ORIGINAL ARTICLE

Psychometric properties of the Polish versions of the HEXACO-60 and the HEXACO-100 personality inventories

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BACKGROUND
The HEXACO Personality Inventory-Revised (HEXACO-PI-R), available in 200-, 100-, and 60-item versions, has become one of the most frequently applied measurement tools for the assessment of basic personality dimensions.

PARTICIPANTS AND PROCEDURE
In this study we examined the Polish versions of the HEXACO-60 and the HEXACO-100 inventories in a community sample of 522 individuals (aged 16-75, M = 32.02, SD = 14.15, 56.3% female). We verified the factor validity of both inventories with exploratory structural equation modeling. Additionally, we tested a six-factor solution on the HEXACO-60 items with principal axis extraction and we compared a factor matrix of the Polish adaptation of the HEXACO-100 facets with the factor matrix of the original version of the HEXACO-100 facets in an exploratory factor comparison analysis. We analyzed correlations be-tween HEXACO domains and various models of person-ality traits, including the Big Two, Big Six, Big Five, and 10 Big Five aspects.

RESULTS
Internal consistency reliability coefficients for scales and subscales were satisfactory. The analyses supported the six-factor structure of the inventories and the results of correlation analyses were consistent with expectations.

CONCLUSIONS
The results indicate that the Polish versions of the HEXA-CO-60 and the HEXACO-100 inventories are reliable and valid instruments for measuring basic personality traits in the HEXACO model.

KEY WORDS
personality assessment; HEXACO; personality structure

BACKGROUND

For more than 20 years the predominant model of personality traits has been the Five Factor Model (FFM; McCrae & Costa, 2003), corresponding to (and sometimes also called) the Big Five, which is derived from psycholexical research (e.g., Goldberg, 1990). The five basic traits depicted in this model are Neuroticism (vs. Emotional Stability), Extraversion, Openness to Experience (or its narrower psycholexical variant – Intellect; for a discussion on the relations between Openness to Experience and Intellect, see McCrae, 1990; Saucier, 1992; Trapnell, 1994), Agreeableness, and Conscientiousness. However, the results of psycholexical studies conducted in many languages – such as French, Dutch, Hungarian, Italian, Korean, Polish (Ashton et al., 2004), German (Ashton, Lee, Marcus, & de Vries, 2007), Greek (Lee & Ashton, 2009), or Croatian (Ashton & Lee, 2008) – has challenged the five-factor structure of personality traits by revealing an additional factor, called Honesty-Humility or Honesty-Propriety (defined by terms such as *sincere*, *honest*, and *modest*; Ashton et al., 2004). The Big Six solution appears to be even more replicable across cultures than the Big Five, especially in languages of non-Northern European origin (e.g., Eastern European, Southern European, or Asian; Lee & Ashton, 2008; Saucier, 2009; see Saucier, Hampson, & Goldberg, 2000, for a discussion on the competing results of psycholexical studies).

Although the Big Six is more replicable than the Big Five, it is not fully ubiquitous among cultures. The psycholexical studies conducted so far indicate that only two factors are culturally universal (Saucier & Srivastava, 2015; Saucier et al., 2014; Strus & Cieciuch, 2019; Thalmayer, Saucier, Ole-Kotikash, & Payne, 2019). The Big Two factors are usually termed Social Self-Regulation and Dynamism. Social Self-Regulation further splits into Conscientiousness, Honesty-Humility, and Agreeableness and Dynamism splits into Openness/Intellect and Extraversion. Emotionality emerges from Dynamism or from both Dynamism and Social Self-Regulation (De Raad, 2009; De Raad et al., 2010; Saucier, 2009; Saucier & Srivastava, 2015; Saucier et al., 2014).

Polish psycholexical research has been cited as evidence of both five-factor (e.g., Peabody & De Raad, 2002; Szarota, 1996) and six-factor (Ashton et al., 2004; Szarota, Ashton, & Lee, 2007) solutions of basic personality dimensions. However, the latest study, conducted on a sample covering the full age range and using more extensive lexical material (*Universal Dictionary of the Polish Language* including 100,000 terms; the previous study was based on *The Concise Polish Dictionary* including 35,000 entries), supported the six-factor structure, corresponding to the content of HEXACO dimensions (Gorbaniuk, Budzińska, Owczarek, Bożek, & Juros, 2013).

The HEXACO model (Ashton & Lee, 2001) is currently the most popular conceptualization of the six-factor structure of personality traits. It refers to the Big Six factors as: Honesty-Humility, Emotionality, Extraversion, Agreeableness, Conscientiousness, and Openness to Experience. In turn, the most popular measure of the six factors is the HEXACO Personality Inventory-Revised (HEXACO-PI-R), available in 200-, 100-, and 60-item versions (Ashton & Lee, 2009; Lee & Ashton, 2004, 2018). The latter two versions have been translated into numerous languages (see http://hexaco.org/hexaco-inventory) and are widely used in personality research (Lee & Ashton, 2018).

The HEXACO model's additional dimension, named Honesty-Humility, is not the only feature that makes it distinct from the FFM. As a consequence of extracting the sixth factor, the content of two other factors changed. The negative pole of HEXACO Agreeableness contains irritability/anger, which is covered by the positive pole of FFM Neuroticism. The positive pole of HEXACO Emotionality (a counterpart of Neuroticism) contains tenderness, which is covered by the positive pole of FFM Agreeableness. Hence, HEXACO Agreeableness and Emotionality can be understood as rotational variants of their FFM counterparts: The negative pole of HEXACO Agreeableness is rotated toward the positive pole of FFM Neuroticism and the positive pole of HEXACO Emotionality is rotated toward the positive pole of FFM Agreeableness (de Vries, Lee, & Ashton, 2008). Extraversion, Conscientiousness, and Openness to Experience closely correspond to their FFM counterparts (Ashton & Lee, 2007).

Lee and Ashton (2013) found that although all the FFM dimensions measured by the NEO Five-Factor Inventory (NEO-FFI) were fully explained by the set of HEXACO dimensions measured by the HEXACO-60, Honesty-Humility, Emotionality, and Agreeableness from the HEXACO model were not satisfactorily accounted for by the set of FFM dimensions. Additionally, other measures of the FFM – Big Five Aspect Scales (DeYoung, Quilty, & Peterson, 2007), Big Five Inventory (John, Donahue, & Kentle, 1991), Next Big Five Inventory (Soto & John, 2017), and IPIP-50 (Goldberg, 1999) – failed to cover the variance of all HEXACO dimensions (Ashton & Lee, 2018; Ashton, Lee, & Visser, 2019; Ludeke et al., 2019). This indicates that the HEXACO model contains variance not shared with the FFM and gives HEXACO an advantage over FFM in terms of predicting various outcomes related to not only Honesty-Humility, but also Emotionality, and Agreeableness. Examples include relations with kin and reciprocal altruism (Ashton & Lee, 2007), egoism (de Vries, de Vries, de Hoogh, & Feij, 2009), prosocial behavior (Hilbig, Zettler, Leist, & Heydasch, 2013), moral functioning (e.g., Hilbig & Zettler, 2015), the "dark triad" traits (Lee & Ashton, 2005), risk tak-

ing (e.g., Ashton, Lee, Pozzebon, Visser, & Worth, 2010), gambling (McGrath, Neilson, Lee, Rash, & Rad, 2018), religiousness (e.g., Aghababaei, 2012; Ashton & Lee, 2019), forgiving versus retaliating behaviors (Lee & Ashton, 2012), guilt and shame proneness (Cohen, Wolf, Panter, & Insko, 2011), as well as academic performance (Thalmayer, Saucier, & Eigenhuis, 2011) and various everyday activities (Skimina, Cieciuch, & Strus, 2018).

CURRENT STUDY

The Polish translation of the HEXACO-100 was included in a large study that confirmed the measurement invariance of this inventory across 16 languages (Thielman et al., 2019). However, the Polish version of the inventory used in that study was a pilot and not free of imperfections. The aim of this paper is twofold: (a) to introduce the refined versions of Polish translations of the HEXACO-60 and HEXACO-100, which are now available to download from the HEXACO website (http://hexaco.org/hexaco-inventory) and (b) to examine their psychometric properties, which have not yet been reported in detail.

In an initial step for this paper, we improved the Polish versions of the questionnaires modifying the items' wording on the basis of the previous results. Stylistic corrections have been made in a large number of items. They were rather subtle (e.g., changing syntax or using synonyms) and aimed at better capturing the theoretical meaning of the measured factors.

Then, we provide the detailed psychometric properties of the refined Polish versions of the HEXACO-60 and HEXACO-100 inventories as measures of six personality domains distinguished within the HEXACO model. We start with reporting descriptive statistics together with sex differences. The analyses of the original versions of the inventories revealed that women averaged substantially higher on Emotionality (large effects) and somewhat higher on Honesty-Humility (small effects; Ashton & Lee, 2009; Lee & Ashton, 2018). Therefore, we expected analogous results:

H1: Women score higher than men on Emotionality and Honesty-Humility.

We expected satisfactory psychometric properties of the HEXACO-60 and the HEXACO-100 in terms of internal-consistency reliability, factor structure, and scale intercorrelations. We formulated the following hypotheses:

H2: The internal-consistency coefficients of the HEXACO-60 and HEXACO-100 scales are satisfactory and comparable to those of the original inventories and their other language adaptations.

H3: The six-factor structure of the HEXACO-60 and HEXACO-100 inventories is well fitted to the data.

H4: The pattern of HEXACO scales' intercorrelations is similar to that in studies on the original versions of the inventories and on their other language adaptations.

We examined the theoretical validity of HEXACO scales by analyzing their relationships with other measures of personality traits. We included various models: the FFM/Big Five, lexical Big Six, and Big Two. Because the HEXACO model is based on the lexical Big Six we expected that:

H5: HEXACO scales more highly correlate with their Big Six counterparts than with other Big Six scales.

Based on the similarities and differences between the HEXACO and the FFM scales, we expected that:

H6: HEXACO correlations with their FFM counterparts are higher for Extraversion, Conscientiousness, and Openness to Experience than for Emotionality and Agreeableness.

H7: FFM Agreeableness correlates with HEXACO Honesty-Humility, Emotionality, and Agreeableness at a comparable level.

Based on the results from psycholexical studies (e.g., Saucier, 2009), we formulated the following hypotheses regarding correlations between the lexical Big Two and the HEXACO scales:

H8: Big Two Dynamism correlates positively with HEXACO Extraversion and Openness to Experience, and negatively with Emotionality.

H9: Big Two Social Self-Regulation correlates positively with HEXACO Honesty-Humility, Agreeableness, and Conscientiousness.

PARTICIPANTS AND PROCEDURE

PARTICIPANTS

The study was conducted on a community sample consisting of 522 respondents, aged from 16 to 75 (M = 32.02, SD = 14.15), 56.3% female[1]. One third of the respondents were single, 28.4% lived in a civil partnership, 29.9% were married, 2.7% were divorced, 1.7% were a widow/widower, 0.4% were separated, and 3.6% did not provide their marital status. The majority of participants indicated that their highest level of completed education was university (35.8%) or high school (46.5%, including current university students, constituting 18.2% of the sample). Unemployed students constituted 20.9% of the sample, other unemployed 4.0%, retired persons 4.8%, housewives 2.1%, and the rest of the sample (68.2%) were professionally active. The majority of participants lived in a big city (34.3% in a city of more than 500,000 citizens; 10.5% in a city of 100,000 to 500,000 citizens), 22.6% lived in a small town (less than 100,000 citizens), and 28.9% lived in a village.

PROCEDURE

The participants were recruited by trained research assistants (psychology students). Each of them administered the measures to approximately 6-10 respondents chosen from a pool of their distant relatives, friends, and acquaintances. Participation in the study was voluntary and anonymous.

The study complied with the recommendations of the Commission of Ethics and Bioethics at the Cardinal Stefan Wyszyński University in Warsaw (participants were informed that participation in the study was voluntary and they provided their oral consent). Because the study was conducted on adults and included only self-report measures of personality traits it did not require formal approval by the Commission of Ethics and Bioethics, according to the institutional guidelines.

The study was carried out using a self-report paper-and-pencil method in three sessions at approximately 2-4-week intervals as part of a larger, four-session research project. The Big Five Inventory and the Big Five Aspect Scales were filled out during the first session, the Questionnaire Big Six during the third session, and the HEXACO-100 during the fourth session. The rest of the measures administered during the sessions (including the second one) were other personality questionnaires (not relevant to this study), and for this reason it was expected that they would not significantly impact the results of the current study.

MEASURES

HEXACO-100. The HEXACO-100 is a 100-item questionnaire operationalization of the HEXACO model of personality traits (Lee & Ashton, 2018). Ninety-six items are distributed throughout six scales measuring six basic HEXACO dimensions (16 items per scale), with each scale composed of four facet scales (four items per facet scale; see Lee & Ashton, 2004, for definitions). Four additional items constitute an interstitial facet of Altruism (approximately equally correlated with Honesty-Humility, Agreeableness, and Emotionality). In this study we used a refined version of Polish translations of the HEXACO-100 items (see *Current study*, para. 2), which we present in the Appendix. Participants indicate their answers on a 5-point Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*). Alpha reliabilities of original English versions of HEXACO-100 scales ranged from .81 for Openness to Experience to .85 for Extraversion, with a mean of .83, at the basic dimension level and from .52 for Unconventionality to .81 for Greed Avoidance, with a mean of .70, at the facet level.

HEXACO-60. The HEXACO-60 is a shortened version of the HEXACO Personality Inventory (Ashton & Lee, 2009). It consists of 60 items selected from the HEXACO-100 and assesses the six HEXACO dimensions (10 items per scale). The HEXACO-60 is not recommended for assessing personality facets. The response scale is the same as in the HEXACO-100. Alpha reliabilities of original English versions of HEXACO-60 scales in a community sample ranged from .73 for Emotionality and Extraversion to .80 for Openness to Experience, with a mean of .75. To assess psychometric properties of the HEXACO-60 we selected relevant items from the HEXACO-100 (the same that constitute the original version of the HEXACO-60; Ashton & Lee, 2009).

Big Five Aspect Scales. The Big Five Aspect Scales (BFAS) is a measure of Big Five personality traits (DeYoung et al., 2007). It consists of 100 items, derived from the International Personality Item Pool (IPIP; Goldberg, 1999; Goldberg et al., 2006), assessing the five dimensions (20 items per scale) and their 10 aspects (10 items per subscale). The scales (and subscales) are: Neuroticism (Volatility and Withdrawal), Agreeableness (Compassion and Politeness), Conscientiousness (Industriousness and Orderliness), Extraversion (Enthusiasm and Assertiveness), and Openness/Intellect (Intellect and Openness to Experience). Participants indicate their answers on a 5-point Likert scale from 1 (*very inaccurately describes me*) to 5 (*very accurately describes me*). We used a Polish translation of the BFAS, prepared by Strus, Cieciuch, and Rowiński (2012). In the current study, Cronbach's α coefficients for domains ranged from .84 for Conscientiousness to .91 for Neuroticism, with a mean of .87; for the aspect scales they ranged from .75 for Compassion to .88 for Volatility, with a mean of .82.

Big Five Inventory. The Big Five Inventory (BFI) was developed as a short measure of the Big Five dimensions (John, Naumann, & Soto, 2008). It contains 44 brief items (eight to 10 items per scale), based on the trait adjectives known to be prototypical markers of the Big Five. Participants indicate their answers on a 5-point Likert scale from 1 (*disagree strongly*) to 5 (*agree strongly*). We used a Polish version of the BFI (Strus & Cieciuch, 2019), and in the current study, Cronbach's α coefficients for dimensions ranged from .74 for Agreeableness to .82 for Neuroticism, with a mean of .79.

Questionnaire Big Six. The Questionnaire Big Six (QB6), consisting of 40 items, is a measure of three models of personality traits derived from psycholexical studies: the Big Six, Big Five, and Big Two (Thalmayer & Saucier, 2014). Participants indicate their answers on a 5-point Likert scale from 1 (*very inaccurately describes me*) to 5 (*very accurately describes me*). We used a Polish version of the QB6 (Strus & Cieciuch, 2019) to measure two models: the Big Six and Big Two (we did not use it for measuring the Big Five scales because they were measured in this study by two well-validated instruments described above).

The Big Six measure is composed of the following scales: Conscientiousness, Agreeableness, Honesty/Propriety, Extraversion, Originality (equivalent of Openness to Experiences), and Resiliency (equivalent of Emotionality). Each scale constitutes five items, which gives 30 items in total. In the current study, Cronbach's α coefficients for the Big Six scales ranged from .68 for Conscientiousness to .78 for Resiliency, with a mean of .71.

The Big Two model corresponds to the first two factors found in nine diverse psycholexical studies (Saucier et al., 2014). It should not be mistaken for higher-order factors derived from the Big Five scales. The two basic dimensions are Social Self-Regulation (internalization of social and cultural norms) and Dynamism (the relative proportion of approach vs. avoidant tendencies in personality; Thalmayer & Saucier, 2014). Each scale contains seven items, which gives 14 items in total. In the current study, Cronbach's α coefficients were .68 for Social Self-Regulation and .69 for Dynamism.

ANALYSES

Descriptive statistics and reliability (H1 and H2). We assessed means and standard deviations for the HEXACO-60 scales, as well as the HEXACO-100 scales and subscales, separately for men and for women. Gender differences were assessed by Student's *t* test. The internal consistency was assessed by calculating mean inter-item correlations, mean item-total correlations, and Cronbach's α coefficients for all scales and subscales. In this respect, our analyses were analogous to those conducted on the original versions of the HEXACO-60 and HEXACO-100 inventories (Ashton & Lee, 2009; Lee & Ashton, 2018).

Additionally, we calculated ω coefficients introduced by McDonald (1978, 1999) and based on a factor analysis. They lead to a more accurate correction for attenuation than Cronbach's α, especially in the case of multidimensional scales (Revelle & Zinbarg, 2009). McDonald distinguished two coefficients: omega total (ω_t, based on the sum of squared loadings on all factors; McDonald, 1978) and omega hierarchical (ω_h, based on the sum of the squared loadings on the general factor; McDonald, 1999). Omega hierarchical has been renamed omega general (ω_g) to reflect that the statistic is an estimate of the percentage of variance of a scale due to a general factor (Condon & Revelle, 2014). When several dimensions contribute to the prediction of the criterion of interest, ω_t will lead to a more accurate correction for attenuation and when only one, general factor contributes to the prediction of the criterion of interest, ω_g will be more accurate (Revelle & Zinbarg, 2009). If a scale is unidimensional, there is no difference between ω_t and ω_g coefficients. We calculated both coefficients

(ω_t and ω_g) for six domain scales measured by the HEXACO-60 and the HEXACO-100 because each of them is composed of four dimensions. This way we estimated what part of each basic scale variance is due to its general factor (e.g., a general factor of Honesty-Humility) – this has not been investigated in previous studies.

We used the *omega* function in the *psych* package in R for calculating α and ω coefficients (Revelle, 2016), SPSS Statistics 24 for calculating means, standard deviations, Student's *t*, mean interitem correlations, and mean item-total correlations as well as Becker's (1998) Effect Size Calculators for calculating Cohen's *d* for gender differences.

Factor analysis (H3). To examine the factorial structure of the Polish adaptation of the HEXACO-60, we first followed the procedure applied by the authors (Ashton & Lee, 2009). Namely, using SPSS Statistics 24, we conducted principal axis extraction with varimax rotation of six factors. Additionally, we examined a six-factor solution in exploratory structural equation modeling (ESEM) with target rotation, using Mplus software. This procedure has not been applied in previous research on the HEXACO inventories despite its advantages.

ESEM combines the strengths of exploratory factor analysis (EFA) and confirmatory factor analysis (CFA), which makes it suitable to test the internal structure of a personality inventory. EFA is considered an "exploratory," data-driven approach, as it does not require any explicit a priori assumptions regarding the number of factors and it allows for cross-loadings. CFA is considered "confirmatory," as it requires a priori specification of the number of factors and indicators meaningfully loading on the stipulated factors. CFA is very restrictive, fixing all cross-loadings at zero. As a result, models tested in CFA are unlikely to be suitable for data collected with personality inventories, which often have many small cross-loadings that are motivated both by the theory and the formulation of the measurement (Asparouhov & Muthén, 2009). Hence, personality inventories perform poorly in CFA and using this procedure to verify their internal structure is not recommended (Hopwood & Donnellan, 2010). ESEM is a useful alternative because, like CFA, it can be used as a confirmatory analysis, with the number of factors and expected loadings of indicators on these factors specified a priori, and it gives access to all the usual SEM parameters. At the same time, as with EFA, it allows for cross-loadings. Because it is less restrictive than CFA, it is more suitable for models of personality traits.

In target rotation, cross-loadings are specified as zero but they are not fixed as in CFA. The loadings change during rotation to find a good fit. They are made as close to zero as possible, but they may be large if it is necessary to provide good fit (Browne, 2001).

We used the same procedure – ESEM with target rotation – to test the six-factor solution of the HEXACO-100 on the facet level. In the last step, we examined the congruence between factorial structures of the Polish and original versions of the HEXACO-100 in an exploratory factor comparison analysis using the orthogonal non-Procrustes (i.e., unadjusted, without row normalization) procedure by Barrett (2013). This procedure allows one to compare the target and comparison matrices using congruence coefficients which quantify the similarity of the target and comparison loading matrices for overall solution congruence, for each factor (column) and for each row (variable) in the matrices. As a target we used the loadings matrix of HEXACO-100 facet scales on six varimax-rotated components (results from a principal component analysis – PCA), published by Lee and Ashton (2018, p. 548) and obtained on the basis of self-reports from an online sample ($N = 100,318$). The comparison matrix was obtained for our data ($N = 522$) in the same way as the target matrix, that is, in a PCA with varimax rotation conducted on 25 facets. Then the results were rotated using the non-Procrustes procedure, where the comparison matrix is aligned to the target matrix by orthogonal rotation of the first one against the second to minimize the sum of squared deviations between the two matrices. Components are not aligned one by one, but a fixed orthogonal structure is maintained across all dimensions. Using unadjusted rotation (without row normalization) does not affect the relative positions of the variables in the common space. The analysis was conducted in the Orthosim 2.1 software by Barrett (2013).

Correlation analyses (H4-H9). We used Pearson's *r* test to examine (a) correlations among the HEXACO-60 and the HEXACO-100 scales, (b) correlations of the six HEXACO domains measured by both HEXACO inventories with measures of the Big Five, Big Six, and Big Two, and (c) correlations of the HEXACO domains and facets with the Big Five aspects.

RESULTS

DESCRIPTIVE STATISTICS AND RELIABILITY (H1 AND H2)

In Table 1, descriptive statistics are presented with α and ω reliability coefficients, and gender differences in the HEXACO-60 and the HEXACO-100 scales. For many HEXACO scales gender differences were statistically significant. According to Cohen's *d* test, large effects were found only for Emotionality and its facets (Fearfulness, Anxiety, and Sentimentality) – women scored higher on these scales than men. There was a medium difference between women and men in Altruism (women's mean was higher). Women also scored higher than men on Honesty-Humility; this effect was small, however. These findings are consistent with previous research and confirm H1 (Ashton & Lee, 2009; Lee & Ashton, 2018).

Table 1

Descriptive statistics and reliability coefficients for the HEXACO-60 and the HEXACO-100 scales

HEXACO scale	Mean inter-item *r*	Mean item-total *r*	α	ω_t (ω_g)	Women *n* = 294 *M* (SD)	Men *n* = 228 *M* (SD)	Difference between women and men	
							Student's *t*	Cohen's *d*
HEXACO-60 basic scales								
Honesty-Humility-60	.26	.45	.78	.84 (.58)	3.61 (0.60)	3.38 (0.67)	4.03**	0.36
Emotionality-60	.28	.47	.80	.86 (.64)	3.50 (0.56)	2.76 (0.55)	15.16***	1.33
Extraversion-60	.31	.50	.82	.87 (.65)	3.36 (0.61)	3.44 (0.63)	−1.46	−0.13
Agreeableness-60	.25	.43	.77	.84 (.58)	3.09 (0.63)	3.03 (0.55)	1.08	0.10
Conscientiousness-60	.29	.48	.80	.85 (.64)	3.65 (0.58)	3.54 (0.59)	2.17*	0.19
Openness to Experience-60	.26	.45	.78	.83 (.67)	3.33 (0.66)	3.33 (0.66)	−0.01	0.00

(Table 1 continues)

Table 1

(Table 1 continued)

HEXACO scale	Mean inter-item r	Mean item-total r	α	ω_t (ω_g)	Women $n = 294$ M (SD)	Men $n = 228$ M (SD)	Difference between women and men	
							Student's t	Cohen's d
HEXACO-100 basic scales								
Honesty-Humility-100	.26	.47	.85	.88 (.65)	3.60 (0.57)	3.42 (0.64)	3.35**	0.30
Emotionality-100	.26	.47	.85	.88 (.61)	3.50 (0.52)	2.81 (0.51)	15.03***	1.34
Extraversion-100	.28	.50	.86	.89 (.66)	3.42 (0.57)	3.48 (0.58)	−1.13	−0.10
Agreeableness-100	.24	.45	.84	.87 (.59)	2.93 (0.58)	2.89 (0.52)	0.73	0.07
Conscientiousness-100	.27	.48	.85	.88 (.64)	3.66 (0.55)	3.58 (0.56)	1.67	0.14
Openness to Experience-100	.25	.46	.84	.88 (.57)	3.32 (0.63)	3.37 (0.62)	−0.80	−0.08
HEXACO-100 facets								
H_Sincerity	.35	.46	.68	.69	3.49 (0.77)	3.46 (0.79)	0.47	0.04
H_Fairness	.42	.55	.75	.76	3.85 (0.83)	3.52 (0.96)	4.21***	0.37
H_Greed Avoidance	.47	.59	.78	.79	3.33 (0.87)	3.16 (0.92)	2.12*	0.19
H_Modesty	.30	.42	.64	.64	3.73 (0.65)	3.55 (0.71)	3.03**	0.26
E_Fearfulness	.39	.51	.72	.73	3.20 (0.74)	2.38 (0.74)	12.41***	1.11
E_Anxiety	.25	.35	.57	.58	3.59 (0.68)	3.03 (0.68)	9.33***	0.82
E_Dependence	.46	.58	.77	.78	3.44 (0.83)	2.81 (0.76)	8.97***	0.79
E_Sentimentality	.39	.50	.71	.72	3.75 (0.70)	3.04 (0.68)	11.81***	1.03
X_Social Self-Esteem	.34	.46	.68	.68	3.53 (0.69)	3.64 (0.66)	−1.85	−0.16
X_Social Boldness	.41	.52	.73	.73	3.03 (0.79)	3.22 (0.81)	−2.65**	−0.22
X_Sociability	.28	.40	.60	.65	3.63 (0.65)	3.47 (0.71)	2.50*	0.24
X_Liveliness	.48	.59	.79	.79	3.49 (0.82)	3.58 (0.72)	−1.23	−0.11
A_Forgiveness	.44	.57	.76	.77	2.72 (0.83)	2.61 (0.76)	1.66	0.14

(Table 1 continues)

Table 1

(Table 1 continued)

HEXACO scale	Mean inter-item r	Mean item-total r	α	ω_t (ω_g)	Women $n = 294$ M (SD)	Men $n = 228$ M (SD)	Difference between women and men	
							Student's t	Cohen's d
A_Gentleness	.34	.45	.67	.67	3.37 (0.71)	3.30 (0.67)	1.28	0.10
A_Flexibility	.28	.38	.60	.61	2.82 (0.75)	2.70 (0.64)	1.91	0.17
A_Patience	.36	.47	.69	.69	2.79 (0.74)	2.96 (0.77)	−2.58*	−0.23
C_Organization	.39	.51	.72	.73	3.84 (0.79)	3.63 (0.79)	3.09**	0.27
C_Diligence	.38	.50	.71	.71	3.78 (0.66)	3.83 (0.68)	−0.91	−0.07
C_Perfectionism	.33	.44	.67	.67	3.64 (0.70)	3.49 (0.67)	2.51*	0.22
C_Prudence	.36	.48	.69	.70	3.38 (0.72)	3.37 (0.70)	0.21	0.01
O_Aesthetic Appreciation	.37	.49	.70	.70	3.46 (0.87)	3.12 (0.89)	4.42***	0.39
O_Inquisitiveness	.38	.50	.71	.71	3.12 (0.87)	3.50 (0.85)	−4.95***	−0.44
O_Creativity	.39	.51	.72	.73	3.45 (0.83)	3.46 (0.79)	−0.14	−0.01
O_Unconventionality	.23	.33	.55	.56	3.27 (0.64)	3.39 (0.65)	−2.27*	−0.18
Altruism	.26	.37	.59	.59	3.91 (0.59)	3.50 (0.62)	7.79***	0.68

Note. $N = 522$; ω_t – omega total (the total amount of reliable variance in the scale); ω_g – omega general (the percentage of the scale variance due to the general factor); *$p < .05$, **$p < .01$, ***$p < .001$.

At the facet level one can note some more significant gender differences. For instance, men are higher on Social Boldness and women are higher on Sociability, whereas at the domain level men and women do not differ in Extraversion. Similarly, they do not differ in Openness to Experience; however, women are higher on Aesthetic Appreciation and men are higher on Inquisitiveness and Unconventionality.

The reliability coefficients are satisfactory, confirming H2. Specifically, Cronbach's α for the HEXACO-60 basic scales ranges from .77 (Agreeableness) to .82 (Extraversion) with a mean of .79. Cronbach's α for the HEXACO-100 basic scales ranges from .84 (Agreeableness and Openness to Experience) to .86 (Extraversion), with a mean of .85, and for the HEXACO-100 facets α ranges from .55 (Unconventionality) to .79 (Liveliness), with a mean of .69. The results are similar to those re-

ported for the original versions of both inventories (see Ashton & Lee, 2009, Table 2; Lee & Ashton, 2018, Table 1). Omegas for unidimensional HEXACO-100 facet scales are only slightly higher than alphas and range from .56 to .79 with a mean of .70. For the HEXACO-60 and the HEXACO-100 six-factor scales we computed both ω_t and ω_g coefficients. Because they are multidimensional, ω_t coefficients should be the most accurate for assessing their reliability. For the HEXACO-60 they ranged from .83 (Openness to Experience) to .87 (Extraversion) with a mean of .85, and for the HEXACO-100 from .87 (Agreeableness) to .89 (Extraversion) with a mean of .88, showing high reliability. Omega general coefficients are lower, indicating that distinguishing four subscales is justifiable. However, general factor saturation might be considered relatively high, especially in comparison with results obtained by Wilt

and Revelle (2019) for the Big Five scales. In this study, ω_gs for the six HEXACO-60 scales ranged from .58 (Honesty-Humility and Agreeableness) to .67 (Openness to Experience) with a mean of .63, and for the six HEXACO-100 scales from .57 (Openness to Experience) to .66 (Extraversion) with a mean of .62; in Wilt and Revelle's study they ranged from .33 (Conscientiousness) to .59 (Extraversion) with a mean of .49.

FACTOR STRUCTURE (H3)

HEXACO-60. The six-factor model was tested on the HEXACO-60 items in two analyses: principal axis factoring (PAF) with varimax rotation and ESEM with target rotation (cross-loadings specified to be close to zero). In PAF, the first six common factors accounted for 39.7% of the item variance (compared to 37.4% and 29.1% reported for the original English version; Ashton & Lee, 2009). The eigenvalues of the first 10 factors were 6.19, 5.88, 3.55, 3.24, 2.92, 2.04, 1.77, 1.58, 1.43, and 1.33. All primary loadings and only six cross-loadings exceeded .30. One item (Item 61: "People have often told me that I have a good imagination") from the Openness to Experience scale had a higher cross-loading on Extraversion than its primary loading. One item (Item 32: "I often push myself very hard when trying to achieve a goal") from the Conscientiousness scale had a cross-loading on Extraversion equal to its primary loading. All factor loadings are presented in Table 2.

Table 2

Factor loadings from PAF and ESEM conducted on the HEXACO-60 items

Item	PAF						ESEM					
	H	E	X	A	C	O	H	E	X	A	C	O
30	**−.40**	−.01	−.10	.04	−.12	.00	**−.36**	−.03	−.11	−.02	−.10	.04
54	**.52**	.03	.04	−.04	.08	.08	**.49**	.05	.05	.07	−.05	.04
78	**−.52**	−.09	−.03	.03	−.13	−.04	**−.45**	−.11	−.06	−.04	−.11	−.01
12	**.43**	−.11	−.08	**−.31**	.13	.11	**.49**	−.09	−.10	−.16	.04	.07
60	**−.36**	.09	.03	.14	−.16	−.06	**−.35**	.08	.03	.04	−.12	−.03
84	**.48**	−.10	−.08	−.24	.16	.11	**.53**	−.08	−.09	−.07	.07	.06
18	**−.36**	.10	−.07	**.31**	−.02	.00	**−.39**	.07	−.03	.19	.04	.02
90	**.50**	.07	.18	−.28	.03	.07	**.57**	.12	.17	−.12	−.06	.04
72	**.47**	−.08	.00	−.11	.06	−.05	**.49**	−.06	−.02	.01	.02	−.09
96	**.60**	−.06	.12	−.21	.01	−.07	**.68**	−.01	.08	−.02	−.05	−.12
5	.10	**.47**	−.08	.15	−.06	.12	.09	**.48**	−.02	.11	−.07	.10
53	.06	**.57**	−.21	.15	.00	.11	.09	**.57**	−.15	.12	−.03	.07
77	−.02	**−.54**	.21	.08	−.04	−.20	−.01	**−.54**	.15	.14	.02	−.19
11	.00	**.51**	−.24	−.04	−.09	.00	.04	**.51**	−.23	−.08	−.13	−.02
35	.18	**−.31**	.12	−.01	.08	.16	.15	**−.30**	.13	.06	.08	.16
17	.02	**.55**	.14	.06	.01	.07	.07	**.57**	.19	.05	−.01	.04
41	.05	**−.57**	.14	.00	−.10	−.05	.02	**−.57**	.09	.04	−.07	−.02
23	−.08	**.63**	.09	.19	.01	−.05	−.08	**.63**	.14	.12	.03	−.07
71	−.07	**.55**	.06	−.01	−.10	−.04	−.03	**.57**	.09	−.06	−.12	−.04
95	.15	**−.54**	−.05	−.03	.01	.16	.15	**−.55**	−.08	.06	.01	.17
4	.10	−.15	**.52**	.05	−.20	.08	.12	−.10	**.51**	.10	−.19	.10
52	−.07	.15	**−.55**	.07	.02	.06	−.03	.11	**−.53**	.07	.00	.05
76	−.02	.29	**−.50**	−.11	.29	.01	−.06	.25	**−.47**	−.15	.26	−.01
10	−.02	.10	**−.51**	.27	.04	.16	.04	.07	**−.46**	.30	.04	.12

(Table 2 continues)

Table 2

(Table 2 continued)

Item	PAF						ESEM					
	H	E	X	A	C	O	H	E	X	A	C	O
34	.08	−.04	**.63**	−.04	−.01	−.18	.04	−.01	**.60**	−.04	.03	−.17
58	.21	−.01	**.42**	−.12	.08	−.09	.15	.02	**.41**	−.10	.09	−.10
64	−.02	.14	**.55**	.11	.00	.00	−.01	.18	**.57**	.10	.04	.00
88	.10	.12	**.57**	.15	.02	.00	.09	.16	**.60**	.16	.06	.00
46	−.06	−.04	**.64**	.15	−.13	.07	−.04	.00	**.66**	.15	−.09	.10
94	.01	.17	**−.61**	.12	.12	.05	.06	.13	**−.59**	.14	.09	.01
3	−.13	.02	.09	**.54**	.05	−.02	−.15	−.01	.14	**.49**	.14	−.02
27	−.16	.07	.10	**.59**	.01	−.03	−.16	.05	.15	**.53**	.11	−.04
9	.22	−.02	−.07	**−.44**	.05	−.06	.13	−.02	−.11	**−.44**	.00	−.05
57	−.16	.11	−.03	**.61**	.00	.09	−.09	.09	.04	**.60**	.07	.07
81	−.19	.01	.00	**.39**	.02	−.02	−.13	−.01	.03	**.39**	.08	−.04
15	.01	−.05	.05	**−.45**	−.01	.08	−.05	−.03	.03	**−.46**	−.05	.11
39	.05	.22	−.20	**.44**	.05	.10	.08	.20	−.14	**.45**	.08	.06
63	.15	−.05	.09	**−.35**	.14	.06	.11	−.04	.09	**−.31**	.10	.07
21	.13	.14	.07	**−.50**	**.34**	.03	.00	.14	.08	**.53**	.30	.04
69	−.14	−.26	.01	**.40**	−.22	−.11	−.03	−.26	−.03	**.45**	−.16	−.11
26	−.07	.11	.00	.15	**−.55**	.05	.01	.13	−.02	.12	**−.55**	.08
74	.20	.02	−.23	.01	**.47**	−.08	.16	.00	−.21	.07	**.48**	−.13
32	−.05	−.08	**.38**	−.05	**−.38**	−.08	.00	−.04	**.34**	−.04	**−.37**	−.03
80	.15	−.04	−.20	.01	**.39**	.21	.11	−.07	−.14	.07	**.37**	.17
38	.13	−.07	−.04	.05	**.51**	.02	.04	−.09	.01	.08	**.54**	−.02
62	−.23	.05	.14	−.05	**−.60**	−.10	−.13	.08	.08	−.09	**−.59**	−.05
86	.02	.10	.03	−.11	**−.48**	−.17	.09	.13	−.04	−.11	**−.50**	−.15
20	.13	.08	.09	−.07	**.61**	.12	.03	.06	.16	−.05	**.61**	−.08
44	.11	.15	−.07	−.18	**.63**	−.01	.02	.13	−.01	−.17	**.63**	−.05
92	.01	−.05	.00	−.08	**.55**	.00	−.04	−.07	.03	−.05	**.55**	−.03
1	.02	−.10	.00	−.17	.09	**.56**	−.03	−.11	.06	−.18	.02	**.58**
49	−.06	.11	.00	.10	−.12	**−.64**	.01	.11	−.09	.11	−.07	**−.67**
7	.07	−.17	.11	.07	−.02	**−.44**	.08	−.17	.05	.10	.03	**−.44**
79	.02	.02	−.01	−.09	.30	**.49**	−.02	.01	.07	−.09	.25	**.47**
37	−.05	.11	.03	.02	−.01	**−.71**	−.01	.11	−.07	.03	.05	**−.74**
61	.00	−.03	**.40**	−.18	.05	**−.33**	.02	.00	**.35**	−.16	.08	**−.33**
85	−.02	.06	**−.39**	.16	.05	**.51**	−.05	.04	−.30	.14	.02	**.51**
19	.11	.09	−.07	.01	.05	**.44**	.08	.09	.00	.01	.01	**.43**
43	.02	−.04	.07	−.16	.03	**−.32**	.04	−.03	.01	−.12	.04	**−.32**
91	.06	.08	.05	−.01	−.02	**.63**	.08	.10	.14	.02	−.08	**.62**

Note. Item numbers from the HEXACO-100. All coefficients > .30 are shown in bold. H – Honesty-Humility, E – Emotionality, X – Extraversion, A – Agreeableness, C – Conscientiousness, O – Openness to Experience.

Table 2 also shows standardized factor loadings from ESEM. All primary loadings and only two cross-loadings (Items 32 and 61) exceeded .30. The six-factor model fitted the data well, according to RMSEA and SRMR; however, CFI was unsatisfactory. The model fit estimates were as follows: $\chi^2(1425) = 2890.57$, $p < .001$, CFI = .801, RMSEA = .044, 90% CI [.042, .047], $p = 1.000$, SRMR = .040.

HEXACO-100. To verify the factor structure of the HEXACO-100, we first conducted ESEM on 25 facets, applying target rotation with cross-loadings specified to be close to zero. The tested six-factor model fitted the data well, $\chi^2(165) = 389.28$, $p < .001$, CFI = .947, RMSEA = .051, 90% CI [.044, .058], $p = .388$, SRMR = .023. The standardized factor loadings of the model are presented in Table 3. Expected loadings were high or moderate and all cross-loadings were low (with the highest being .38 for Diligence). Altruism was expected to be loaded by Honesty-Humility, Emotionality, and Agreeableness. The highest loading was for Emotionality. Surprisingly, the Extraversion loading was higher than loadings for Honesty-Humility and Agreeableness.

Table 3

Standardized factor loadings of the six-factor ESEM model of the HEXACO-100

Facet	Honesty-Humility	Emotion-ality	Extra-version	Agree-ableness	Conscien-tiousness	Openness to Experience
H_Sincerity	**.56**	−.08	−.04	−.04	.10	.01
H_Fairness	**.43**	.07	.06	.15	.17	.09
H_Greed Avoidance	**.72**	−.09	−.13	.08	−.06	.04
H_Modesty	**.78**	.08	.01	−.02	−.05	−.11
E_Fearfulness	−.10	**.63**	−.20	.11	.10	−.17
E_Anxiety	.03	**.67**	−.24	−.11	.08	.11
E_Dependence	−.08	**.71**	.22	.06	−.06	−.05
E_Sentimentality	.17	**.73**	.11	−.05	.05	.13
X_Social Self-Esteem	−.07	−.18	**.63**	.05	.20	.01
X_Social Boldness	−.09	−.15	**.60**	−.16	.02	.15
X_Sociability	−.08	.27	**.76**	.14	−.07	−.02
X_Liveliness	.07	−.10	**.75**	−.03	.10	−.03
A_Forgiveness	.09	−.01	.12	**.56**	−.07	.04
A_Gentleness	.19	.13	.16	**.59**	−.06	−.04
A_Flexibility	−.06	.14	−.10	**.67**	−.06	.04
A_Patience	−.01	−.27	−.06	**.71**	.16	.07
C_Organization	.07	.13	.08	.05	**.70**	−.20
C_Diligence	.04	−.03	**.38**	−.08	**.53**	.20
C_Perfectionism	−.01	.17	−.10	−.14	**.74**	.10
C_Prudence	.00	−.11	−.10	.14	**.75**	−.04
O_Aesthetic Appreciation	.07	.20	−.19	.15	.05	**.77**
O_Inquisitiveness	−.05	−.16	−.06	.12	.12	**.57**
O_Creativity	−.02	.03	.22	−.08	−.05	**.70**
O_Unconventionality	−.03	−.06	.02	−.06	−.08	**.75**
Altruism	.22	**.48**	**.32**	.20	.17	.09

Note. All coefficients > .30 are shown in bold.

In Table 4 we present the results from the analysis carried out using the orthogonal non-Procrustes procedure by Barrett (2013), in which we examined the similarity of the factor structure – tested in PCA with varimax rotation – of the Polish adaptation of the HEXACO-100 to the factor structure of the original version of the inventory. We report factor loadings from both matrices and congruence coefficients calculated at facet (rows) and factor (columns) levels. Congruence coefficients, analogically to correlations, range from –1 to 1. Coefficients higher than .85 are typically considered evidence of similarity at an acceptable level and those higher than .95 indicate very good factor replication (cf. Barrett, 1986; McCrae, Zonderman, Bond, Costa, & Paunonen, 1996). As can be seen in Table 4, only one congruence coefficient was lower than .95 (i.e., .93 for Flexibility, which is a facet of Agreeableness). At the factor level, all coefficients were higher than .95. The overall solution congruence was .98, which indicates that the factor

Table 4

Target and comparison factor matrices with congruence coefficients

Item	Target matrix						Comparison matrix						Cong coef
	H	E	X	A	C	O	H	E	X	A	C	O	
H_Sincerity	**.78**	−.04	−.05	.04	.05	.03	**.74**	−.05	−.03	.01	.14	.03	.99
H_Fairness	**.68**	.17	.10	.17	.27	.02	**.58**	.12	.07	.26	.23	.11	.97
H_Greed Avoidance	**.75**	−.02	−.08	.18	−.04	.13	**.75**	−.02	−.16	.25	.03	.05	.98
H_Modesty	**.70**	.20	−.11	**.32**	−.05	−.06	**.77**	.17	−.06	.17	.03	−.12	.97
E_Fearfulness	.01	**.64**	−.27	.04	.05	−.20	−.07	**.67**	−.32	.14	.09	−.24	.99
E_Anxiety	−.06	**.64**	−.42	−.21	.08	.03	.06	**.71**	−.32	−.10	.07	.07	.96
E_Dependence	.01	**.75**	.12	−.04	−.13	−.03	−.07	**.77**	.13	.07	−.10	−.10	.99
E_Sentimentality	.28	**.74**	.09	.10	−.02	.09	.19	**.78**	.04	.02	.06	.11	.98
X_Social Self-Esteem	.01	−.22	**.71**	.15	.21	−.03	−.07	−.17	**.74**	.04	.20	.07	.97
X_Social Boldness	−.09	−.07	**.74**	−.17	.00	.19	−.14	−.14	**.71**	−.19	−.01	.21	.99
X_Sociability	−.11	**.32**	**.72**	.12	−.12	.02	−.07	**.32**	**.75**	.12	−.09	−.01	.99
X_Liveliness	.05	−.06	**.79**	.19	.13	.01	.04	−.07	**.82**	−.01	.10	.04	.97
A_Forgiveness	.27	.00	.18	**.63**	−.08	.08	.19	.04	.09	**.70**	−.02	.03	.98
A_Gentleness	.22	.09	.00	**.76**	−.10	.03	**.31**	.18	.08	**.68**	.01	−.07	.97
A_Flexibility	.15	.08	.06	**.74**	.03	−.01	.02	.17	−.18	**.76**	.01	.00	.93
A_Patience	.03	−.21	.03	**.78**	.13	.07	.16	−.26	−.05	**.72**	.26	.07	.97
C_Organization	.03	.01	.15	.00	**.69**	−.19	.17	.14	.14	.12	**.76**	−.14	.95
C_Diligence	.06	−.02	**.37**	−.07	**.65**	.19	.07	−.02	**.51**	−.04	**.56**	**.31**	.98
C_Perfectionism	.01	.14	−.15	−.12	**.69**	.15	.06	.16	.00	−.10	**.79**	.18	.98
C_Prudence	.08	−.21	−.03	.17	**.73**	−.02	.14	−.13	.01	.17	**.80**	.03	.99
O_Aesthetic Appreciation	.17	.15	−.02	.13	.09	**.71**	.15	.21	−.11	.15	.11	**.78**	.99
O_Inquisitiveness	.03	−.24	.02	.02	.13	**.64**	−.03	−.20	.04	.14	.18	**.69**	.98
O_Creativity	.03	.08	.16	.02	−.03	**.73**	−.01	.04	**.33**	−.13	−.03	**.74**	.96
O_Unconventionality	−.04	−.06	.01	.00	−.11	**.78**	−.04	−.06	.13	−.10	−.05	**.81**	.98
Altruism	**.46**	**.47**	.20	**.37**	.08	.15	**.32**	**.56**	**.30**	.27	.20	.10	.96
Cong coef for factors							.97	.99	.97	.96	.98	.99	

Note. All coefficients > .30 are shown in bold. Cong coef – congruence coefficient; H – Honesty-Humility; E – Emotionality; X – Extraversion; A – Agreeableness; C – Conscientiousness; O – Openness to Experience.

structure of the Polish adaptation of the HEXACO-100 is a very good replication of the original version of the inventory.

In general, the results presented above confirm the factor validity of the Polish adaptations of the HEXACO-60 and HEXACO-100 (H3).

CORRELATIONS AMONG THE HEXACO FACTOR SCALES (H4)

Table 5 shows correlations among the HEXACO factor scales: separately for the HEXACO-60 and the HEXACO-100 inventories. In both inventories there was one moderate correlation coefficient: between Honesty-Humility and Agreeableness. Similarly, in validation studies of the original version of the HEXACO-100, the correlation between these two factors exceeded .40 (Lee & Ashton, 2018). All other correlations were low (< .30), as expected (confirming H4).

CORRELATIONS WITH OTHER PERSONALITY MEASURES (H5-H9)

Correlations with QB6 scales. We correlated HEXACO-60 and HEXACO-100 basic scales with measures of the Big Six and Big Two personality factors included in the QB6. Correlation coefficients are presented in Table 6.

As can be seen in Table 6, each HEXACO scale showed the highest correlation with its Big Six counterpart, confirming H5. However, some HEXACO scales also correlated moderately with other Big Six scales: Honesty-Humility with Agreeableness, Extraversion with Resiliency and Originality, and Conscientiousness with Honesty/Propriety and Originality.

Correlations with the Big Two scales were as expected (H8 and H9): Social Self-Regulation correlated moderately with Honesty-Humility, Agreeableness, and Conscientiousness; Dynamism correlated highly with Extraversion and moderately with

Table 5

Correlations among the HEXACO-60 (above the diagonal) and HEXACO-100 (below the diagonal) factor scales

HEXACO scale	Honesty-Humility	Emotionality	Extraversion	Agreeableness	Conscientiousness	Openness to Experience
Honesty-Humility		.12	−.09	.42	.28	.09
Emotionality	.14		−.20	.11	.03	−.05
Extraversion	−.11	−.16		−.05	.22	.21
Agreeableness	.44	.09	−.06		.16	.03
Conscientiousness	.28	.05	.24	.18		.19
Openness to Experience	.08	−.07	.22	.05	.21	

Note. N = 522. All coefficients > |.09| are significant at $p < .05$. All coefficients > |.11| are significant at $p < .01$. All coefficients > |.14| are significant at $p < .001$.

Table 6

Correlations of the HEXACO-60/HEXACO-100 with the Big Six and Big Two scales from the QB6

HEXACO scale	Honesty/ Propriety	Resiliency	Extraversion	Agreeableness	Conscientiousness	Originality	Social Self-Regulation	Dynamism
Honesty-Humility	.43/.42	−.01/−.03	−.09/−.10	.41/.41	.24/.23	−.06/−.09	.44/.43	−.13/−.17
Emotionality	.20/.21	−.61/−.61	.08/.08	−.13/−.14	.07/.07	−.17/−.17	.01/.02	−.23/−.22
Extraversion	.00/.02	.39/.39	.60/.65	.01/.02	.30/.30	.36/.36	.14/.16	.62/.64
Agreeableness	.29/.25	.02/.03	−.05/−.06	.57/.58	.20/.18	−.13/−.13	.44/.41	−.17/−.19
Conscientiousness	.32/.33	.11/.14	.09/.11	.25/.28	.61/.68	.32/.31	.52/.55	.20/.21
Openness to Experience	.03/.03	.07/.09	.09/.10	.08/.07	.02/.04	.43/.43	.08/.09	.29/.31

Note. N = 518. All coefficients > |.09| are significant at $p < .05$. All coefficients > |.11| are significant at $p < .01$. All coefficients > |.14| are significant at $p < .001$.

Openness to Experience. Only the negative correlation between Dynamism and Emotionality was lower than expected.

Correlations with the Big Five measures. The HEXACO-60 and the HEXACO-100 were also correlated with two popular measures of the Big Five. Correlation coefficients with the BFAS scales are presented in Table 7 and correlations with the BFI scales are presented in Table 8.

We expected the strongest relationships between HEXACO Extraversion, Conscientiousness, and Openness to Experience and their Big Five counterparts (H6). This hypothesis was confirmed by the data. The strongest correlations were between Extraversion measured by the HEXACO inventories and Extraversion measured by the BFAS and the BFI. Correlations between measures of Openness to Experience and Conscientiousness from HEXACO and the Big Five models exceeded .60.

Honesty-Humility correlated moderately with Agreeableness (slightly higher with BFAS than with the BFI Agreeableness scale). Emotionality was only moderately related with Neuroticism when the Big Five was measured by the BFI, but when it was measured by the BFAS, Emotionality also correlated mod-

erately with Agreeableness. HEXACO Agreeableness was more strongly related to its BFI than to its BFAS counterpart.

We expected that Big Five Agreeableness would correlate similarly with three HEXACO scales: Honesty-Humility, Emotionality, and Agreeableness (H7). This hypothesis was confirmed when measuring Agreeableness with the BFAS: The correlation with Agreeableness was even lower than with Honesty-Humility and Emotionality.

Correlations with the Big Five Aspects. Table 9 presents correlations between the Big Five aspects measured by the BFAS and the HEXACO domains and facets. Honesty-Humility and its facets are most strongly related to Politeness, which is in line with previous findings (Barford, Zhao, & Smillie, 2015; Ludeke et al., 2019).

Emotionality was substantially related to both aspects of Neuroticism (Volatility and Withdrawal) and Compassion, with the highest correlation with Withdrawal. This is also consistent with previous observations (Ludeke et al., 2019). However, in this study, the correlations with Compassion and Volatility were slightly higher than those found by Ludeke et al. (2019), which were .38 and .40, respectively.

Table 7

Correlations between the HEXACO-60/HEXACO-100 and the BFAS scales

HEXACO scale	Neuroticism	Agreeableness	Conscientiousness	Extraversion	Openness
Honesty-Humility	−.08/−.06	.43/.46	.23/.22	−.14/−.17	.15/.13
Emotionality	.56/.56	.41/.42	−.02/−.02	−.14/−.11	.03/.05
Extraversion	−.36/−.36	−.01/.03	.26/.25	.71/.73	.25/.26
Agreeableness	−.22/−.23	.35/.34	.17/.16	−.15/−.16	−.02/−.01
Conscientiousness	−.23/−.27	.22/.23	.58/.63	.05/.08	.22/.22
Openness to Experience	−.08/−.10	.11/.10	.04/.04	.24/.25	.69/.69

Note. N = 504. All coefficients > |.09| are significant at *p* < .05. All coefficients > |.11| are significant at *p* < .01. All coefficients > |.15| are significant at *p* < .001.

Table 8

Correlations between the HEXACO-60/HEXACO-100 and the BFI scales

HEXACO scale	Neuroticism	Agreeableness	Conscientiousness	Extraversion	Openness
Honesty-Humility	−.09/−.07	.39/.39	.23/.22	−.15/−.18	.00/−.03
Emotionality	.52/.52	.22/.24	.01/.02	−.09/−.07	−.01/.00
Extraversion	−.40/−.40	.18/.21	.24/.23	.67/.70	.31/.32
Agreeableness	−.20/−.21	.53/.53	.18/.15	−.13/−.14	−.11/−.12
Conscientiousness	−.19/−.23	.16/.21	.62/.66	.00/.02	.08/.09
Openness to Experience	−.14/−.14	.11/.10	.08/.08	.14/.15	.64/.64

Note. N = 505. All coefficients > |.09| are significant at *p* < .05. All coefficients > |.11| are significant at *p* < .01. All coefficients > |.15| are significant at *p* < .001.

Table 9

Correlations between the HEXACO domains and facets and the Big Five aspects

HEXACO facet	Neuroticism		Agreeable-ness		Conscien-tiousness		Extraversion		Openness	
	Nv	Nw	Ac	Ap	Ci	Co	Ee	Ea	Oi	Oo
Honesty-Humility-60/100	−.12/−.11	−.02/.00	.33/.33	.44/.47	.18/.16	.21/.21	.00/−.00	−.20/−.25	.03/.00	.20/.20
H_Sincerity	−.13	−.04	.18	.28	.15	.16	−.03	−.09	.04	.10
H_Fairness	−.12	−.06	.30	.36	.18	.20	.05	−.09	.07	.22
H_Greed Avoidance	−.06	.03	.20	.35	.10	.09	−.10	−.25	−.01	.16
H_Modesty	.00	.10	.33	.44	.04	.19	.04	−.32	−.10	.08
Emotionality-60/100	.47/.47	.56/.56	.46/.48	.23/.23	−.19/−.18	.17/.16	.13/.15	−.32/−.30	−.22/−.20	.24/.26
E_Fearfulness	.33	.42	.24	.17	−.17	.16	−.02	−.35	−.29	.03
E_Anxiety	.39	.55	.36	.17	−.21	.11	−.03	−.30	−.12	.27
E_Dependence	.35	.37	.35	.13	−.13	.06	.28	−.12	−.15	.17
E_Sentimentality	.37	.39	.55	.25	−.04	.14	.21	−.15	−.04	.34
Extraversion-60/100	−.19/−.20	−.48/−.47	.07/.11	−.10/−.07	.40/.39	.03/.03	.52/.58	.64/.61	.39/.39	.04/.06
X_Social Self-Esteem	−.28	−.53	.01	−.02	.42	.10	.37	.49	.33	.00
X_Social Boldness	−.09	−.35	−.04	−.25	.25	−.07	.34	.66	.42	.09
X_Sociability	−.02	−.12	.27	.03	.14	−.04	.53	.26	.14	.06
X_Liveliness	−.23	−.46	.13	.03	.40	.09	.57	.49	.30	.02
Agreeableness-60/100	−.31/−.32	−.08/−.08	.22/.21	.40/.40	.13/.12	.17/.15	.06/.05	−.28/−.29	−.11/−.09	.07/.07
A_Forgiveness	−.18	−.08	.16	.22	.05	.08	.14	−.12	−.01	.09
A_Gentleness	−.13	.02	.28	.39	.04	.15	.12	−.28	−.15	.04
A_Flexibility	−.10	.08	.15	.31	.06	.11	−.04	−.32	−.14	.05
A_Patience	−.55	−.25	.05	.31	.20	.13	−.07	−.17	.01	.01
Conscientiousness-60/100	−.22/−.26	−.20/−.24	.17/.17	.22/.24	.50/.54	.48/.53	.00/.03	.08/.09	.30/.30	.08/.08
C_Organization	−.16	−.15	.15	.26	.46	.60	.03	−.04	.11	.02
C_Diligence	−.23	−.34	.12	.05	.48	.24	.20	.35	.44	.13
C_Perfectionism	−.06	−.02	.20	.20	.33	.42	−.01	.01	.20	.13
C_Prudence	−.35	−.23	.05	.21	.42	.37	−.13	.00	.19	−.03
Openness to Experience-60/100	−.04/−.05	−.11/−.13	.20/.18	−.02/−.02	.10/.11	−.04/−.04	.12/.12	.26/.28	.52/.52	.62/.62
O_Aesthetic Appreciation	.02	−.05	.29	.15	.06	.07	.01	−.01	.25	.62
O_Inquisitiveness	−.11	−.19	.02	−.07	.12	.01	−.01	.15	.39	.29
O_Creativity	−.04	−.17	.16	−.05	.12	−.10	.24	.44	.46	.51
O_Unconventionality	−.02	−.10	.07	−.13	.02	−.15	.15	.34	.50	.47
Altruism	.08	.15	.52	.41	.11	.25	.29	−.12	.03	.26

Note. $N = 504$. Nv – Volatility, Nw – Withdrawal, Ac – Compassion, Ap – Politeness, Ci – Industriousness, Co – Orderliness, Ee – Enthusiasm, Ea – Assertiveness, Oi – Intellect, Oo – Openness to Experience. All coefficients > |.09| are significant at $p < .05$. All coefficients > |.11| are significant at $p < .01$. All coefficients > |.15| are significant at $p < .001$.

Sentimentality was the facet most strongly related to Compassion (r = .55).

The patterns of correlations found in this study for Extraversion, Openness to Experience and Altruism were identical to those from the study by Ludeke et al. (2019). Extraversion was strongly related to Assertiveness and Enthusiasm, but also moderately to Withdrawal (negatively), Industriousness, and Intellect. Openness to Experience was only strongly related to Openness and Intellect. Altruism was primarily correlated with both aspects of Agreeableness and secondarily with Enthusiasm.

There were some small differences between the results of this study and the results obtained by Ludeke et al. (2019) regarding Agreeableness and Conscientiousness. In this study, Agreeableness was primarily associated with Politeness and secondarily with Volatility (negatively), whereas Ludeke et al. found a higher correlation with Volatility than with Politeness. Conscientiousness was strongly related to Industriousness and Orderliness and moderately to Intellect in both studies. However, in Ludeke et al.'s study it was also moderately associated with Assertiveness, whereas in this study we found a correlation with this aspect for only one Conscientiousness facet, which was Diligence.

DISCUSSION

The findings from this study confirmed that the Polish adaptations of the HEXACO-60 and the HEXACO-100 inventories are reliable and valid measures of the Big Six personality dimensions. The internal consistencies of the scales do not differ from their original versions. Additionally, the omega general coefficients showed that the general factor saturation of the six basic scales (which comprise four facet factors each) is higher than that found by Wilt and Revelle (2019) for the five basic scales (they used Big Five scales representing four components of each trait: affect, behavior, cognition, and desire). This may suggest that the five basic factors of personality traits are more internally diversified and the six basic factors are more consistent. This requires further examination of data collected with different measures of these two competing models of basic personality traits.

Internal consistency reliability coefficients for the six basic scales measured by the HEXACO-60 were only slightly lower than those for the basic scales measured by the HEXACO-100. Hence, we recommend using this shortened version when the aim of a study is to measure only the six basic HEXACO dimensions. A researcher interested in measuring the HEXACO facets is encouraged to use the HEXACO-100. Most of the facet scales had satisfactory α and ω coefficients. Only for three of them were the coefficients lower than .60 (although not lower than .55). These were:

Anxiety (Emotionality), Unconventionality (Openness to Experience), and Altruism (interstitial scale). Cronbach's α coefficients below .60 for some of the facet scales also occurred in the original version of the HEXACO-100 (Lee & Ashton, 2018) and in other language versions, for instance Spanish (Romero, Villar, & López-Romero, 2015) or, especially, Lithuanian (Truskauskaitė-Kunevičienė, Kaniušonytė, Kratavičien, & Kratavičiūtė-Ališauskienė, 2012). Lower internal consistency is replicable in different languages especially for Altruism and Unconventionality. When interpreting α and ω coefficients for facet scales of the HEXACO-100, one should take into account that they consist of only four items each. A more reliable measure of the HEXACO facets is available with the longer scales of the HEXACO-200.

Previous studies typically verified the factor structure of other language adaptations of instruments measuring the HEXACO model in exploratory analyses (such as principal component analysis or principal axis extraction). However, their results should not be interpreted in terms of confirmation. In this study, we used exploratory structural equation modeling (ESEM), which allowed us to confirm the six-factor structure of the HEXACO-60 and the HEXACO-100, revealing high or moderate expected loadings and low cross-loadings.

The use of an exploratory factor comparison analysis was another methodological novelty of this study in comparison with other studies that examined psychometric properties of language adaptations of the HEXACO inventories. High congruence coefficients showed that the Polish version of the HEXACO-100 is a very good replication of the original inventory.

However, we noted one deviation in intercorrelations of the HEXACO scales. Honesty-Humility correlated moderately with Agreeableness – not only measured by the same inventory, but also with its counterparts from the Big Five and Big Six models. Its correlation with the Agreeableness scale from the QB6 was almost identical to the correlation with the corresponding Honesty-Propriety scale. The higher than expected correlation between Honesty-Humility and Agreeableness is most likely caused by strong prosocial content (or even core) present in both factors and it also showed up in the study on a community sample that used the original version of the HEXACO-100 (Lee & Ashton, 2018). It did not replicate in other language adaptations, however (Međedović, Čolović, Dinić, & Smederevac, 2019; Romero et al., 2015; Truskauskaitė-Kunevičienė et al., 2012). Despite this fact, the distinctiveness of the Honesty-Humility factor should not be questioned because of the lack of cross-loadings in both variants of the conducted factor analysis: PCA and ESEM.

The correlation analyses of the HEXACO basic scales and the lexical Big Six factors measured by the QB6 showed the highest similarity between

the dimensions of Extraversion, Emotionality (vs. Resiliency), and Conscientiousness. Honesty-Propriety was moderately related not only to Honesty-Humility, but also to Conscientiousness. HEXACO Agreeableness only correlated moderately with QB6 Agreeableness, but the latter was also moderately related with HEXACO Honesty-Humility. Openness to Experience only correlated moderately with Originality, but the latter was also moderately related with HEXACO Extraversion and Conscientiousness. Overall, the pattern of correlations between the HEXACO and the Big Six indicates a considerable similarity of the two measures of the very similar, albeit not identical models. Each HEXACO scale showed the highest correlation with its QB6 counterpart and correlations with other scales reflected intercorrelations among HEXACO domains, as presented in Table 5.

Regarding the relations of the HEXACO basic scales with the lexical Big Two measured by the QB6, Social-Self Regulation correlated positively with Honesty-Humility, Agreeableness, and Conscientiousness and did not correlate with other HEXACO scales, as expected (see Strus & Cieciuch, 2019). Dynamism positively correlated with Extraversion and moderately with Openness to Experience. At a similar level, Dynamism also correlated with Emotionality (negatively) and with Conscientiousness (positively). Based on the definition of Dynamism, it should be particularly negatively related to Fearfulness, which is a facet of Emotionality. For this reason, a negative relationship between Dynamism and Emotionality was expected. The correlation coefficient between the two variables in this study was lower than |.30|, but higher than that from the study conducted by Saucier et al. (2014). The lower than expected correlation between Dynamism and Emotionality in these two studies may indicate that the emotional aspect of Dynamism is dominated by other aspects of this broad trait (especially related to Extraversion).

The patterns of correlations between the HEXACO and Big Five basic scales might serve as further evidence for the Polish versions of the HEXACO-60 and the HEXACO-100 being valid operationalizations of the HEXACO model of personality. The highest correlations were found between Extraversion, Conscientiousness, and Openness to Experience measured by the HEXACO inventories and Extraversion, Conscientiousness, and Openness measured by the BFAS and the BFI, which was expected, as these three HEXACO basic traits are the most similar to their Big Five counterparts. When Big Five traits were measured by the BFAS, the results showed a stronger alignment with expectations. BFAS Agreeableness was related similarly to three HEXACO factors, i.e. Agreeableness, Honesty-Humility, and Emotionality, showing that the two Agreeableness factors – from the HEXACO and from the Big Five models – con-

ceptually differ from each other. The same pattern of correlations was found by Ludeke et al. (2019) for the BFAS Agreeableness scale, but not by Ashton et al. (2019) for the BFI Agreeableness scale, which did not correlate with Emotionality.

The pattern of correlations between the HEXACO domains and the Big Five aspects was largely consistent with results obtained by Ludeke et al. (2019) in a meta-analysis of four samples. This further confirms the validity of the Polish adaptations of the HEXACO-60 and the HEXACO-100 inventories. What is more, a moderate correlation between Honesty-Humility and Politeness shows that these two traits, although associated, are conceptually distinct. This finding undermines DeYoung's (2015) claim that Honesty-Humility reflects only one aspect of Agreeableness (i.e., Politeness) instead of constituting a dimension that adds to the FFM (see Ludeke et al., 2019).

To conclude, we find the psychometric properties of the Polish versions of the HEXACO-60 and the HEXACO-100 inventories satisfactory and recommend using them in research. Both inventories are reliable and valid measures of the six basic dimensions distinguished in the HEXACO model of personality traits. We believe that the HEXACO model can be useful to predict various outcomes, especially related to moral functioning, due to the inclusion of the additional dimension of Honesty-Humility.

FUNDING

Endnote

1 Psychometric properties of the original version of the HEXACO-100 were examined with much larger samples of online respondents ($N = 100{,}318$) and undergraduate students ($N = 2{,}868$; Lee & Ashton, 2018). Psychometric properties of the original version of the HEXACO-60 were examined with a sample of students ($N = 936$) and a community sample ($N = 734$; Ashton & Lee, 2009). Psychometric properties of other language adaptations of the inventories were examined with various samples – often of a similar size or smaller and less representative than the community sample in this study (e.g., de Vries et al., 2008; Truskauskaitė-Kunevičienė et al., 2012; Wakabayashi, 2014).

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Table S1

Polish Items of the HEXACO-100 and HEXACO-60 Inventories

No.	Scale	Subscale	Item
1*	O	Aesthetic Appreciation	Wizyta w galerii sztuki byłaby dla mnie dość nudna. [R]
2	C	Organization	Systematycznie sprzątam swoje miejsce pracy i/lub mieszkanie.
3*	A	Forgiveness	Nie żywię urazy nawet wobec ludzi, którzy mnie bardzo skrzywdzili.
4*	X	Social Self-Esteem	Zwykle czuję się z siebie zadowolony/a.
5*	E	Fearfulness	Bał(a)bym się, gdybym musiał/a podróżować przy złej pogodzie.
6	H	Sincerity	Jeżeli czegoś chcę od osoby, której nie lubię, zachowuję się wobec niej bardzo uprzejmie, aby to uzyskać. [R]
7*	O	Inquisitiveness	Chętnie dowiaduję się nowych rzeczy o historii i życiu politycznym innych krajów.
8	C	Diligence	W pracy często wyznaczam sobie ambitne cele.
9*	A	Gentleness	Ludzie mówią mi czasami, że jestem zbyt krytyczny/a wobec innych. [R]
10*	X	Social Boldness	Rzadko wyrażam swoje zdanie podczas spotkań grupowych. [R]
11*	E	Anxiety	Czasem zamartwiam się drobiazgami i nic nie mogę na to poradzić.
12*	H	Fairness	Gdybym miał/a pewność, że nigdy nie zostanę złapany/a, był(a)bym gotów/gotowa ukraść milion złotych. [R]
13	O	Creativity	Wolał(a)bym pracę wymagającą wykonywania rutynowych działań niż taką, gdzie potrzeba kreatywności. [R]
14	C	Perfectionism	Często sprawdzam powtórnie wykonaną pracę, aby znaleźć ewentualne błędy.
15*	A	Flexibility	Ludzie czasami mówią mi, że jestem zbyt uparty/a. [R]
16	X	Sociability	Unikam rozmów na błahe tematy. [R]
17*	E	Dependence	Kiedy cierpię z powodu jakiegoś bolesnego wydarzenia, potrzebuję kogoś, kto sprawi, że poczuję się lepiej.
18*	H	Greed Avoidance	Posiadanie dużych pieniędzy nie jest dla mnie szczególnie ważne.
19*	O	Unconven-tionality	Myślę, że poświęcanie uwagi niekonwencjonalnym ideom to strata czasu. [R]
20*	C	Prudence	Decyzje podejmuję raczej pod wpływem chwili czy nastroju niż po starannym namyśle. [R]
21*	A	Patience	Ludzie uważają mnie za osobę wybuchową. [R]
22	X	Liveliness	Prawie zawsze jestem pełen/pełna energii.
23*	E	Sentimentality	Zbiera mi się na płacz, gdy widzę, jak inni płaczą.
24	H	Modesty	Jestem zwyczajnym człowiekiem, wcale nie lepszym od innych.
25	O	Aesthetic Appreciation	Nie poświęcił(a)bym czasu na czytanie tomiku poezji. [R]
26*	C	Organization	Planuję z odpowiednim wyprzedzeniem i tak wszystko organizuję, aby uniknąć zamieszania w ostatniej chwili.

(Table S1 continues)

Table S1

(Table S1 continued)

No.	Scale	Subscale	Item
27*	A	Forgiveness	Mój stosunek do ludzi, którzy potraktowali mnie źle, to: „przebaczam i zapominam".
28	X	Social Self-Esteem	Myślę, że większość ludzi lubi niektóre cechy mojego charakteru.
29	E	Fearfulness	Mógłbym/mogłabym wykonywać prace, które wiążą się z niebezpieczeństwem. [R]
30*	H	Sincerity	Nie użył(a)bym pochlebstw, aby uzyskać podwyżkę czy awans w pracy, nawet jeśli wydawałoby mi się to skuteczne.
31	O	Inquisitiveness	Oglądanie map różnych miejsc sprawia mi przyjemność.
32*	C	Diligence	Kiedy staram się osiągnąć jakiś cel, wytrwale do niego dążę.
33	A	Gentleness	Jestem wyrozumiały/a dla błędów popełnianych przez innych.
34*	X	Social Boldness	W sytuacjach społecznych to ja zazwyczaj wychodzę z inicjatywą.
35*	E	Anxiety	Martwię się różnymi rzeczami znacznie mniej niż większość ludzi. [R]
36	H	Fairness	Skusił(a)bym się na kupno kradzionej rzeczy, gdybym miał/a ograniczone środki finansowe. [R]
37*	O	Creativity	Twórcza praca nad powieścią, piosenką czy obrazem sprawiałaby mi przyjemność.
38*	C	Perfectionism	Kiedy nad czymś pracuję, nie zwracam zbyt wiele uwagi na szczegóły. [R]
39*	A	Flexibility	Zwykle jestem dość ustępliwy/a i potrafię zmienić zdanie, gdy inni ludzie się ze mną nie zgadzają.
40	X	Sociability	Lubię mieć wokół siebie dużo ludzi, z którymi mogę porozmawiać.
41*	E	Dependence	Potrafię radzić sobie z trudnymi sytuacjami, nie potrzebując emocjonalnego wsparcia ze strony innych. [R]
42	H	Greed Avoidance	Chciał(a)bym mieszkać w bardzo drogiej, ekskluzywnej okolicy. [R]
43*	O	Unconventionality	Podobają mi się ludzie, którzy mają nietypowe poglądy.
44*	C	Prudence	Popełniam dużo błędów, ponieważ działam bez zastanowienia. [R]
45	A	Patience	Rzadko odczuwam złość, nawet gdy ludzie źle mnie traktują.
46*	X	Liveliness	Zazwyczaj jestem radosny/a i optymistyczny/a.
47	E	Sentimentality	Kiedy ktoś, kogo dobrze znam, jest nieszczęśliwy, to niemal czuję jego ból.
48	H	Modesty	Nie chciał(a)bym, aby ludzie traktowali mnie jako kogoś, kto jest od nich ważniejszy.
49*	O	Aesthetic Appreciation	Gdybym miał/a okazję, chętnie poszedłbym/poszłabym na koncert muzyki klasycznej.
50	C	Organization	Ludzie często żartują sobie z bałaganu, jaki panuje w moim pokoju czy na biurku. [R]
51	A	Forgiveness	Jeżeli ktoś raz mnie oszuka, zawsze będę w stosunku do niego podejrzliwy/a. [R]
52*	X	Social Self-Esteem	Czuję, że nie jestem zbyt popularny/a w swoim środowisku. [R]

(Table S1 continues)

Table S1

(Table S1 continued)

No.	Scale	Subscale	Item
53*	E	Fearfulness	Gdy pojawia się fizyczne niebezpieczeństwo, jestem przerażony/a.
54*	H	Sincerity	Jeśli od kogoś czegoś chcę, śmieję się z jego żartów, nawet gdy są zupełnie beznadziejne. [R]
55	O	Inquisitiveness	Książka dotycząca historii nauki czy techniki bardzo by mnie znudziła. [R]
56	C	Diligence	Często rezygnuję z wyznaczonego celu, zanim go osiągnę. [R]
57*	A	Gentleness	Jestem raczej łagodny/a w ocenianiu innych ludzi.
58*	X	Social Boldness	Będąc w grupie ludzi, często jestem tą osobą, która wypowiada się w imieniu innych.
59	E	Anxiety	Nie mam kłopotów ze snem wynikających ze stresu lub niepokoju. [R]
60*	H	Fairness	Nigdy nie przyjąłbym/przyjęłabym łapówki, nawet gdyby była bardzo duża.
61*	O	Creativity	Ludzie mówią, że mam bogatą wyobraźnię.
62*	C	Perfectionism	Zawsze staram się dokładnie wykonywać swoją pracę, nawet jeśli pochłania to więcej czasu.
63*	A	Flexibility	Kiedy ludzie mówią mi, że nie mam racji, od razu zaczynam się z nimi spierać. [R]
64*	X	Sociability	Bardziej podoba mi się praca wymagająca stałego kontaktu z ludźmi niż taka, w której pracuje się samemu.
65	E	Dependence	Za każdym razem, kiedy się czymś martwię, chcę podzielić się swoimi troskami z drugą osobą.
66	H	Greed Avoidance	Chciał(a)bym, żeby ludzie widzieli, jak jeżdżę luksusowym samochodem. [R]
67	O	Unconven- tionality	Myślę, że jestem dość oryginalną osobą.
68	C	Prudence	Nie pozwalam, żeby moim zachowaniem rządziły chwilowe impulsy.
69*	A	Patience	Nie wpadam w złość tak szybko jak inni ludzie.
70	X	Liveliness	Ludzie często mówią, że mógłbym/mogłabym być weselszy/a. [R]
71*	E	Sentimentality	Doświadczam silnych uczuć, kiedy ktoś bliski wyjeżdża na dłuższy czas.
72*	H	Modesty	Myślę, że należy mi się większy szacunek niż zwykłej osobie. [R]
73	O	Aesthetic Appreciation	Czasami lubię po prostu patrzeć na drzewa kołysane wiatrem.
74*	C	Organization	Moje niezorganizowanie jest powodem kłopotów, jakie miewam w pracy. [R]
75	A	Forgiveness	Nie umiem całkowicie przebaczyć osobie, która zrobiła mi coś złego. [R]
76*	X	Social Self-Esteem	Czasem czuję, że jestem kimś bezwartościowym. [R]
77*	E	Fearfulness	Nawet w nagłym wypadku nie wpadł(a)bym w panikę. [R]
78*	H	Sincerity	Nie udawał(a)bym, że kogoś lubię, tylko po to, aby coś od tej osoby uzyskać.
79*	O	Inquisitiveness	Nigdy nie lubiłem/am zaglądać do encyklopedii. [R]
80*	C	Diligence	W pracy ograniczam się jedynie do wykonywania niezbędnego minimum. [R]

(Table S1 continues)

Table S1

(Table S1 continued)

No	Scale	Subscale	Item
81*	A	Gentleness	Nawet jeśli ktoś popełnia dużo błędów, nie wyrażam się o nim negatywnie.
82	X	Social Boldness	Zwykle czuję się skrępowany/a, kiedy mówię coś do grupy ludzi. [R]
83	E	Anxiety	Odczuwam silny niepokój, gdy oczekuję na jakąś ważną decyzję.
84*	H	Fairness	Uległ(a)bym pokusie używania fałszywych pieniędzy, gdybym miał(a) pewność, że to nie wyjdzie na jaw. [R]
85*	O	Creativity	Nie jestem typem osoby twórczej czy kreatywnej. [R]
86*	C	Perfectionism	Ludzie często nazywają mnie perfekcjonist(k)ą.
87	A	Flexibility	Trudno mi pójść z kimś na kompromis, kiedy jestem przekonany/a, że to ja mam rację. [R]
88*	X	Sociability	Pierwszą rzeczą, jaką zawsze robię w nowym miejscu, jest nawiązanie bliższych kontaktów z ludźmi.
89	E	Dependence	Rzadko mówię innym o swoich problemach. [R]
90*	H	Greed Avoidance	Posiadanie luksusowych i naprawdę kosztownych rzeczy sprawiałoby mi mnóstwo przyjemności. [R]
91*	O	Unconven-tionality	Uważam, że dyskusje o problemach filozoficznych są nudne. [R]
92*	C	Prudence	Wolę robić to, co mi akurat przychodzi do głowy, zamiast trzymać się jakiegoś planu. [R]
93	A	Patience	Trudno mi utrzymać nerwy na wodzy, gdy ktoś mnie obraża. [R]
94*	X	Liveliness	Większość ludzi jest bardziej entuzjastyczna i dynamiczna ode mnie. [R]
95*	E	Sentimentality	Nie ulegam uczuciom nawet w sytuacjach, w których większość ludzi bardzo się wzrusza. [R]
96*	H	Modesty	Chciał(a)bym, żeby ludzie wiedzieli, że mam wysoką pozycję i jestem kimś ważnym. [R]
97		Altruism	Współczuję ludziom, którym powiodło się w życiu gorzej niż mnie.
98		Altruism	Staram się hojnie wspomagać tych, którzy tego potrzebują.
99		Altruism	Nie miał(a)bym oporów, aby wyrządzić krzywdę komuś, kogo nie lubię. [R]
100		Altruism	Ludzie uważają mnie za osobę nieczułą. [R]

Note. *Item included in the HEXACO-60 inventory. [R] – reverse scored, H – Honesty-Humility, E – Emotionality, X – Extraversion, A – Agreeableness, C – Conscientiousness, O – Openness to Experience.