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The discriminant validity of honesty-humility: A meta-analysis of the HEXACO, Big Five, and Dark Triad

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ABSTRACT

We perform a meta-analysis of almost 400 studies to assess honesty-humility's relationships with the (H)EXACO, Big Five, and Dark Triad dimensions. We meta-analytically support that honesty-humility shares a modest amount of variance with the (H)EXACO and Big Five dimensions, although it is more strongly associated with Big Five agreeableness than HEXACO agreeableness. Honesty-humility does, however, very strongly relate to the Dark Triad, and the unreliability-corrected correlation of honesty-humility with Machiavellianism approaches levels expected in tests of convergent validity. Most relationships significantly differed based on the measure and facet. We urge future authors to investigate the facets shared between honesty-humility and Machiavellianism as well as assess differences of the HEXACO against the Big Five and Dark Triad (B5 + D3) when studied together.

1. Introduction

The most apparent difference between the HEXACO and its primary predecessor, the Big Five[4], is the inclusion of honesty-humility (Ashton & Lee, 2007, 2018; Lee & Ashton, 2008, 2014, 2018, 2019). Some critics argue, however, that honesty-humility is subsumed in the Big Five model by neuroticism and agreeableness, and therefore any predictive ability of honesty-humility is captured by these two dimensions. These critics also argue that excluding facets of honesty-humility from neuroticism and agreeableness inappropriately conceptualizes these two dimensions in the HEXACO model, and only the Big Five model properly details neuroticism and agreeableness (McCrae & Costa, 2008; van Kampen, 2012; Widiger & Costa, 2012). If true, then honesty-humility provides little benefit to research or practice, and the HEXACO may be an inadequate representation of personality. Similarly, honesty-humility has been argued to be repetitive with the Dark Triad, and some authors have even considered honesty-humility to represent an absence of dark traits (Hodson et al., 2018; Kaufman, Yaden, Hyde, & Tsukayama, 2019; Templer, 2018). If the case, then the HEXACO may simply be a reconceptualization of "B5 + D3" studies, and the discriminant validity of honesty-humility from even these constructs is uncertain.

While individual studies have been conducted to investigate these assertions, a wide-scale investigation has not been performed to derive more comprehensive and definitive assessments. For this reason, the current article presents a meta-analysis examining the discriminant validity of honesty-humility. We provide meta-analytic correlations as well as meta-analytic structural equation modeling (MASEM) analyses to assess the relationships of honesty-humility with the dimensions of the (H)EXACO, Big Five, and Dark Triad. From these results, we assess whether the relations of honesty-humility approach magnitudes expected in tests of convergent validity, and thereby whether honesty-humility may be redundant with these other constructs. Further, we test whether these relationships differ based on the applied measure, as existing scales have differing conceptualizations and operationalizations of the HEXACO, Big Five, and Dark Triad. We also provide facet-level analyses of the HEXACO, Big Five, and Dark Triad dimensions. These analyses provide initial inferences regarding whether certain facets may be shared between constructs, but also whether the answer to this question depends on the applied measure – thereby providing a deeper and unique understanding of how the studied constructs are related.

Our meta-analysis provides several benefits for research and practice. First, we provide firm conclusions regarding the discriminant validity of honesty-humility. The utility of the HEXACO can be further supported if the variance in honesty-humility is unique

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[4] We use the term, "Big Five", to broadly refer to all five-factor models of personality, although we recognize conceptual differences in the various operationalizations of the five-factor model (e.g. NEO, BFI, IPIP, etc.).

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from the Big Five or Dark Triad. Second, our results also provide firm assessments of the nomological net of honesty-humility. While many authors have studied the relations of honesty-humility with the (H)EXACO, Big Five, and Dark Triad dimensions, our meta-analysis assesses these relations by aggregating hundreds of studies. By doing so, we provide robust inferences regarding the true nature of these relationships. Third, some authors have discovered conflicting results regarding the relations of honesty-humility and other strongly-related constructs, such as agreeableness and Machiavellianism. The current results partially explain these conflicting results by assessing the influence of the applied scale, showing that these relationships may differ due to the research design. Fourth, our meta-analysis identifies important directions for future research, such as assessing the relations of honesty-humility's facets with strongly-related constructs to assess their conceptual and empirical overlap. Together, the current article provides many insights and directions for future research regarding the HEXACO, Big Five, and Dark Triad.

2. Background

2.1. HEXACO, Big Five, and Dark Triad

Several dimensions of the HEXACO and Big Five have very few differences between the two frameworks. Most researchers consider extraversion, conscientiousness, and openness to be largely identical between the HEXACO and Big Five, and prior studies have supported that these dimensions produce similar relationships whether measured by scales operationalizing the HEXACO or Big Five (Ashton & Lee, 2005; de Vries & Van Gelder, 2013; Dunlop, Morrison, Koenig, & Silcox, 2012).

Other dimensions of these two frameworks have notable differences despite being conceptually associated. These are emotionality/neuroticism and agreeableness (Ashton, Lee, & de Vries, 2014; Miller, Gaughan, Maples, & Price, 2011; Oh et al., 2014; Thalmayer, Saucier, & Eigenhuis, 2011). HEXACO emotionality and Big Five neuroticism share a common association with anxiety, providing some similarity between the two dimensions; however, only HEXACO emotionality includes an association with sentimentality, whereas only Big Five neuroticism includes an association with anger. These differing associations with sentimentality and anger causes divergence between the dimensions. Similarly, HEXACO and Big Five agreeableness share an association with gentleness; however, only HEXACO agreeableness includes an association with *not* experiencing anger, whereas only Big Five agreeableness includes an association with sentimentality. In other words, the HEXACO and Big Five are similar in their conceptualizations of these two dimensions by their associations with anxiety (emotionality/neuroticism) and gentleness (agreeableness), but they differ by their associations with sentimentality (HEXACO emotionality, Big Five agreeableness) and anger (HEXACO agreeableness, Big Five neuroticism). Therefore, while these dimensions are similar between the HEXACO and the Big Five, they are certainly not identical.

Further, the most overt difference between these two personality models is the dimension of honesty-humility, which is included in the HEXACO but not the Big Five. The dimension, in part, reflects an ethical or moral aspect of personality, which is unique from other HEXACO and Big Five dimensions (Ashton & Lee, 2009; de Vries, de Vries, & Born, 2011). However, honesty-humility does share similarities with agreeableness, particularly as conceptualized by the Big Five (Hilbig, Zettler, Leist, & Heydasch, 2013; Lee & Ashton, 2012; Sheppard & Boon, 2012). Adjectives that describe general prosocial tendencies (e.g. sympathetic, soft-hearted, generous) load onto both honesty-humility and agreeableness in factor-analytic studies (Ashton & Lee, 2007; Ashton et al., 2014). Both dimensions are associated with interpersonal cooperation despite opportunities for exploitation (Ashton & Lee, 2001, 2007; Ashton et al., 2014). Honesty-humility is more strongly associated with cooperation despite the opportunity to exploit, whereas agreeableness is more strongly associated with cooperation despite the opportunity to be exploited. Prior studies have also shown that honesty-humility often has very strong correlations with agreeableness, some as large as 0.61 (Gylfason, Halldorsson, & Kristinsson, 2016) 0.63 (Schneider & Goffin, 2012), and 0.70 (Boies, Yoo, Ebacher, Lee, & Ashton, 2004).

These similarities between honesty-humility and agreeableness cannot be ignored. Some authors have argued that these parallels are too strong for honesty-humility be a distinct dimension of personality, and it is better represented as a facet of agreeableness (McCrae & Costa, 2008; van Kampen, 2012). These authors likewise suggest that concerns regarding honesty-humility and agreeableness cast doubt over the entire HEXACO, and the framework should not be utilized until honesty-humility can be robustly supported as a unique dimension.

To address these concerns, we meta-analytically test whether honesty-humility is distinct from the dimensions of the HEXACO and Big Five, which provides insights into the validity of both honesty-humility as well as the HEXACO model. It should be noted, however, that the current meta-analysis investigates relationships of overall constructs. We do not perform meta-analyses that investigate indicators (e.g. item-level meta-analysis) because the interrelationships of indicators are rarely reported in accessible materials (Carpenter, Son, Harris, Alexander, & Horner, 2016). Thus, we consider honesty-humility to be distinct from other dimensions if their unreliability-corrected correlation is less than 0.70, which is a cutoff derived from convergent validity guidelines for the study of personality (Bosco, Aguinis, Singh, Field, & Pierce, 2015; Carlson & Herdman, 2012; Gignac & Szodorai, 2016; Paterson, Harms, Steel, & Credé, 2016; Post, 2016; Swank & Mullen, 2017).

Hypothesis 1. *Honesty-humility is distinct from the HEXACO and Big Five dimensions* ($\bar{\rho} < 0.70$).

Concerns regarding honesty-humility and agreeableness are more pronounced when considering Big Five agreeableness than HEXACO agreeableness (Ashton, Lee, & Visser, 2019; Lee & Ashton, 2019). The facet of sentimentality in Big Five agreeableness relates to "a tendency to feel strong emotional bonds with others" (Ashton et al., 2014, p. 142), which is not included in HEXACO agreeableness. Honesty-humility includes social aspects, as indicators of sincerity, fairness, and modesty are expressed towards others. A person who expresses these indicators may feel stronger emotional bonds with others (i.e. sentimentality). Likewise, some Big Five measures include agreeableness facets that overtly relate to honesty-humility. These include modesty and straightforwardness (Costa & McCrae, 2008; Miller et al., 2011), wherein the latter can even be considered an expression of honesty. We therefore hypothesize that honesty-humility has a greater relationship with Big Five agreeableness than HEXACO agreeableness.

Hypothesis 2. *The relationship of honesty-humility is greater with Big Five agreeableness than HEXACO agreeableness.*

Authors have delineated the manner in which the HEXACO and Big Five dimensions differ, but the precise magnitude of these differences are largely unknown (Ashton et al., 2014; Miller et al., 2011; Thalmayer et al., 2011). We meta-analytically test the convergence of each HEXACO and Big Five dimension given these uncertainties. In doing so, these results also provide a relative comparison for the convergence of honesty-humility with other constructs.

Research Question 1: To what extent do the HEXACO dimensions correlate with their respective Big Five dimensions?

While most prior research has associated the HEXACO with the Big Five, a growing number of authors have begun to associate honesty-humility with the Dark Triad (Aghababaei, Mohammadtabar, & Saffarinia, 2014; de Vries & van Kampen, 2010; Lee & Ashton, 2014; Lee et al., 2013). The Dark Triad is a framework of three maladaptive personality traits: Machiavellianism, narcissism, and psychopathy (Jonason & Webster, 2010; Jones & Paulhus, 2014; Paulhus & Williams, 2002). Because many descriptors of the Dark Triad are near opposites of honesty-humility descriptors, authors have expressed concerns regarding the discriminant – or lack thereof – relation of these constructs. Converging with the Dark Triad, however, may not be problematic. If honesty-humility converges with the Dark Triad, the HEXACO may serve as a parsimonious replacement for B5 + D3 investigations while accounting for a similar amount of variance (Lee & Ashton, 2014). We therefore test the discriminant validity of honesty-humility with the Dark Triad.

Hypothesis 3. *Honesty-humility is distinct from the Dark Triad dimensions* ($\bar{\rho} < 0.70$).

The hypotheses above predict relationships of honesty-humility with other personality dimensions individually, but honesty-humility may be distinct from each other dimension while still share a majority of its variance when assessed with each dimension together. Thus, we apply meta-analytic structural equation modeling to assess the extent that the (H)EXACO, Big Five, and Dark Triad together explain the variance in honesty-humility.

Hypothesis 4. *Most of the variance in honesty-humility is independent from the HEXACO, Big Five, and Dark Triad dimensions when studied together.*

Not all HEXACO, Big Five, and Dark Triad measures operationalize their representative constructs in an identical manner. In the current article, we compare relationships produced by different measures of the same construct (e.g. NEO, BFI, IPIP) as well as different versions of measures (e.g. NEO-FFI, NEO PI-R). While we assess scale differences for all studied relations, we highlight possible differences that pose notable theoretical implications.

Prior authors have discussed sizable variations of agreeableness in Big Five measures (Ashton et al., 2014; Crowe, Lynam, & Miller, 2018; Miller et al., 2011), and these differences may affect its relationship with honesty-humility. Specifically, the NEO includes the subdimensions of straightforwardness and modesty, which are often associated with honesty-humility. The BFI and most IPIP measures do not include these two subdimensions, suggesting that their relation to honesty-humility is weaker than the NEO. Further, the NEO PI-R includes more items than the NEO-FFI, and the NEO-FFI does not equally represent each subdimension present in the NEO PI-R. The NEO PI-R includes eight items to gauge each of the six agreeableness subdimensions, whereas the NEO-FFI includes twelve total items that are not evenly distributed across the subdimensions. Notably, only two straightforwardness items are included, and no modesty items are included. For this reason, it is expected that the NEO PI-R more strongly relates to honesty-humility than the NEO-FFI. We also expect the IPIP-120 to demonstrate a larger relationship with honesty-humility than other IPIP measures, as the IPIP-120 is based on the NEO PI-R.

Similarly, Miller et al. (2012) discovered that the Dirty Dozen psychopathy subscale does not fully capture variance associated with interpersonal antagonism, which is included in other psychopathy scales (Levenson, Kiehl, & Fitzpatrick, 1995; Lilienfeld & Widows, 2005). Due to the association of honesty-humility and treating others well, which is particularly reflected in the fairness and sincerity dimensions, we expect honesty-humility to demonstrate smaller relationships. Lastly, we also assess differences in the other applied measures of the HEXACO, Big Five, and Dark Triad. Because we investigate these differences in a general manner, we do not propose specific hypotheses for each analysis, but instead investigate them via the research question below.

Research Question 2: Do the relations of honesty-humility with the other HEXACO, Big Five, and Dark Triad dimensions differ based on the applied measures?

Authors have criticized the detrimental tendency of current research treat the HEXACO, Big Five, and Dark Triad dimensions as unidimensional despite their multidimensional nature (Miller, Vize, Crowe, & Lynam, 2019; Vize, Lynam, Collison, & Miller, 2018), and we therefore assess differences in the relations of these dimensions' facets. Specifically, honesty-humility's facets of sincerity and fairness are believed to more strongly relate to Machiavellianism and psychopathy, whereas honesty-humility's facet of modesty is believed to more strongly relate with narcissism. We also expect differing relations of psychopathy's facets with honesty-humility, as some are more related to interpersonal mistreatment (e.g. interpersonal antagonism, meanness) than others (e.g. boldness) (Miller et al., 2012). By studying these facets, we can better understand the overall relations between the dimensions, but we can also provide initial inferences regarding which facets may be shared between dimensions – opening avenues for future research. Because we study a broad range of facets, we investigate these relations as a research question rather than hypotheses.

Research Question 3: What are the relations among the facets of the HEXACO, Big Five, and Dark Triad constructs?

3. Meta-analytic study

3.1. Method

To perform the current meta-analysis, we followed the Meta-Analysis Reporting Standards (MARS; Kepes, McDaniel, Brannick, & Banks, 2013), the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA; Moher, Liberati, Tetzlaff, & Altman, 2009) guidelines, as well as prior meta-analyses of similar topics (Ashton et al., 2019; Barrick & Mount, 1991; Bono & Judge, 2004; Judge, Heller, & Mount, 2002; Lee, Berry, & Gonzalez-Mulé, 2019; Moshagen, Thielmann, Hilbig, & Zettler, 2019; Pletzer, Bentvelzen, Oostrom, & de Vries, 2019; Pletzer, Oostrom, Bentvelzen, & de Vries, 2020). The current article was not preregistered, but all data is available in Supplemental Material A.

3.1.1. Identifying sources

Searches were conducted in June 2019 in the EBSCO and Google Scholar databases using the following phrases: "HEXACO", "'Brief HEXACO Inventory'", "'HEXACO-PI'", "'HEXACO-PI-R'", "'HEXACO-SPI'", "'HEXACO-60'", "'HEXACO-100'", "'HEXACO-200'", "'IPIP6'", "'Honesty-Humility'", and "'Big Six' AND Personality". Google Scholar searches are more comprehensive than almost any other academic database, and therefore it is more likely to return results that are only tangentially related. For example, the search, "HEXACO", returns 7690 results in Google Scholar but only 1464 in EBSCO. For this reason, we only recorded the first 1000 results of our Google Scholar searches, as results after the first 1000 were largely irrelevant. We included all EBSCO results, as most of these results were relevant to the current meta-analysis. It should also be noted that we used multiple search terms involving the word

"HEXACO" because each search returned a very similar list of the first 1000 Google Scholar results, but some differences were observed. For this reason, we conducted multiple HEXACO searches to ensure that all relevant articles were discovered.

These searches produced 3469 initial sources that were coded by two coders in multiple phases (Fig. 1). The coders jointly developed coding guidelines, created a coding rulebook, reviewed material, and trained each other on coding decision rules. For each phase, the two coders initially coded articles together until they reached a sufficient level of agreement (ICC[2,k]) for a set of 50 articles, and they then coded articles independently. They conferred on any coding difficulties, and articles were occasionally spot-checked to determine any systematic differences in coding decisions. No systematic differences arose.

The coders first coded whether each source reported quantitative statistics regarding any HEXACO dimension. We did not include studies that measured the Big Five alone, as we were interested in the HEXACO specifically. The initial list of 3469 sources was reduced to 1192. In the second phase, the coders recorded every relationship of a HEXACO dimension that was reported using an effect size suitable for meta-analyses. Relevant effect sizes were typically correlations as well as means and standard deviations reported for two groups (e.g. low honesty-humility vs. high-honesty humility). We did not include effect sizes representing the relationship of more than two variables, such as partial correlations, due to concerns regarding their biasing influence in meta-analyses (Boxer, Groves, & Docherty, 2015; Ferguson, 2015; Furuya-Kanamori & Doi, 2016; Rothstein & Bushman, 2015). The list of 1192 sources was reduced to 866. Lastly, the coders recorded and categorized effect sizes from these sources based on our research questions. We did not include effect sizes representing the relationships of other-reported personality, as the nature of other-reported personality is qualitatively different than self-reported personality (Ashton & Lee, 2010; de Vries, Lee, & Ashton, 2008; Lee & Ashton, 2013; Lee et al., 2009; Roth & Altmann, 2019). Because self-reports are the dominant approach to assess personality, we believed that analyzing self-reported personality alone would provide the most accurate assessment of honesty-humility and the HEXACO. This final phase reduced our list from 866 to 394.

3.1.2. Analyses

All effect sizes were converted to a common statistic and most analyses were calculated in Comprehensive Meta-Analysis V3. The

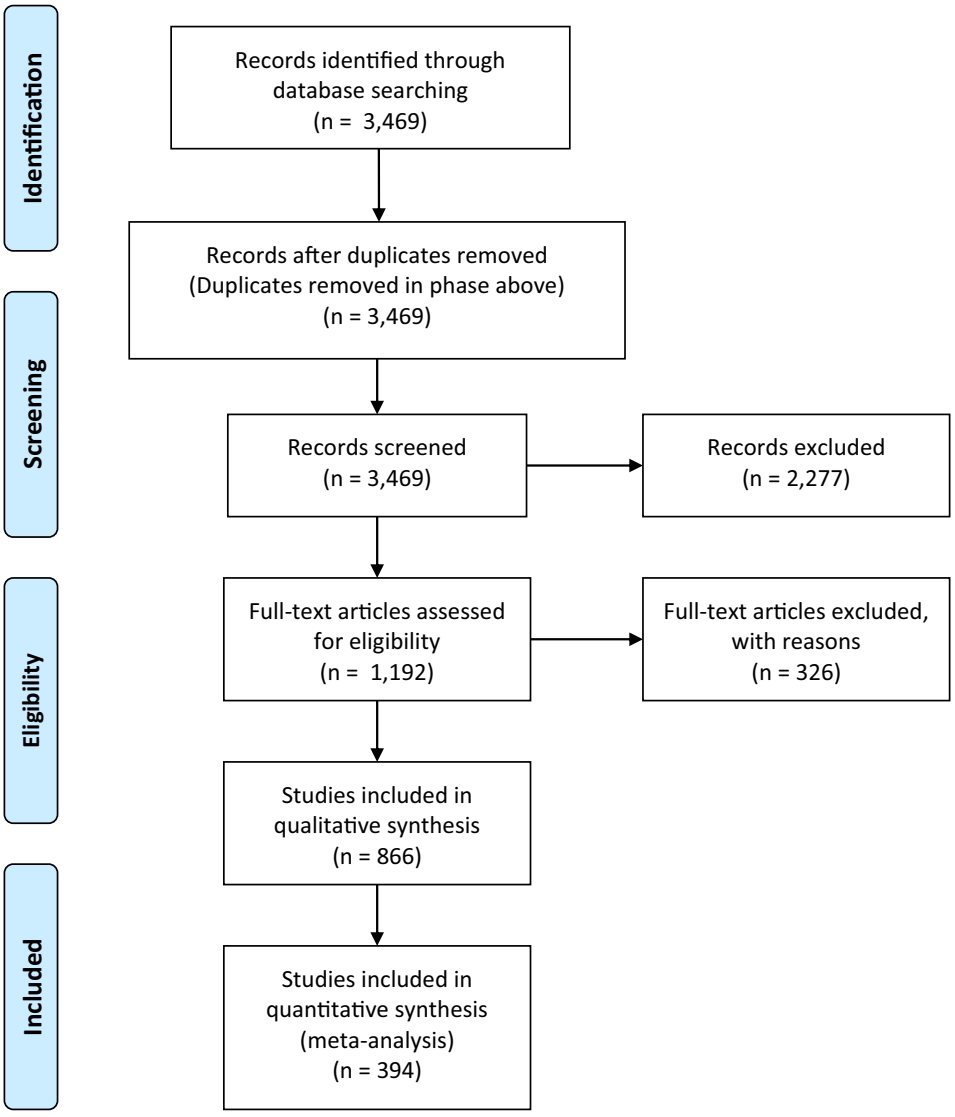

Fig. 1. Prisma diagram of meta-analysis search procedures.

weight-function model analysis and three-level meta-analyses were calculated in R. We began by calculating indices of publication biases, including fail-safe k, Egger's test, trim-and-fill method tests, and weight-function analyses. We include many assessments of publication bias because each has relative weaknesses, and applying many can help address the concerns in each (Andrews & Kasy, 2019; Carter, Schönbrodt, Gervais, & Hilgard, 2019). Fail-safe k indicates the number of undiscovered studies with a null effect that would need to be included for an effect's p-value to exceed 0.05 (Rosenberg, 2005; Orwin, 1983). Effects with a larger fail-safe k are typically considered to be more robust. Egger's test assesses the relationship between effect size and sample size in the dataset, and a significant relationship indicates that publication biases are present (Peters, Sutton, Jones, Abrams, & Rushton, 2006). Trim-and-full method tests estimate the number of missing studies to the left and right of the mean effect, and several estimated missing studies suggests that publication biases are present (Duval & Tweedie, 2000a, 2000b). Lastly, weight-function analyses identify whether certain p-value ranges have a significantly greater number of observed studies, and significantly more studies in certain ranges indicate that publication biases are present (Hedges, 1992; Macaskill, Walter, & Irwig, 2001). Typically, publication biases are not considered a concern unless multiple tests are significant for a single relationship (Ashton et al., 2019; Bono & Judge, 2004; Judge et al., 2002; Macaskill et al., 2001; Sutton, Duval, Tweedie, Abrams, & Jones, 2000).

A random-effects model was applied for all primary analyses, and results are reported as correlation coefficients (r). We used an artifact distribution approach to correct for unreliability, which is often favored over the individual correction approach in prior meta-analyses (Barrick & Mount, 1991; Harter, Schmidt, & Hayes, 2002; Hunter & Schmidt, 1990). A sample-size weighting approach was applied for all analyses, and multiple effects from the same study were averaged together to prevent unequal weighting. Some authors have expressed concern towards averaging studies together, however, as doing so ignores within-study variance. For this reason, we recalculated all effects using a three-level meta-analytic approach. Three-level meta-analyses model variance between and within studies, which eliminates the need to average effect sizes together within a single study (Cheung, 2015; Jak, 2015). All three-level meta-analytic results replicated the primary analyses in the current article, and all inferences were consistent between the traditional meta-analytic approach and the three-level meta-analytic approach. Due to its more common reporting in current meta-analyses, we present the traditional meta-analytic results in the primary text, whereas we include the three-level meta-analytic results in Supplemental Material B.

We also tested a series of meta-analytic structural equation models (Cheung, 2015; Jak, 2015). Some authors have expressed concern regarding the "mixed and matched" nature of correlation matrices when performing meta-analytic structural equation modeling. Correlations in these matrices are often based on varying samples, thereby opening the possibility that each correlation having a different sample size and based on entirely different sources. In these cases, it is likely that meta-analytic structural equation model results are unreliable or unable to be estimated (e.g. not positive definite). To avoid this concern, our meta-analytic structural equation models were calculated only with sources that reported complete correlation matrices for the variables of interest. For instance, in assessing the relationship of honesty-humility with the Big Five dimensions, the included sources must have reported the correlation of honesty-humility with each of the Big Five dimensions. By doing so, the entire correlation matrix is based on the same sources and has the same sample sizes, and the noted concerns are avoided.

3.2. Results

3.2.1. Publication bias analyses

Our publication bias analyses identified some potential biases (Supplemental Material B & C). Egger's test identified 9 of 18 relationships may include publication biases; the trim-and-fill method identified 15 of 18 relationships (missing studies > 5); and the weight function analyses identified 3 of 18 relationships. Eight of 18 relationships were indicated as possibly including publication biases by two analyses, whereas only 1 of 18 relationships were indicated by all three analyses. This relationship was between honesty-humility and emotionality.

Despite these findings, we did not modify our dataset. Random-effects meta-analyses are resilient to biases and influential cases (Hedges & Vevea, 1998; Higgins, Thompson, & Spiegelhalter, 2009; Hunter & Schmidt, 2000), and any influences would not notably sway our results. Likewise, our primary effects were calculated with a large number of original samples (k = 48–427), and our fail-safe k was very large for all effects (≥1000). This indicates that an extreme number of unobserved studies would need to be included for our interferences to substantively differ. For these reasons, any biases or influential cases would have a small effect on our results, and we believed that incorporating all observations would be preferred to any possibility of inappropriately modifying our dataset. Nevertheless, readers should interpret the current results while considering these possible biases. Supplemental Material B and C should be referenced to determine the extent that certain effects may be over- or under-estimated, especially the effect noted above, and any concerning effects can be reanalyzed using the data provided in Supplemental Material A.

3.2.2. Primary analyses

To interpret all results, we applied effect size guidelines developed for the social sciences and study of personality (Bosco et al., 2015; Gignac & Szodorai, 2016; Paterson et al., 2016). We considered uncorrected correlations between 0.05 and 0.15 to be small, 0.15 and 0.25 to be moderate, and 0.25 and 0.35 to be strong. Table 1 presents the meta-analytic relations of honesty-humility with the (H)EXACO, Big Five, and Dark Triad. Of the Big Five, honesty-humility showed small relationships with neuroticism ($\bar{r}$ = −0.112, $\bar{\rho}$ = −0.138, *95%C.I.*[−0.140, −0.084]), extraversion ($\bar{r}$ = −0.062, $\bar{\rho}$ = −0.077, *95%C.I.*[−0.083, −0.040]), and openness ($\bar{r}$ = 0.047, $\bar{\rho}$ = 0.061, *95%C.I.*[0.022, 0.072]). It had a moderate relationship with conscientiousness ($\bar{r}$ = 0.196, $\bar{\rho}$ = 0.245, *95%C.I.*[0.171, 0.220]) but a strong relationship with agreeableness ($\bar{r}$ = 0.395, $\bar{\rho}$ = 0.503, *95%C.I.*[0.356, 0.433]). Of the Dark Triad, honesty-humility had very strong relationships with Machiavellianism ($\bar{r}$ = −0.538, $\bar{\rho}$ = −0.690, *95%C.I.*[−0.560, −0.515]), narcissism ($\bar{r}$ = −0.429, $\bar{\rho}$ = −0.557, *95%C.I.*[−0.456, −0.401]), and psychopathy ($\bar{r}$ = −0.493, $\bar{\rho}$ = −0.628, *95%C.I.*[−0.522, −0.464]). The relationship of honesty-humility with Big Five agreeableness was significantly larger than its relationship with the HEXACO agreeableness (p < .001), but its relationship was strongest with the Dark Triad dimensions. These results fully support Hypotheses 1 and 2. We can only partially support Hypothesis 3, as the corrected correlation of honesty-humility with Machiavellianism was very close to the chosen cutoff value ($\bar{\rho}$ = 0.70).

Our meta-analytic structural equation models further tested the discriminant nature of honesty-humility (Supplemental Material D). The HEXACO explained 13 percent of the variance in honesty-humility; the Big Five explained 18 percent of the variance; and the Dark Triad explained 37 percent of the variance. Hypothesis 4 was supported.

Table 1
Meta-Analytic results for honesty-humility and other dimensions of personality.

	# of Sources	k	N	$\bar{r}$	$\bar{\rho}$	95% C.I.	z-value	p-value
(H)EXACO								
1.) Emotionality	309	396	261,686	0.063	0.082	0.049, 0.076	9.174	< 0.001
2.) Extraversion	300	390	260,026	0.018	0.023	0.006, 0.030	2.879	0.004
3.) Agreeableness	324	427	274,480	0.290	0.377	0.279, 0.301	47.318	< 0.001
4.) Conscientiousness	311	406	265,064	0.219	0.281	0.207, 0.230	36.593	< 0.001
5.) Openness	296	390	260,571	0.108	0.140	0.098, 0.119	19.480	< 0.001
Big Five								
6.) Neuroticism	55	68	42,095	−0.112	−0.138	−0.140, −0.084	−7.865	< 0.001
7.) Extraversion	52	67	39,977	−0.062	−0.077	−0.083, −0.040	−5.665	< 0.001
8.) Agreeableness	61	79	44,267	0.395	0.503	0.356, 0.433	17.791	< 0.001
9.) Conscientiousness	57	71	42,857	0.196	0.245	0.171, 0.220	15.170	< 0.001
10.) Openness	52	65	39,826	0.047	0.061	0.022, 0.072	3.714	< 0.001
Dark Triad								
11.) Machiavellianism	55	51	18,299	−0.538	−0.690	−0.560, −0.515	−36.728	< 0.001
12.) Narcissism	47	54	17,981	−0.429	−0.557	−0.456, −0.401	−26.651	< 0.001
13.) Psychopathy	51	58	21,114	−0.493	−0.628	−0.522, −0.464	−27.662	< 0.001

Table 2 includes the convergent validity relationships of the (H)EXACO and Big Five. Extraversion ($\bar{r}$ = 0.762, $\bar{\rho}$ = 0.924, *95%C.I.*[0.740, 0.782]) and conscientiousness ($\bar{r}$ = 0.733, $\bar{\rho}$ = 0.905, *95%C.I.*[0.707, 0.757]) demonstrated relationships expected of tests for convergent validity. Openness ($\bar{r}$ = 0.658, $\bar{\rho}$ = 0.860, *95%C.I.*[0.619, 0.693]) approached typical convergent validity cutoffs, whereas emotionality/neuroticism ($\bar{r}$ = 0.511, $\bar{\rho}$ = 0.628, *95%C.I.*[0.479, 0.542]) as well as agreeableness ($\bar{r}$ = 0.497, $\bar{\rho}$ = 0.633, *95%C.I.*[0.463, 0.528]) fell short. These results were expected given the differing conceptualizations of these constructs, and they address Research Question 1.

To test scale effects, we calculated effects separate for each measure as well as dummy-coded meta-regressions (Supplemental Material E). Confidence intervals for the former can be used to compare measures, whereas the latter can be used to derive statistical significance tests. For each meta-regression, the comparison group was the most popular measure for the construct of interest, which were the HEXACO-60 (HEXACO), NEO (Big Five), and SDT (Dark Triad). We also conducted more specific analyses regarding the NEO and IPIP scales used to measure the Big Five. Visual representations and further descriptions of results regarding scale differences are provided in Supplemental Material E as well as Figs. 2, 3, 4, and 5.

To measure the HEXACO, the most common scale was the HEXACO-60, which was applied in 247 studies. Other scales administered to measure the HEXACO were: HEXACO-100 (1 7 2), HEXACO-200 (52), IPIP (23), BHI (9), and others (26). To measure the Big Five, the most common scale was the NEO, which was applied in 30 studies. The NEO-FFI was applied in 21 studies, whereas the NEO PI-R was applied in 9 studies. Other scales administered to measure the Big Five were: IPIP (29), BFI (12), and others (27). The following IPIP scales were applied: IPIP-10 (4), IPIP-20 (3), IPIP-50 (17), IPIP-100 (3), IPIP-120 (3), IPIP-240 (2). The scales used to measure Machiavellianism were: SDT (27), DD (11), Mach-IV (12), and others (5). The scales used to measure narcissism were: SDT (29), DD (11), NPI (12), and others (7). The administered scales to measure psychopathy were: SDT (27), DD (11), SRP (13), and others (13).

Only three of the eighteen assessed relations did not show significant variation based on the applied measure. Readers can refer to Supplemental Material E as well as Figs. 2, 3, 4, and 5 to determine the precise nature of these differences, but we instead only detail the significant effects relevant to our discussion of theory surrounding the HEXACO, Big Five, and Dark Triad.

First, honesty-humility as measured by the IPIP produced stronger relationships with Big Five agreeableness ($\bar{r}$ = 0.601, $\bar{\rho}$ = 0.766, *95%C.I.*[0.560, 0.639]) than the average of all honesty-humility measures ($\bar{r}$ = 0.395, $\bar{\rho}$ = 0.503, *95%C.I.*[0.356, 0.433]). Second, Big Five NEO scales ($\bar{r}$ = 0.475, $\bar{\rho}$ = 0.605, *95%C.I.*[0.433, 0.514]) produced larger effects than BFI ($\bar{r}$ = 0.321, $\bar{\rho}$ = 0.409, *95%C.I.*[0.278, 0.363]) or IPIP scales ($\bar{r}$ = 0.359, $\bar{\rho}$ = 0.457, *95%C.I.*[0.293, 0.422]) for the relation of honesty-humility and Big Five agreeableness, and the NEO PI-R ($\bar{r}$ = 0.537, $\bar{\rho}$ = 0.684, *95%C.I.*[0.472, 0.597]) produced a larger effect than the NEO-FFI ($\bar{r}$ = 0.443, $\bar{\rho}$ = 0.564, *95%C.I.*[0.399, 0.484]). The IPIP-120, which is based on the NEO PI-R, also produced a stronger effect ($\bar{r}$ = 0.603, $\bar{\rho}$ = 0.768, *95%C.I.*[0.345, 0.776]) than the average of the IPIP measures for this relationship. Third, the relation of HEXACO agreeableness and Big Five agreeableness is smaller when using an IPIP measure to gauge Big Five agreeableness ($\bar{r}$ = 0.346, $\bar{\rho}$ = 0.441, *95%C.I.*[0.287, 0.402]) compared to the average of all measures ($\bar{r}$ = 0.497, $\bar{\rho}$ = 0.633, *95%C.I.*[0.463, 0.528]). The most popular IPIP measure, the IPIP-50 ($\bar{r}$ = 0.333, $\bar{\rho}$ = 0.424, *95%C.I.*[0.260, 0.403]), also produced smaller effects than the IPIP-120 ($\bar{r}$ = 0.470, $\bar{\rho}$ = 0.599, *95%C.I.*[0.393, 0.540]), which is again based on the NEO PI-R. Fourth, the relation

Table 2
Meta-analytic results for convergent validity correlations of (H)EXACO and Big Five dimensions.

	# of Sources	k	N	$\bar{r}$	$\bar{\rho}$	95% C.I.	z-value	p-value
1.) Emotionality / Neuroticism	38	48	21,878	0.511	0.628	0.479, 0.542	25.916	< 0.001
2.) Extraversion	39	49	22,287	0.762	0.924	0.740, 0.782	39.601	< 0.001
3.) Agreeableness	43	58	24,127	0.497	0.633	0.463, 0.528	24.800	< 0.001
4.) Conscientiousness	40	51	22,763	0.733	0.905	0.707, 0.757	34.496	< 0.001
5.) Openness	39	49	22,287	0.658	0.860	0.619, 0.693	24.002	< 0.001

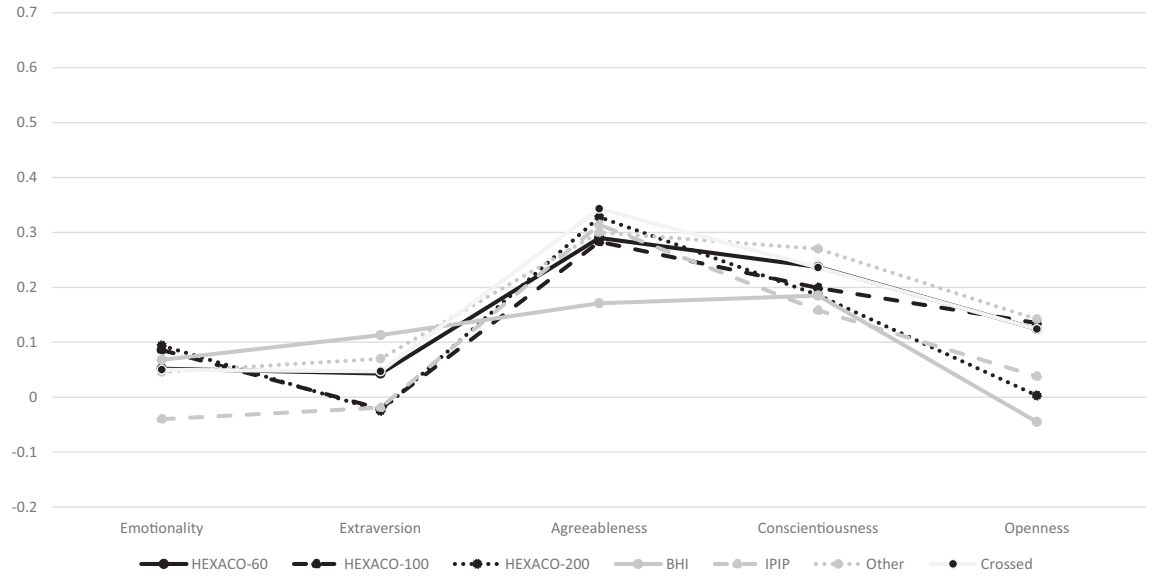

Fig. 2. Visual representation of honesty-humility correlations with (H)EXACO dimensions separated by measure. Note: The x-axis indicates the construct correlated with honesty-humility; the y-axis indicates that uncorrected meta-analytic correlation coefficient; and the lines indicate the applied HEXACO measure.

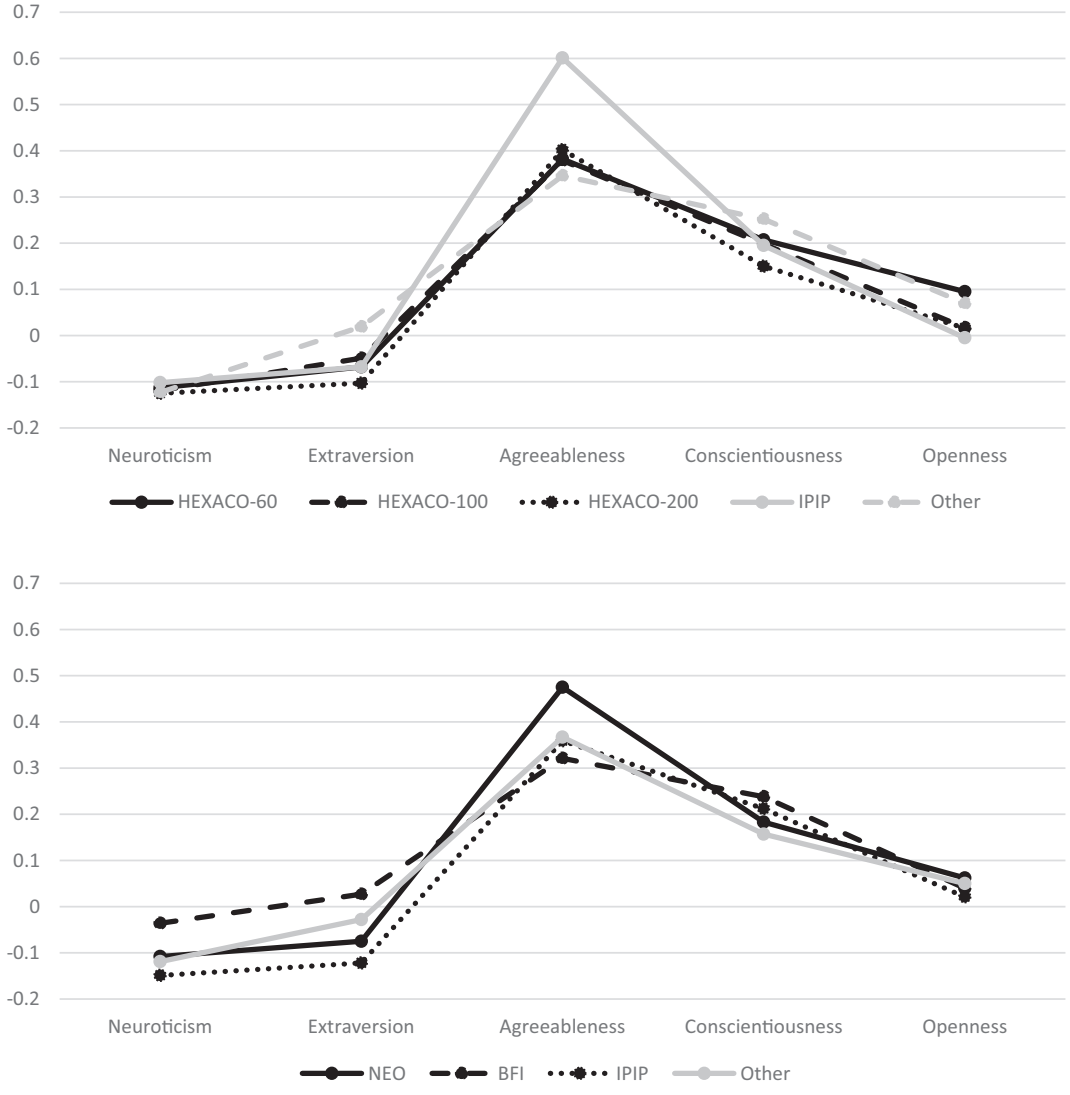

Fig. 3. Visual representation of honesty-humility correlations with Big Five dimensions separated by HEXACO measure (Top) and Big Five measure (Bottom). Note: The x-axis indicates the construct correlated with honesty-humility; the y-axis indicates that uncorrected meta-analytic correlation coefficient; and the lines indicate the applied HEXACO measure (top) or Big Five measure (bottom).

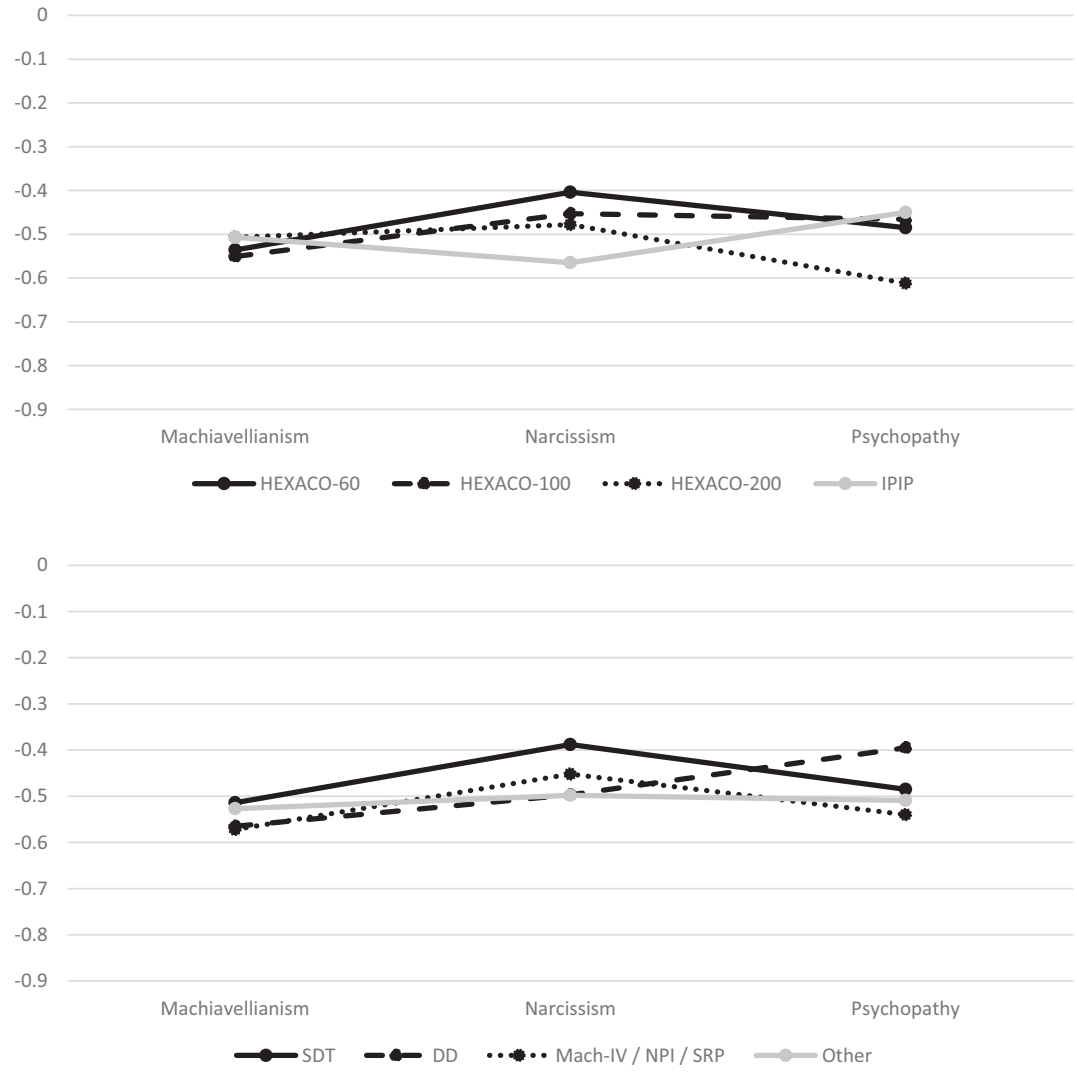

Fig. 4. Visual representation of honesty-humility correlations with Dark Triad dimensions separated by HEXACO measure (Top) and Dark Triad measure (Bottom). Note: The x-axis indicates the construct correlated with honesty-humility; the y-axis indicates that uncorrected meta-analytic correlation coefficient; and the lines indicate the applied HEXACO measure (top) or Dark Triad measure (bottom).

of honesty-humility and psychopathy is smaller with the Dirty Dozen ($\bar{r}$ = −0.395, $\bar{\rho}$ = −0.503, *95%C.I.*[−0.425, −0.365]) compared to the average of all psychopathy measures ($\bar{r}$ = −0.493, $\bar{\rho}$ = −0.628, *95%C.I.*[−0.522, −0.464]). These results address Research Question 3.

Lastly, we assessed relations between facets and constructs. To ensure that these results were robust, we only calculated meta-analytic effects between facets and constructs represented by five or more sources. We were thereby able to assess the relation of honesty-humility facets with the Big Five and Dark Triad, and we were able to assess the relation of two different operationalizations of psychopathy facets (Triarchic Psychopathy Measure [TriPM] and Self-Report Psychopathy Scale [SRP]) with honesty-humility. We were not able to assess the relation of Big Five, Machiavellianism, or narcissism facets with honesty-humility. While more than five studies reported the relation of both Machiavellianism and narcissism facets with honesty-humility, these studies applied varying operationalizations of these two constructs, causing less than five studies to have reported the facet relations of any one operationalization.

Table 3 presents the relations of honesty-humility facets with the Big Five and Dark Triad, in which notable variation can be seen across each construct. The ranges of correlations for each construct's relation with honesty-humility facets were: openness (−0.130 to 0.001), conscientiousness (−0.026 to 0.243), extraversion (−0.114 to 0.045), agreeableness (0.193 to 0.327), neuroticism (−0.133 to −0.003), Machiavellianism (−0.452 to −0.294), narcissism (−0.500 to −0.211), and psychopathy (−0.513 to −0.287). Supplemental Material F presents the relations of psychopathy facets with honesty-humility. The SRP had a smaller range of correlations (−0.571 to −0.355) than the TriPM (−0.486 to −0.093), but sizable differences were seen in facets for each operationalization of psychopathy. The largest facet relations for the SRP and TriPM were interpersonal manipulation ($\bar{r}$ = −0.571, $\bar{\rho}$ = −0.728, *95%C.I.*[−0.641, −0.492]) and meanness ($\bar{r}$ = −0.486, $\bar{\rho}$ = 0.619, *95%C.I.*[−0.541, −0.427]), respectively, whereas the smallest relations for the SRP and TriPM were criminal tendencies ($\bar{r}$ = −0.355, $\bar{\rho}$ = −0.452, *95%C.I.*[−0.426, −0.283]) and boldness ($\bar{r}$ = −0.093, $\bar{\rho}$ = −0.118, *95%C.I.*[−0.203, 0.019]), respectively. Together, these results address Research Question 3.

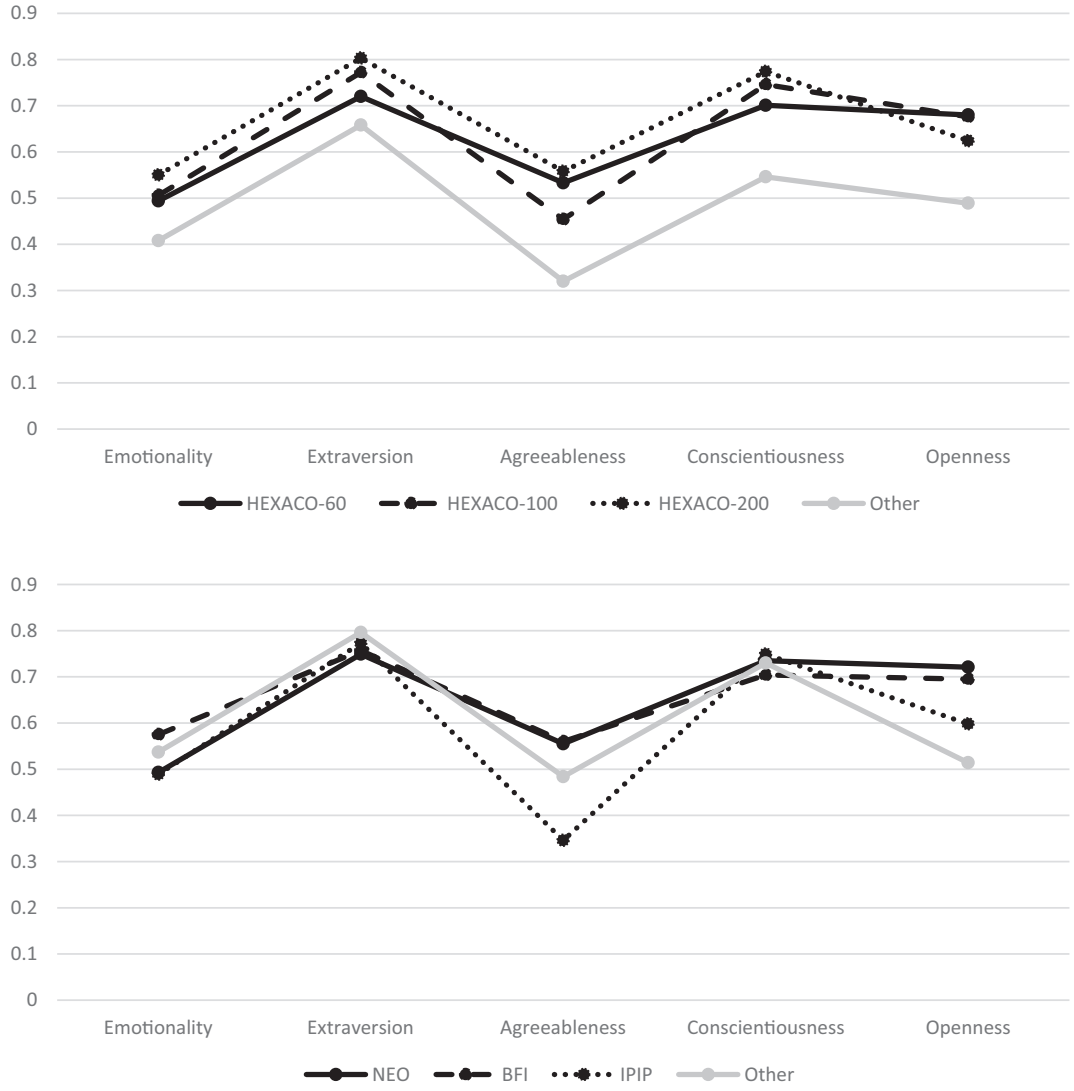

Fig. 5. Visual representation of (H)EXACO and Big Five convergent validity correlations separated by HEXACO measure (Top) and Big Five measure (Bottom). Note: The x-axis indicates the correlated constructs; the y-axis indicates that uncorrected meta-analytic correlation coefficient; and the lines indicate the applied HEXACO measure (top) or Big Five measure (bottom).

4. Discussion

4.1. Theoretical implications

The primary goal of this article was to test honesty-humility's discriminant validity. We detailed prior concerns that honesty-humility is repetitive with Big Five agreeableness as well as the Dark Triad, and we highlighted that the relations of honesty-humility may differ based on the applied measure or studied facet. Our meta-analysis provided several notable implications.

Honesty-humility produced small to moderate correlations with other (H)EXACO and Big Five dimensions, apart from a large correlation with Big Five agreeableness. Its correlation with Big Five agreeableness was significantly larger than its correlation with HEXACO agreeableness, which coincides with theoretical arguments that some variance in the Big Five is "reorganized" by the HEXACO model (Ashton et al., 2014; Goldberg, 2001; Lee & Ashton, 2014). Because honesty-humility produced a greater relationship with Big Five agreeableness than HEXACO agreeableness, some of the variance in honesty-humility is supported to be reorganized from agreeableness to honesty-humility when conceptualizing the HEXACO. This result was further supported by showing that the rest of the (H)EXACO model only explains 13 percent of the variance in honesty-humility, whereas the entire Big Five model explains 18 percent of its variance. At the same time, suggestions that honesty-humility is broadly subsumed by the Big Five appear to be false. The majority of variance in honesty-humility was still unique, although certain operationalizations of agreeableness did produce correlations typically expected in tests of convergent validity – as discussed further below. Honesty-humility and the HEXACO model therefore provides notable predictive validity beyond the Big Five, and it may be more strongly connected to certain theoretical frameworks associated with honesty-humility but not the Big Five dimensions.

One of these other frameworks is the Dark Triad. Honesty-humility demonstrated very strong relationships with the Dark Triad; the relationship between honesty-humility and Machiavellianism was larger than the relationship of HEXACO emotionality and Big Five neuroticism as well as HEXACO agreeableness and Big Five agreeableness. This finding suggests that, although honesty-humility and Machiavellianism contain conceptual differences, they may also share a common theoretical basis. While

Table 3
Meta-analysis results for honesty-humility facets, the Big Five, and Dark Triad.

	Honesty-Humility Dimension			
	Sincerity	Fairness	Greed Avoidance	Modesty
Big Five				
1.) Openness	−0.001 (−0.037, 0.036)	−0.011 (−0.065, 0.042)	0.001 (−0.024, 0.026)	−0.130 (−0.209, −0.050)
	11; 6243	11; 6243	11; 6243	11; 6243
2.) Conscientiousness	0.112 (0.075, 0.148)	0.243 (0.192, 0.292)	0.019 (−0.033, 0.071)	−0.026, (−0.082, 0.031)
	11; 6243	11; 6243	11; 6243	11; 6243
3.) Extraversion	−0.043 (−0.087, 0.001)	0.045 (0.000, 0.089)	−0.114 (−0.171, −0.056)	−0.093 (−0.166, −0.019)
	11; 6243	11; 6243	11; 6243	11; 6243
4.) Agreeableness	0.210 (0.157, 0.261)	0.327 (0.291, 0.362)	0.193 (0.147, 0.238)	0.272 (0.210, 0.331)
	12; 6533	12; 6533	11; 6533	11; 6533
5.) Neuroticism	−0.133 (−0.183, −0.083)	−0.099 (−0.148, −0.049)	−0.109 (−0.159, −0.059)	−0.003 (−0.049, 0.043)
	11; 6243	11; 6243	11; 6243	11; 6243
Dark Triad				
1.) Machiavellianism	−0.444 (−0.483, −0.403)	−0.452 (−0.559, −0.330)	−0.294 (−0.384, −0.187)	−0.347 (−0.420, −0.271)
	6; 2194	6; 2194	6; 2194	6; 2194
2.) Narcissism	−0.248 (−0.286, −0.208)	−0.211 (−0.331, −0.084)	−0.364 (−0.416, −0.309)	−0.500 (−0.551, −0.446)
	7; 2243	7; 2243	7; 2243	7; 2243
3.) Psychopathy	−0.401 (−0.476, −0.321)	−0.513 (−0.640, −0.359)	−0.287 (−0.320, −0.254)	−0.298 (−0.426, −0.159)
	8; 2944	8; 2944	8; 2944	8; 2944

Note: The numbers listed on the first line of each row represent the uncorrected meta-analytic correlation and 95% confidence interval. The second line of each row represents the number of included studies and pooled sample size.

honesty-humility does not entirely represent an absence of dark traits, as assumed in certain prior studies (Hodson et al., 2018; Kaufman et al., 2019; Templer, 2018), it may be associated with much of the same nomological net, capture much of the same variance, and predict many of the same outcomes. This is not to say that honesty-humility is entirely repetitive with the Dark Triad, as most of its variance was distinct from the three dimensions, but their association should not be ignored in understanding and interpreting honesty-humility as well as the HEXACO model of personality.

We showed that these relationships significantly differ based on the applied measure, which was true for the HEXACO, Big Five, and Dark Triad scales. Big Five measures of agreeableness were shown to influence its relationship with honesty-humility. The NEO produced a stronger relationship than the BFI or IPIP scales; the NEO PI-R produced a stronger relationship than the NEO-FFI; and the IPIP-120, which is based on the NEO PI-R, produced a stronger relationship than other Big Five IPIP measures. These findings suggest that the straightforwardness and modesty dimensions of the NEO (and more so the NEO PI-R) cause a greater relationship with honesty-humility. It should also be recognized that the relationship produced by the NEO-PI-R and the IPIP-120 between agreeableness and honesty-humility indeed reached magnitudes typically expected in tests of convergent validity. While honesty-humility may be distinct from agreeableness across most operationalizations, the two constructs may not be distinct across all operationalizations. Further, the IPIP HEXACO measure produced a stronger relationship between honesty-humility and Big Five measures of agreeableness than other HEXACO measures, perhaps because the IPIP HEXACO measure was derived from an item pool previously used to create multiple Big Five measures. These included items may thereby include more aspects of agreeableness than other HEXACO measures. Also, the Dirty Dozen psychopathy subscale produced smaller relations with honesty-humility than other psychopathy measures, further supporting that its exclusion of interpersonal antagonism causes the measure to produce smaller relations with other relevant constructs.

Lastly, we observed notable variation in the relations of facets. Honesty-humility's facets of sincerity and fairness, which reflect treating others well, had larger relations with Machiavellianism and psychopathy than its other facets, whereas honesty-humility's facet of modesty had a stronger relation with narcissism. Likewise, the facets of psychopathy produced notable variations in their relations with honesty-humility, and the largest of all facet variations was observed in the relations of the TriPM facets with honesty-humility. Honesty-humility had a small relation with boldness, but it had large relationships with disinhibition and meanness. These results again emphasize that the HEXACO, Big Five, and Dark Triad dimensions should not be always be treated as holistic constructs, but researchers should instead assess differences in their facets to understand how these constructs are related as well as which facets may be shared between the constructs – as discussed further in the future research discussed below.

4.2. Future research

The current meta-analysis answered many questions regarding the relationship of the HEXACO and Big Five (Bourdage, Lee, Ashton, & Perry, 2007; de Vries, de Vries, De Hoogh, & Feij, 2009; Lee, Ogunfowora, & Ashton, 2005). Future research comparing the HEXACO and Big Five should focus on finer-grained analyses, detailing relations of facets and differences of measures. For instance, honesty-humility's fairness facet had the strongest relation with Big Five agreeableness, but we were unable to assess relations of fairness with agreeableness's facets or the influence of specific measures on facet relations due to a lack of prior reporting. Supporting such effects could better show how the variance in the Big Five is indeed reorganized in the HEXACO model as well as the differing predictive abilities of dimensions due to this

reorganization. The facets of honesty-humility and conscientiousness should also be further investigated. The two dimensions had a stronger relationship in the current meta-analysis than commonly assumed, and the relation of fairness with conscientiousness reached a magnitude only seen in honesty-humility's relation with agreeableness.

Further, we supported the distinctiveness of honesty-humility, and thereby the HEXACO may represent a broader conceptualization of personality than the Big Five. Future research should assess the extent that the HEXACO – and honesty-humility in particular – can explain variance in outcomes beyond the Big Five. While some research has already investigated this notion (Ashton & Lee, 2008; Bourdage et al., 2007; Lee et al., 2005), many of the most relevant outcomes have yet to be studied. For instance, many outcomes associated with morals and ethics in a business context, such as whistleblowing or counterproductive work behaviors, are often studied with the Big Five framework, but the HEXACO and honesty-humility may better predict such outcomes. Such comparisons between the two frameworks can provide a better understanding of both, but it can also provide a better understanding of the studied outcomes.

A more fruitful research direction, however, may be the comparison of the HEXACO with the Dark Triad. Future research should investigate the conceptual similarities and differences between honesty-humility and the Dark Triad dimensions, particularly Machiavellianism. Individual facets that the two dimensions share should be identified, as it is likely that honesty-humility and Machiavellianism have a common conceptual basis. Machiavellianism includes the facets of amorality, distrust of others, and desire for status (Dahling, Whitaker, & Levy, 2009; Dahling, Kuyumcu, & Librizzi, 2012). The first and second of these is contradictory to honesty-humility's overall association with ethics, and the third is contradictory to honesty-humility's facets of greed avoidance and modesty. Similarly, honesty-humility's facets of sincerity and fairness had significantly larger relations with Machiavellianism, suggesting that they too may reflect a common conceptual basis. Identifying relevant facets in future research could link honesty-humility and the HEXACO to broader theoretical frameworks that have been previously integrated with the Dark Triad. Likewise, identifying facets that the two dimensions do not share can determine the manner in which they are distinct. Machiavellianism's desire for control does not have a clear association with honesty-humility, and it is unclear whether honesty-humility's sincerity is associated with Machiavellianism. Such efforts could also expand upon current research seeking the "core" of the Dark Triad (i.e. cause of shared variance), of which honesty-humility has emerged as a possible candidate (Vize, Collison, Miller, & Lynam, 2020).

Further, researchers should perform similar studies with narcissism and psychopathy. Honesty-humility's modesty facet had a very strong relation with narcissism, suggesting that some aspects between the constructs are shared. Perhaps more importantly honesty-humility's sincerity and fairness facets had very strong relations with psychopathy, and psychopathy had several facets that strongly related to honesty-humility depending on the operationalization. These included interpersonal manipulation, disinhibition, and meanness. Our results suggest that honesty-humility and psychopathy may too share a common conceptual basis, but this basis may greatly depend on the applied conceptualization. For instance, the TriPM's boldness facet of psychopathy had a small relation with honesty-humility, providing distinctness between the two constructs, but this facet is not present in other operationalizations of psychopathy (Levenson et al., 1995; Lilienfeld & Widows, 2005). For this reason, future researchers should not only study the convergence of honesty-humility and the Dark Triad, but they should create hypotheses that are catered to specific operationalizations. One operationalization of psychopathy, for example, may converge with honesty-humility, whereas the others produce distinct constructs.

It should also be considered whether the Dark Triad should be incorporated into the HEXACO to develop a new framework. Some researchers have supported a "B5 + 2" framework (Almagor, Tellegen, & Waller, 1995; Church, Katigbak, & Reyes, 1998; Durrett & Trull, 2005), such that the Big Five is joined with positive valence and negative valence. While these frameworks have received mixed support in other investigations (Ashton et al., 2014; Lee & Ashton, 2008; Romero, Villar, & López-Romero, 2015; Thielmann et al., 2019; Wakabayashi, 2014), this positive valence dimension may share variance with honesty-humility and this negative valence dimension may share variance with the Dark Triad. When joined together, it is possible that the HEXACO and Dark Triad together largely replicate the B5 + 2 framework, which could provide theoretical support for the usage of the joint framework. Research is needed, however, to justify the combination of these frameworks.

Furthermore, researchers should investigate the incremental predictive validity of honesty-humility beyond the Dark Triad – and vice versa. Some authors have argued that the HEXACO is a more parsimonious approach to capture the same predictive variance as the Big Five and Dark Triad together, thereby suggesting that the HEXACO should replace B5 + D3 studies (Lee & Ashton, 2014). Too few studies investigated the HEXACO and Dark Triad together when studying outcomes to assess this research question via meta-analytic structural equation modeling in the current article, thereby illustrating a clear need for future research.

Future research should continue to investigate the manners in which measures of the HEXACO, Big Five, and Dark Triad differ. We further detailed the differences between honesty-humility and agreeableness based on the applied measure, which is a recurrent topic of interest (Ashton et al., 2014; Crowe et al., 2018; Miller et al., 2011). These relationships could be further investigated by applying analyses that can structurally assess relations between facets (e.g. confirmatory composite analysis; Hair, Howard, & Nitzl, 2020). For example, researchers could support whether straightforwardness and modesty are shared facets of honesty-humility (e.g. HEXACO-100) and agreeableness (e.g. NEO PI-R) measures. Similarly, we showed that honesty-humility and psychopathy's relation was weaker when the latter was assessed via the Dirty Dozen subscale, and structural analyses could complement existing work assessing the causes of such differences between measures (Miller et al., 2012). These investigations could also provide insights into scale differences with less theoretical support. We showed that the IPIP-50 produced smaller relations between HEXACO agreeableness and Big Five agreeableness than other Big Five measures. This finding suggests that the IPIP-50 operationalizes agreeableness in a manner that is more dissimilar to HEXACO agreeableness than other Big Five measures. Likewise, we suggested that agreeableness as measured by the NEO PI-R and IPIP-120 more strongly relate to honesty-humility due to their inclusion of modesty and straightforwardness. It is possible, though, that these stronger relationships were produced because the NEO PI-R and IPIP-120 are broader measures of agreeableness, and any broad measure of agreeableness may produce similar results. Research investigating structural properties among these measures is needed before the nature of these differences can be understood.

Another important research topic will continue to be the study of HEXACO, Big Five, and Dark Triad facets. We also call for future research to assess the relation of honesty-humility's facets with each of the Dark Triad dimensions. Some facet relationships could not be analyzed in the current meta-analysis due to a lack of prior reporting – those of narcissism and Machiavellianism. Again, structural analyses can uncover any common conceptual bases between

these constructs, and researchers should attend to differences in operationalizations.

Lastly, much of our hypothesis development and discussion drew from prior research debating the validity of the Big Five, HEXACO, and Dark Triad models of personality (Ashton & Lee, 2020), but some recent authors have increasingly argued that researchers should simply apply the most appropriate personality model for the task at hand (Srivastava, 2020; Wiernik, Yarkoni, Giordano, & Raghavan, 2020). Our results also provide insights into this latter perspective, and they can be applied to better understand the overlap and reorganization of variance between these models of personality, such that future researchers can better identify which model may be more appropriate for their research questions at hand. For instance, the HEXACO may perform quite well when predicting outcomes associated with interpersonal manipulation, which is reflected in honesty-humility's shared variance with Machiavellianism; however, it may not perform well when predicting outcomes associated with self-aggrandizement and callousness, which is reflected in honesty-humility's modest variance shared with narcissism and psychopathy. We call on future researchers to more deeply consider the notion of not having a "correct" model of personality but rather models that are correct for specific purposes.

4.3. Limitations

Many methodological and analytical decisions must be made when conducting a meta-analysis, and these decisions can alter observed results. We based our decisions on prior guides and meta-analyses of personality, but some readers may disagree with our choices. For this reason, we urge readers to review the sensitivity analyses provided in Supplemental Material B. Analyses can also be reconducted using the databases provided in Supplemental Material A.

Further, we chose to terminate Google Scholar searches after the first 1000 results, as sources beyond the first few hundred were increasingly irrelevant. While our meta-analysis includes more sources than many (Greengross, Silvia, & Nusbaum, 2020; Holtzman, 2017; Howard & Cogswell, 2018), it is still a concern that we may have inappropriately excluded some relevant sources. Similarly, we chose not to contact researchers to obtain unpublished results, because recent research has supported that unpublished studies rarely alter meta-analytic findings (Dalton, Aguinis, Dalton, Bosco, & Pierce, 2012) and our large fail-safe n value further reinforce this assumption. For these reasons, future researchers should consider reanalyzing our results using different search criteria.

We discussed our results in regard to testing the validity of honesty-humility and the HEXACO model. We recognize that such terminology is typically reserved for the study and discussion of measures rather than constructs themselves. We believed that such terminology best clarified our present goals and findings, but some researchers may be opposed to our language. For this reason, we emphasize that the current results do not entirely speak towards individual scales or measures, and again future research is needed on this topic.

5. Conclusion

The current article focused on honesty-humility, as it is the largest distinguishing feature between the HEXACO and Big Five models of personality. We demonstrated that the construct is distinct from the other HEXACO, Big Five, and Dark Triad dimensions; however, it has a larger relationship with Big Five agreeableness than HEXACO agreeableness, and it very strongly relates to Machiavellianism. The results also significantly differed when comparing measures as well as assessing facets. These findings produce important implications for our understanding of honesty-humility, the HEXACO model, as well as personality in general.

Appendix A. Supplementary material

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jrp.2020.103982.

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