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The HEXACO Personality Inventory: Validation and Psychometric Properties in the Serbian Language

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ABSTRACT

The aim of this research is to validate the HEXACO model of personality in the Serbian language through psychometric validation of the 100-item version of the HEXACO-PI-R. The research was conducted on 2 independent samples, the first comprising 1,217 participants from a community sample (55.5% females; average age = 31.77 years), and the second 345 undergraduate students (65% females; average age = 21 years). Besides the HEXACO-PI-R, 2 questionnaires were applied for the purposes of convergent validation: the Big Five Plus Two (BF+2), measuring 7 lexical personality dimensions (applied in Sample 1), and the Big Five Inventory (BFI; applied in Sample 2). Factor structure of the HEXACO-PI-R is in line with model assumptions. Convergent validity is good, whereby Extraversion, Openness to Experience, and Conscientiousness are highly correlated to their BFI and BF+2 counterparts. Honesty–Humility is most closely related to Negative Valence (BF+2), Emotionality to BFI Neuroticism, and Agreeableness to BF+2 Aggressiveness and BFI Agreeableness. The results point to the satisfactory validity of the HEXACO model and its measure in the Serbian language.

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Lexical research of personality is one of the most prominent paradigms in exploring the structure of personality traits. One of the most robust solutions obtained in this research is a five-factor structure, operationalized in the Big Five model (e.g., John & Srivastava, 1999; Saucier & Goldberg, 1998). The five personality traits depicted in the Big Five model are Neuroticism (emotional instability), Extraversion (gregariousness, enjoyment in social interactions), Openness to Experience (inquisitiveness and creativity), Agreeableness (cooperativeness and trust), and Conscientiousness (self-discipline, sense of duty). Following an era of dominance of the Big Five model within the psycholexical paradigm, the attention of researchers shifted toward models containing basic lexical dimensions beyond the Big Five. This resulted in thorough exploration of the structure, validity, and replicability of six-factor (Ashton, Lee, Marcus, & De Vries, 2007; De Raad & Szirmak, 1994; Di Blas & Forzi, 1998; Lee & Ashton, 2008; Szirmak & De Raad, 1994) and seven-factor (Saucier, 1997; Waller, 1999) lexical models. Initial “classic” psycholexical studies, the results of which challenged the five-factor personality structure, were conducted in the Italian and Hungarian languages (De Raad & Szirmak, 1994; Di Blas & Forzi, 1998; Szirmak & De Raad, 1994). The results in both languages revealed an additional factor, comprising descriptors such as honest, sincere, modest versus greedy, deceitful, conceited, and so on. The additional factor found in emic lexical research is often called Honesty–Humility. Very similar six-factor structures were found in German (Ashton et al., 2007), French, Dutch,

Hungarian, Italian, Korean, Polish (Ashton et al., 2004), Greek (Lee & Ashton, 2009), Croatian (Ashton & Lee, 2008), and English (Lee & Ashton, 2008). Cross-language replicability of the six-factor structure is approximately the same as for the Big Five (Saucier, 2009), which further supports the plausibility of the former model. It could be assumed that the Honesty–Humility factor is already represented in other personality models that also had a five-factor structure, such as the Five-Factor Model (FFM), specifically in the attributes of Agreeableness, labeled as Straightforwardness and Modesty. However, some recent analyses showed that Honesty–Humility and Agreeableness from the FFM are conceptually different traits and that they should be differentiated in personality taxonomies (Ashton, Lee, & de Vries, 2014). This way the six-factor structure represents a viable alternative to the Big Five/Five-Factor personality models.

The HEXACO model of personality is currently the most popular conceptualization of such six-factor structure, measured by the HEXACO-PI-R. Each of the six broad HEXACO traits includes four facets (Lee & Ashton, 2004, 2006). Key conceptual differences between the HEXACO and the Big Five include the emergence of the additional dimension, Honesty–Humility, as well as the appearance of Emotionality instead of Neuroticism. In particular, the HEXACO versions of Neuroticism and Agreeableness could be regarded as rotated versions of their Big Five counterparts (De Vries, Lee, & Ashton, 2008). The consequence of such rotation is that the descriptors of irritability and ill temper, which loaded on Big Five Neuroticism, load on the

negative pole of Agreeableness in HEXACO. Similarly, the traits of empathy and sentimentality, which were a part of Big Five Agreeableness, load on HEXACO Emotionality (Ashton & Lee, 2007). Besides the higher and lower order HEXACO dimensions, the inventory includes an interstitial facet of Altruism versus Antagonism, which refers to a tendency to be soft-hearted and sympathetic. The Altruism facet is expected to correlate moderately and approximately equally with the three dimensions in the altruistic domain: Honesty–Humility, Agreeableness, and Emotionality.

This study

The HEXACO model of personality has not been examined in Serbian culture so far. The lexical study conducted in Croatian, a southern Slavic language akin to Serbian, revealed a six-factor structure (Ashton & Lee, 2008). Also, the validation of the HEXACO–PI–R in a Croatian sample provided further evidence for the validity of the HEXACO model (Babarović & Šverko, 2013). The main aim of this study is to validate the HEXACO model in a Serbian sample through psychometric validation of the 100-item version of the HEXACO–PI–R (HEXACO–100), whereby the latent structure of the inventory will be examined, as well as the relations with two inventories stemming from the lexical paradigm: the BFI (John, Donahue, & Kentle, 1991, according to John & Srivastava, 1999) and Big Five Plus Two–Short Version (BF+2–70; Čolović, Smederevac, & Mitrović, 2014).

The BF+2 is based on lexical studies in the Serbian language (Smederevac, 2000; Smederevac, Mitrović, & Čolović, 2007) that broadly followed the approach of Tellegen and Waller's and Waller's nonrestrictive methodology (Tellegen & Waller, 1987; Waller, 1999) in which all descriptors, except synonyms, were included in analysis. Tellegen and Waller (1987) argued that psycholexical studies usually rely on the restrictive criteria of Allport and Odbert (1936), without empirical verification. In both Serbian lexical studies, representative sets of personality descriptive terms were extracted from the dictionaries (Dictionary of the Serbo-Croatian Literary Language, 1967–1976; Moskovljević, 2000). This approach has yielded a seven-factor personality structure, quite similar to the Big Five dimensions supplemented with two new evaluative categories that were named Positive Valence and Negative Valence. In the Serbian language, studies resulted in a seven-factor structure. Positive Valence refers to the perception of oneself as an exceptional and superior person, whereas Negative Valence refers to the perception of self as an evil, frightful, and manipulative person. These two factors showed significant contribution in the prediction of personality disorders (Smederevac, Mitrović, & Čolović, 2010). It could be noticed that evaluative dimensions are (content-wise) closest to HEXACO's Honesty–Humility, especially Negative Valence (Smederevac, Dinić, Mitrović, & Čolović, 2012). Namely, superiority markers from Positive Valence fit well with markers of need for special entitlement from Honesty–Humility and manipulateness from Negative Valence fits well with markers of manipulation and exploitation of others from Honesty–Humility. Also, in Serbian lexical studies, Agreeableness has consistently appeared as Aggressiveness and included markers of anger display, disagreeableness and tough-mindedness.

Method

Participants and procedure

Two independent samples were used in the study. Sample 1 included 1,217 participants (55.5% female) from the general population (age range = 17–68, $M_{\text{age}} = 31.77$, $SD_{\text{age}} = 13.08$). Psychology students (master's level) administered the questionnaires as a part of their course activities. The majority of the participants (31.3%) reported holding a university (master's) degree, and 20.8% were undergraduate students.

Sample 2 included 345 undergraduate students of the Faculty of Media and Communications (46%); Faculty of Philosophy (23%), and the Faculty of Sport and Physical Education (31%), located in Belgrade, Serbia. Sixty-five percent participants in the sample were female ($M_{\text{age}} = 21$, $SD_{\text{age}} = 3.9$ years). Participation in the study was voluntary, and participants were provided with additional points in the psychology course that they were taking.

Measures

The sets of measures partly differed across samples. In Sample 1, HEXACO–100 and BF+2 were applied, whereas in Sample 2 the BFI was applied along with the HEXACO–100.

HEXACO–100 (Samples 1 & 2)

The 100-item version of the HEXACO–PI–R was used (Lee & Ashton, 2016). Each of the six HEXACO dimensions contains four facets (see Table 1) that are measured via four items. In addition, the interstitial facet of Altruism, which contains four items as well, is also included in the inventory. Reliabilities of dimensions are good considering the number of items: in Sample 1, $\alpha_H = .79$, $\alpha_E = .78$, $\alpha_X = .82$, $\alpha_A = .79$, $\alpha_C = .83$, $\alpha_O = .83$ (reliabilities of facets range from .43 for Anxiety to .80 for Greed Avoidance, with a mean of .66), and in Sample 2, $\alpha_H = .81$, $\alpha_E = .81$, $\alpha_X = .83$, $\alpha_A = .78$, $\alpha_C = .84$, $\alpha_O = .82$ (reliabilities of facets range from .63 for Sentimentality and Perfectionism to .79 for Greed Avoidance, with a mean of .70).

Big Five Plus Two Inventory–Short Version (Sample 1)

The BF+2–70 (Čolović, Smederevac, & Mitrović, 2014) measures seven dimensions extracted in two psycholexical studies in the Serbian language, which were based on Tellegen and Waller's nonrestrictive methodology (Waller, 1999). Five dimensions resemble the Big Five, whereby Agreeableness is set in an opposite direction from Aggressiveness and includes indicators of anger manifestation, aggressive impulses and reactions, disagreeableness and tough-mindedness. The additional two dimensions are evaluative dimensions: Positive Valence, which includes positive self-concept and superiority, and Negative Valence, which includes negative self-concept and manipulative style. Each of the seven scales contains 10 statements (including reverse-coded items). Reliabilities of the scales range from $\alpha = .75$ for Openness to Experience to $\alpha = .85$ for Positive Valence.

Big Five Inventory (Sample 2)

The BFI (John et al., 1991, according to John & Srivastava, 1999) contains 44 items, measuring the Big Five personality dimensions (reliabilities range from $\alpha = .72$ –.83).

Table 1. HEXACO–100: Descriptives and gender differences (Sample 1).

Dimensions and facets	Total		Male		Female		$t_{(1,201)}$	d
	M	SD	M	SD	M	SD		
Honesty–Humility	3.46	.62	3.40	.61	3.50	.62	–2.54	–.15
Sincerity	3.71	.81	3.70	.83	3.73	.80	–.64	–.04
Fairness	3.55	1.02	3.32	1.06	3.74	.95	–7.25	–.42
Greed Avoidance	3.20	.97	3.24	.99	3.18	.95	1.06	.06
Modesty	3.36	.73	3.37	.74	3.35	.72	.56	.03
Emotionality	3.22	.57	2.94	.49	3.44	.52	–16.81	–.97
Fearfulness	2.74	.85	2.40	.74	3.01	.84	–13.38	–.77
Anxiety	3.52	.68	3.33	.67	3.67	.65	–8.82	–.51
Dependence	3.07	.86	2.80	.81	3.27	.83	–9.75	–.56
Sentimentality	3.54	.80	3.23	.75	3.79	.74	–13.06	–.75
Extraversion	3.56	.56	3.54	.57	3.57	.56	–.89	–.05
Social Self-Esteem	3.77	.65	3.76	.64	3.79	.66	–.73	–.04
Social Boldness	3.05	.82	3.10	.79	2.00	.85	2.05	.12
Sociability	3.78	.77	3.71	.79	3.84	.75	–2.96	–.17
Liveliness	3.62	.77	3.59	.76	3.65	.79	–1.31	–.08
Agreeableness	2.90	.56	2.92	.54	2.88	.58	1.28	.07
Forgiveness	2.73	.80	2.76	.78	2.70	.81	1.26	.07
Gentleness	3.24	.73	3.23	.71	3.24	.74	–.04	–.00
Flexibility	2.57	.71	2.56	.71	2.57	.71	–.42	–.02
Patience	3.06	.79	3.13	.78	3.00	.79	2.71	.16
Conscientiousness	3.47	.96	3.56	.60	3.70	.57	.38	.02
Organization	3.67	.82	3.50	.82	3.81	.81	–4.25	–.25
Diligence	3.85	.70	3.79	.73	3.90	.67	–2.73	–.16
Perfectionism	3.63	.73	3.52	.75	3.72	.70	–4.77	–.28
Prudence	3.40	.85	3.43	.83	3.39	.86	.92	.05
Openness to Experience	3.43	.68	3.38	.71	3.48	.66	–2.63	–.15
Aesthetic Appreciation	3.47	.96	3.24	.95	3.65	.91	–7.66	–.44
Inquisitiveness	3.40	.89	3.54	.91	3.30	.86	4.76	.27
Creativity	3.53	.93	3.42	.98	3.62	.88	–3.78	–.21
Unconventionality	3.33	.79	3.31	.78	3.35	.80	–.92	–.05
Altruism	3.95	.67	3.82	.70	4.05	.63	–5.96	–.35

Note. $n = 1,217$.

* $p < .05$. $p < .01$.

All instruments have a Likert 5-point scale for responding, ranging from 1 (*I disagree completely*) to 5 (*I agree completely*). The HEXACO–100 and BFI were back-translated and the final Serbian version was approved by the authors of the inventories. Translation into Serbian was made by authors of this article, and back-translation was made by English professors.

Results

The majority of the analyses (descriptive statistics, t tests for gender differences and factor analysis, including correlations between HEXACO and BF+2) were performed on Sample 1, whereas the HEXACO and the Big Five correlations were based on Sample 2.

Descriptives, gender differences, and intercorrelations

Descriptives were obtained by calculating mean raw scores on six scales and their facets. According to Cohen's d , a large gender difference was found only for Emotionality, whereas only small differences were found on the rest of the dimensions.

Correlations among scales were low, as expected (see Appendix), which indicated that there was no overlap between dimensions. Also, it could be noticed that correlations are smaller than intercorrelations between the BF+2–70 and BFI scales.

Exploratory factor analysis of the HEXACO–100 facets

To examine the factor structure of the HEXACO–100 facets, the principal axis method with promax rotation was conducted. Based on parallel analysis, six factors were extracted with eigenvalues 3.80 (eigenvalues based on parallel analysis on 95th percentile was 1.31), 3.03 (1.26), 2.44 (1.22), 2.19 (1.19), 1.86 (1.17), and 1.43 (1.14). Eigenvalue for the seventh factor was below 1 (e.g., 0.90 [1.12]). Loadings of facets on factors representing broad HEXACO dimensions were in line with the model assumptions (Table 2). The Altruism facet did not load highly on any dimension, but its loading on the Emotionality factor was somewhat higher.

Correlations between the HEXACO–100 and the Big Five Plus Two Inventory

Correlations were calculated using raw scores. Extraversion, Agreeableness, Openness to Experience, and Conscientiousness from the HEXACO–100 had high correlations ($>.62$) with their counterparts from the BF+2–70 (Table 3). Also, HEXACO facets of these factors correlated highly with the matching BF+2–70 dimensions. Although HEXACO Extraversion is highly related to BF+2–70 Extraversion, it is also correlated negatively and moderately with BF+2–70 Neuroticism. Emotionality and its facets Fearfulness and Anxiety had modest positive correlations with Neuroticism, and the facet Sentimentality negatively correlated with Negative Valence. The correlation between Emotionality and Aggressiveness was not

Table 2. HEXACO-100 facets: Pattern matrix of the principal axis factor analysis (Sample 1).

Facets	X	C	O	A	E	H
Liveliness	.74	.03	-.09	.02	-.07	.02
Sociability	.70	-.08	-.11	.07	.20	-.05
Social Self-Esteem	.61	.18	.01	-.02	-.10	-.04
Social Boldness	.60	-.03	.10	-.14	-.10	-.11
Organization	.08	.71	-.21	.03	.07	.01
Prudence	-.06	.69	.04	.16	-.19	.00
Perfectionism	-.08	.63	.03	-.15	.14	-.01
Diligence	.24	.61	.15	-.10	.00	-.06
Aesthetic Appreciation	-.10	.02	.77	.04	.13	.11
Creativity	.14	-.08	.72	.01	.13	-.02
Unconventionality	-.08	-.06	.70	-.01	-.01	-.13
Inquisitiveness	-.07	.08	.55	.02	-.15	.06
Patience	-.05	.16	.13	.81	-.18	-.13
Flexibility	-.10	.03	-.06	.64	.00	-.05
Gentleness	.01	-.10	-.09	.60	.08	.09
Forgiveness	.10	-.11	.07	.59	.05	.01
Sentimentality	.05	-.04	.10	-.02	.74	.14
Dependence	.11	-.10	.05	-.01	.66	-.17
Fearfulness	-.28	.07	-.13	.05	.58	-.20
Anxiety	-.26	.25	.02	-.12	.46	-.04
Altruism	.23	.14	.04	.19	.37	.23
Greed Avoidance	-.08	-.03	.06	-.02	-.11	.68
Sincerity	-.01	.10	.01	-.16	-.15	.63
Modesty	-.09	-.17	-.07	.07	.00	.60
Fairness	.02	.28	-.03	.08	.08	.40

Note. $n = 1,217$. X = Extraversion; C = Conscientiousness; O = Openness to Experience; A = Agreeableness; E = Emotionality; H = Honesty-Humility. Loadings above .40 are shown in bold.

significant, which at first glance does not comply with theoretical expectations, given that Emotionality should be regarded as the rotated variant of Neuroticism and Agreeableness from the Big Five model (Ashton & Lee, 2007). The only facet of Emotionality that correlated with Aggressiveness was Anxiety, but the correlation is low. This result could be because BF+2 Aggressiveness content (anger, tough-mindedness, and stubbornness) might not be highly relevant to Emotionality. Agreeableness correlated highly negatively with Aggressiveness, but its expected negative correlation with Neuroticism was low. Honesty-Humility and its facets correlated most consistently and negatively with Negative Valence. Altruism had the highest (negative) correlation with Negative Valence. Positive Valence negatively correlated with the HEXACO facet Modesty and positively with Social Self-Esteem.

Comparing amounts of explained variance of the six HEXACO-100 scales based on the seven BF+2-70 scales and vice versa, explained variances are almost the same for Agreeableness and Aggressiveness, Conscientiousness from both inventories, Openness from both inventories, and Honesty-Humility, Positive Valence, and Negative Valence (Table 3). However, imbalance was found in the explanation of Neuroticism and Emotionality: HEXACO scales explained a larger amount of variance of BF+2-70 Neuroticism, compared to the explained variance of HEXACO Emotionality based on BF+2-70, but these coefficients are low. Also, HEXACO

Table 3. Correlations between HEXACO-100 and BF+2-70 (Sample 1).

HEXACO-100	BF+2-70							R^2_{HEXACO}
	N	E	A	C	O	PV	NV	
Honesty-Humility	-.09	.03	-.30	.21	-.00	-.30	-.53	.33
Sincerity	-.10	-.01	-.16	.15	.05	-.15	-.40	
Fairness	-.14	.12	-.28	.31	.04	-.06	-.48	
Greed Avoidance	-.01	-.03	-.17	.09	-.03	-.22	-.30	
Modesty	.01	-.01	-.21	-.01	-.09	-.49	-.30	
Emotionality	.25	.06	.05	.07	-.03	-.09	-.15	.14
Fearfulness	.23	-.13	-.01	-.03	-.20	-.14	-.07	
Anxiety	.26	-.06	.10	.08	-.01	-.11	-.08	
Dependence	.07	.16	.05	.03	.05	.04	-.05	
Sentimentality	.16	.18	-.01	.13	.18	-.05	-.24	
Extraversion	-.53	.71	-.09	.25	.37	.45	-.11	.63
Social Self-Esteem	-.57	.45	-.15	.25	.32	.43	-.17	
Social Boldness	-.28	.38	.12	.12	.25	.36	.07	
Sociability	-.27	.66	-.11	.16	.23	.23	-.13	
Liveliness	-.49	.64	-.14	.23	.31	.33	-.13	
Agreeableness	-.14	.15	-.64	.06	-.04	-.15	-.33	.46
Forgiveness	-.08	.15	-.33	.03	-.01	-.09	-.18	
Gentleness	-.06	.14	-.45	.00	-.06	-.16	-.31	
Flexibility	-.07	.05	-.53	.07	-.12	-.16	-.24	
Patience	-.19	.11	-.61	.08	.06	-.05	-.25	
Conscientiousness	-.21	.16	-.21	.71	.26	.19	-.36	.53
Organization	-.15	.21	-.21	.64	.08	.08	-.34	
Diligence	-.27	.24	-.06	.55	.40	.34	-.20	
Perfectionism	.03	.06	-.01	.48	.20	.13	-.20	
Prudence	-.25	.01	-.34	.47	.15	.05	-.33	
Openness to Experience	-.06	-.02	.00	.01	.62	.23	-.05	.45
Aesthetic Appreciation	-.02	-.05	-.06	.05	.45	.11	-.13	
Inquisitiveness	-.04	-.05	-.05	.05	.38	.10	-.05	
Creativity	-.09	.13	.00	.00	.59	.29	-.05	
Unconventionality	-.03	-.09	.13	-.09	.47	.19	.11	
Altruism	-.16	.33	-.33	.26	.18	.00	-.48	
$R^2_{\text{BF+2-70}}$.34	.55	.46	.52	.49	.36	.39	

Note. $n = 1,217$. BF+2-70 = Big Five Plus Two Inventory-Short Version; N = Neuroticism; E = Extraversion; A = Aggressiveness; C = Conscientiousness; O = Openness to Experience; PV = Positive Valence; NV = Negative Valence. Correlations above .40 are shown in bold. $R^2_{\text{BF+2-70}}$ is the prediction of each of the seven BF+2-70 scales based on six HEXACO-100 scales. R^2_{HEXACO} is the prediction of each of the six HEXACO-100 scales based on seven BF+2-70 scales.

* $p < .05$. ** $p < .01$.

Extraversion is better explained by BF+2–70 than vice versa, but these coefficients are the highest.

Correlations between the HEXACO-100 and the Big Five Inventory

Results show that Extraversion, Openness, and Conscientiousness from the HEXACO-100 had high correlations ($>.71$) with their BFI counterparts (Table 4). The same could be concluded for their facets. HEXACO Extraversion and some of its facets correlated moderately negatively with BFI Neuroticism. HEXACO Agreeableness correlated moderately and positively with BFI Agreeableness, but also negatively with Neuroticism, confirming the assumption that HEXACO Agreeableness is a rotated variant of the Big Five factor of the same name (Ashton & Lee, 2007). Emotionality correlated positively with Neuroticism, especially with Anxiety, but its relation with Agreeableness was not significant, which is in accordance with the results concerning HEXACO correlations with the BF+2–70. However, the facet Sentimentality correlated positively with BFI Agreeableness, which is congruent with previous findings (Ashton & Lee, 2007). Honesty–Humility and its facets correlated most consistently (positively) with BFI Agreeableness, although these correlations were low. Fairness is

the Honesty–Humility facet that shared the largest amount of variance with BFI Agreeableness.

Comparing amounts of explained variance of the six HEXACO-100 scales based on five BFI scales and vice versa, Extraversion, Conscientiousness, and Openness are the highest and almost equally represented in both inventories, followed by Agreeableness and Honesty–Humility as at least represented by BFI. There is an imbalance in the comparison of Emotionality and Neuroticism: HEXACO scales explained the larger amount of variance of BFI Neuroticism, compared to the explained variance of HEXACO Emotionality by all BFI dimensions.

Discussion

The results show that the structural features of the 100-item HEXACO-PI-R in a Serbian sample are in line with model assumptions: Broad HEXACO factors are replicated, with low intercorrelations among HEXACO dimensions. Considering that the 100-item version of HEXACO-PI-R was applied, reliabilities (Cronbach's alpha coefficients) of the six personality scales are satisfactory and in line with previously obtained reliabilities in the same (Lee & Ashton, 2016), the longer 200-item version (Lee & Ashton, 2004) and the shorter 60-item version (Ashton & Lee, 2009). Cronbach's alphas in this study are similar to those obtained in the Italian, Dutch, and Canadian sample (Ashton et al., 2006) as well as to those in the Croatian study (Babarović & Šverko, 2013). The results regarding gender differences are in line with previous findings (Lee & Ashton, 2004, 2006), showing a large gender difference in Emotionality. In some previous studies (Lee & Ashton, 2004, 2006) moderate gender differences were found in Honesty–Humility, but in our study these differences are small. The validation of the BF+2 in Serbian (Čolović et al., 2014; Smederevac et al., 2010) showed generally small gender differences in personality traits, including both Positive Valence and Negative Valence, with content similar to that of Honesty–Humility (Smederevac et al., 2012).

The results point to strong similarities between HEXACO Extraversion, Openness to Experience, and Conscientiousness, and their Big Five and BF+2 counterparts. Also, these HEXACO dimensions are well captured in both the BF+2 and the BFI, and vice versa. These results are in line with theoretical expectations and empirical findings regarding the HEXACO model (Ashton & Lee, 2007; Ashton et al., 2014; Lee & Ashton, 2004). In the case of HEXACO Agreeableness, the results show that this dimension is strongly related to Aggressiveness, but weakly to BF+2–70 Neuroticism. Bearing in mind that BF+2 Aggressiveness includes indicators of anger control (and thus, as previous findings show, correlates with both BFI Agreeableness and BFI Neuroticism; Čolović et al., 2014; Smederevac et al., 2010), it is not surprising that HEXACO Agreeableness has higher correlations with Aggressiveness than with BF+2–70 Neuroticism. Regarding relations with the BFI, HEXACO Agreeableness is related both to Agreeableness and Neuroticism, as expected. It seems that HEXACO Agreeableness is lined up well with BF+2 Aggressiveness, rather than BFI Agreeableness, but direct comparison should be addressed in future studies. A Serbian study that examined relations between HEXACO-100 and lower order aggressiveness dimensions measured by the Anger Vengefulness Dominance Hostility questionnaire (Dinić, Mitrović, & Smederevac, 2014) showed that Agreeableness was strongly related to Anger and Hostility, and that both Agreeableness and

Table 4. Correlations between HEXACO-100 and BFI (Sample 2).

HEXACO-100	BFI					R^2_{HEXACO}
	N	E	A	C	O	
Honesty/Humility	-.12	-.06	.36	.18	-.10	.19
Sincerity	-.11	-.01	.29	.07	-.01	
Fairness	-.06	.02	.34	.35	-.20	
Greed Avoidance	-.11	-.10	.18	.11	.02	
Modesty	-.08	-.07	.22	-.08	-.08	
Emotionality	.47	-.08	.12	.02	-.17	.35
Fearfulness	.26	-.17	.03	.04	-.26	
Anxiety	.52	-.12	.00	-.01	-.07	
Dependence	.35	.00	.04	-.01	-.12	
Sentimentality	.20	.05	.29	.04	.01	
Extraversion	-.40	.77	.30	.28	.26	.61
Social Self-Esteem	-.40	.45	.16	.35	.20	
Social Boldness	-.19	.70	.08	.20	.22	
Sociability	-.14	.47	.34	.12	.06	
Liveliness	-.48	.62	.33	.18	.29	
Agreeableness	-.38	-.17	.48	.11	.05	.36
Forgiveness	-.28	-.03	.36	.06	.14	
Gentleness	-.13	-.16	.45	-.08	-.10	
Flexibility	-.24	-.11	.25	.24	-.01	
Patience	-.44	-.18	.32	.10	.08	
Conscientiousness	-.18	.20	.17	.79	.15	.55
Organization	-.09	.15	.13	.66	-.10	
Diligence	-.18	.33	.12	.66	.24	
Perfectionism	-.03	.13	.16	.53	.30	
Prudence	-.23	.05	.11	.57	.09	
Openness to Experience	-.08	.13	.09	.04	.71	.47
Aesthetic Appreciation	-.01	.01	.13	.05	.54	
Inquisitiveness	-.08	-.01	.00	.08	.34	
Creativity	-.12	.23	.18	.04	.80	
Unconventionality	-.03	.18	-.05	-.06	.50	
Altruism	.04	.06	.44	.14	.05	
R^2_{BFI}	.48	.59	.39	.56	.50	

Note. $n = 345$. BFI = Big Five Inventory; N = Neuroticism; E = Extraversion; A = Agreeableness; C = Conscientiousness; O = Openness to Experience. Correlations above .40 are shown in bold. R^2_{BFI} = prediction of each of the five BFI scales based on six HEXACO-100 scales. R^2_{HEXACO} is the prediction of each of the six HEXACO-100 scales based on five BFI scales.

* $p < .05$. ** $p < .01$.

Honesty–Humility were related to Vengefulness and Dominance. Based on previous and current results, it could be concluded that the HEXACO Agreeableness scale covers the core features of reactive aggression. Similar results were reported by Lee and Ashton (2012), showing that Agreeableness was related to both immediate retaliation and premeditated vengeful acts, whereas Honesty–Humility was associated more strongly with the latter.

Although Emotionality does not correlate strongly with any BF+2–70 dimensions, its correlation with Neuroticism is somewhat higher than with the rest of BF+2–70 traits. Emotionality, and especially its facet Anxiety, have moderate correlations with BFI Neuroticism. However, Emotionality correlates with neither BF+2–70 Aggressiveness nor BFI Agreeableness, which is apparently not in line with theoretical assumptions. However, such a result could be attributed to the contents of BF+2 Aggressiveness and BFI Agreeableness, neither of which contain markers of “soft-hearted” and empathic concern for others, but rather gentleness, forgiveness, and cooperativeness. In some of the previous studies (Babarović & Šverko, 2013; Lee, Ogunfowora, & Ashton, 2005), although Emotionality had a strikingly higher (negative) correlation with Emotional Stability, it also showed substantial correlation with Agreeableness, but from International Personality Item Pool Big Five, with content similar to feelings of concern for others and trust. Also, it could be noticed that Emotionality is the least represented in the BF+2 and represented poorly in the BFI (see Appendix).

There is also one important finding regarding the HEXACO Extraversion scale. Besides the expected relations with its counterparts, there are significant negative correlations with Neuroticism dimensions from both BF+2–70 and BFI. The correlation between Extraversion and Neuroticism could be noticed in other inventories (e.g., Smederevac et al., 2010; Soto & John, 2016). However, some findings show that depression more highly correlates with the negative pole of HEXACO Extraversion than with Emotionality, especially with the Social Self-Esteem and Liveliness facets of Extraversion (Međedović, 2014), as in this study. This might be due to the fact that HEXACO Emotionality does not include markers of depression (Lee & Ashton, 2004). Thus, the results suggest descriptors of depressive states are closer to Introversion than to Emotionality in the HEXACO. More precisely, the Social Self-Esteem and Liveliness facets describe tendencies relevant to the opposite pole of depressiveness.

Regarding evaluative dimensions, it would seem that Positive Valence and Negative Valence are both covered by Honesty–Humility. Whereas Negative Valence negatively correlated with all facets of Honesty–Humility, Positive Valence correlated only with Modesty. Positive Valence had significant correlation with Social Self-Esteem, an Extraversion facet, indicating that the HEXACO model includes important aspects of positive and negative self-evaluation.

In general, the results suggest that the Serbian version of the HEXACO–100 is a valid and useful measure of HEXACO personality traits. Its structure, reliabilities, gender differences, and convergent correlations correspond closely to model assumptions.

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Appendix

Table A-1. Correlations between HEXACO-100 and BF+2-70 scales.

	HEXACO-100						BF+2-70						
	H	E	X	A	C	O	N _(BF+2-70)	E _(BF+2-70)	A _(BF+2-70)	C _(BF+2-70)	O _(BF+2-70)	PV _(BF+2-70)	NV _(BF+2-70)
H	1	.11	-.03	.26	.25	.07	-.09	.03	-.30	.21	-.00	-.30	-.53
E		1	-.11	-.02	.11	-.03	.25	.06	.05	.07	-.03	-.09	-.15
X			1	.03	.22	.11	-.53	.71	-.09	.25	.37	.45	-.11
A				1	.04	-.05	-.14	.15	-.64	.06	-.04	-.15	-.33
C					1	.17	-.21	.16	-.21	.71	.26	.19	-.36
O						1	-.06	-.02	.00	.01	.62	.23	-.05
N _(BF+2-70)							1	-.35	.36	-.23	-.23	-.23	.27
E _(BF+2-70)								1	-.11	.26	.33	.38	-.14
A _(BF+2-70)									1	-.22	-.00	.14	.58
C _(BF+2-70)										1	.21	.19	-.38
O _(BF+2-70)											1	.45	-.07
PV _(BF+2-70)												1	.19

Note. BF+2-70 = Big Five Plus Two Inventory–Short Version; H = Honesty–Humility; E = Emotionality; X = Extraversion; A = Agreeableness; C = Conscientiousness; O = Openness to experience; N_(BF+2-70) = Neuroticism; E_(BF+2-70) = Extraversion; A_(BF+2-70) = Aggressiveness; C_(BF+2-70) = Conscientiousness; O_(BF+2-70) = Openness to Experience; PV_(BF+2-70) = Positive Valence; NV_(BF+2-70) = Negative Valence.

* $p < .05$. ** $p < .01$.

Table A-2. Correlations between HEXACO-100 and BFI scales.

	HEXACO-100						BFI				
	H	E	X	A	C	O	N _(BFI)	E _(BFI)	O _(BFI)	A _(BFI)	C _(BFI)
H	1	.01	-.11	.31	.22	.04	-.12	-.06	-.10	.36	.18
E		1	-.09	-.15	-.05	-.07	.47	-.08	-.17	.12	-.02
X			1	.01	.26	.10	-.40	.77	.26	.30	.28
A				1	.15	.07	-.38	-.17	.05	.48	.11
C					1	.13	-.18	.20	.15	.17	.79
O						1	-.08	.13	.71	.09	.04
N _(BFI)							1	-.25	-.13	-.30	-.31
E _(BFI)								1	.31	.18	.24
O _(BFI)									1	.20	.20
A _(BFI)										1	.26
C _(BFI)											1

Note. BFI = Big Five Inventory; H = Honesty–Humility; E = Emotionality; X = Extraversion; A = Agreeableness; C = Conscientiousness; O = Openness to Experience; N_(BFI) = BFI Neuroticism; E_(BFI) = BFI Extraversion; O_(BFI) = BFI Openness to Experience; A_(BFI) = BFI Agreeableness; C_(BFI) = BFI Conscientiousness.

* $p < .05$. ** $p < .01$.