Where's the H? Relations between BFI-2 and HEXACO-60 scales

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ABSTRACT

We examined the relations between the scales of the Next Big Five Inventory (BFI-2) and the 60-item version of the HEXACO Personality Inventory—Revised (HEXACO-60) using self-reports from a Canadian undergraduate sample ($N = 700$). Results showed generally close correspondences between conceptually similar HEXACO-60 and BFI-2 scales, although HEXACO-60 Emotionality was somewhat less well accounted for by the BFI-2 scales than BFI-2 Neuroticism was accounted for by HEXACO-60 scales. However, the HEXACO-60 Honesty-Humility scale was largely unaccounted for by the BFI-2 scales. Results suggest that the BFI-2, despite its psychometric soundness, would not be suitable for use when studying individual difference variables or personality phenomena in which Honesty-Humility might be implicated.

1. Introduction

The *Journal of Personality and Social Psychology* recently published an article reporting on the construction and psychometric properties of a personality inventory, the Next Big Five Inventory (BFI-2; Soto & John, 2017). In our opinion, the results reported in that article clearly indicate that the BFI-2 is a psychometrically sound instrument, as would be expected given the thorough process of test construction described by its authors.

However, we also believe that the publication of this article will lead some researchers to use the BFI-2 as a summary measure of personality in the mistaken belief that it captures all of the major dimensions of personality. Soto and John (2017) did not actually claim such comprehensiveness for the BFI-2; instead, they claimed only that the BFI-2 is a psychometrically sound brief measure of the Big Five personality factors. However, because the Big Five framework was formerly the best available summary of personality variation, many readers of that article are likely to use the BFI-2 as a measure of the full set of basic personality factors.

As explained elsewhere (e.g., Ashton et al., 2004; Ashton & Lee, 2007; Lee & Ashton, 2008), the structure of personality characteristics is best summarized by a set of six dimensions called the HEXACO factors. The evidence for this assertion is the repeated emergence of this set of factors (but no larger set) from lexical studies of personality structure in various languages. The critical advantage of lexical studies is that their variable sets—consisting of the familiar personality-descriptive adjectives of a given language—can be taken as a reasonably unbiased, representative sampling of the population of subjectively important personality traits. Findings from standard lexical studies in over a dozen languages—representing several branches of the Indo-European family as well as several mutually unrelated non-Indo-European languages—have repeatedly recovered the six HEXACO factors but not any set of seven or more factors. This finding of six cross-language replicated dimensions contrasts with the finding from earlier English-language lexical studies—generally based on much smaller and/or less representative lexical variable sets—that produced only the set of five dimensions known as the Big Five.[1,2]

Three factors of the HEXACO and Big Five frameworks are highly similar: Extraversion, Conscientiousness, and Openness to Experience. Two other HEXACO factors (Agreeableness and Emotionality) overlap considerably with two Big Five factors (Agreeableness and Neuroticism) but with some shifting of the defining content of the factors, such that

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[1] As pointed out elsewhere (e.g., Ashton et al., 2014), this is not a claim that this six-factor structure would emerge in lexical studies of all languages. On the contrary, we think that the replicability may well be limited to those languages currently spoken by persons living in modern, highly educated societies. In languages having very small populations and/or an exclusively oral tradition, it is possible that much less differentiated structures will be recovered, such as the set of two dimensions described by Saucier et al. (2014).

[2] Analyses of results from lexically-based studies involving an alternative and broader criterion for selecting adjectives (Saucier, 2009) have also produced a six-factor structure that is similar, though not identical, to the HEXACO framework.

each set can to a large extent be understood as a rotational variant of the other (see, e.g., Ashton, Lee, & De Vries, 2014). The HEXACO Honesty-Humility factor has no direct counterpart in the Big Five system, but some measures of the Big Five incorporate some defining traits of Honesty-Humility within their Agreeableness factor.

There are noteworthy differences between various measures of the Big Five in their relations with the HEXACO factors, as operationalized by the scales of the HEXACO-PI-R. As reported by Ashton and Lee (in press), the original Big Five Inventory (BFI; John, Donahue, & Kentle, 1991) captures reasonably well the variance of HEXACO Agreeableness and Emotionality, but captures very little of the variance of Honesty-Humility. In contrast, the NEO Personality Inventory—Revised (NEO-PI-R; Costa & McCrae, 1992) captures considerably more variance from HEXACO Honesty-Humility (mainly within the NEO-PI-R Agreeableness factor), but this is offset by variance not captured in HEXACO Agreeableness and Emotionality, such that the total amount of missing HEXACO variance for the NEO-PI-R is about the same as for the BFI. That total amount of missing variance is substantial, nearly equal to that which would be lost by discarding one of the Big Five factors.

In the present report, we examine the BFI-2 in relation to a similar-length version of the HEXACO-PI-R, to find out whether the BFI-2/HEXACO relations are similar to the BFI/HEXACO relations previously observed. Because the development of the BFI-2 did not involve any attempt to increase the representation of Honesty-Humility-related traits, we expect that it will not differ substantially from the BFI in its relations with the HEXACO scales. In particular, we expect that the BFI-2 scales will account for very little variance in Honesty-Humility but will account well for variance in the remaining HEXACO scales, apart from some relatively small deficits in capturing the variance of HEXACO Emotionality and/or Agreeableness.

The potential absence of Honesty-Humility variance from the BFI-2 is important, because the validity and the significance of that construct have been well established in previous research. For example, self-reports of Honesty-Humility are correlated substantially with observer reports as provided by persons who know the target very well (e.g., De Vries, Lee, & Ashton, 2008; Lee & Ashton, 2017; Zettler, Lang, Hülsheger, & Hilbig, 2016) and are also correlated substantially with objectively recorded unselfish behavior in experimental games (whether hypothetical or incentivized; e.g., Heck, Thielmann, Moshagen, & Hilbig, 2018; Hilbig, Zettler, & Heydasch, 2012; Hilbig, Zettler, Leist, & Heydasch, 2013). In addition, self-reports of low Honesty-Humility are related to self-reports of a wide variety of important psychological constructs, such as delinquency, social adroitness, materialism, unethical business decisions, and "quid pro quo" sexual harassment proclivity (Ashton & Lee, 2008), (lack of) guilt proneness (Cohen, Panter, & Turan, 2012; Cohen, Wolf, Panter, & Insko, 2011), "competitive jungle" worldviews (Leone, Desimoni, & Chirumbolo, 2012), extrinsic (versus intrinsic) life aspirations (Visser & Pozzebon, 2013), and the "dark triad" variables of Machiavellianism, psychopathy, and narcissism (Book, Visser, & Volk, 2015; Hodson et al., 2018; see also De Vries & Van Kampen, 2010). Finally, the pattern of sex- and age-related differences in Honesty-Humility matches closely (inversely) the corresponding demographic differences in crime rates (Ashton & Lee, 2016).

Note that, because the BFI-2—unlike its predecessor—was explicitly designed to produce scores for facet-level traits within each of its five broad factors, we can also examine the joint factor structure of the 15 facet scales of the BFI-2 and the 24 facet scales of the (60-item) HEXACO-PI-R. In this way we can find out whether any of the BFI-2 facets might serve as markers of Honesty-Humility and, more generally, how the various BFI-2 facets fit within the HEXACO factor space and vice versa.

2. Method

Participants were 700 undergraduate students (61% women, 38% men, 1% other or not reported) at Canadian universities who completed

a series of personality inventories and related instruments in exchange for course credit or monetary payment.[3] The median age of participants was 19 years, with a range from 17 to 66.

Questionnaires were administered in paper-and-pencil format in research laboratories, with a typical session involving about 10 participants, each of whom responded independently. For nearly half of the participants, the HEXACO instrument was in fact the HEXACO-100, but for the purpose of the present study we scored the subset of HEXACO-100 items that belong to the HEXACO-60 scales so that the HEXACO instrument would be equal in length to the BFI-2, which contains 60 items. This subset of participants completed the HEXACO-100 and the BFI-2 (roughly half in each order). The remaining participants first completed the BFI-2, then the HEXACO-60, and then some other personality and related instruments. Both the HEXACO and the BFI-2 instruments were administered in paper-and-pencil format with their standard self-report instructions, including their standard five-point response scales. Researchers may obtain the dataset by contacting the corresponding author.

3. Results

Descriptive statistics and alpha reliabilities of the factor-level scales are shown in Table 1. All scales had means relatively close to their scale midpoints, and alphas ranged from 0.76 to 0.89 for the BFI-2 and 0.75 to 0.84 for the HEXACO-60.[4]

Table 1 also shows correlations between the factor-level scales of the BFI-2 and HEXACO-60. As seen in that table, each inventory showed rather small interscale correlations, all with absolute values below 0.30. The mean intercorrelation—if one reverses the signs of correlations involving BFI-2 Neuroticism or HEXACO-60 Emotionality—was 0.17 for the BFI-2 and 0.07 for the HEXACO-60. With regard to cross-inventory correlations, these were quite high for the two inventories' variants of Extraversion (0.81), Conscientiousness (0.79), and Openness (0.79). BFI-2 Agreeableness correlated 0.59 with HEXACO-60 Agreeableness and 0.33 with HEXACO-60 Honesty-Humility. BFI-2 Neuroticism correlated 0.62 with HEXACO-60 Emotionality, −0.47 with HEXACO-60 Extraversion, and −0.33 with HEXACO-60 Agreeableness. No other cross-inventory correlations had an absolute value reaching 0.25.

Table 2 shows the adjusted squared multiple correlations achieved (a) by the six HEXACO-60 factor scales in predicting each of the five BFI-2 factor scales and (b) by the five BFI-2 factor scales in predicting each of the six HEXACO-60 factor scales (see Ashton & Lee, in press, for a detailed explanation of this analytic strategy).[5] The HEXACO-60 scales jointly accounted for similar proportions of variance in each of the BFI-2 scales, with a range from 48% (Agreeableness) to 68% (Extraversion) and a mean of 60.6%. The BFI-2 scales jointly accounted for very little variance in the HEXACO-60 Honesty-Humility scale (12%) but accounted for much more variance in the other HEXACO-60 scales, with a range from 47% (Emotionality and Agreeableness) to 72% (Extraversion); overall, the BFI-2 scales accounted for an average of 51.0% of the variance in the six HEXACO-60 scales. The ratio of these two mean values is 1.19, which means that the HEXACO-60 scales accounted for 5.95 variables' worth of BFI-2 scales. This ratio indicates that the HEXACO-60 scales do provide considerable additional information beyond that given by the BFI-2 scales; had this ratio instead

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[3] Our sample size was determined partly by the availability of research participants, but we also aimed to obtain a relatively large sample size so that the obtained results from our sample would be close to the population values.

[4] See Soto and John (2017) and Lee and Ashton (2018) for information about the factor structure of each instrument in previous samples.

[5] To give readers further details of the results of the multiple regression analyses, we provide in the Supplementary Appendix for each regression equation the commonality coefficients (Nimon, Lewis, Kane, & Haynes, 2008) as well as standardized regression coefficients.