N	<b>.84</b>	-.09	.14#	.05	-.10	-.19*	.25***	-.08	.02	-.36***	-.26***	-.17*	.39***
E		<b>.75</b>	.25***	.26***	.29***	.30***	.11	.45***	-.00	.42***	.39***	.34***	-.25***
O			<b>.60</b>	.12	.07	.14#	.06	.07	.02	.08	.14#	.17*	.07
A				<b>.73</b>	.04	.28***	.30***	-.06	-.13#	.01	-.14#	-.22**	.12
C					<b>.70</b>	.32***	.19*	.17*	.11	.37***	.22**	.19*	-.15*
HI						<b>.63</b>	.38***	.19*	.19*	.44***	.23**	.18*	-.14#
VI							<b>.71</b>	-.08	.12	.04	-.10	.02	.20**
HC								<b>.60</b>	.33***	.43***	.39***	.27***	-.22**
VC									<b>.64</b>	.29***	.16*	.13	-.03
G-SWB										<b>.89</b>	.69***	.42***	-.51***
PF											<b>.84</b>	.57***	-.46***
EF												<b>.69</b>	-.28***
TF													<b>.72</b>

Note. N = Neuroticism, E = Extraversion, O = Openness, A = Agreeableness, C = Conscientiousness, H = Horizontal, I = Individualism, V = Vertical, C = Collectivism, G-SWB – general SWB appraisal, F = frequency of: PF = Pleasure, EF = Energy, TF = Tension.

Coefficients accompanied by # p < .10, \* p < .05, \*\* p < .01, \*\*\* p < .001.

beliefs, while other beliefs were related positively to one another. The affective components of Subjective Well-being were moderately or strongly related to general Subjective Well-being appraisal ( $r = .42-.69$ ).

Results partly confirmed Hypothesis H1 among adolescents. As expected, Neuroticism, Extraversion and Conscientiousness were related to all Subjective Well-being components. Openness and Agreeableness were related only to Pleasure and Energy – higher Openness with higher frequency but higher Agreeableness with lower frequency of Pleasure and Energy.

In this group Neuroticism was related only to Individualism beliefs, negatively to Horizontal but positively to Vertical Individualism. Extraversion was positively related to both Horizontal beliefs (Horizontal Individualism and Horizontal Collectivism). Openness was related to Horizontal Individualism but this relationships did not reach statistical significance. Agreeableness was positively related to both Individualism beliefs (Horizontal Individualism and Vertical Individualism) and negatively to Vertical Collectivism (statistical significance was not reached). Conscientiousness was positively related to both Horizontal (Horizontal Individualism and Horizontal Collectivism) and both Individualism beliefs (Horizontal Individualism and Vertical Individualism).

Horizontal Individualism was related to all the Big-Five traits: negatively to Neuroticism, positively to the other traits. Vertical Individualism was positively related to Neuroticism, Agreeableness and Conscientiousness. Horizontal Collectivism was positively associated with Extraversion and Conscientiousness. Vertical Collectivism was negatively related Agreeableness (this last relationship did not reach statistical significance).

Among adolescents both Horizontal (Horizontal Individualism and Horizontal Collectivism) beliefs were related to all Subjective Well-being components – negatively to frequency of Tension and positively to the other Subjective Well-being components. Vertical Collectivism was positively related to a general Subjective Well-being appraisal and Pleasure. Only the Vertical Individualism was positively related to Tension – it was unbeneficial for Subjective Well-being.

Table 3 presents correlations among young adults, different than among adolescents. Among young adults Individualism and Collectivism beliefs were negatively related to one another. In this group the affective components of Subjective Well-being were only weakly related to the general Subjective Well-being appraisal ( $r = .26-.30$ ).

Results also partly confirmed Hypothesis H1 among early adults. As expected, Neuroticism, Extraversion and Openness were related to all Subjective Well-being components. Agreeableness was positively related only to the general Subjective Well-being and it was negatively related to Tension. Conscientiousness was positively related only to the general Subjective Well-being appraisal.

Among young adults Openness was a key trait that was positively related to both Individualism beliefs (Horizontal Individualism and Vertical Individualism) and negatively to Horizontal Collectivism. Positive relations with both Individualism beliefs (Horizontal Individualism and Vertical Individualism), especially with Vertical Individualism, were also found for Extraversion and Conscientiousness. Very weak negative correlations (they did not reach statistical significance) were observed for Neuroticism and Vertical Individualism, as well as for Agreeableness and Horizontal Collectivism.

**Table 3. The reliability (Cronbach's alpha on the diagonal) and inter-correlations of the measured variables among early adults**

N=254	N	E	O	A	C	HI	VI	HC	VC	G-SWB	PF	EF	TF
N	<b>.69</b>	-.39***	-.20***	-.13*	.01	-.06	-.12#	.04	-.07	-.32***	-.26***	-.29***	.20***
E		<b>.74</b>	.32***	.16*	.09	.12#	.16**	.08	.03	.34***	.19**	.22***	-.30***
O			<b>.65</b>	.10	.15*	.29***	.18**	-.23***	-.03	.63***	.21***	.26***	-.28***
A				<b>.71</b>	.05	.06	.09	-.12#	-.05	.13*	.07	-.04	-.29***
C					<b>.72</b>	.11#	.19**	.01	.10	.14*	.06	.07	-.08
HI						<b>.78</b>	.19**	-.17*	-.17*	.38***	.08	.21***	-.05
VI							<b>.69</b>	-.18**	-.17*	.20***	.17**	.15*	-.08
HC								<b>.63</b>	.26***	-.22***	-.10	-.13*	.01
VC									<b>.64</b>	-.00	-.01	-.05	-.06
G-SWB										<b>.88</b>	.28***	.26***	-.30***
PF											<b>.72</b>	.13*	-.23***
EF												<b>.89</b>	-.12#
TF													<b>.80</b>

Note. N=Neuroticism, E=Extraversion, O=Openness, A=Agreeableness, C=Conscientiousness, H=Horizontal, I=Individualism, V=Vertical, C=Collectivism. G-SWB – general SWB appraisal, F=frequency of: PF=Pleasure, EF=Energy, TF=Tension.

Coefficients accompanied by #  $p < .10$ , \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .



**Table 4. The reliability (Cronbach's alpha on the diagonal) and inter-correlations of the measured variables among middle-aged adults**

<i>N</i> =252	N	E	O	A	C	HI	VI	HC	VC	GSWB	PF	EF	TF
N	<b>.61</b>	-.05	-.04	.08	-.05	.03	-.01	.03	.07	-.11#	-.11#	.01	.21***
E		<b>.63</b>	.18**	-.15*	.01	.12#	.06	-.05	.00	.16*	.07	.04	-.03
O			<b>.60</b>	-.03	.04	.18**	.28***	-.16**	-.17**	.42***	.21***	.17**	-.08
A				<b>.65</b>	.06	.02	-.05	.14*	.08	-.08	.02	-.02	-.12#
C					<b>.70</b>	.08	.04	-.03	-.16*	.05	.07	-.01	-.08
HI						<b>.67</b>	.24***	-.20*	-.14*	.26***	.13*	.21***	-.07
VI							<b>.64</b>	-.24***	-.23***	.19**	.09	.21***	-.08
HC								<b>.66</b>	.18**	-.18**	-.19**	-.15*	.07
VC									<b>.77</b>	-.17**	-.01	-.01	-.02
G-SWB										<b>.85</b>	.24***	.22***	-.21***
PF											<b>.87</b>	.11#	-.15*
EF												<b>.82</b>	-.16*
TF													<b>.88</b>

Note. N = Neuroticism, E = Extraversion, O = Openness, A = Agreeableness, C = Conscientiousness, H = Horizontal, I = Individualism, V = Vertical, C = Collectivism, G-SWB – general SWB appraisal, F = frequency of: PF = Pleasure, EF = Energy, TF = Tension.

Coefficients accompanied by #  $p < .10$ , \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

Horizontal Individualism was positively related to Openness, Extraversion and Conscientiousness. Vertical Individualism was also positively related to these three traits (Openness, Extraversion and Conscientiousness) and negatively to Neuroticism (did not reach statistical significance). Horizontal Collectivism was negatively associated with Openness and Agreeableness (did not reach statistical significance). Vertical Collectivism was not related to any of the Big-Five traits.

Among young adults, both Horizontal beliefs (Horizontal Individualism and Horizontal Collectivism) were related to the general Subjective Well-being appraisal and to Energy, but the relationships for the Horizontal Individualism were positive, while for the Horizontal Collectivism they were negative. Vertical Individualism was related positively to the general Subjective Well-being appraisal, Energy and Pleasure. Vertical Collectivism was not related to any of the Subjective Well-being components.

Table 4 shows that among middle-aged adults, Individualism and Collectivism beliefs were negatively related to one another (similarly as among young adults). In this group the affective components of Subjective Well-being were also significantly but weakly related to the general Subjective Well-being appraisal ( $r = .21-.24$ ).

Results partly confirmed Hypothesis H1 in the group of middle-aged adults. There were only a few relationships between the Big-Five traits and the Subjective Well-being components in this group, some of them quite peculiar. Neuroticism was positively related to Tension and tended to be negatively related to the general Subjective Well-being

appraisal and Pleasure. Extraversion was positively related only to the general Subjective Well-being appraisal. Openness was positively related to the general Subjective Well-being appraisal, Pleasure and Energy. Agreeableness was negatively related to Tension. Conscientiousness was not related to any of the Subjective Well-being components.

Among middle-aged adults Openness also played a key role and was related positively to both Individualism beliefs (Horizontal Individualism and Vertical Individualism) and negatively to both Collectivism beliefs (Horizontal Collectivism and Vertical Collectivism). Conscientiousness was negatively related to Vertical Collectivism, Extraversion was positively related to Horizontal Individualism (at tendency-level). Agreeableness was related positively only to Horizontal Collectivism, while Neuroticism was not related to any of the beliefs in this group.

Interestingly, each belief was related to a specific set of traits. Among young adults Horizontal Individualism was positively related to Openness and Extraversion, while Vertical Individualism was positively related only to Openness. Horizontal Collectivism was negatively associated with Openness and positively with Agreeableness. Vertical Collectivism was negatively related to Openness and Conscientiousness.

Similarly to young adults, among middle-aged adults both Horizontal beliefs (Horizontal Individualism and Horizontal Collectivism) were related to the general Subjective Well-being appraisal, Pleasure and Energy. Horizontal Individualism was positively related to these dimensions, while Horizontal Collectivism was related

**Table 5. Multiple regression analyses of Big-Five traits on Horizontal and Vertical Individualism or Collectivism scores among adolescents and adults**

Groups	Model	N	E	O	A	C	F	df
Adolescents	HI	-.17*	.13#	.09	.23***	.25***	9.86***	5,168
	VI	.27***	.00	-.03	.29***	.21**	8.04***	5,168
	HC	-.02	.49***	-.04	-.18**	.04	10.59***	5,168
	VC	.04	-.00	.02	-.14#	.12	1.16	5,168
Adults	HI	.28***	.15***	.38***	-.03	-.09*	52.87***	5,500
	VI	.08#	.10*	.29***	-.00	.04	13.70***	5,500
	HC	.04	.09#	-.24***	-.01	.00	5.24***	5,500
	VC	-.12**	-.00	-.21***	.04	.02	8.04***	5,500

Column labels: N=Neuroticism, E=Extraversion, O=Openness, A=Agreeableness, C=Conscientiousness.

Row labels: H=Horizontal, I = Individualism, V=Vertical, C=Collectivism.

Standardized coefficients accompanied by #  $p < .10$ , \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .

negatively. Vertical Individualism was positively related to the general Subjective Well-being appraisal and Energy. One relationship was limited only to this group: Vertical Collectivism was negatively related to the general Subjective Well-being appraisal.

### Regression analyses – Big-Five traits predict personal beliefs

The above results show, that there are similarities between young and middle-aged adults. Adults and adolescents differ in terms of the relationships between personal beliefs, Subjective Well-being components, traits and Subjective Well-being indices, traits and personal beliefs, as well as between personal beliefs and Subjective Well-being components. Basing on these findings, we decided to design separate SEM models for adolescents and separate models for adults (two adult groups combined). In each model, a specific Subjective Well-being component would be predicted by traits and this relationship would be mediated by personal beliefs. However, we first conducted regression analyses aimed to identify which traits predict specific personal beliefs among adolescents and among adults.

Table 5 shows that among adolescents Agreeableness predicted all beliefs, while Openness did not predict any of the beliefs. A reverse patterns was found for adults – Openness predicted all beliefs, while Agreeableness was insignificant. The remaining Big-Five traits predicted beliefs in both groups. However, other set of Big-Five traits allowed to predict each of the considered here personal beliefs in every group. Moreover the set of Big-Five traits as predictors for a given belief was also different among adolescents and adults.

Among adolescents, both Individualism beliefs (Horizontal Individualism and Vertical Individualism) were predicted positively by Agreeableness and Conscientiousness. Horizontal Individualism was additionally predicted positively by Extraversion and negatively by Neuroticism.

Vertical Individualism was additionally predicted positively by Neuroticism. Both Collectivism dimension were negatively predicted by Agreeableness (Vertical Collectivism only as tendency) and Horizontal Collectivism additionally positively by Extraversion.

Among adults both Individualism beliefs (Horizontal Individualism and Vertical Individualism) were predicted positively by Openness, Extraversion and Neuroticism, Horizontal Individualism was additionally predicted negatively by Conscientiousness. Both Collectivism beliefs were predicted negatively by Openness, Horizontal Collectivism was additionally predicted positively by Extraversion and Vertical Collectivism – negatively by Neuroticism.

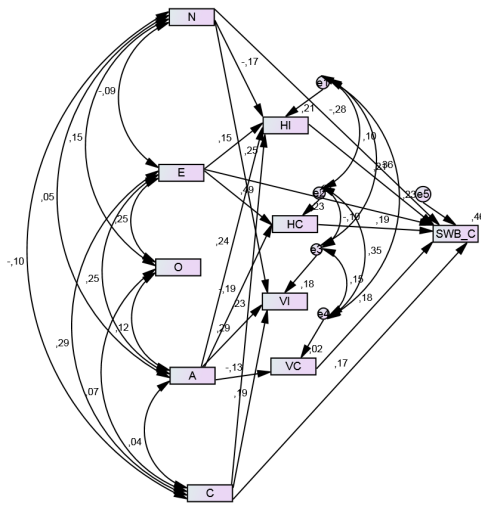
Basing on the above results, we designed models of relationships between the Big-Five traits and Horizontal and Vertical Individualism and Collectivism beliefs separately for each Subjective Well-being component and separately for adolescents and for adults.

### Relationships between the Big-Five, personal beliefs and the general SWB

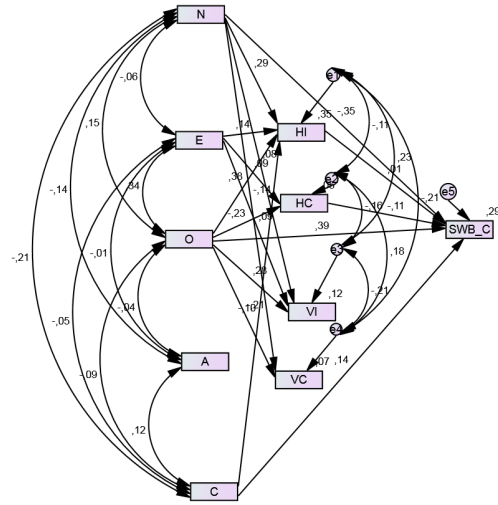
Among adolescents (Figure 1A), the general SWB appraisal (SWB-complex) was predicted directly by Neuroticism, Extraversion and Conscientiousness, by Horizontal beliefs (Horizontal Individualism and Horizontal Collectivism) and by Vertical Collectivism. All these beliefs and traits, except for Neuroticism, were positive predictors of the general Subjective Well-being (happiness). Besides the direct effects of these three traits we also found their indirect effects and an additional indirect effect of Agreeableness on general Subjective Well-being through beliefs (standardized indirect effects of traits were: N = -.035, E = .123, A = -.008, C = .048).

Among adults (Figure 1B), the general SWB appraisal (SWB-Complex) was directly predicted by three traits, negatively by Neuroticism, positively by Conscientiousness and Openness (instead of Extraversion);

**Figure 1A. Model for SWB\_C designed for adolescents (R-squared = .464)**



**Figure 1B. Model for SWB\_C designed for adults (R-squared = .291)**



**Table 6. Fit indices of Models for the general SWB appraisal (SWB-Complex) designed for adolescents and for adults in 4 groups: adolescents, early adults (Early A), middle-aged adults (Middle A) and Adults together (Adults T)**

SWB for adolescents	CMIN	DF	p	CMIN/DF	GFI	AGFI	CFI	RMSEA
Adolescents	7.693	13	.863	0.592	.991	.963	1.000	.000
Early A	119.583	13	.001	9.199	.928	.693	.681	.180
Middle A	69.700	13	.001	5.362	.950	.789	.599	.132
Adults T	219.436	13	.001	16.880	.930	.705	.702	.177
SWB for adults	CMIN	DF	p	CMIN/DF	GFI	AGFI	CFI	RMSEA
Adolescents	53.037	13	.001	4.080	.945	.768	.872	.133
Early A	23.562	13	.035	1.812	.982	.924	.968	.057
Middle A	16.139	13	.242	1.241	.987	.947	.978	.031
Adults T	7.808	13	.856	0.601	.997	.987	1.000	.000

by Horizontal beliefs (Horizontal Individualism and Horizontal Collectivism) – positively by Horizontal Individualism and negatively by Horizontal Collectivism. We also found indirect effects of these three traits and an additional indirect effect of Extraversion on general SWB through beliefs (standardized indirect effects of traits were: N = .002, E = -.008, O = .027, C = -.001).

The model designed for adolescents fit adolescents data well, but it did not fit any of the adults data. The model designed for adults fit the combined adults data well and both of the adults subsamples, but did not fit adolescents data (Table 6).

**Relationships between the Big-Five, personal beliefs and Pleasure**

Among adolescents (Figure 2A), Pleasure was predicted directly by three traits, negatively by Neuroticism

and Agreeableness, positively by Extraversion, and additionally positively by Horizontal Collectivism. We also found additional indirect effects of Extraversion and Agreeableness (standardized indirect effects of traits were: E = .105, A = -.040).

Among adults (Figure 2B), Pleasure was also directly predicted by three traits: positively by Conscientiousness and Openness, negatively by Neuroticism. Additionally it was predicted negatively by Horizontal Collectivism. We also found an additional indirect effect of Openness and an indirect effect of Extraversion through Horizontal Collectivism (standardized indirect effects of traits were: E = -.009, O = .025).

The model designed for adolescents fit the adolescents data well, but not the adults data. The model designed for adults fit all adults groups (young, middle-aged and combined) but it did not fit the adolescents data (Table 7).

Figure 2A. Model for frequency of Pleasure (PF) designed for adolescents ( $R\text{-squared} = .286$ )

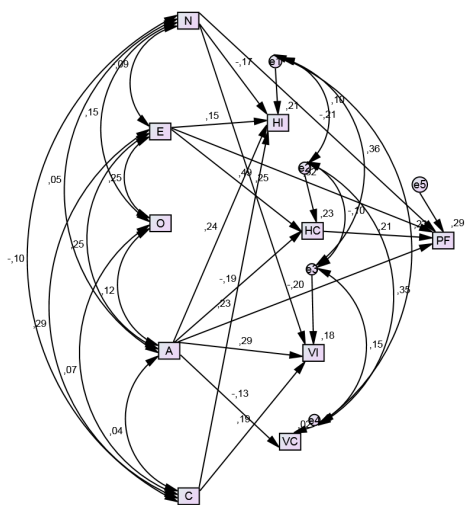


Figure 2B. Model for frequency of Pleasure designed for adults ( $R\text{-squared} = .081$ )

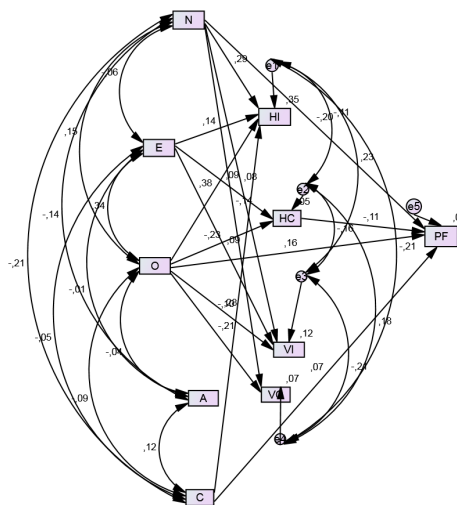


Table 7. Fit indices of Models for frequency of Pleasure designed for adolescents and for adults in 4 groups: adolescents, early adults (Early A), middle-aged adults (Middle A) and Adults together (Adults T)

PF for adolescents	CMIN	DF	p	CMIN/DF	GFI	AGFI	CFI	RMSEA
Adolescents	14.213	15	.509	0.948	.983	.937	1.000	.000
Early A	49.419	15	.001	3.295	.964	.868	.820	.095
Middle A	46,537	15	.001	3.102	.966	.874	.682	.092
Adults T	162.676	15	.001	10.845	.944	.796	.737	.140
PF for adults	CMIN	DF	p	CMIN/DF	GFI	AGFI	CFI	RMSEA
Adolescents	57.042	14	.001	4.074	.943	.775	.839	.133
Early A	22.239	14	.074	1.588	.983	.934	.957	.048
Middle A	16.980	14	.257	1.213	.987	.948	.970	.029
Adults T	8.107	14	.884	0.579	.997	.987	1.000	.000

**Relationships between the Big-Five, personal beliefs and Energy**

Among adolescents (Figure 3A), Energy was directly predicted only by traits – negatively by Neuroticism and Agreeableness, positively by Extraversion and Openness. Although Conscientiousness and personal beliefs correlated with Energy (in zero-order correlations) they did not contribute to predicting Energy. The mediating role of personal beliefs was not confirmed in this group.

Among adults (Figure 3B) Energy was predicted directly by three traits, negatively by Agreeableness and positively by Extraversion and Openness. Additionally it was positively predicted by both Individualism beliefs (Horizontal Individualism and Vertical Individualism). Extraversion and Openness influenced Energy also indirectly through beliefs, while Neuroticism and Conscientiousness had only indirect effects (standardized

indirect effects of traits were as follow: E = .053, O = .144, N = .095, C = -.029).

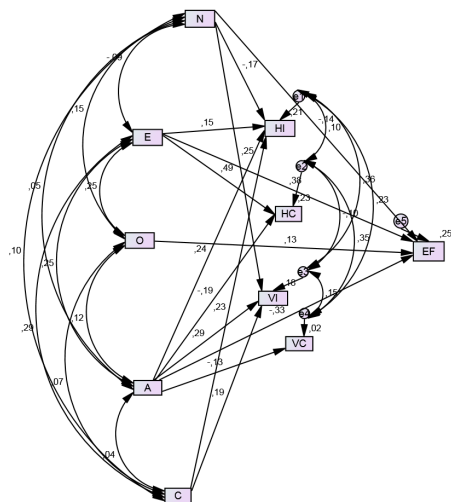
The model designed for adolescents fit adolescents data well, but it did not fit to the data of the adults groups. The model designed for adults fit all adults groups (young, middle-aged, combined) but it did not fit the data collected among adolescents (Table 8).

**Relationships between the Big-Five, personal beliefs and Tension**

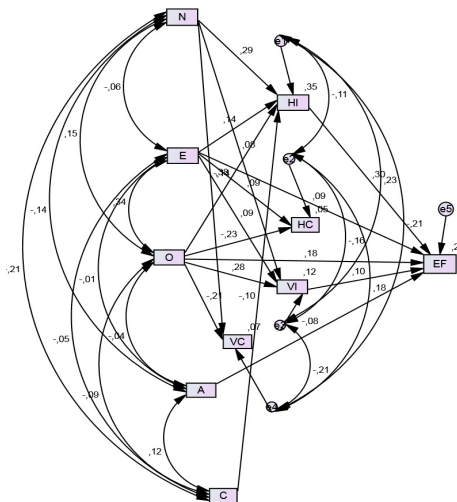
Among adolescents (Figure 4A), Tension was directly predicted by three traits – positively by Neuroticism and Agreeableness, negatively by Extraversion, and additionally positively by Vertical Individualism. Apart from direct effects Neuroticism and Agreeableness influenced Tension also indirectly through Vertical Individualism. Additionally, Conscientiousness influenced Tension indirectly



**Figure 3A. Model for frequency of Energy (EC) designed for adolescents ( $R\text{-squared} = .251$ )**



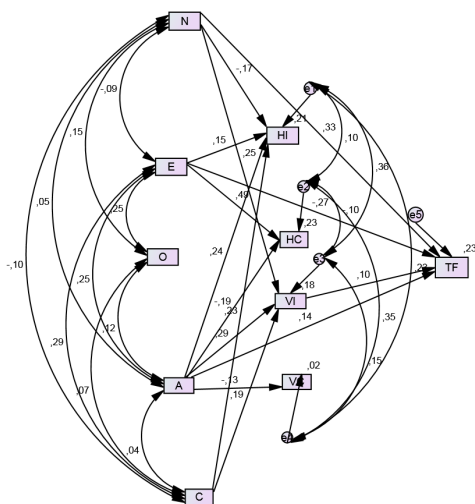
**Figure 3B. Model for frequency of Energy designed for adults ( $R\text{-squared} = .265$ )**



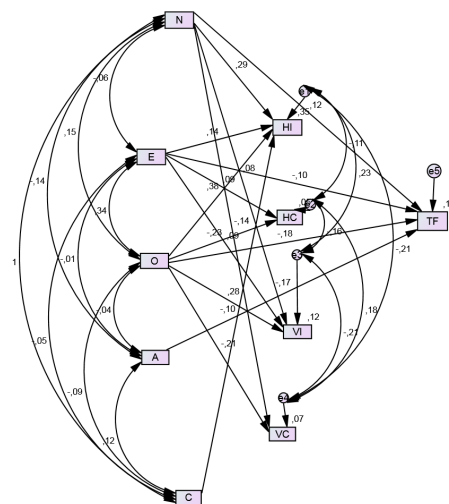
**Table 8. Fit indices of Models for frequency of Energy designed for adolescents and for adults in 4 groups: adolescents, early adults (Early A), middle-aged adults (Middle A) and Adults together (Adults T)**

EF for adolescents	CMIN	DF	p	CMIN/DF	GFI	AGFI	CFI	RMSEA
Adolescents	12.163	15	.667	0.811	.986	.949	1.000	.000
Early A	51.432	15	.001	3.429	.964	.866	.826	.098
Middle A	51.964	15	.001	3.464	.963	.863	.622	.099
Adults T	209.326	15	.001	13.955	.933	.756	.712	.160
EF for adults	CMIN	DF	p	CMIN/DF	GFI	AGFI	CFI	RMSEA
Adolescents	42.909	13	.001	3.301	.956	.812	.883	.115
Early A	32.580	13	.002	2.506	.975	.895	.906	.077
Middle A	16.431	13	.227	1.264	.987	.946	.965	.032
Adults T	9.328	13	.748	0.718	.996	.984	1.000	.000

**Figure 4A. Model for frequency of Tension (TF) designed for adolescents ( $R\text{-squared} = .232$ )**



**Figure 4B. Model for frequency of Tension designed for adults ( $R\text{-squared} = .098$ )**



**Table 9. Fit indices of Models for frequency of Tension designed for adolescents and for adults in 4 groups: adolescents, early adults (Early A), middle-aged adults (Middle A) and Adults together (Adults T)**

TF for adolescents	<i>CMIN</i>	<i>DF</i>	<i>p</i>	<i>CMIN/DF</i>	<i>GFI</i>	<i>AGFI</i>	<i>CFI</i>	<i>RMSEA</i>
Adolescents	10.158	15	.810	0.677	.989	.958	1.000	.000
Early A	54.051	15	.001	3.603	.962	.859	.820	.101
Middle A	38.907	15	.001	2.594	.971	.895	.751	.080
Adults T	164.876	15	.001	10.992	.943	.791	.737	.141
TF for adults	<i>CMIN</i>	<i>DF</i>	<i>p</i>	<i>CMIN/DF</i>	<i>GFI</i>	<i>AGFI</i>	<i>CFI</i>	<i>RMSEA</i>
Adolescents	42.823	14	.001	3.059	.956	.828	.885	.109
Early A	20.676	14	.110	1.477	.984	.938	.969	.043
Middle A	17.703	14	.221	1.265	.986	.947	.961	.032
Adults T	7.873	14	.896	0.562	.997	.988	1.000	.000

(standardized indirect effects of traits were as follow: N = .024, A = .028, C = .019).

Among adults (Figure 4B) Tension was predicted directly only by four traits, positively by Neuroticism and negatively by Extraversion, Openness and Agreeableness. Conscientiousness and personal beliefs were not related to Tension (in zero-order correlations) in both adults groups and they also did not predict Tension. In this model designed for adults personal beliefs did not mediate the relationships between Big-Five traits and Tension.

Again, the model designed for adolescents fit adolescents data, but not the adults data. The model designed for adults fit all adults datasets (young, middle-aged, combined) but not the adolescents (Table 9).

## Discussion

In the present study we considered five basic traits (the Big-Five), four characteristic adaptations (Horizontal and Vertical Individualism and Collectivism beliefs), and four biographical elements that constitute Subjective Well-being (a general SWB appraisal including need and life satisfaction, subjective happiness, and three dimensions of mood: Pleasure, Energy and Tension). We analyzed the role of basic traits and characteristic adaptations in predicting each of the Subjective Well-being components. Using SEM we examined whether characteristic adaptations mediated the relationships between the Big-Five traits and each of the Subjective Well-being components. Moreover, we examined whether the relationships between personality (traits and beliefs) and Subjective Well-being were moderated by period of life. We started our analyses with group comparisons.

The three groups representing three life periods differed on all measures. In reference to the Big-Five traits the results were consistent with Hypothesis H4a and consistent with data on the dynamic of personality traits over the lifespan (Caspi et al., 2005).

Consistently with Hypothesis H4d, Horizontal and Vertical Individualism beliefs were strongest in the

youngest group (adolescents), medium among young adults and weakest among middle-aged adults. As expected in Hypothesis H4c, Vertical Collectivism was lowest among young adults, highest among adolescents, and its medium level was observed among middle-aged adults. Horizontal Collectivism was higher among adolescents than among the two other groups (who did not differ from one another, although they differed in Openness). In general, adolescents manifested higher Collectivism beliefs and early adults had higher Horizontal Collectivism than would be expected from their Openness or from Poland's shift from Collectivism to Individualism (Hofstede, 2000).

On the one hand, it seems that higher respect for Collectivism is associated with lower maturity and lower independence. Adolescents depend on their parents and go to school. Their main task is to develop self-awareness, autonomy and control, to shape their own identity (Erikson, 1968; Bee, 2004). According to Arnett (2006) a period that separates adolescence and early adulthood is the emerging adulthood. It is a period of peak physical health, agility, performance and effective physical immunity (Arnett, 2012). People in this period (aged 18–26) do not have children, do not live in their own home and do not have sufficient income to become fully independent. Most of them share problems of identity exploration, lack of independence and stabilization (uncertain personal and vocational future), self-focus, and feeling in-between (between adolescence and early adulthood).

On the second hand, higher respect for Collectivism and stronger collectivism beliefs may be associated with socio-economic and political changes observed in Poland in the recent years. In the face of these changes, young people may crave for a more collectivistic vision of the state and society (Krzywosz-Rynkiewicz & Zalewska, 2018).

Age effects for the Subjective Well-being varied for each dimension. As expected (H4b), adolescents reported the most frequent Tension and least frequent Energy. They also reported less frequent Pleasure and a lower general SWB appraisal than middle-aged adults, but they did not

differ from young adults in these Subjective Well-being components. These results can also be referred to lower level of maturity and independence.

### Correlations within age groups

Relationships between individualism and collectivism beliefs, as well as relationships between affective and cognitive Subjective Well-being appraisals seem quite intriguing. Among adolescents individualism and collectivism beliefs were relatively independent or positively related to one another. According to Verkuyten (1995) such patterns of relationships between beliefs are characteristic of collectivistic cultures. However, among adolescents the affective components of Subjective Well-being were moderately or even strongly related to general Subjective Well-being appraisal ( $r = .42-.69$ ) and this is characteristic of individualistic cultures (Suh, Diener, Oishi, & Triandis, 1998). These findings are therefore inconsistent – some are typical of collectivistic cultures, while the others of individualistic. Inconsistent relationships were also found in both adult groups. Among adults relationships between individualism and collectivism beliefs were negative and this is characteristic of individualistic cultures (Verkuyten, 1995), while relationships between the affective and cognitive Subjective Well-being appraisals were rather weak and this is typical of collectivistic culture. These patterns suggest that each group has its own combination of individualism and collectivism. We can say that these two groups live in the same country but in different cultures.

These correlational analyses showed that there are significant relationships between traits and Subjective Well-being components, between traits, individualism and collectivism beliefs, as well as between beliefs and Subjective Well-being components. A more in-depth analysis also showed that these relationships are similar among young and middle-aged adults, but different among adolescents. Specific differences were found for relationships between personal beliefs, Subjective Well-being components, traits and Subjective Well-being components, traits and personal beliefs (especially for Openness and Agreeableness), as well as between personal beliefs and Subjective Well-being components (especially for Horizontal Collectivism and Vertical Individualism).

As stated in the introduction, there is a shortage of data on the relationships between personality traits and Individualism or Collectivism beliefs. This may stem from a widespread assumption, that these beliefs are shaped by culture and independent of personality (Triandis, 1995; Church, 2000, 2010). We have shown, that this assumption may be false and it should not discourage investigators from studying these relationships.

### Big-Five traits as predictors of personal beliefs

In our analyses of traits and beliefs, we found three important effects:

- 1) Agreeableness and Openness have inverse connotations for adolescents and adults – Agreeableness is more significant than Openness in predicting personal

beliefs among adolescents, the opposite was found among adults.

- 2) Each of the four beliefs had its own, unique set of personality predictors – this means that the division of culture orientations into four beliefs proposed by Triandis and Gelfand (1998) and based on the multidimensional concept of individualism and collectivism (Triandis (1995; Singelis et al., 1995) is valid.
- 3) There are different patterns of predictions among adolescents and among adults: each belief was predicted by a unique set of Big-Five traits in each group. This indicates that period of life moderates the significance of the Big-Five traits and the significance of the personal beliefs (Horizontal and Vertical Individualism or Collectivism beliefs).

### Relationships between the Big-Five and Subjective Well-being components: the mediating role of Individualism and Collectivism beliefs and the moderating role of life periods

Our study shows, that characteristic adaptations (McAdam & Pals, 2006; McCrae & Costa, 1999; McCrae et al., 2012) expressed through Horizontal and Vertical Individualism or Collectivism beliefs partially mediate the relationships between the Big-Five and Subjective Well-being components. Six out of eight models confirmed partial mediations – the mediation was not confirmed only for Energy among adolescents and for Tension among adults.

Earlier research showed, that socio-cognitive constructs, such as self-esteem, self-efficacy or life-engagement can be treated as components of Eudaimonic Well-being (Keyes, 2002; Ryff, 1989; Ryff & Singer, 2008; Waterman et al., 2010). Our findings additionally suggest, that other self-construal beliefs, which develop on the foundation of traits and external impacts (social, cultural, situational) can partially mediate relationships between basic traits and Subjective Well-being components.

We also found that periods of life moderate the significance of traits and beliefs, the relationships between basic traits and Subjective Well-being, beliefs and Subjective Well-being components, traits and beliefs. All models designed for adolescents fit adolescent sample well, and did not fit any of the adult subsample. Inversely, models designed for adults fit adult data but not the adolescent data.

As mentioned above, the role of traits in predicting Subjective Well-being components was different among adolescents and adults. Among adolescents Neuroticism and Agreeableness were negative predictors and Extraversion was a stable positive predictor of Subjective Well-being components. Among adults Neuroticism was the only stable negative predictor, while Openness was the only stable positive predictor of Subjective Well-being components.

The role of beliefs in predicting Subjective Well-being components was also different among adolescents and adults. Among adolescents Horizontal Collectivism was a positive predictor of Pleasure and general Subjective

Well-being, while Horizontal Individualism and Vertical Collectivism were positive predictors of general SWB appraisal. Vertical Individualism was a positive predictor of Tension, meaning that it was unbeneficial for Subjective Well-being. Among adults Individualism beliefs (Horizontal Individualism and Vertical Individualism) were positive predictors, while Horizontal Collectivism was a negative predictor of general SWB and Pleasure.

Moreover, the role of traits in predicting beliefs was different among adolescents and adults. Among adolescents Agreeableness, Conscientiousness and Neuroticism were positive predictors of Individualism, while Agreeableness was a negative predictor of Collectivism beliefs. Among adults Openness, Extraversion and Neuroticism were positive predictors of Individualism beliefs, while Openness was a negative predictor of Collectivism. In both groups only the Horizontal beliefs (Horizontal Individualism and Horizontal Collectivism) were predicted positively by Extraversion.

As it was mentioned each belief was predicted by a unique set of Big-Five traits in each group. The data allow to infer that not only the role but also the meaning (associated with underlying basic tendencies) of beliefs as predictors of Subjective Well-being were different among adolescents and adults. In the culture of adolescents Horizontal Collectivism (self-interdependence, equality, collaboration and empathy) as a positive predictor of Subjective Well-being was predicted mostly and positively by Extraversion (the tendency to engage in tasks and social interactions, to experience positive emotions). In the culture of adults as a negative predictor of Subjective Well-being it was predicted mostly and negatively by Openness to experience (the tendency to seek out new experiences). Similarly, Vertical Individualism (competition, freedom, the desire for special status) as a positive predictor of Subjective Well-being among adults was predicted mostly and positively by Openness to experience – the tendency to seek out new experiences. As a negative predictor of Subjective Well-being among adolescents Vertical Individualism was positively predicted by the configuration of Neuroticism (sensitivity to negative stimuli) Agreeableness (the tendency for cooperation and a positive attitude towards others) and Conscientiousness (self-discipline and goal-directed behaviour). Such a configuration, especially high Neuroticism and high Conscientiousness, has been indicated as a risk factor for developing some obsessive compulsive disorders, like perfectionism (Hill, McIntire, & Bacharach, 1997; Stairs, Smith, Zapolski, Combs, & Settles, 2012) or workaholism (Součková, Vaculik, & Prochazka, 2014).

McAdams and Pals (2006) assumed that each level of personality is related to its own unique set of predictors and moderators. Our findings are consistent with their model, in that period of life moderated the significance of traits and beliefs, as well as the relationships between basic traits and Subjective Well-being, traits and beliefs, beliefs and Subjective Well-being. These results, however, contradict the model proposed by McCrae and Costa (1999, 2003; McCrae et al., 2012), who assumed that the role of traits

and specific adaptations (as mediators) is universal and not moderated by other variables. Our data suggest that only a more complex model can explain the mechanisms of personality. Cross-cultural research suggested, that Horizontal and Vertical Individualism or Collectivism beliefs modify the significance of traits and the congruence between traits and behaviour (Markus & Kitayama, 1998; Church, 2000, 2010). It therefore seems, that relationships between traits and biographical elements may be moderated by Horizontal and Vertical Individualism or Collectivism. Studies in this area may yield interesting results.

We also found, that personality (traits and beliefs together) was more strongly related to Subjective Well-being components among adolescents than among adults (who reported lower Individualism beliefs than adolescents): for general Subjective Well-being – 46% and 29%, for Pleasure – 29% and 8%, for Tension – 23% and 10%. Only for Energy the percentage of explained variance was similar – 25% among adolescents and 27% among adults.

It is visible too, that among both groups (adolescents and adults) general SWB appraisal, which is rather a cognitive evaluation, is better predicted by personality than affective dimensions. This result is inconsistent with previous findings showing that basic personality traits predict affective dimensions of Subjective well-being better than cognitive ones (Zalewska, 2003). That suggests that characteristic adaptations (beliefs) contribute to the prediction of cognitive appraisals much higher than to affective components and calls for further research.

## Conclusions

Results of this study showed that three groups representing three periods of life differed in all examined variables. Adolescents reported the highest Neuroticism, lowest Agreeableness and Conscientiousness, the highest level of all Individualism and Collectivism beliefs, the highest frequency of Tension, the lowest Energy, lower Pleasure and cognitive appraisals of SWB than the middle adults.

The correlational analyses confirmed relations between traits and SWB components. They also showed significant relations between the Big-Five traits and individualism and collectivism beliefs, as well as between these personal beliefs and SWB components.

It also occurred that relations between individualism and collectivism beliefs indicated a different kind of culture than relations between affective and cognitive SWB appraisals – they informed about some kind of mixture of individualism and collectivism symptoms in each group, and that the symptoms were different in group of adolescents and in both groups of adults.

Horizontal and Vertical Individualism or Collectivism beliefs considered as characteristic adaptations mediated partially the relationships between the Big-Five traits and SWB components. In six out of eight designed models the results confirmed partial mediations. That findings informed that not only constructs that can be considered as components of eudaimonic happiness



(self-esteem, self-efficacy, life-engagement), but also other self-constructs can mediate relations between traits and SWB as biographical elements.

However, obtained results indicated that the meaning of the traits and beliefs, as well as relations between basic traits and SWB, traits and beliefs (especially as regards Openness and Agreeableness) as well as between personal beliefs and SWB components (especially in reference to HC and VI) were moderated by periods of life. These data call for more rich model than that offered by McCrae and Costa (1999).

### Limitations

These results need to be confirmed and clarified with using larger more representative samples. It seems important to repeat such research to collect data in different times and in different socio-economic and political conditions. Such data would allow to infer about effects associated with development stages and effects associated with changes in external socio-political and economic life conditions.

These data were collected in cross-sectional approach, and the longitudinal research is needed to check developmental changes in Horizontal and Vertical Individualism and Collectivism beliefs and SWB among adolescents, then emerging, young and middle adults and across the life span. The data were collected only among Polish groups. There is a need to extend such research to other countries that occupy various positions on continuum from collectivism to individualism and compare the data gathered in different conditions.

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