

# On Measuring the Sixth Basic Personality Dimension: A Comparison Between HEXACO Honesty-Humility and Big Six Honesty-Propriety

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## Abstract

Recent developments in personality research led to the proposition of two alternative six-factor trait models, the HEXACO model and the Big Six model. However, given the lack of direct comparisons, it is unclear whether the HEXACO and Big Six factors are distinct or essentially equivalent, that is, whether corresponding inventories measure similar or distinct personality traits. Using Structural Equation Modeling (Study 1), we found substantial differences between the traits as measured via the HEXACO-60 and the 30-item Questionnaire Big Six (30QB6), particularly for Honesty-Humility and Honesty-Propriety (both model's critical difference to the Big Five approach). This distinction was further supported by Study 2, showing differential capabilities of the HEXACO-60 and the 30QB6 to account for several criteria representing the theoretical core of Honesty-Humility and/or Honesty-Propriety. Specifically, unlike the indicator of Honesty-Humility, the indicator of Honesty-Propriety showed low predictive power for some conceptually relevant criteria, suggesting a limited validity of the 30QB6.

## Keywords

HEXACO, Big Six, Honesty-Humility, Honesty-Propriety, comparative validity, personality measurement, Structural Equation Modeling

For several decades, the question of how personality can best be described, parsimoniously structured, and efficiently measured has gained broad attention in personality research (see Boyle, 2010). In particular, the emergence of the Five-Factor Model (e.g., Digman, 1990; McCrae & Costa, 1999)—or the so-called Big Five—as a framework of personality structure has strongly promoted the study of individual differences from the 1990s on. The idea that personality is basically covered by five broad trait dimensions (i.e., Neuroticism, Extraversion, Intellect/Imagination/Openness, Agreeableness, and Conscientiousness) has been considered a vital counterforce to the “chaotic plethora of personality constructs” (Funder, 2001, p. 200), thus benefiting personality psychology as a whole (see also Ozer & Reise, 1994).

However, beyond the well-accepted view that five factors are sufficient to provide a comprehensive understanding of personality, more recent developments based on lexical studies across various languages suggest that six trait dimensions provide a more adequate overarching framework of personality (Ashton et al., 2004; Lee & Ashton, 2008; see also Brocklebank, Pauls, Rockmore, & Bates, 2015). This, in turn, formed the basis for the

emergence of two six-factor personality models—the HEXACO Model of Personality (Ashton & Lee, 2007) and the Big Six model (Saucier, 2009)—and the development of corresponding inventories, most prominently the HEXACO Personality Inventory-Revised (HEXACO-PI-R; e.g., Lee & Ashton, 2004, 2006) and the Questionnaire Big Six (QB6; Thalmayer, Saucier, & Eigenhuis, 2011).

First, the HEXACO model (Honesty-Humility, Emotionality, eXtraversion, Agreeableness, Conscientiousness, and Openness to Experience) represents an extended and slightly modified variant of the Big Five framework. In particular, three of the HEXACO factors—Extraversion, Conscientiousness, and Openness to Experience—bear a high resemblance to their Big Five counterparts and are considered

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“largely the same” (Ashton, Lee, & de Vries, 2014, p. 140). In contrast, for the remaining three factors, the HEXACO model deviates from the Big Five framework: First, the HEXACO model includes rotated versions of Emotionality (the counterpart of Big Five Neuroticism) and Agreeableness, thus providing a different and arguably more straightforward theoretical interpretation of both dimensions (for details see Ashton et al., 2014). Most important, however, the model adds a sixth trait dimension termed Honesty-Humility. High levels of Honesty-Humility are associated with sincerity, fairness, greed-avoidance, and modesty whereas low levels imply dishonesty, unfairness, greed, and entitlement. As such, Honesty-Humility captures content that is not fully accommodated by the Big Five (e.g., Ashton & Lee, 2008; Lee, Ogunfowora, & Ashton, 2005). In line with this notion, the predictive advantage of Honesty-Humility over and above the Big Five has consistently been demonstrated for several self-report criteria such as the Dark Triad personality traits (Lee & Ashton, 2005), egoism (de Vries, de Vries, De Hoogh, & Feij, 2009), political ideology (e.g., Chirumbolo & Leone, 2010; Kajonius & Dåderman, 2014), workplace delinquency (e.g., de Vries & van Gelder, 2015), and sexual harassment tendencies (e.g., Lee, Gizzarone, & Ashton, 2003) as well as for observations of actual moral behaviors such as fairness (e.g., Hilbig, Thielmann, Hepp, Klein, & Zettler, 2015), trustworthiness (Thielmann & Hilbig, 2015), and (dis)honesty (Hilbig & Zettler, 2015).

Although these findings provide support for the HEXACO model in general—and the Honesty-Humility factor in particular—criticism has been voiced against the lexical approach underlying the emergence of the HEXACO model. Specifically, it has been noted that the lexical studies resulting in the HEXACO model were based on a restricted selection of adjectives, excluding terms of highly evaluative nature (Saucier, 2009). In turn, lexical analyses based on a more inclusive adjective selection led to the proposition of the Big Six model (Saucier, 2009)—an alternative and arguably more general and comprehensive six-factor model of personality structure—and the QB6 (Thalmayer et al., 2011) as a corresponding inventory. Compared to the HEXACO model, the Big Six model incorporates somewhat modified variants of the HEXACO Emotionality and Openness to Experience factors. Specifically, in the Big Six model, Emotionality is reversed to Resiliency which basically captures internalizing negative emotionality. Openness to Experience is subsumed in the Originality/Talent factor which additionally includes major components of positive valence. Finally, the Big Six model replaces Honesty-Humility with Honesty-Propriety, which, in consequence, represents the Big Six model’s critical sixth trait dimension beyond the more classic five factors. Although Honesty-Propriety shares many aspects with Honesty-Humility (e.g., ethical behavior, integrity vs. deceit, greed, instrumental use of others; see Thalmayer et al., 2011), it additionally incorporates aspects related to negative valence and socially

disapproved risk-taking. Overall, these modifications hence imply that some of the HEXACO and Big Six dimensions—most prominently Honesty-Humility and Honesty-Propriety—are related but, to some degree, theoretically distinct. However, given the lack of direct comparisons, the magnitude of theoretical distinctiveness versus equivalence between said HEXACO and Big Six dimensions is still unknown.

In theoretical terms, different suggestions have been made regarding the relation between the two six-factor trait models. On the one hand, it has been noted that “[the] Big Six dimensions are close enough to HEXACO dimensions that it is fair to consider them variants of a single model” (Thalmayer et al., 2011, p. 997). This suggests that the HEXACO and Big Six counterpart factors bear a strong resemblance and that, by implication, the corresponding inventories (HEXACO-PI-R and QB6) represent “highly comparable” (Thalmayer & Saucier, 2014, p. 483) measurement tools assessing largely similar personality traits. On the other hand, this notion is at odds with the idea that the Big Six model represents a more comprehensive and generalizable version of the HEXACO model due to its broader lexical basis. Given this apparent ambiguity, it is an open question whether the Big Six and HEXACO traits should be considered merely related or rather essentially equivalent personality dimensions. More practically speaking, it is unknown whether the HEXACO and Big Six inventories measure highly similar or more distinct trait dimensions and, in the latter case, whether either is superior in terms of representing the core theoretical content of the underlying theoretical constructs.

Against this background, the purpose of our studies was to critically test the similarity of the HEXACO and Big Six trait dimensions as measured via the respective personality inventories. In particular, we focused on the similarity between Honesty-Humility and Honesty-Propriety given that, as previously sketched, this sixth factor represents the primary addition to the Big Five framework. Hence, researchers will primarily rely on a six-factor framework—and a corresponding inventory—whenever they are interested in the content of this sixth trait dimension. Nonetheless, we initially aimed at an overall comparison of the two six-factor models given the general ambiguity regarding the magnitude of equivalence versus distinctiveness of the personality dimensions subsumed in each of the two models.

## Study 1

To test the similarity between the HEXACO and Big Six dimensions, an informative first step is to critically test the (common) factor structure of the corresponding personality inventories by means of Structural Equation Modeling (SEM). Therefore, in Study 1, we assessed the HEXACO and Big Six personality traits through corresponding

inventories as developed by the original authors of each of the personality model of interest (i.e., variants of the HEXACO-PI-R and QB6). By using these measurement tools, we intended to capture the theoretically implied content of the different personality dimensions as closely as possible.

## Method

**Materials.** For the assessment of the HEXACO dimensions, we relied on the German 60-item version of the HEXACO Personality Inventory-Revised (HEXACO-60; Ashton & Lee, 2009). The HEXACO-60 comprises 10 items for each of the six trait dimensions which are to be answered on a 5-point Likert-type scale ranging from *strongly disagree* to *strongly agree*. Supporting the psychometric quality of the German version of the HEXACO-60, the inventory has been shown to provide a reliable (internal consistencies:  $.74 \leq \alpha \leq .83$ ; test-retest reliability:  $.72 \leq r_{tt} \leq .90$ ), valid, and economic measurement of the six HEXACO dimensions (Moshagen, Hilbig, & Zettler, 2014). Besides, the short version of the inventory allowed us to maximize the balance in length between the assessment of the HEXACO and the Big Six dimensions (see below).

To measure the Big Six personality traits, participants completed the German version of the 30-item Questionnaire Big Six (30QB6; Thalmayer & Saucier, 2014), a refined version of the 36QB6 (Thalmayer et al., 2011). For each trait, the 30QB6 contains four to six items which are answered on a 5-point Likert-type scale ranging from *strongly disagree* to *strongly agree*. The 30QB6 has been shown to be an economic and cross-culturally applicable instrument (which is available in 31 languages). The German version of the inventory has been shown to possess satisfactory reliabilities for the Big Six dimensions (Cronbach's  $\alpha$  internal consistencies ranging from .63 to .70; Thalmayer & Saucier, 2014).

**Procedure.** The study was run via the Internet, closely adhering to common guidelines for web-based experimenting (e.g., Reips, 2002). Participants were recruited via a German web-portal that provides links to diverse tests and questionnaires. Therein, the study was promoted as a scientific test informing about individuals' personality profiles. After participants completed an informed consent and provided demographical information, they worked on the HEXACO-60 and the 30QB6. Next, participants answered a few control questions assessing their seriousness of participation. As incentive, participants finally received anonymous feedback on their individual personality profile.

**Participants.** We recruited  $N = 491$  participants,  $N = 477$  of whom fulfilled the criteria for inclusion, namely (a) serious completion of the personality measures (i.e., requiring at

least two seconds per item of the HEXACO-60 and the 30QB6), (b) no repeated participation, and (c) at least a "good" grasp of the German language.<sup>1</sup> Participants (74.4% female) were aged 18 to 59 years ( $M = 24.1$ ,  $SD = 8.6$ ) and had diverse educational backgrounds.

**Data Analysis.** As sketched above, we based our analysis of the (common) factor structure of the HEXACO and Big Six dimensions on a SEM approach, using the maximum-likelihood estimator as implemented in Mplus (version 7.3; Muthén & Muthén, 2012) with Satorra-Bentler (Satorra & Bentler, 2001) adjusted standard errors and test statistics (MLM in Mplus) to address the effect of non-normality. The model fitting strategy entailed the comparison of several models defining 12 to 6 latent trait factors, assuming a simple structure for each of the latent dimensions. The 12-factor model comprised separate factors for each trait, that is, six HEXACO and six Big Six factors. To arrive at a 6-factor model—defining common factors for the six HEXACO and Big Six counterparts—we consecutively merged the counterpart factors across the models based on the size of their intercorrelations. In particular, to define a more restricted model, we merged those factors with the strongest intercorrelations in the nearest less restricted model. Each model was then compared with the most similar and less parsimonious model (i.e., typically the model including one additional factor).

Given the extremely high statistical power of the  $\chi^2$ -model test to reject a mildly misspecified model—in the present study, statistical power was  $1 - \beta > .99$  to detect a difference corresponding to Root-Mean-Square Error of Approximation (RMSEA) = 0.02 at  $\alpha = .05$  (Browne & Cudeck, 1992; Moshagen & Erdfelder, 2016)—and the fact that the  $\chi^2$  test-statistic is seriously inflated for models involving a large number of variables (e.g., Herzog & Boomsma, 2009; Moshagen, 2012), overall model fit was evaluated by means of the RMSEA and the Standardized Root Mean Residual (SRMR). The same reasoning necessarily applies to  $\chi^2$ -difference testing, so we comparatively evaluated the fit of the competing models by relying on a number of criteria, including the change in the Comparative Fit Index ( $\Delta CFI$ ) and the change in the Bayesian Information Criterion ( $\Delta BIC$ ). Concerning  $\Delta CFI$ , values larger than .01 indicate substantial dissimilarity (Chen, 2007; Cheung & Rensvold, 2002); with respect to  $\Delta BIC$ , values  $\geq 10$  imply very strong evidence in favor of the model with the smaller BIC (Raftery, 1995; see also Zettler, Lang, Hülshager, & Hilbig, 2015).

## Results and Discussion

Table 1 summarizes the descriptive statistics, internal consistencies (Cronbach's  $\alpha$ ), and scale-based zero-order correlations between all variables assessed in Study 1.

**Table 1.** Means, Standard Deviations (in Parentheses), and Scale-Based Intercorrelations Between All Measures Assessed in Study 1.

			Correlations											
Measure	Scale	<i>M</i> ( <i>SD</i> )	1	2	3	4	5	6	7	8	9	10	11	12
1. HEX-Honesty-Humility	1-5	3.42 (0.67)	(.77)											
2. HEX-Emotionality	1-5	3.15 (0.66)	−.04	(.78)										
3. HEX-Extraversion	1-5	3.05 (0.69)	.07	−.14**	(.82)									
4. HEX-Agreeableness	1-5	3.05 (0.64)	.36***	−.04	.07	(.79)								
5. HEX-Conscientiousness	1-5	3.37 (0.63)	.14**	−.03	.11*	.08	(.80)							
6. HEX-Openness	1-5	3.48 (0.67)	.16***	−.10*	.21***	.10*	.15***	(.78)						
7. Big6-Honesty-Propriety	1-5	3.65 (0.70)	.42***	.17***	.04	.32***	.27***	−.04	(.70)					
8. Big6-Resiliency	1-5	2.65 (0.80)	.06	−.65***	.45***	.15**	.08	.11*	−.06	(.71)				
9. Big6-Extraversion	1-5	3.54 (0.80)	−.02	.18***	.63***	.08	−.08	.02	.04	.10*	(.73)			
10. Big6-Agreeableness	1-5	2.87 (0.81)	.35***	−.22***	.01	.73***	.13**	.17***	.24***	.28***	−.12**	(.70)		
11. Big6-Conscientiousness	1-5	3.15 (0.74)	.15**	.00	.21***	.09*	.67***	−.01	.26***	.15**	.05	.05	(.57)	
12. Big6-Originality/Talent	1-5	3.71 (0.61)	−.05	−.18***	.30***	−.11*	.24***	.46***	−.09	.19***	.06	−.04	.04	(.51)

Note. HEX = HEXACO. Internal consistency reliabilities (Cronbach's  $\alpha$ ) are shown in the diagonal (in parentheses). Correlations between HEXACO and Big Six counterpart dimensions are in boldface.

\* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$ .

Apparently, all trait scales yielded satisfactory internal consistencies, except for the Big Six Originality/Talent ( $\alpha = .51$ ) and Big Six Conscientiousness ( $\alpha = .57$ ) factors. Moreover, in line with previous findings (Thalmayer et al., 2011), each trait dimension showed the strongest link (in absolute terms) with its corresponding HEXACO or Big Six counterpart (see correlations in boldface in Table 1).<sup>2</sup>

To analyze the similarity between the trait dimensions as measured by the HEXACO-60 and the 30QB6 more thoroughly, we estimated and compared several SEMs following the analytical procedure as detailed above. First, we defined a 12-factor model, including separate factors for each HEXACO and Big Six dimension (see Table 2 for fit statistics). However, estimating the 12-factor model led to a non-positive definite latent covariance matrix due to latent correlation coefficients of  $r > 1$  for both the Agreeableness and the Conscientiousness counterparts of the HEXACO and Big Six models. Because correlations larger than 1 imply equivalence of the corresponding HEXACO and Big Six factors, we merged the two Agreeableness and Conscientiousness factors. This model comprising 10 factors in total exhibited an adequate fit to the data,  $\chi^2(3,870) = 9372.11$ ,  $p < .001$ , RMSEA = 0.055, SRMR = 0.081, CFI = 0.603.

As a next step, based on the sizes of the intercorrelations between the HEXACO and Big Six counterpart factors in the 10-factor model (see values in boldface in Table 3), we consecutively merged the corresponding factors and estimated models with 9 factors (Emotionality and Resiliency merged;  $r = -.91$ ), 8 factors (both Extraversion factors merged;  $r = .81$ ), 7 factors (Openness and Originality/Talent

merged;  $r = .72$ ), and 6 factors (Honesty-Humility and Honesty-Propriety merged;  $r = .58$ ). Importantly, note that the Honesty-Humility and Honesty-Propriety factors were the last to be combined given that they showed the weakest intercorrelation among all HEXACO and Big Six counterpart factors. As summarized in Table 2, all differences in the BIC values ( $\Delta$ BIC) from the 10-factor model onwards indicated very strong evidence in favor of the less restricted models, thus implying the 10-factor model to yield the best-fitting solution. By contrast, based on the differences in the CFI values ( $\Delta$ CFI)—and the high correlation between the HEXACO-Emotionality and Big Six-Resiliency factor ( $r = -.91$ )—it might also be reasonable to adopt the 9-factor model as the best-fitting model, thus additionally defining a common trait factor for HEXACO-Emotionality and Big Six-Resiliency. Nevertheless, in light of the contradictory evidence regarding the combination of the two factors as provided by  $\Delta$ BIC (supporting separate factors) and  $\Delta$ CFI (supporting a common factor), we maintain separate factors in the sense of a conservative test.<sup>3</sup> In any case, note that the 10-factor model generally yielded the smallest BIC value, thus further supporting the 10-factor model as the best-fitting solution. In other words, our analyses provided support for a common latent factor for only two (at most three) of six HEXACO and Big Six counterparts, as measured via the HEXACO-60 and the 30QB6, respectively.

Corroborating the distinctiveness between the four said HEXACO and Big Six counterpart factors, Table 3 also shows meaningful differences in the links of these factors to the remaining factors. For example, notwithstanding their high correlation of  $r = .81$ , the Extraversion factors implied

**Table 2.** Absolute and Comparative Fit Statistics for the Estimated Structural Equations Models in Study 1.

Number of factors	Common factors	df	$\chi^2$	RMSEA	CFI	SRMR	BIC	Model comparison	$\Delta df$	$\Delta CFI$	$\Delta BIC$
12 <sup>a</sup>	—	3849	9249.22***	0.054	0.610	0.080	124479.05				
10	AG, CO	3870	9372.11***	0.055	0.603	0.081	124475.73	10 vs. 12 factors	21	0.007	3.32
9	AG, CO, EM/RE	3879	9460.95***	0.055	0.597	0.082	124514.60	9 vs. 10 factors	9	0.006	-38.87
8	AG, CO, EM/RE, EX	3887	9636.29***	0.056	0.585	0.084	124650.65	8 vs. 9 factors	8	0.012	-136.05
7	AG, CO, EM/RE, EX, OP/OR	3894	9710.55***	0.056	0.580	0.085	124683.85	7 vs. 8 factors	7	0.005	-33.20
6	AG, CO, EM/RE, EX, OP/OR, HH/HP	3900	9903.01***	0.057	0.567	0.086	124850.31	6 vs. 7 factors	6	0.013	-166.46

Note. AG = Agreeableness; CO = Conscientiousness; EM = Emotionality; RE = Resiliency; EX = Extraversion; OP = Openness; OR = Originality/Talent; HH = Honesty-Humility; HP = Honesty-Propriety; RMSEA = Root-Mean-Square Error of Approximation; CFI = Comparative Fit Index; SRMR = Standardized Root Mean Square Residual; BIC = Bayesian Information Criterion;  $\Delta df$  = difference of degrees of freedom;  $\Delta RMSEA$  = difference of RMSEA values;  $\Delta CFI$  = difference of CFI values;  $\Delta BIC$  = difference of BIC values.

<sup>a</sup>This model was associated with a non-positive definite covariance matrix.

\*\*\* $p < .001$ .

**Table 3.** Correlations Between the Latent Personality Variables in the 10-Factor Structural Equation Model (Study 1), with Agreeableness and Conscientiousness as Common Factors Across the HEXACO and Big Six Model.

Factor	Correlations								
	1	2	3	4	5	6	7	8	9
1. Agreeableness									
2. Conscientiousness	.18***								
3. HEX-Honesty-Humility	.44***	.19***							
4. HEX-Emotionality	-.22***	-.03	-.06						
5. HEX-Extraversion	.11***	.19***	.11***	-.24***					
6. HEX-Openness	.20***	.10**	.23***	-.12**	.23***				
7. Big6-Honesty-Propriety	.34***	.40***	.58***	.17***	.09*	.00			
8. Big6-Resiliency	.34***	.10**	.08*	-.91***	.61***	.12***	-.06		
9. Big6-Extraversion	.03	-.04	.01	.20***	.81***	.02	.10**	.15***	
10. Big6-Originality/Talent	-.06	.27***	-.02	-.31***	.44***	.72***	-.05	.30***	.09*

Note. HEX = HEXACO. Correlations between HEXACO and Big Six counterpart factors are in boldface.

\* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$ .

noteworthy differences between the two trait models and their corresponding inventories: Whereas HEXACO-Extraversion was positively linked to Conscientiousness, HEXACO-Openness, and Big Six-Originality/Talent and negatively linked to HEXACO-Emotionality, Big Six-Extraversion showed none of these associations except for a reversed (i.e., positive) relation to HEXACO-Emotionality. Similarly, HEXACO-Openness was characterized by a positive relation to Agreeableness and HEXACO-Honesty-Humility; Big Six-Originality/Talent, in contrast, showed a positive link to Conscientiousness and Big Six-Resiliency as well as a negative link to HEXACO-Emotionality.

In summary, the results from SEM showed noteworthy differences for four of the six trait dimensions as operationalized

through the HEXACO-60 and 30QB6 personality inventories. Most strikingly, the largest difference occurred for the Honesty-Humility and Honesty-Propriety factors. Specifically, across all HEXACO and Big Six counterpart factors, Honesty-Humility and Honesty-Propriety yielded the smallest scale- and factor-based intercorrelations. Besides, significant (albeit somewhat smaller) differences were apparent for the Openness versus Originality/Talent, HEXACO- versus Big Six-Extraversion, and Emotionality versus Resiliency factors. In turn, equivalence was supported concerning the (indicators of the) Agreeableness and Conscientiousness factors. Taken together, the apparent differences in the factor structure of the two inventories suggest that the HEXACO-60 and the 30QB6 measure distinct personality constructs—thus, supporting the

original purpose of the Big Six model to offer a six-factor *alternative* to the HEXACO model (Saucier, 2009). These differences are particularly apparent for the critical extension beyond the Big Five, the Honesty-Humility and Honesty-Propriety factors.

Aiming at a more liberal test of the underlying factor structure of our data, we complemented the SEM-based analyses with Exploratory Factor Analyses (EFA). As a first step, we considered a parallel analysis on the joint covariance matrix to determine the number of factors to retain. Generally supporting the results from SEM, parallel analysis indicated an optimal extraction of 11 factors. In addition, we compared the fit statistics for the single EFA models (extracting 6 to 12 factors with Geomin rotation) in Mplus (see Table S1 in the Supplemental Material, available online at <http://asm.sagepub.com/supplemental>). Although the smallest BIC value emerged for the 7-factor EFA model, the CFI steadily and substantially ( $\Delta\text{CFI} > .01$ ) increased from the 6-factor model onward to the 12-factor model. Overall, the more exploratory analytical approaches hence consistently supported that more than six factors are needed to fit the HEXACO and Big Six data sufficiently well. This was also supported by comparably small factor intercorrelations (all  $r \leq .27$ ) in the 10-factor EFA model (the equivalent to the 10-factor SEM model, see above). Nonetheless, note that the exact optimum of factors slightly varies across procedures and decision criteria.

Based on the findings from Study 1 (particularly the main SEM-based analyses), the goal of Study 2 was to shed further light on the specific differences between Honesty-Humility and Honesty-Propriety. As sketched above, adding a sixth trait dimension constitutes the key difference between the six-dimensional trait models and the more traditional Big Five and thus most likely constitutes one of the main incentives for using a six-factor inventory. Therefore, it is particularly important to clarify whether the HEXACO and Big Six inventories provide comparably valid measures of the underlying constructs of interest, that is, Honesty-Humility and Honesty-Propriety, respectively. Thus, in Study 2, we examined the relations between the latter traits and several external criteria that should—according to the theoretical conceptualizations of these traits—either be captured by only one of the two dimensions or both.

## Study 2

As summarized previously, the key objective of Study 2 was to examine the capability of the HEXACO and Big Six inventories to capture what Study 1 suggests to be distinct theoretical cores of Honesty-Humility and Honesty-Propriety, respectively. To this end, we aimed at comparing how well the corresponding operationalizations of these two trait dimensions account for relevant external criteria mirroring their defining features (ethical behavior, fairness,

modesty, etc.). According to theory, Honesty-Propriety should be somewhat broader than Honesty-Humility (Saucier, 2009), thus implying that Honesty-Propriety (as measured via a variant of the QB6) should predict a broader set of external criteria than Honesty-Humility (as measured via a variant of the HEXACO-PI-R). This predictive advantage should particularly hold for those aspects that are uniquely attributed to Honesty-Propriety (but not explicitly included in Honesty-Humility), such as socially disapproved risk-taking (see, e.g., Thalmayer et al., 2011).

To date, only one study compared the predictive power of Honesty-Humility and Honesty-Propriety as measured via different versions of the QB6 and the 100-item version of the HEXACO-PI-R (Thalmayer et al., 2011). The results suggested a high resemblance between Honesty-Humility and Honesty-Propriety in that both dimensions accounted for individual differences in several criteria such as future grade point average, punctuality, and number of Facebook contacts in approximately equal magnitude. However, none of the criteria under investigation mirrored the defining features of Honesty-Humility or Honesty-Propriety, respectively, as sketched above. To systematically compare the HEXACO and Big Six inventories in providing a valid measurement of the two theoretical constructs, it is vital to critically test the ability of the inventories to account for criteria that essentially mirror the respective theoretical cores.

Following this reasoning, we selected several criteria corresponding to the defining features of Honesty-Humility and Honesty-Propriety. In particular, both Honesty-Humility and Honesty-Propriety cover sincerity and honesty (vs. deceit) as well as fairness and greed-avoidance. Correspondingly, we chose well-established measures of (dis)honesty (i.e., a cheating task) and fairness (i.e., a money-allocation task). In addition, in line with the theoretical conceptualization of Honesty-Humility, we included measures of (low) modesty/humility (i.e., psychological entitlement, narcissism). Finally, Honesty-Propriety should, by definition, particularly capture socially disapproved risk-taking. Thus, we also included different measures of dispositional and behavioral risk-taking (to mirror the multifaceted nature of risk-taking in general; e.g., Weber, Blais, & Betz, 2002), focusing on socially disapproved risk-taking.

## Method

**Materials.** For the basic personality assessment, we relied on the same inventories as in Study 1. That is, the HEXACO dimensions were measured via the German version of the HEXACO-60 (Ashton & Lee, 2009; Moshagen et al., 2014). The Big Six dimensions, in turn, were operationalized through the German version of the 30QB6 (Thalmayer & Saucier, 2014). In both questionnaires, participants'

responses were collected on 5-point Likert-type scales ranging from *strongly disagree* to *strongly agree*.

In addition to the measurement of basic personality traits, we implemented three specific personality scales corresponding to two of the selected external criteria as sketched above. Specifically, as proxies for (low) modesty or humility, we first assessed narcissism using the German version of the Narcissistic Admiration and Rivalry Questionnaire (NARQ; Back et al., 2013). The NARQ contains 18 items which provide information on the two dimensions of narcissism, admiration and rivalry. Participants responses were collected on a 6-point Likert-type scale ranging from *strongly disagree* to *strongly agree*. Example items are “I deserve to be seen as a great personality” (admiration) and “I enjoy it when another person is inferior to me” (rivalry). The German version of the NARQ has been shown to possess very satisfactory psychometric properties (Back et al., 2013). Second, we assessed entitlement using a (self-generated) German translation of the Psychological Entitlement Scale (PES; Campbell, Bonacci, Shelton, Exline, & Bushman, 2004). In the translation process, we adhered to scientific recommendations such as translation–retranslation loops (e.g., Brislin, 1980). The PES is a nine-item scale that offers a reliable, valid, and stable measurement of entitlement (Campbell et al., 2004). Again, answers were provided on a Likert-type scale (with seven answer options), ranging from *strongly disagree* to *strongly agree*. As an example, consider the item “I honestly feel I’m just more deserving than others.”

To measure (domain-specific) dispositional risk-taking, we relied on the revised German version of the Domain-Specific Risk-Taking Scale (DOSPERT-R; Blais & Weber, 2006; Johnson, Wilke, & Weber, 2004). The DOSPERT-R contains 30 items describing diverse risk-taking activities in five different content domains (i.e., ethical, financial, health/safety, social, and recreational risk-taking), with risk-taking in the ethical domain corresponding most closely to socially disapproved risk-taking. Participants were asked to indicate the likelihood with which they would engage in the specific activities using a 7-point Likert-type scale ranging from *very unlikely* to *very likely*. For example, in the ethical risk-taking domain, participants were asked to estimate the likelihood of “having an affair with a married man/woman.” In general, the original DOSPERT scale (based on which the DOSPERT-R has been developed) has been shown to possess good psychometric properties (see Blais & Weber, 2006).

In addition to the self-report scales, we further implemented three behavioral measures to assess (dis)honesty, fairness, and (behavioral) risk-taking. As a measure of dishonesty, we relied on a well-established cheating paradigm, the Coin-Tossing Task (e.g., Shalvi, 2012; Zettler, Hilbig, Moshagen, & de Vries, 2015). In this task, participants were first instructed to take a coin and to choose a target side

(heads or tails). They were then asked to toss the coin exactly twice and to record or memorize the number of successes (i.e., tosses that turned up on the target side). Next, participants were asked to report whether they had obtained exactly two successes (in exactly two tosses). If they responded “yes,” they received a monetary incentive of €5.00 (approximately \$5.70) for this task. If they responded “no,” they received no additional monetary reward. It was emphasized that nobody was able to observe the actual coin tosses and that it was hence unknown whether they reported the true outcome of the tosses or not. Thus, on the individual level, the paradigm perfectly preserved anonymity. Nonetheless, this setup allows a straightforward analysis of dishonesty on the aggregate level given that the statistical probability of obtaining exactly two successes in exactly two tosses is known to be 25%.

As a behavioral measure of fairness, we used a simple game-theoretic paradigm, the Dictator Game (Forsythe, Horowitz, Savin, & Sefton, 1994). In this game, participants (dictators) were asked to divide an endowment of €5.00 (approximately \$5.70) at will (in €0.50 increments) between themselves and another unknown participant of the study. By implication, the amount a participant is willing to transfer to the recipient can be interpreted as an indicator of fair or altruistic behavior (e.g., Forsythe et al., 1994; see also Thielmann, Böhm, & Hilbig, 2015).

Finally, a Risk-Taking Game (Weller & Thulin, 2012) provided a measure of behavioral risk-taking. The game as implemented in our study comprised six trials, each of which represented a hypothetical choice between two options. One option (the safe option) always referred to a sure loss (e.g., lose €4.00) whereas the other (the risky option) implied an unsure, yet higher loss versus losing nothing (e.g., lose €10.00 with 50% probability and €0.00 with 50% probability). Across trials, the difference in expected value between the choice options was zero (i.e., two trials each favored the risky choice, the safe choice, or neither of both). Following Weller and Thulin (2012), participants were asked to choose the option they preferred as if they would make the decision in real-life. The number of choices for the risky option served as a measure of behavioral risk-taking.

**Procedure.** The study was run via the Internet and carried out by a professional panel provider. To minimize spillover effects between the measurements, we implemented a longitudinal design, separating the basic personality assessment from the measurement of the external criteria. At both measurement occasions, participants first provided informed consent and demographical information. Thereafter, at Time 1, they worked on the HEXACO-60 and the 30QB6, in randomized order. At Time 2—about 2 weeks later—participants first filled in the three personality scales (i.e., NARQ, PES, and DOSPERT-R, in randomized order),

followed by the three behavioral tasks (i.e., Coin-Tossing Task, Dictator Game, and Risk-Taking Game, again in randomized order). As a compensation for participation, participants received a flat fee and were additionally incentivized either (a) corresponding to their response in the Coin-Tossing Task or (b) corresponding to their own allocation in the Dictator Game and whatever another (randomly matched) dictator allocated to them. Note that it was randomly chosen which of the two games (i.e., Coin-Tossing Task or Dictator Game) was decisive for individuals' additional payoff and that participants were fully aware of this procedure in advance. The payment was handled entirely by the panel provider, thus preserving full anonymity.

**Participants.** As noted above, participants were recruited by a professional panel provider, serving the purpose to acquire a more heterogeneous sample as compared to typical studies based on student samples. An a priori power analysis revealed a required sample size of  $N = 133$  participants to uncover a small- to medium-sized difference (Cohen, 1988) of  $\Delta r = .25$  (with  $r_1 = .10$  and  $r_2 = .35$ , resulting in Cohen's  $q = 0.265$ ) between two correlation coefficients in a  $z$  test for correlated correlations involving a common index (i.e., the respective dependent variable/external criterion) with a satisfactory power of  $1 - \beta = .85$  and a common alpha level of .05. For the correlation between the two independent variables (i.e., Honesty-Humility and Honesty-Propriety), we further assumed  $r = .50$  based on the results of Study 1. Corresponding to these calculations, we recruited  $N = 197$  for Time 1, anticipating a dropout of about 30% between the two measurement occasions. Out of these,  $N = 152$  completed both measurements (i.e., the basic personality scales at Time 1 and the external criteria at Time 2), thus constituting the final sample.<sup>4</sup> Supporting the heterogeneous composition of the sample, participants were approximately equally split across the sexes (51.3% female), covered a broad age range (between 18 and 81 years,  $M = 51.5$ ,  $SD = 14.3$ ), and had diverse educational backgrounds.

**Data Analysis.** In line with the key question whether the theoretically implied content of Honesty-Humility and Honesty-Propriety is mirrored comparably well by the corresponding indicators, we compared the measures of Honesty-Humility (as provided by the HEXACO-60) and Honesty-Propriety (as provided by the 30QB6) in terms of how well they account for the selected criteria (i.e., the measures of honesty, fairness, modesty, and risk-taking). For each criterion, we compared the zero-order correlations of Honesty-Humility and Honesty-Propriety, respectively, via  $z$  tests for correlated correlation coefficients (Meng, Rosenthal, & Rubin, 1992). To account for measurement error, we used a SEM-based analytical approach (see Study 1). That is, we considered the correlations between the latent personality factors of Honesty-Humility and Honesty-Propriety and the external

criteria. In case of a self-report questionnaire as criterion (i.e., NARQ, PES, and DOSPERT-R scales), we likewise modeled the dependent variable as latent trait factor. In the Coin-Tossing-Task, data analysis was based on the polychoric correlation matrix, given the categorical nature of the responses, using the robust weighted least squares estimator (called WLSMV in Mplus) which has been shown to outperform other estimation methods when data is truly ordinal (e.g., Flora & Curran, 2004; Moshagen & Musch, 2014).

## Results and Discussion

Table 4 summarizes the descriptive statistics, reliabilities (Cronbach's  $\alpha$ ), and scale-based correlations between the HEXACO and Big Six traits. As in Study 1, each HEXACO and Big Six dimension yielded the strongest correlation with its corresponding counterpart factor (see values in boldface in Table 4).<sup>5</sup> Furthermore, for all HEXACO dimensions, the reliabilities were satisfactory in size. By contrast, similar to Study 1, some of the Big Six dimensions revealed a low internal consistency, particularly the Honesty-Propriety factor (with  $\alpha = .46$ ). Nevertheless, note that the SEM-based analytical approach taken herein still allowed for a fair comparison (concerning internal consistency) of the explanatory power of Honesty-Humility and Honesty-Propriety given that differences in measurement error are accounted for by this method. Also, note that we replicated all results modeling Honesty-Humility based on five items only (including at least one item per facet with the highest factor loadings in Study 1), thus ruling out that our results are primarily attributable to differences in scale length—and consequently reliability—between the HEXACO-60 and the 30QB6.

As is apparent in Table 5, Honesty-Humility and Honesty-Propriety showed distinct (SEM-based) correlational patterns with the external criteria under investigation. In particular, Honesty-Humility revealed meaningful links to all but two criteria (i.e., the social and recreational risk-taking scale of the DOSPERT-R). In contrast, Honesty-Propriety yielded meaningful associations with five of the ten criteria. Correspondingly, statistically comparing the zero-order correlations in size ( $z$  tests) yielded significant predictive advantages for Honesty-Humility over Honesty-Propriety for five dependent measures, namely fairness (i.e., giving in the Dictator Game), dishonesty (i.e., probability to win in the Coin-Tossing Task), narcissism (i.e., latent NARQ factor), entitlement (i.e., latent PES factor), and social risk-taking (i.e., latent DOSPERT-R factor). In turn, Honesty-Propriety showed a higher explanatory power for a single criterion, namely ethical risk-taking as modeled based on the DOSPERT-R.

At first glance, the findings are hence compatible with the results of Study 1 in that they suggest some level of distinction between Honesty-Humility and Honesty-Propriety. That is, corresponding to their theoretical conceptualizations, Honesty-Humility showed a predictive



**Table 4.** Means, Standard Deviations (in Parentheses), and Scale-Based Intercorrelations Between the HEXACO and Big Six Dimensions as Assessed in Study 2.

Measure	Scale	<i>M</i> ( <i>SD</i> )	Correlations											
			1	2	3	4	5	6	7	8	9	10	11	12
1. HEX-Honesty-Humility	1-5	3.68 (0.62)	(.75)											
2. HEX-Emotionality	1-5	3.10 (0.57)	.10	(.73)										
3. HEX-Extraversion	1-5	3.36 (0.57)	-.15	-.23**	(.77)									
4. HEX-Agreeableness	1-5	3.21 (0.52)	.15	-.15	.32***	(.71)								
5. HEX-Conscientiousness	1-5	3.64 (0.50)	.10	.04	.08	-.02	(.70)							
6. HEX-Openness	1-5	3.32 (0.71)	.16*	-.11	.26**	.03	.07	(.81)						
7. Big6-Honesty-Propriety	1-5	4.08 (0.50)	<b>.47***</b>	.17*	-.06	.18*	<b>.44***</b>	-.02	(.46)					
8. Big6-Resiliency	1-5	3.14 (0.84)	-.04	<b>-.67***</b>	.51***	<b>.49***</b>	.09	.09	-.01	(.79)				
9. Big6-Extraversion	1-5	3.51 (0.68)	.02	.10	<b>.61***</b>	.21**	.08	.16	.06	.12	(.69)			
10. Big6-Agreeableness	1-5	3.02 (0.63)	.18*	-.34***	.30***	<b>.72***</b>	.00	.20*	.12	.57***	.17*	(.59)		
11. Big6-Conscientiousness	1-5	3.89 (0.61)	.05	-.18*	.24**	.25**	<b>.49***</b>	-.01	.20*	.40***	.10	.14	(.55)	
12. Big6-Originality/Talent	1-5	3.58 (0.61)	-.19*	-.13	.37***	.03	.35***	<b>.39***</b>	.05	.12	.10	.14	.18*	(.61)

Note. HEX = HEXACO. Internal consistency reliabilities (Cronbach's  $\alpha$ ) are shown in the diagonal (in parentheses). Correlations between HEXACO and Big Six counterpart dimensions are in boldface.

\* $p \leq .05$ . \*\* $p \leq .01$ . \*\*\* $p \leq .001$ .

advantage for the modesty-related criteria (i.e., narcissism and entitlement) whereas Honesty-Propriety showed a predictive advantage for socially disapproved risk-taking. However, implying limitations of the 30QB6 to actually capture all core theoretical aspects of Honesty-Propriety, this trait dimension showed no significant association with some of its defining features, namely fairness and (dis)honesty (and further with entitlement, an indicator of low modesty). By comparison, Honesty-Humility as measured via the HEXACO-60 predicted all criteria that constitute the theoretical core of this construct in a satisfactory manner. Consequently, the results are also at odds with the proposed broader nature of Honesty-Propriety compared to Honesty-Humility as implied by Big Six theory (Saucier, 2009). That is, whereas Honesty-Humility revealed significant explanatory power for eight of the ten criteria under investigation, Honesty-Propriety did so for five criteria only.

## General Discussion

Recent research on the structure of basic personality suggests that individual differences might be best described in a six-dimensional personality space. Correspondingly, two alternative six-factor trait models— and corresponding inventories—have recently been proposed: the HEXACO model (e.g., Ashton & Lee, 2007) and the Big Six model (Saucier, 2009). Although the latter has been assumed to provide a more general variant of the former, both models have also been considered to be highly similar (Thalmayer

et al., 2011). However, given that corresponding empirical evidence is missing, the literature is mute on whether the trait dimensions as assessed via the corresponding personality inventories (i.e., the HEXACO-PI-R and the QB6) are distinct or rather similar. A central purpose of the present work thus was to critically test the similarity between the HEXACO and Big Six traits. Given their critical importance as an extension beyond the well-accepted Big Five framework, we particularly focused on the sixth trait dimension in either model (i.e., Honesty-Humility and Honesty-Propriety, respectively) and on the ability of the corresponding instruments to reflect the theoretical core of these constructs.

To this end, Study 1 examined the factor structure of the HEXACO and Big Six dimensions, thus providing initial evidence on the similarities and differences between the two trait models and their corresponding operationalizations in general. Stepwise model comparisons revealed a 10-factor structure as the best-fitting model, implying noteworthy differences for four of the six trait dimensions. Most important, the largest difference was apparent between Honesty-Humility and Honesty-Propriety which, in turn, spanned different latent trait factors. Based on this finding, our goal in Study 2 was to further illuminate the differences between Honesty-Humility and Honesty-Propriety by comparing their explanatory power for several criteria that represent the defining features of the traits in question (i.e., honesty, fairness, modesty, and socially disapproved risk-taking).

**Table 5.** Means, Standard Deviations (in Parentheses), and Zero-Order Correlations of the External Criteria Assessed in Study 2 With the Latent Honesty-Humility and Honesty-Propriety Factors, Respectively, and Corresponding *z* Test Statistics.

Criterion	Scale	<i>M</i> ( <i>SD</i> )	Correlation		<i> z </i>
			Honesty-Humility	Honesty-Propriety	
Narcissism	1-6	2.56 (0.78)	<b>-.50***</b>	-.35***	3.61***
Entitlement	1-7	3.55 (1.11)	<b>-.35***</b>	.03	8.04***
Ethical Risk-Taking	1-7	2.16 (0.95)	<b>-.66***</b>	<b>-.76***</b>	3.67***
Financial Risk-Taking	1-7	2.09 (1.17)	-.41***	-.37***	1.05
Health-Related Risk-Taking	1-7	2.69 (1.07)	<b>-.38***</b>	-.33**	1.34
Social Risk-Taking	1-7	4.50 (1.06)	<b>.16</b>	-.02	4.16***
Recreational Risk-Taking	1-7	2.48 (1.27)	-.16	-.18	0.49
Dictator Game Giving	0-5	1.99 (1.33)	<b>.19<sup>†</sup></b>	.05	3.14**
Dishonest Behavior <sup>a</sup>	0-1	0.50 (0.50)	<b>-.38***</b>	-.16	5.48***
Behavioral Risk-Taking	0-6	3.77 (2.15)	<b>-.27***</b>	<b>-.30***</b>	0.72

Note. Correlations in boldface indicate the significantly larger correlation of each pairwise comparison.

<sup>a</sup>Given that dishonest behavior was assessed as a binary choice in a Coin-Tossing Task, the mean mirrors the proportion of participants who reported a success in this task (i.e., two coin tosses on the selected target side). Given that the probability to obtain a success in this task is 25%, about a half of the wins must have been illegitimately reported.

<sup>†</sup>*p* ≤ .10. \*\**p* ≤ .01. \*\*\**p* ≤ .001.

Complementing Study 1, results again corroborated the dissimilarity of the two trait dimensions. Specifically, the indicator of Honesty-Propriety as implemented in the 30QB6 predicted a smaller set of criteria than the indicator of Honesty-Humility as implemented in the HEXACO-60, with missing links to some of the key defining features of Honesty-Propriety (i.e., fairness and dishonesty). This suggests that the 30QB6 does not entirely reflect the theoretically implied content of Honesty-Propriety and that further alterations to the inventory may be worthwhile to ensure that it captures the breadth of content as implied by theory (note that the QB6 is still under development; Thalmayer & Saucier, 2014). Also, the internal consistencies of some 30QB6 scales (e.g., Honesty-Propriety) were rather low. The correlational pattern for the indicator of Honesty-Humility as provided by the HEXACO-60 corresponded to HEXACO theory very well. As such, the results also replicate previous research linking Honesty-Humility to the Dark Triad

personality traits (including narcissism and entitlement; e.g., Lee & Ashton, 2014), fairness in the Dictator Game (e.g., Hilbig, Thielmann, et al., 2015; Thielmann & Hilbig, 2014), dishonest behavior in cheating paradigms (e.g., Hilbig & Zettler, 2015), and different aspects of risk-taking (Weller & Thulin, 2012; Weller & Tikir, 2011). Overall, these findings suggest that Honesty-Humility in the HEXACO-60 more closely mirrors the theoretical core of this factor *and* of Honesty-Propriety. On the construct level, the results hence neither imply that Honesty-Propriety refers to the broader trait factor as compared to Honesty-Humility (Saucier, 2009), nor do the HEXACO and Big Six dimensions generally constitute “variants of a single model” (Thalmayer et al., 2011, p. 997).

Importantly, the above conclusion mainly applies to the HEXACO and Big Six dimensions *as measured via the HEXACO-60 and the 30QB6*. Whether the conclusion holds for the two trait models in general is an open quest for future research. In this regard, it seems worthwhile to examine the (common) factor structure and comparative validity of the HEXACO and Big Six dimensions by means of an alternative measurement approach, for example, modeling the corresponding dimensions based on their defining adjectives from lexical studies (Ashton et al., 2004; Saucier, 2009). Such an approach might also clarify whether the observed differences in explanatory power between Honesty-Humility and Honesty-Propriety are attributable to the different nature of statements characterizing the HEXACO-60 and 30QB6. That is, although some of the HEXACO-60 statements are very specific in content, they are phrased in subjunctive form, thus merely describing hypothetical behaviors (e.g., “If I knew that I could never get caught, I would be willing to steal a million dollars”). In comparison, the 30QB6 statements describe factual behaviors and transgressions (e.g., “I steal things”) which might tend to foster socially desirable responding and an influence of response styles due to the more self-incriminating nature of certain responses. Although no corresponding evidence exists for the 30QB6, recent evidence does confirm that Honesty-Humility scores in the HEXACO-60 are neither substantially marred by social desirable responding (see e.g., Hilbig, Moshagen, & Zettler, 2015) nor particularly prone to response styles (Zettler et al., 2015).

Also, our results should not be interpreted as counterevidence to Big Six theory or the 30QB6 in general. We mainly focused on one particular trait dimension, leaving aside the comparative validity of the remaining dimensions. Especially for those HEXACO and Big Six dimensions for which the Big Six model implements noteworthy differences (i.e., Openness to Experience vs. Originality/Talent and Emotionality vs. Resiliency)—and for which Study 1 also pointed to distinct latent trait factors—future research comparing their predictive power for relevant criteria is certainly required and may well provide support for the Big Six model and inventory over the HEXACO. Moreover, the equivalence of the HEXACO and

Big Six Agreeableness and Conscientiousness factors as observed in Study 1 suggests that the 30QB6 provides an operationalization of these dimensions that is equivalent to the HEXACO-60—with half as many items. If future research can corroborate this conclusion by showing comparable predictive power of both operationalizations for relevant criteria, this implies that the 30QB6 would be preferable (time-wise) over the HEXACO-60 as a measure of both Agreeableness and Conscientiousness. Nevertheless, especially for Honesty-Propriety (but also for the remaining dimensions), further research is certainly required to support both the Big Six model and the valid (and reliable) measurement of its dimensions via the 30QB6. In particular, future research is needed to show that the Big Six factors as measured via corresponding inventories (a) can account for relevant criteria in line with theory and (b) reveal predictive advantages over and above the Big Five dimensions (as has been repeatedly shown for the HEXACO factors; e.g., Ashton et al., 2014). If these requirements are met, the Big Six model (and corresponding inventories) will likely be a valuable alternative to the HEXACO model and inventories.

Finally, some limitations of our studies should be acknowledged: First, the measurement of the Big Six dimensions (via the 30QB6) was based on half as many items as the measurement of the HEXACO dimensions (via the HEXACO-60), thus probably driving the apparent differences in reliabilities across inventories. However, we considered it vital to stick to the personality inventories developed by the original authors of the corresponding theory and to also use the variant of the QB6 that has been shown to be cross-culturally applicable (i.e., the 30QB6; Thalmayer & Saucier, 2014) given that we conducted our studies in Germany. To nonetheless account for the differences in reliabilities, we relied on a SEM-based analytical approach, thus minimizing the effect of reliability due to the different number of items per questionnaire. Also, we replicated our results using a shortened (five-item) measure of Honesty-Humility. Closely related, we cannot rule out that cultural differences in the development of the HEXACO-60 and the 30QB6 are (at least partly) responsible for the observed differences in comparative validity in our German samples. In particular, the HEXACO-60 has been developed and validated in Canada whereas—as mentioned above—the 30QB6 represents a cross-culturally validated instrument. Conducting the studies in a Western culture like Germany might hence have advantaged the HEXACO-60 in the first place. In any case, although our data suggests that the validities of some 30QB6 scales are comparably low in Western cultures as compared to those of the HEXACO-60, the 30QB6 might have a psychometric advantage in other cultures. However, given that the majority of personality research is still conducted in Western countries, it seems useful to compare the performance of inventories in these cultures. Finally, as another limitation, our selection of external criteria in Study 2 might have led to an underestimation of the true validity of the

Honesty-Propriety indicator as implemented in the 30QB6 because we did not include a measure of trait negative valence (as, e.g., included in the Inventory of Personal Characteristics #7; Tellegen, Grove, & Waller, 1991)—another aspect unique to Honesty-Propriety as compared to Honesty-Humility. This might be a quest for future research.

To conclude, our findings suggest that the HEXACO and Big Six dimensions—particularly the Honesty-Humility and Honesty-Propriety factors—as measured by the HEXACO-60 and the 30QB6, respectively, constitute notably distinct trait dimensions. Unlike Honesty-Humility (as implemented in the HEXACO-60), Honesty-Propriety (as implemented in the 30QB6) showed satisfactory explanatory power only for some of its key defining aspects as implied by Big Six theory (e.g., socially disapproved risk-taking), but not for others (e.g., fairness and honesty). Thus, whenever researchers seek to include the critical sixth factor of the HEXACO or Big Six trait model because of fairness- or honesty-related aspects, the current state of evidence suggests that variants of the HEXACO Personality Inventory should be preferred over the current version of the 30QB6. More generally, the present results imply that caution is warranted in drawing conclusions on “similar” constructs—particularly the Honesty-Humility and Honesty-Propriety factors—from HEXACO and Big Six inventories.

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### Notes

1. Nevertheless, note that the results are virtually similar when including these cases in the analyses.
2. Although facet-level analyses are not recommended based on the HEXACO-60 (because half of the facet scores are based on two items only) and have thus to be interpreted with caution, we considered it informative to additionally investigate whether certain facets of the HEXACO dimensions showed particularly strong links to the corresponding Big Six counterpart factor. Indeed, the correlation between the *Patience* facet of HEXACO-Agreeableness and Big Six-Agreeableness ( $r = .74$ ) slightly exceeded the correlation for the overall HEXACO-Agreeableness factor ( $r = .73$ ; see Table 1). The same was true for the correlation between the *Organization* facet of HEXACO-Conscientiousness and Big Six-Conscientiousness ( $r = .68$ , compared with  $r = .67$  for the overall HEXACO-Conscientiousness factor; see Table 1).

3. Note that—irrespective of the caveats related to the  $\chi^2$  test-statistic sketched above—this conclusion also aligns with a significant difference between the models as indicated by a  $\chi^2$ -difference test comparing the 10-factor model with the 9-factor model,  $\chi^2(\Delta df = 9) = 88.84, p < .001$ .
4. One participant was excluded from data analysis due to a mismatch in the reported demographic information from the first to the second measurement occasion.
5. Considering the facet-level correlations between the facets of the HEXACO dimensions and the corresponding Big Six counterpart factor scores (cf. Note 2, Study 1) again revealed a particularly high correlation for the Conscientiousness *Organization* facet with Big Six-Conscientiousness ( $r = .53$ ) which slightly exceeded the correlation for the overall HEXACO-Conscientiousness dimension ( $r = .49$ ; see Table 4). For all other HEXACO facets, the correlations with the corresponding Big Six dimension were smaller than those for the overall HEXACO factors.

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