Article

The HEXACO Honesty-Humility, Agreeableness, and Emotionality Factors: A Review of Research and Theory

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Abstract

We review research and theory on the HEXACO personality dimensions of Honesty-Humility (H), Agreeableness (A), and Emotionality (E), with particular attention to the following topics: (1) the origins of the HEXACO model in lexical studies of personality structure, and the content of the H, A, and E factors in those studies; (2) the operationalization of the H, A, and E factors in the HEXACO Personality Inventory–Revised; (3) the construct validity of self-reports on scales measuring the H factor; (4) the theoretical distinction between H and A; (5) similarity and assumed similarity between social partners in personality, with a focus on H and A; (6) the extent to which H (and A and E) variance is represented in instruments assessing the "Five-Factor Model" of personality; and (7) the relative validity of scales assessing the HEXACO and Five-Factor Model dimensions in predicting criteria conceptually relevant to H, A, and E.

Keywords

HEXACO, Honesty-Humility, Agreeableness, Emotionality, personality structure, personality assessment

The HEXACO model of personality structure consists of six dimensions—Honesty-Humility (H), Emotionality (E), Extraversion (X), Agreeableness (A), Conscientiousness (C), and Openness to Experience (O)—and is operationalized in a self- and observer report instrument called the HEXACO Personality Inventory (Revised). In the years since the last review of theory and research on the HEXACO framework (Ashton & Lee, 2007), this model has been increasingly adopted in personality research. For example, the HEXACO personality factors have been studied in relation to topics such as vocational interests (McKay & Tokar, 2012), political attitudes (Chirumbolo & Leone, 2010; Zettler, Hilbig, & Haubrich, 2011), guilt and shame proneness (Cohen, Wolf, Panter, & Insko, 2011), academic aptitude and performance (Noftle & Robins, 2007), religiousness (Aghababaei, Wasserman, & Nannini, 2014; Saroglou, Pichon, Trompette, Verschueren, & Dernelle, 2005), risk taking (Weller & Thulin, 2012), and schizotypy (Winterstein et al., 2011). But in spite of the increased familiarity with this framework, we believe that some of its aspects—particularly with regard to the H, A, and E dimensions—are sometimes misunderstood. The purpose of this manuscript is therefore to discuss these aspects in further detail. We address seven topics: (1) the origins of the HEXACO model in lexical studies of personality structure, and the content of the H, A, and E factors in those studies; (2) the operationalization of the H, A, and E factors in the HEXACO Personality Inventory–Revised; (3) the construct validity of self-reports on scales measuring the H factor; (4) the theoretical distinction between H and A; (5) similarity and assumed similarity between social partners in personality, with a focus on H and A; (6) the extent to which H (and A and E) variance is represented in instruments assessing the "Five-Factor Model" (FFM); and (7) the relative validity of scales assessing the HEXACO and FFM dimensions in predicting criteria conceptually related to H, A, and E.

The HEXACO Factors in Lexical Studies of Personality Structure

During the late 20th century, personality researchers reached a near-consensus favoring the Big Five or FFM as the optimal structural framework for personality characteristics. Given the evident usefulness of that model, researchers might wonder why the HEXACO model has been proposed as an alternative. The reason can be summarized simply: The same objective research strategy that led to the discovery of the five-dimensional model has subsequently revealed a replicable set of six

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personality dimensions. This six-dimensional space captures some important personality variance not represented within the five-dimensional models while also allowing a better theoretical interpretation of personality variation.

The Big Five/FFM and the HEXACO framework have their origins in results of lexical studies of personality structure. In these studies, factor analyses are typically conducted using respondents' self-ratings (or observer ratings of close acquaintances) on the familiar personality-descriptive adjectives of a given language. An important advantage of lexical investigations, in the context of studying personality structure, is that the personality lexicon approximates the domain of subjectively important personality characteristics for the speakers of a given language, and thereby removes much of the potential for researcher bias in variable selection (for discussion about the precise boundaries of the personality domain, see Ashton & Lee, 2005; Saucier, 2009).

Early lexical studies of personality structure conducted in the English language consistently recovered a set of five dimensions (see review by Goldberg, 1993). These dimensions form the "Big Five" factor structure, and they are also the basis of the closely related FFM of personality (see McCrae, 1989). Since approximately the year 2000, however, lexical studies of personality structure have been conducted in at least a dozen languages, and the structure of the English personality lexicon has also been reexamined. The personality lexicons of these languages have produced a similar factor space consisting of six dimensions (e.g., Ashton et al., 2004; Lee & Ashton, 2008; Saucier, 2009). That is, the largest factor space that is widely recovered across the lexical personality studies in various languages consists of six rather than five dimensions. The precise locations of the factor axes tend to vary across studies, due to the lack of true simple structure in the personality domain (see, for example, Saucier, 1992), but the HEXACO factors correspond closely to the dimensions that most commonly emerge upon rotation to simple structure.

The six-factor structure overlaps heavily with the classic Big Five of early English lexical studies. The X, C, and O factors are largely the same as their Big Five counterparts, apart from the deliberate exclusion of intellectual ability from HEXACO O. However, the H, A, and E dimensions do not correspond isomorphically to any of the classic Big Five factors; instead, these three dimensions incorporate the variance associated with Big Five Agreeableness and Neuroticism (versus Emotional Stability) factors as well as additional variance not captured within the classic Big Five. To use Goldberg's (2001) term, the variance of the Big Five is "reorganized" in the six-factor structure.

Adjectives that typically define the lexical E factor—recall that in the HEXACO framework, E represents Emotionality, not eXtraversion—include *vulnerable, sensitive, anxious*, and *sentimental* versus *fearless, tough, independent*, and *unemotional*. This factor shares some content with Big Five Neuroticism (e.g., anxiety), but lacks the anger-related aspects of Neuroticism and instead contains sentimentality-related traits that are associated with Big Five Agreeableness. Adjectives that typically define the lexical A factor include *peaceful, gentle, patient*, and *agreeable* versus *quick-tempered, choleric, stubborn*, and *quarrelsome*. The lexical A factor shares some content with the classic Big Five Agreeableness factor (e.g., gentleness), but lacks the sentimentality-related aspects of that factor and instead contains (at its low pole) the anger-related traits that are associated with Big Five Neuroticism. Adjectives that typically define the lexical H factor include *honest, sincere, fair*, and *modest* versus *greedy, conceited, deceitful*, and *pretentious*. In the classic Big Five framework, these terms are typically peripheral elements of Big Five Agreeableness.

In addition to the terms that typically define the lexical H, A, and E factors, many additional terms tend to divide their loadings between those factors, sometimes loading primarily on H, sometimes loading primarily on A, and occasionally loading substantially on E. These "wild card" adjectives describe generally prosocial tendencies (e.g., *sympathetic, soft-hearted, generous*), and as such, they play an important role in the theoretical interpretation of the HEXACO factors (Ashton & Lee, 2007), as we discuss later in this article.

De Raad et al. (2010) conducted a series of pairwise comparisons between personality factor solutions of various languages and suggested that only three personality factors were fully replicable across languages. (Contrary to Widiger and Costa [2012], this suggestion cannot be cited as support for the Big Five/FFM over the HEXACO framework.) However, the solutions of any given pair of languages may be only modestly similar to each other even if both are quite similar to a hypothesized solution. As shown in Table 1, when the six-factor solutions obtained in various languages are compared with a *common* hypothesized six-factor structure, the replicability of that structure becomes clear: The hypothesized HEXACO factors show strong convergent and weak discriminant relations with the obtained six-factor solutions of various languages (see Ashton & Lee, 2010b; Lee & Ashton, 2008). Consistent with this result, De Raad et al. (in press) recently used simultaneous components analysis to find common cross-language structures, and obtained a six-factor solution corresponding closely to that of Ashton et al. (2004).

One might wonder about the potential replicability of the six-factor structure across all human languages, including those spoken by small populations and having an exclusively oral tradition. We suspect that in such languages—in which lexical studies of personality structure have only recently begun to be undertaken—personality characteristics may define very few, very broad factors, perhaps corresponding to the two-dimensional structure recently reported by Saucier et al. (2014). Our point, however, is that six—and no more than six—personality factors are widely replicated across the world's major languages. That is, in contrast to the replicability of the six-factor structure as demonstrated in Table 1,

Table 1. Convergent and Discriminant Relations of Hypothesized Six Factors With Obtained Six Factors of Lexical Studies of Personality Structure.

Indigenous lexical factors	Rated similarity with HEXACO definitions (Lee & Ashton, 2008)					
	H	E	X	A	C	O
H	**7.0**	2.7	1.6	4.2	2.1	2.3
E	2.6	**6.0**	2.3	2.8	1.9	2.3
X	2.0	2.1	**7.0**	2.7	1.9	3.2
A	4.2	3.0	1.9	**6.7**	2.4	3.1
C	2.9	2.1	1.7	2.4	**6.9**	2.3
O/I	2.3	1.5	2.7	2.1	3.1	**5.2**
	Mean correlations with six cross-language marker scales (Ashton & Lee, 2010b)					
	X	A	C	E	O/I	H
X	**.86**	−.04	.01	−.24	.22	.09
A	−.02	**.74**	.09	−.13	.01	.33
C	.03	.15	**.81**	−.19	.14	.21
E	−.14	−.02	−.09	**.73**	−.23	−.03
O/I	.08	.02	.00	−.02	**.60**	.03
H	.01	.28	.15	.03	.06	**.62**

Note. Similarity ratings were made on a 0 to 9 scale; results are taken directly from Ashton and Lee (2008). Mean correlations with marker scales are based on values provided by B. de Raad (see Ashton & Lee, 2010b). H = Honesty-Humility, E = Emotionality, X = Extraversion, A = Agreeableness, C = Conscientiousness, O = Openness to Experience, I = Intellect.

there is no set of more than six factors that is even a plausible candidate to show a similar degree of cross-cultural replicability. Because the HEXACO framework is the largest replicable personality factor space, we believe that it represents the optimal model of personality structure. If the existence of a replicable set of six—not just five—lexical personality factors had been known during the 1980s, the Big Five/FFM would probably not have been adopted so widely by personality researchers. In fact, one may view the near-consensus favoring a five-dimensional structure of personality characteristics as a historical accident, one that resulted from the use in early English lexical studies of small variable sets in which H-related traits were underrepresented (see Lee & Ashton, 2008).

Operationalization of the H, A, and E Factors

The six dimensions obtained in lexical studies of personality structure have been operationalized in a self- and observer report instrument, the HEXACO Personality Inventory–Revised (HEXACO-PI-R).[1] In the HEXACO-PI-R, each of the six factors is defined by four facet-level scales; an additional facet, Altruism versus Antagonism, is intended to represent a blend of the H, A, and E factors rather than defining any one factor. Table 2 lists descriptions of the four narrow facet-level traits within the H, A, and E factors, as well as the interstitial Altruism facet. As seen in the table, the H facets are called Sincerity, Fairness, Greed Avoidance, and Modesty; the A facets are called Forgivingness, Gentleness, Flexibility, and Patience; and the E facets (again, Emotionality, not eXtraversion) are called Anxiety, Fearfulness, Dependence, and Sentimentality. These facets are intended to represent broadly the array of personality characteristics that define each factor, but are not necessarily the best possible representation of each factor; different sets of facets could also have been chosen.

The relationships between the HEXACO factors and those of the Big Five/FFM are shown in Table 3. Using the data of Goldberg's Oregon community sample, we have operationalized the Big Five/FFM using four widely-used sets of brief markers of its dimensions: the NEO Five-Factor Inventory (NEO-FFI; Costa & McCrae, 1992), the Big Five Inventory (BFI; John, Donahue, & Kentle, 1991), the 50-item International Personality Item Pool Big Five Factor Markers (Goldberg, 1999), and the Adjective Mini-Markers of the Big Five (Saucier, 1994). By computing the Big Five/FFM dimensions from these four instruments together, we aimed to cancel out the idiosyncracies of any single instrument and obtain a prototypical set of five factors. Specifically, we computed respondents' scores on five varimax-rotated principal components obtained from their self-reports on those four sets of five variables, and then correlated those scores with their self-reports on the 60-item HEXACO-PI-R (HEXACO-60; Ashton & Lee, 2009). As seen in Table 3, the Big Five/FFM and HEXACO variables show nearly isomorphic relations for the X, C, and O factors. Big Five/FFM Neuroticism and Agreeableness roughly correspond to rotated variants of HEXACO E and A. In addition, Big Five/FFM Agreeableness also has some limited overlap with HEXACO H, which is largely independent of these Big Five/FFM measures.[2] Later in this article, we discuss the somewhat different pattern of relations between the HEXACO H, E, and A factors and the FFM dimensions as operationalized by the NEO Personality Inventory–Revised (NEO-PI-R; Costa & McCrae, 1992).

The Construct Validity of Self-Reports of H

When the self-report HEXACO-PI-R is administered under standard research conditions, we interpret individual differences in H scale scores as representing a substantive personality dimension. An alternative interpretation is that these individual differences merely represent a dimension of biases in personality self-reports--specifically, a dimension of social desirability versus undesirability of responses that is independent of actual personality trait levels. Such an interpretation would be based mainly on the possibility that many

Table 2. Descriptions of Facet-Level Traits of HEXACO-PI-R Honesty-Humility, Agreeableness, and Emotionality.

Honesty-Humility domain
The **Sincerity** scale assesses a tendency to be genuine in interpersonal relations. Low scorers will flatter others or pretend to like them in order to obtain favors, whereas high scorers are unwilling to manipulate others. The **Fairness** scale assesses a tendency to avoid fraud and corruption. Low scorers are willing to gain by cheating or stealing, whereas high scorers are unwilling to take advantage of other individuals or of society at large. The **Greed Avoidance** scale assesses a tendency to be uninterested in possessing lavish wealth, luxury goods, and signs of high social status. Low scorers want to enjoy and to display wealth and privilege, whereas high scorers are not especially motivated by monetary or social-status considerations. The **Modesty** scale assesses a tendency to be modest and unassuming. Low scorers consider themselves as superior and as entitled to privileges that others do not have, whereas high scorers view themselves as ordinary people without any claim to special treatment.
Agreeableness domain
The **Forgivingness** scale assesses one's willingness to feel trust and liking toward those who may have caused one harm. Low scorers tend "hold a grudge" against those who have offended them, whereas high scorers are usually ready to trust others again and to re-establish friendly relations after having been treated badly. The **Gentleness** scale assesses a tendency to be mild and lenient in dealings with other people. Low scorers tend to be critical in their evaluations of others, whereas high scorers are reluctant to judge others harshly. The **Flexibility** scale assesses one's willingness to compromise and cooperate with others. Low scorers are seen as stubborn and are willing to argue, whereas high scorers avoid arguments and accommodate others' suggestions, even when these may be unreasonable. The **Patience** scale assesses a tendency to remain calm rather than to become angry. Low scorers tend to lose their tempers quickly, whereas high scorers have a high threshold for feeling or expressing anger.
Emotionality domain
The **Fearfulness** scale assesses a tendency to experience fear. Low scorers feel little fear of injury and are relatively tough, brave, and insensitive to physical pain, whereas high scorers are strongly inclined to avoid physical harm. The **Anxiety** scale assesses a tendency to worry in a variety of contexts. Low scorers feel little stress in response to difficulties, whereas high scorers tend to become preoccupied even by relatively minor problems. The **Dependence** scale assesses one's need for emotional support from others. Low scorers feel self-assured and able to deal with problems without any help or advice, whereas high scorers want to share their difficulties with those who will provide encouragement and comfort. The **Sentimentality** scale assesses a tendency to feel strong emotional bonds with others. Low scorers feel little emotion when saying good-bye or in reaction to the concerns of others, whereas high scorers feel strong emotional attachments and an empathic sensitivity to the feelings of others.
Interstitial scale
The **Altruism (versus Antagonism)** scale assesses a tendency to be sympathetic and soft-hearted toward others. High scorers avoid causing harm and react with generosity toward those who are weak or in need of help, whereas low scorers are not upset by the prospect of hurting others and may be seen as hard-hearted.

Note. HEXACO-PI-R = HEXACO Personality Inventory–Revised.

Table 3. Correlations of HEXACO-60 Scales With Big Five/FFM Factors in Goldberg's Oregon Community Sample (n = 387).

	Big Five/FFM factor				
HEXACO-60 scales	Neuroticism	Extraversion	Agreeableness	Conscientiousness	Openness
Honesty-humility	−.08	−.14	.28	.09	−.13
Emotionality	**.55**	.01	**.34**	−.06	−.11
Extraversion[a]	−.14	**.74**	.13	.10	.21
Agreeableness	**−.37**	−.16	**.52**	−.09	.03
Conscientiousness	.02	.03	.01	**.70**	.20
Openness to experience	−.03	.07	.12	−.10	**.76**

Note. FFM = Five-Factor model. See text for description of scales used in computing Big Five/FFM factors. Absolute values greater than .30 are typed in bold.

[a]Only 7 of 10 Extraversion items were administered to this sample; see Note 2.

Table 4. Self/Observer Agreement, Similarity, and Assumed Similarity of the HEXACO-PI-R Scales (N = 2,134).

	M (*SD*)	α	Self/observer agreement	Similarity	Assumed similarity
	Self / observer	Self / observer			
Honesty-humility	3.23 (.61) / 3.20 (.64)	.82 / .86	.47	.24	.45
Emotionality	3.42 (.62) / 3.30 (.63)	.84 / .87	.63	.00	−.03
Extraversion	3.48 (.57) / 3.52 (.59)	.85 / .87	.56	.12	.12
Agreeableness	2.96 (.59) / 3.10 (.66)	.84 / .89	.48	.12	.09
Conscientiousness	3.44 (.58) / 3.43 (.63)	.83 / .88	.53	.08	.05
Openness to experience	3.37 (.60) / 3.16 (.62)	.81 / .84	.56	.28	.36

Note. HEXACO-PI-R = HEXACO Personality Inventory–Revised. α = internal-consistency reliability.

persons who have very low levels of honesty- and humility-related traits will falsely boast of having high levels instead.

We consider this alternative interpretation to be a somewhat implausible explanation for individual differences in H scale scores, because persons who provide self-reports under standard research conditions are anonymous and have no incentive to exaggerate their levels of socially desirable characteristics. However, the interpretation of the H scale as a dimension of self-report bias does generate some testable predictions.

One such prediction is that self-report H scores should show considerably lower variation and lower internal-consistency reliability than do self-reports of other personality factors. In fact, however, there are no appreciable differences (see Table 4). Another prediction that follows from this alternative view is that self-reports on the H scale should be very weakly (and perhaps even negatively) correlated with observer reports on that scale, even when the observer is closely acquainted with the target person. The self-report bias interpretation also implies that self-reports of H should be substantially associated with the variance of other socially desirable self-report variables which does not overlap with observer reports of those variables.

We can test the hypothesis that self-report H scale scores are attributable to social desirability bias using data from pairs of close acquaintances who have independently provided self-reports and reciprocal observer reports on the HEXACO-PI-R. Table 4 shows the self/observer convergent correlations (N = 2,134, 64% women) for the six factor-level scales of the 100-item HEXACO-PI-R, as obtained by combining several previous samples (including those reported in Ashton & Lee, 2010a; Lee et al., 2009, and others). As can be seen in the table, the self/observer correlation for H (r = .47) is rather high, equalling that of A and only slightly below that of the other four factors. These results suggest that self-reports of H, like self-reports of the other five HEXACO factors, do reflect substantive personality variance rather than merely biases in self-report.[3]

Among the four facet-level scales of the H factor, self/observer agreement is considerably lower for Sincerity (r = .20 in this sample) than for the other three; if Sincerity were removed from the H scale, self/observer agreement would actually increase somewhat, to .52. We have suggested (Ashton & Lee, 2010a) that the behaviors associated with this trait (involving, at the opposite pole, the subtle manipulation of others through flattery and ingratiation) are relatively difficult for observers to discern accurately, even when those observers are well acquainted with the target person (see Jackson, 1978, for a similar suggestion). We predict that in typical research samples, self-reports of Sincerity will be more accurate indications of trait-relevant behaviors than will observer reports; however, this hypothesis has not yet been tested, so the possibility remains that observer reports of Sincerity are as valid as (or more valid than) self-reports of this trait. In any case, as we note later in this section, the self-report-specific variance of the Honesty-Humility facets, including Sincerity, is apparently not due in any large part to a factor of self-report bias.

In analyses reported elsewhere, we have used confirmatory factor analysis (CFA) models and targeted orthogonal Procrustes rotations to define six trait factors and two source or bias factors using the HEXACO-PI-R variables (Ashton & Lee, 2010a; Lee & Ashton, 2013). Those analyses have produced substantial trait factors for all six HEXACO dimensions—including H—and they have also produced small factors representing biases in self- and observer reports, respectively. (These bias factors are unlikely to reflect intentional "faking," insofar as participants responded anonymously and without incentives to provide desirable [or undesirable] reports.) The self-report bias factor has shown rather low loadings for H facet scales, indicating that only a small fraction of the self-report-specific variance of those variables is due to a general tendency to provide socially desirable or undesirable self-reports. This result contrasts somewhat with that for observer reports, where the (rather larger) bias factor has moderately high loadings for H facet scales as well as those for A and to some extent C and O. These latter results reflect the fact that personality observer reports tend to be less differentiated than are personality self-reports. As we have suggested elsewhere (Ashton & Lee, 2010a), a likely explanation of this fact is that observers will use a target's overall level of "good" versus "bad" behavior

to infer that target's level of several independent personality traits that contribute to such behavior, whereas the target himself or herself will directly estimate his or her level of each of those traits separately, by considering his or her own motivational and emotional tendencies.

Thus, the foregoing results support the substantive interpretation of the H factor and undermine the interpretation of self-report bias: Variation in self-report H scores is similar to that of self-reports on the other HEXACO factors and to observer reports on H. Self/observer agreement for the H scale is rather high, at levels approaching those of the other HEXACO factors. Also, the self-report H scale has only weak loadings on a self-report bias factor as obtained in CFA or in targeted rotations of factors derived from self/observer data.

Evidence supporting the construct validity of self-reports of H also comes from studies that include objective behavioral measures of exploitation or of dishonesty. In some studies, participants with lower self-reports on H have shown greater exploitiveness or noncooperation when such behavior carries no costs, as shown by a stronger tendency to defect against unconditional cooperators in Prisoner's Dilemma tasks (Zettler, Hilbig, & Heydasch, 2013) and greater "free riding" behavior in the absence of punishment in a public goods game (Hilbig, Zettler, & Heydasch, 2012).

In other studies, researchers have created situations in which the participant may feel tempted to engage in minor cheating behaviors in order to gain (or avoid losing) a reward. For example, researchers have examined whether participants misreport the outcome of a given task (e.g., the number of questions correctly answered or the result of dice rolling or coin tossing) which is linked to monetary rewards (Hershfield, Cohen, & Thompson, 2012; Hilbig & Zettler, 2013) and whether participants keep some extra reward that is "mistakenly" awarded to them (Perugini & Leone, 2009). Across several samples included in these studies, self-reports of H have been found to be the strongest personality predictor of actual cheating behaviors. The correlations obtained in these studies (averaging in the .20s) are typical for personality predictions of a single behavioral observation.

The Theoretical Distinction Between H and A

Elsewhere we have explained our theoretical interpretations of the HEXACO factors, speculating on the likely adaptive trade-offs in the human evolutionary past for higher and lower levels of each dimension (Ashton & Lee, 2001, 2007). According to our interpretations, the H and A factors are both relevant to individual differences in cooperation or reciprocal altruism, but in different ways. High levels of H represent a tendency to cooperate with another person even when one could successfully exploit that individual, whereas high levels of A represent a tendency to cooperate with another person even when that individual appears to be somewhat exploitive (or, equivalently, not fully cooperative). In other words, a person with a low level of H tends to defect when there is an opportunity to exploit the other person, whereas a person with a low level of A tends to defect when there is some perception of being exploited by the other person.

These interpretations of H and A are consistent with the content of the factors as defined in lexical studies of personality structure, as summarized in an earlier section of this article (see detailed discussion in Ashton & Lee, 2007): H is defined by terms such as *honest* and *sincere* versus *greedy* and *opportunistic*, and A is defined by terms such as *tolerant* and *forgiving* versus *angry* (*choleric*) and *quick-tempered*.[4] Some recent research has examined the relations of self-rerports on H and A with behavior in simulated games designed to assess the two proposed aspects of reciprocal altruism. Hilbig, Zettler, Leist, and Heydasch (2013) examined participants' behaviors in two economic games called the dictator game and the ultimatum game, which were chosen to illustrate the contrast between H- and A-related cooperation. In the dictator game, two players who are strangers to each other are given some money, and one player is randomly chosen as the proposer, who is given the right to divide the money in any way he or she wishes. In a one-time dictator game, therefore, the proposer can take as much as he or she wants without the possibility of being punished by the other player (who is referred to as the responder). The proportion of money allocated to the responder thus indicates the proposer's level of active cooperation, a tendency not to exploit others when he or she could successfully do so (i.e., H-related altruism). In the ultimatum game, all the rules remain the same except that the responder may reject the proposed split of the endowment, in which case neither player gets a payoff. Therefore, the responder can punish the proposer for an allocation perceived as unfair. The maximum proportion of money that the proposer can allocate to himself/herself without rejection by the responder represents the responder's level of reactive cooperation, a tendency to tolerate others' exploitiveness (i.e., A-related altruism). Consistent with their hypothesis, Hilbig et al. (2012) found that proposers' active cooperation (n = 198) was correlated with H (.25, $p < .01$) but not with A (.11, *ns*), whereas responders' reactive cooperation (n = 212) was correlated with A (.19, $p < .01$) but not with H (-.01, *ns*).[5] These results have since been closely replicated in a larger participant sample (Thielmann, Hilbig, & Niedtfeld, in press).

The theoretical distinction between H and A is also reflected in the correlations of these dimensions with personality pathology involving low levels of these two forms of reciprocal altruism. Psychopathy and narcissism—both of which involve the exploitation of others—have been found to be much more strongly associated with low H than with low A (e.g., De Vries, Ashton, & Lee, 2008; Gaughan, Miller, & Lynam, 2012; Lee & Ashton, 2005; Lee et al., 2013;

Miller, Gaughan, Pryor, Kamen, & Campbell, 2009). In contrast, borderline personality features—which include (among other tendencies) angry and unforgiving reactions to perceived exploitation by others—have been found to be much more strongly associated with low A than with low H (e.g., Hepp, Hilbig, Moshagen, Zettler, Schmahl, & Niedtfeld, 2014; Thielmann et al., in press).

The theoretical interpretation of H and A as two aspects of a cooperative or reciprocally altruistic tendency can also explain the pattern of loadings of personality trait terms on these two factors (e.g., Lee & Ashton, 2008). Some terms represent roughly univocal indicators of H (e.g., *honest, sincere* versus *conceited, deceitful*) or of A (e.g., *agreeable, calm* versus *quick-tempered, stubborn*), and many represent same-signed blends of H and A (e.g., *accommodating, considerate, good-hearted*). But few if any terms represent opposite-signed blends of H and A. We believe that the prevalence of trait terms representing same-signed blends (i.e., high H/high A and low H/low A) reflects the fact that, in many contexts, the tendency to cooperate (versus defect) will depend on both of the reciprocally altruistic tendencies, with the relative importance of each depending on the context. As a result, many behaviors (and hence many personality traits) that involve some element of cooperation or of defection will be associated with both H and A, in consistent directions. But we suggest that there are few if any behaviors or traits that depend on the *contrast* between the two reciprocally altruistic tendencies represented by H and A. That is, H and A contribute additively to the likelihood of cooperation or defection, but do not contribute subtractively to the likelihood of any identifiable style of behavior. Individuals who show high H and low A (or vice versa) can be described in terms of H-related traits and in terms of A-related traits (e.g., sincere but stubborn, greedy but even-tempered), but apparently there are no single trait terms that neatly capture these combinations.

As noted in this section, the H and A factors are interpreted as two aspects of a tendency toward reciprocally altruistic behavior. We have also proposed that the E factor (again, Emotionality) represents a tendency toward kin altruism and other behaviors that reduce harm or gain help for one's kin (see detailed discussion in Ashton & Lee, 2007). Therefore, these three dimensions contribute independently to an overall tendency to engage in prosocial or altruistic versus antisocial or antagonistic behavior. Consistent with this interpretation, the HEXACO-PI-R facet scale of Altruism shows a strong projection on the vector defined by the combination of high H, high A, and high E, as do adjectives such as *kind, sympathetic*, and *generous*. As we have noted previously (Ashton & Lee, 2001, 2007), the plane formed by this vector and the X factor (eXtraversion) approximates that of the "interpersonal circle" (e.g., Saucier, 1992; Trapnell & Wiggins, 1990), being defined by one axis for the quality of social interaction (H + A + E) and one axis for the intensity of social interaction (X).[6]

Similarity and Assumed Similarity Between Social Partners in H and A

Some further illustration of the distinction between the HEXACO H and A factors is obtained from personality assessments of pairs of closely acquainted persons, such as close friends or romantic partners. Such relationships can be examined not only with regard to self/observer agreement (as discussed in an earlier section) but also with regard to the individuals' similarity of personality (as indicated by the intraclass correlation between personality self-reports within each dyad) and assumed (or perceived) similarity of personality (as indicated by the correlation of one partner's self-report with that same partner's observer report of the other partner's personality).

Lee et al. (2009) examined self-reports and observer reports on the six factor-level scales of the 100-item HEXACO-PI-R in closely acquainted university students, most of whom were same-sex friends, with some boyfriend/girlfriend pairs and a few sibling pairs. As Lee et al. reported, the H and O factors each showed a moderate level of similarity ($r \approx .25$) and a rather high level of assumed similarity ($r \approx .40$), whereas the remaining HEXACO factors all showed much lower levels. We have now accumulated a much larger data set ($N = 2{,}134$) that subsumes the samples of Lee et al., and the levels of similarity and assumed similarity for the six HEXACO factors are shown in Table 4. As seen in that table, the pattern reported by Lee et al. is clearly apparent. Of particular note in the current context is the contrast between the H and A factors: Similarity is higher for H (.24) than for A (.12), and assumed similarity is much higher for H (.45) than for A (.09). That is, friends and romantic partners tend to be somewhat similar in H, and tend to perceive even more similarity between themselves in that dimension; in contrast, there is very little similarity or assumed similarity for A.

McCrae et al. (2008), in a cross-cultural examination of similarity and assumed similarity in spouses' personalities as measured by the NEO PI-R, found a similar pattern of differences between facet-level traits. In discussing their findings, McCrae et al. asked, "Why is the Compliance facet [of NEO-PI-R Agreeableness] so much less important for selecting a mate than the Straightforwardness and Modesty facets?" (p. 1157). We suggest that the reason can be found in the fact that the latter facets are chiefly associated with the H factor, whereas the former facet is chiefly associated with the HEXACO A factor. (The Angry Hostility facet, which is chiefly associated with the low pole of HEXACO A, showed results broadly similar to those obtained for the Compliance facet.)

This difference between the H and A factors in their levels of similarity—and especially of assumed similarity—between social partners likely reflects the fact that H, but not A, is highly relevant to one's values concerning how one ought to interact with others (Lee et al., 2009). The low-H form of uncooperativeness involves an approach to

interactions whereby one seeks to cheat and defeat others for material and social-status gain, whereas the low-A form of uncooperativeness merely represents a disposition to respond sharply to any perceived exploitation by others. Consistent with this interpretation, the findings of Leone, Desimoni, and Chirumbolo (2012) indicate that the tendency to view the world as a competitive "jungle" is much more strongly associated with low H than with low A. Visser and Pozzebon (2013) likewise found that extrinsic life aspirations (e.g., attractiveness, financial success, social status; Kasser & Ryan, 1996) showed much stronger negative correlations with H than with A. The sharp contrast between H and A in the similarity and assumed similarity of close acquaintances represents an important difference between the two constructs, but it would never have been observed, let alone understood, if H and A had been treated as a single construct.

H, A, and E in the NEO-PI-R

Some proponents of five-dimensional models of personality structure have objected to the HEXACO structure on the grounds that the Big Five/FFM Agreeableness factor can accommodate the variance of the H factor. McCrae and Costa (2008, p. 167) pointed out that "honesty and humility correspond conceptually and empirically to the Straightforwardness and Modesty facets" of Agreeableness as assessed by the NEO-PI-R. They suggested that in the large variable sets of lexical studies of personality structure,

> relatively subtle distinctions may be sufficient to define different factors, and in this case it appears that the more introverted aspects of Agreeableness (Honesty and Humility) are distinguished from the more extraverted aspects. Both, however, can be subsumed in the broader Agreeableness factor found in the NEO-PI-R. (McCrae & Costa, 2008, p. 167)

Van Kampen (2012, p. 98) pointed out that some measures of Big Five Agreeableness likewise include traits associated with H, and concluded that it was therefore unnecessary to adopt the HEXACO framework in place of the traditional Big Five.

Neither McCrae and Costa (2008) nor Van Kampen (2012) have explained why these particular constructs—H and A—should so consistently emerge as separate factors in lexical studies of personality structure. If the Big Five/FFM did in fact represent the optimal structural model of personality, then one would expect that six-factor solutions should show a wide variety of "relatively subtle distinctions" rather than a consistent separation of the particular constructs represented by the core elements of H and A. Given that the results of lexical studies of personality structure form the ultimate basis of the Big Five (and even of the FFM; see McCrae, 1989), the finding of six replicable factors should lead proponents of five-dimensional models to revise those models. Even if those proponents preferred to consider HEXACO H and A as two large subcomponents of a very broad Big Five/FFM Agreeableness factor, one would expect them to advocate a model in which that factor—and *only* that factor—is explicitly divided into two subcomponents. One would also expect them to reorient the content of the Big Five/FFM Agreeableness and Neuroticism factors to correspond more closely to the A and E axes. However, the proponents of the Big Five/FFM have not yet revised their models in these ways.

As noted earlier, it is sometimes argued that because the NEO-PI-R Agreeableness factor contains some facet-level variables relevant to the H factor, there is no need to abandon the FFM in favor of the HEXACO model. The problem with this argument is that the five factors of the NEO-PI-R cannot fully capture the variance of the six-dimensional HEXACO space. In particular, the NEO-PI-R contains only two factors that correspond to the three-dimensional space spanned by the HEXACO H, A, and E factors: NEO-PI-R Agreeableness does capture much variance due to H and A (and some variance due to E), and NEO-PI-R Neuroticism does capture much variance due to E as well as some variance due to (low) A. But even so, much of the variance of these three HEXACO factors remains unexplained. For example, Gaughan et al. (2012) obtained self-reports on the NEO-PI-R and the 200-item HEXACO-PI-R from a sample of nearly 300 undergraduate students. The five factor-level scales of the NEO-PI-R scales achieved adjusted squared multiple correlations of .50, .51, and .52 in predicting the H, A, and E factor-level scales of the HEXACO-PI-R, whereas the six factor-level scales of the HEXACO-PI-R scales (with the Altruism facet not incorporated) achieved adjusted squared multiple correlations of .64 and .71 in predicting the NEO-PI-R Neuroticism and Agreeableness factors (see Table 1 of Gaughan et al.). Thus, the results of Gaughan et al. suggest that even the NEO-PI-R factors do not adequately capture the variance of H, A, and E.

HEXACO and FFM Measures in the Prediction of Variables Conceptually Related to H, A, or E

Variables Conceptually Related to H

The fact that the FFM does not fully account for the variance of the H, A, and E factors implies that some criterion variables associated with those factors will be less well predicted by measures of the FFM than by measures of the HEXACO model. With regard to predicting variables having some conceptual relevance to the H factor, several studies have compared HEXACO and FFM inventories. In most of those investigations, personality has been assessed using self-reports as well as observer reports from close acquaintances. The consistent finding of these investigations is that a variety of criterion variables having theoretical links to the H factor

are indeed better predicted by the HEXACO dimensions than by those of the FFM, across both self- and observer reports of personality.

For example, in one recent investigation, Lee et al. (2013) examined several criterion variables representing the domains of sex (e.g., short-term mating strategies), power (e.g., need for influence over others), and money (e.g., conspicuous consumption). All three domains were predicted better by the HEXACO model than by the FFM. Specifically, the 60-item version of the HEXACO-PI-R achieved higher adjusted multiple correlations than did the NEO-FFI, with differences in adjusted multiple correlations ranging from .08 to .21. A similar pattern of results was obtained when personality was assessed using observer reports from close acquaintances. In all of these analyses, the predictive advantage of the HEXACO model was in large part attributable to the inclusion of the H factor. A related finding of the same study was that the HEXACO factors were also able to account for the considerable predictive variance added beyond the FFM by the well-known "Dark Triad" variables (i.e., psychopathy, Machiavellianism, and narcissism; e.g., Paulhus & Williams, 2002).

One might argue that these patterns of results would have been somewhat different if the NEO-PI-R had been used to assess the FFM dimensions, because of the larger element of H-related variance in the NEO-PI-R as compared with the NEO-FFI (see, for example, Miller, Gaughan, Maples, & Price, 2011). In our view, the lack of H-related content in the most widely used brief measures of the Big Five/FFM would seem to indicate that such content is not considered to be central to any of those five dimensions. We suggest moreover that the recent popularity of the "Dark Triad" variables—whose common variance is essentially identical to low H (Lee et al., 2013)—is largely due to the weak representation of traits involving deceitfulness and conceitedness within most widely used measures of the Big Five/FFM.

In any case, even the use of the NEO-PI-R does not eliminate the predictive deficit of the FFM relative to the HEXACO model with regard to some important H-relevant criteria. Ashton and Lee (2008) showed that even when the FFM dimensions were assessed using the NEO-PI-R, the HEXACO dimensions showed higher correlations than did the FFM in predicting self-reports of materialism, social adroitness (i.e., manipulativeness), delinquency, and unethical decision making (for similar findings in the prediction of self-reported egoism, see De Vries, De Vries, De Hoogh, & Feij, 2009). For each of these variables, the H factor yielded higher correlations than did FFM Agreeableness (which in most cases yielded higher correlations than did HEXACO A). The differences in multiple correlations yielded by self-reports on the HEXACO and FFM averaged about .10 for delinquency and unethical decision making, and about .20 for materialism and social adroitness. The materialism and unethical decision making variables were also examined in relation to observer reports on the HEXACO and FFM, and the differences in multiple correlations were about the same as those obtained with personality self-reports. When a proxy H scale was constructed by isolating the Straightforwardness and Modesty facets from the remaining NEO-PI-R Agreeableness facets, the predictive validity of the resulting "FFM plus NEO-PI-R H" model equalled that of the HEXACO model for social adroitness, but remained well below that of the HEXACO model for delinquency, materialism, and unethical business decisions. The increments in validity gained by forming a NEO-PI-R-based H scale were appreciable, but would presumably have been greater if that inventory had contained a wider range of H-related facets.

Van Kampen (2012) commented on these results by stating that "Ashton and Lee (2008) have to admit" (p. 98, Footnote 4) that when a subfactor of NEO-PI-R Agreeableness is defined by the facets of Straightforwardness and Modesty, that subfactor can likewise add to the validity of the remaining five factors. But contrary to the implication of Van Kampen's phrase "have to admit," this result is fully consistent with our point that the validity of measures of the Big Five/FFM would be enhanced by including scores for a separate H factor (see also De Vries & Van Kampen, 2010).

Some anonymous reviewers of previous manuscripts have suggested that the H factor is merely the result of "elevating" the constructs assessed by the NEO-PI-R Straightforwardness and Modesty facets to the status of a factor-level variable. According to this argument, the predictive advantage of the H factor therefore represents a "measurement artifact" that would likewise be shown for other facets. It is of course true that any given facet-level variable may provide incremental validity beyond factor-level variables in predicting a theoretically relevant criterion (e.g., Ashton, Paunonen, & Lee, 2014). But we again remind readers that the H factor was not "invented" by elevating facet-level traits to the status of a factor; instead, it emerged as one of six replicated dimensions across lexical studies of personality structure in various languages. The limitation of the NEO-PI-R in representing the HEXACO structure is that traits associated with the HEXACO H, A, and E factors are represented within only two factor-level scales, with the consequence that those scales cannot properly accommodate those three factors.

Variables Conceptually Related to A

In contrast to the many studies examining variables conceptually related to H factor, there is little if any research examining whether variables conceptually related to the A factor would show a predictive advantage for the HEXACO model over the FFM. However, we would expect some modest advantage for those variables whose content suggests a close alignment with A but not with H or E. One such variable is the Agreeableness scale of Jackson, Paunonen, and Tremblay (2000)—a variable derived not from lexical research but from previous measures (Jackson, 1984) of the

psychological needs for abasement, defendence (reversed), and aggression (reversed). In the data set of Goldberg's (1999) Oregon community sample, the five NEO-PI-R factor scales produced a multiple correlation of only .55 with the Jackson et al. Agreeableness scale (the highest correlations being .44 with NEO-PI-R Agreeableness and –.36 with NEO-PI-R Neuroticism), which correlated more strongly (r = .69) with HEXACO-PI-R Agreeableness (but only .28 with HEXACO-PI-R Honesty-Humility).[7]

Variables Conceptually Related to E

In addition to research studies showing that H-related criteria are better predicted by the HEXACO model than by the FFM, several investigations have reported analogous findings for E-related criteria. McKay and Tokar (2012) found that "realistic" vocational interests (e.g., in mechanical, construction, and outdoor work) were better predicted by HEXACO scales than by FFM scales (multiple correlations of .40 versus .18 among men and of .31 versus .20 among women), with the E factor showing the largest correlation. Ashton, Lee, Visser, and Pozzebon (2008) found that self-report measures of phobic tendencies involving physical dangers (Cutshall & Watson, 2004) were better predicted by HEXACO scales (multiple correlations of .62 for self-reports and .49 for observer reports) than by FFM scales (multiple correlations of .49 for self-reports and .36 for observer reports), with the E factor showing the largest correlation.

A further example of the importance of the E factor comes from the study of Gaughan et al. (2012) described earlier in this section. Gaughan et al. found that self-report psychopathy scores were better predicted by HEXACO than by FFM scales (squared multiple correlations of .64 versus .50); interestingly, this result occurred even though the FFM Agreeableness scale was slightly more strongly negatively associated with psychopathy than was H. The predictive advantage of the HEXACO measure was largely due to E, which showed strong negative correlations with psychopathy even though FFM Neuroticism did not. The lack of a negative association between FFM Neuroticism and psychopathy is attributable both to the absence within Neuroticism of the fearful, dependent, and sentimental aspects of E and also to the presence within Neuroticism of anger (which has modest *positive* associations with psychopathy). Ashton, Lee, Pozzebon, Visser, and Worth (2010) found a similar result in that self-reports of status-driven risk taking (a construct derived from the evolutionary psychology literature) showed strong negative correlations with HEXACO H and E (rs = −.49 and −.45, respectively); the multiple correlation yielded by the HEXACO scales (.65) exceeded that yielded by FFM scales (.53), of which only FFM Agreeableness correlated substantially with status-driven risk taking (−.48).

The inclusion of the E factor within the HEXACO framework also allows for a more complete representation of sex differences in personality than does the FFM. For example, in the data set of Goldberg's Oregon community sample, participant sex showed a multiple correlation of .50 with the HEXACO-PI scales (due mainly to the .42 zero-order correlation with E) but only .37 with the NEO-PI-R scales. In Korean participant samples, sex differences on the NEO-PI-R have been extremely small, not reaching one fourth of a standard deviation unit for any scale (Costa, Terracciano, & McCrae, 2001), but women have averaged about one standard deviation unit higher than do men on the E scale of the HEXACO-PI-R (Yoo, Lee, & Ashton, 2004). (The greater sex differences observed for HEXACO-PI-R E are not attributable to items describing preferences for gender-related interests—for example, in football, mechanical work, child care, or fashion—as such items are not included in the scale.) As noted earlier in this article, our theoretical interpretation of the HEXACO E factor involves a broad construct of kin altruistic tendency. This construct subsumes E-related traits such as empathic concern, harm-avoidance, and help-seeking, all of which have previously been discussed in terms of sex differences favoring women (see review in Ashton & Lee, 2007). In our view, the omission from the FFM of much E-related variance—and hence of some aspects of personality showing considerable and theoretically meaningful sex differences—is a significant limitation of that model.

Other Variables

The results described in this section show that a wide array of personality-related criteria are better predicted—and their underlying constructs better understood—when personality structure is conceptualized in terms of the HEXACO model rather than the FFM. The HEXACO model has some important advantages over the FFM in accommodating variables that are located in certain regions of the space spanned by the H, A, and E factors. But most regions of the personality space—those spanned by the X, C, and O factors, as well as parts of those spanned by H, A, and E—will be represented equally well by the NEO and HEXACO inventories. Moreover, each of the inventories contains some facet-level variables that are not directly represented by the other; therefore, either inventory may slightly outperform the other in the prediction of criteria that show some strong conceptual link with the facets of one inventory but not the other. In the case of self-report personality scales predicting self-report criteria, however, some caution is warranted: The scales of the NEO inventories, as compared with those of the HEXACO inventories, appear to have more variance attributable to biases in self-report (presumably representing "halo" or socially desirable responding; for example, Anusic, Schimmack, Pinkus, & Lockwood, 2009) and less variance that is shared with the corresponding scales in observer reports as provided by close acquaintances (Lee & Ashton, 2013). Thus, when self-reports on the NEO inventories and the HEXACO inventories are used in predicting *self-report* criterion variables, shared method variance will tend to

inflate the apparent validity of the former inventories more than that of the latter.

Summary and Conclusion

Research undertaken in the years since our last review of the HEXACO model of personality structure allows the following conclusions:

Recent evidence from lexical studies of personality structure confirms that a common set of six—and not more than six—dimensions is recovered across diverse languages. The HEXACO model of personality structure is based on these six lexical dimensions, and operationalizations of the HEXACO factors correspond closely to the lexical factors. Given that lexical research forms the ultimate basis of the Big Five and even of the FFM, the finding of six rather than only five replicable dimensions suggests that the widespread adoption of five-dimensional personality models was premature.

The construct validity of self-reports of H could be questioned on the grounds that persons low in H might falsely boast of being high in H. However, several lines of evidence support the construct validity of self-reports of H, at least when personality is assessed under anonymous, low-stakes conditions typical of psychological research. In particular, self-reports of H show score distributions similar to those for the other HEXACO factors, moderately high levels of agreement with observer reports from close acquaintances, weak loadings on a factor of self-report social desirability bias, and modest negative correlations with exploitive or dishonest behaviors as observed in laboratory settings.

The H and A factors are interpreted as complementary aspects of a tendency toward reciprocal altruism. This theoretical interpretation has been supported in recent game theoretical research, whereby H predicts fairness of money allocations in the dictator game whereas A predicts acceptance of relatively unfair money allocations in the ultimatum game. A similar "double dissociation" between H and A is observed across studies of personality disorder symptoms, whereby low H predicts psychopathic and narcissistic tendencies (which involve exploitation of others) whereas A predicts borderline tendencies (which involve strong reactions to perceived exploitation by others).

The interpretations of H and A as two distinct sources of cooperative or reciprocally altruistic tendency also explain some results from lexical studies of personality structure: Some terms load roughly univocally on H or on A (hence representing each reciprocal-altruistic tendency in isolation), and many terms show same-signed loadings on both H and A (hence representing an overall reciprocal-altruistic tendency), but few if any terms show opposite-signed loadings on H and A.

The H and A factors contrast sharply in the similarity and the assumed similarity between close acquaintances, such as friends or romantic partners: H shows greater similarity and much greater assumed similarity than does A. This finding likely reflects the differential relevance of H and A to values, aspirations, and worldviews: low H—but not low A—reflects an approach toward life in which one seeks wealth and status by cheating and defeating others.

In relation to the classic Big Five factors as operationalized in various brief inventories, the HEXACO E and A factors represent an alternative rotation of Big Five Neuroticism and Agreeableness, and the H factor is weakly associated only with Big Five Agreeableness. The NEO-PI-R operationalization of the FFM contains considerably more H variance within its Agreeableness factor, but the five NEO-PI-R dimensions do not fully capture the variance associated with HEXACO H, A, and E. The HEXACO framework has outperformed the FFM in accommodating a wide range of variables conceptually relevant to the H and E factors, including delinquency, unethical decision-making, materialism, sociosexuality, phobic tendencies, psychopathy, status-driven risk taking, and "realistic" vocational interests. In addition, the E factor also shows theoretically appropriate sex differences that are not represented within the FFM. These patterns of results are not attributable to method variance associated with self-report, as in most cases observer reports of personality were also obtained and yielded similar findings; moreover, self-report biases tend to be larger for measures of the FFM dimensions than for measures of the HEXACO dimensions.

To summarize, recent research has supported our earlier suggestion that the HEXACO framework—with its three separate factors for H, A, and E—provides a satisfactory empirical and theoretical account of personality variation. Earlier five-dimensional models of personality structure do not fully accommodate the variance of the H, A, and E dimensions, which are represented in those models by only two factors. We believe that the evidence of the past several years makes it clear that in the case of personality structure, two out of three is not good enough.

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Notes

1. For very brief measures of the HEXACO factors or similar constructs, see De Vries (2013) and Thalmayer, Saucier, and Eigenhuis (2011). Instruments suitable for use in

elementary school and middle school children are currently being developed.

2. The HEXACO-60 Honesty-Humility (H) and Agreeableness (A) scales intercorrelated .22 in this sample. Note that 3 items from the HEXACO-60 Extraversion (X) scale were not administered; this scale is therefore computed from the remaining 7 of its original 10 items. The missing items were those of the Social Self-Esteem facet, which correlates negatively with Big Five/Five-Factor Model (FFM) Neuroticism but had not yet been incorporated into the HEXACO Personality Inventory at the time when this inventory was administered to the Oregon sample. Therefore, the results of Table 3 will tend to underestimate the strength of the negative association between X and Big Five/FFM Neuroticism. Note also that the results of Table 3 will tend to underestimate slightly all of the correlations, because the administration of the HEXACO items took place several years after administrations of the various Big Five/FFM items.
3. An alternative interpretation of these findings is that a person will tend to associate with others whose observer reports of his or her H levels will be biased in the same way that his or her own self-reports are biased. That is, a person with inflated self-reports of H will associate with persons who overestimate his or her levels of H, and a person with deflated self-reports of H will associate with persons who underestimate his or her levels of H. We consider this an unparsimonious and unlikely interpretation, except possibly in circumstances where the pairs of participants differ in some demographic variable (e.g., generation, nationality) that could be associated with biases in both self- and observer reports.
4. A reviewer correctly pointed out that anger is elicited not only by direct exploitation but more generally by obstruction (intentional or otherwise) of desired goals. Note, though, that we consider exploitation broadly to include any action—or any *non*-action—that benefits oneself at cost to another individual; thus, this category includes a wide range of inconsiderate actions and failures to act. A recent evolutionary interpretation of anger (Sell, 2011), which was apparently developed independently of our interpretation of low A, considers anger as a response to cues that an individual "does not weight the angry individual's welfare highly when making decisions that impact them both" (p. 389).
5. A study by Perugini, Tan, and Zizzo (2010) found that HEXACO A was more strongly associated than was H with contributions in a public goods involving repeated iterations and real monetary outcomes for participants. Perugini et al. found that the mean donations decreased across iterations of the game; this presumably reflected a tendency for participants who contributed to the common pool to avoid being exploited by participants who made smaller (or zero) contributions. The association of A with contribution amounts likely reflects a tendency for participants who readily become angry (i.e., persons low in A) to reduce their contributions quickly in response to the low contributions of others.
6. An important construct related to cooperation is that of interpersonal trust. In the HEXACO framework, the tendency to be trusting of others is associated with higher A and to some extent higher H and higher X. We suggest that this inclination to assume the best about others is greater in persons who are not inclined to perceive others as exploiting them (i.e., higher A), who are not themselves inclined to exploit others (i.e., higher H), and who feel confident and optimistic in general (i.e., higher X).
7. The Jackson et al. scale was administered in the fall of 1999, whereas the NEO-PI-R and HEXACO-PI were administered in the summer of 1994 and the spring of 2003, respectively.

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