

Title:

**Initial validation of the English HEXACO Adjective Scales (HAS)**

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**The paper with the original version of the HAS (Italian validation) is**

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## **Abstract**

The HEXACO model is a personality traits structure consisting of six main dimensions: Honesty-Humility, Emotionality, Extraversion, Agreeableness, Conscientiousness, and Openness to Experience. While the model is grounded on lexical studies, researchers have used brief, contextualized sentences to measure these traits (item format). Adjective lists also can be used to measure personality. The HEXACO Adjective Scales (HAS) was recently developed in Italian to assess these traits using 60 adjectives. The current study aimed to validate the English translation and adaptation of the HAS. The results showed that the translated adjectives were effective at measuring the six dimensions of personality defined by the HEXACO model. The measured dimensions were found to have good internal consistency, convergent validity, and criteria validity. Therefore, future research can reliably use the HAS in English by adopting the marker list provided as an appendix to this report. The HAS provides an alternative and effective way to measure HEXACO personality dimensions using adjectives also in English.

## Introduction

The most renowned theoretical framework for categorizing personality into main dimensions is the five-factor model (McCrae & Costa, 1987), although lexical studies have revealed evidence supporting six main personality dimensions (Ashton & Lee, 2020; Ashton, Lee, et al., 2004). Indeed, the HEXACO model (Lee & Ashton, 2004) divides the personality space into Honesty-Humility (H), Emotionality (E), eXtraversion (X), Agreeableness (vs. anger) (A), Conscientiousness (C), and Openness to Experience (O) (Ashton & Lee, 2007).

The HEXACO Personality Inventory-Revised (HEXACO-PI-R) is commonly used to assess the six dimensions of the HEXACO model and is available in various versions, including 200-, 100-, and 60-item formats (Ashton & Lee, 2009; Lee & Ashton, 2004). The inventory has been translated into many languages (Thielmann et al., 2020). Despite its lexical foundation, the measures on the HEXACO-PI-R consists of brief, contextualized sentences that pertain to relevant behaviors, emotions, thoughts, and motivations.

A different approach to measuring personality involves the use of adjective lists, such as those used to assess the five-factor model traits (Goldberg, R, 1992; Perugini & Leone, 2008; Piedmont et al., 1991). This method relies on the lexical hypothesis (Wood, 2015), which posits that adjectives can capture various aspects of an individual's self-concept as reflected in their self-evaluations or evaluations by others using personality-related descriptive terms (Goldberg, 1981, 1993).

Personality can be evaluated using both items and adjectives. Each format has its advantages and disadvantages. The item format has the advantage of contextualizing and referring to actual behaviors, emotions, thoughts, and motivations, whereas the adjective format is more holistic, quicker to administer and easier for participants to read and comprehend. Adjective measures have the advantage of not being tied to specific actions or contextualized descriptions, making them applicable in various contexts. Adjectives are particularly promising in ecological momentary assessments, a type of study that is increasingly popular in personality research (Fleeson &

Gallagher, 2009; Horstmann et al., 2020), where quick and easy to understand questions facilitate the compliance of participants.

Our research group has recently developed and validated the HEXACO Adjective Scales (HAS) in Italian (Romano et al., 2022), which consists of 60 adjectives designed to assess the six primary dimensions of personality as defined by the HEXACO model.

The purpose of this study is to present the preliminary validation of the English translation and adaptation of the HAS.

## **Materials and Methods**

### *Participants*

Participants were recruited from native English speakers through Prolific Academic. Participation was on a voluntary basis, and we offered 3 € of reimbursement. The study was conducted online. The final sample included 310 participants (155 females and 155 males),  $M_{\text{age}} = 40.7$ ,  $SD = 12.4$ . Concerning the education level, 181 had a university degree, 120 had a high school diploma, 5 had a middle school diploma, 4 completed only the primary schools. Participants gave informed consent. All studies were approved by the local Ethical Committee and conducted following the guidelines of the ethical standards of the Declaration of Helsinki (World Medical Organization, 1996).

Fixing alpha at .05 and Power at .8, a sample size of 300 will be sensitive to significant correlations as small as  $r = .16$ .

### *Procedure*

After providing informed consent, participants completed in a fixed order the HAS adjective list of 60 adjectives, the 60 items version of the HEXACO-PI-R (Ashton & Lee, 2009), the 51 items of the behavioral criteria. After that, we administered 24 additional adjectives providing potential alternatives for an HAS translation in English, including conceptual and semantic synonyms of some of the Italian adjectives.

Finally, they completed the Self-Report-Single Item indicator, a self-reported attention check (Meade & Craig, 2012). The completion of the entire survey required around 15 minutes.

### *Materials*

#### *English HAS and additional adjective markers*

The final set of 60 HAS adjectives was translated into English using a back-translation procedure. The list was finally double-checked by a English native speaker, who is also proficient in Italian.

Participants rated the extent to which each of the 60 adjectives described them on a scale from 1 (*it does not describe me at all*) to 7 (*it describes me completely*).

We collected data from 24 additional adjectives (4 per trait, 2 loading on the positive pole and two on the negative) as backup markers, as explained before.

See the appendix reporting the exact instructions used for the HAS administration, the list of the 60 adjectives composing the English HAS, and the markers presenting with reverse code.

#### *HEXACO-60 (Ashton & Lee, 2009).*

The short version of the HEXACO-PI assesses six major personality traits with 10 items each: Honesty-humility ( $\alpha = .76$ ,  $\omega = .81$ ), Emotionality ( $\alpha = .76$ ,  $\omega = .82$ ), eXtraversion ( $\alpha = .80$ ,  $\omega = .87$ ), Agreeableness vs anger ( $\alpha = .75$ ,  $\omega = .85$ ), Conscientiousness ( $\alpha = .75$ ,  $\omega = .83$ ), and Openness to experience ( $\alpha = .76$ ,  $\omega = .79$ ).

#### *Behavioral Acts.*

The full list of criteria presented by Grucza and Goldberg (2007) clustered into six classes of behavioral acts was adopted. This included: Undependability: 7 items,  $\alpha = .70$ ,  $\omega = .72$  ; Communication: 8 items  $\alpha = .77$ ,  $\omega = .87$ ; Creativity: 10 items  $\alpha = .71$ ,  $\omega = .85$ ; Friendliness: 8 items,  $\alpha = .85$ ,  $\omega = .88$ ; Drug Use: 12 items,  $\alpha = .89$ ,  $\omega = .93$ ; Erudition: 6 items,  $\alpha = .81$ ,  $\omega = .87$ .

#### *Analysis Plan*

We run a Principal component analysis for a 6-component solution after ipsatization for the 60 marker adjectives of the HAS to recover the six-factor structure. Adjectives loading weakly on the expected

trait will be candidate for substitution with one of the backup adjective markers. The potential backup is selected to load on the same pole of the same dimension and to have the highest correlation with the HEXACO-PI-R target trait (extension analysis, Gorsuch, 1997). We then checked factor congruency with the Tuckers' Phi index. We measured the internal consistency of the different scale scores with alpha and omega indices. Finally, the analysis plan included a series of Pearson's correlations. We will correlate the HAS scale scores with the HEXACO-60 scale scores and the behavioral acts scores.

The study is pre-registered on the as-predicted platform (<https://aspredicted.org/3t3si.pdf>).

## Results

### *Factorial Structure*

The factorial structure has been recovered satisfactorily for all the sixty items.

We substituted the original translation of four adjectives. In two cases the changes adopted are close synonym (*semantic synonyms*) that empirically worked better in this English speaking sample than our original translation did. SNOB has been substituted by POSER and IMPERTURBABLE by UNEMOTIONAL. Two other adjectives have been replaced with adjective closely related (*conceptual synonyms*) to the original translation although they are not semantic synonyms: INCONSTANT has been replaced by UNDISCIPLINED and LITIGIOUS by HOSTILE. These substitutions were performed following an iterative procedure based on the empirical results of subsequent standard and extension PCAs, after a first PCA that allowed us to identify four potential markers that could have been replaced because of their weak or misplaced loadings on the appropriate dimension. Notably, the substituted adjectives are more frequently used in common language than the original markers.

The six-component solution, after the four substitutions, explains 41% of variance. The factorial solutions have been rotated with a Procrustes rotation, using the Italian original loading matrix as a target matrix.

The average Tucker's phi factor congruency index between the Italian and the English solutions is .90.

Adjective	Reverse Code	H	E	X	A	C	O
haughty	R	-0.48	0.34		0.41		
greedy	R	-0.48				0.32	
dishonest	R	-0.53				0.35	
faithful		0.47					
hypocritical	R	-0.5					
loyal		0.66					
honest		0.73					
sincere		0.62					
poser	R	-0.43					
humble		0.39			-0.36		
courageous	R		0.31				
emotional			-0.74				
fragile			-0.8				
impassive	R		0.36				
unemotional	R	-0.44	0.65	0.3			
hypersensitive			-0.76				
fearful			-0.65				
sure	R		0.36	-0.31	-0.33		
stable (emotionally)	R		0.61		-0.37		
vulnerable			-0.74				
cheerful				-0.61			
asocial	R			0.58			
exuberant				-0.59			-0.34
extraverted				-0.76			
introverted	R			0.76			
silent	R			0.63			
sociable				-0.79			
solitary	R			0.68			
shy	R			0.67			
vivacious				-0.54			
aggressive	R				0.67		
calm			0.59		-0.54		
choleric	R				0.7		
hostile	R				0.56		
peaceful					-0.65		
patient					-0.68		
overbearing	R				0.39		
quarrelsome	R				0.65		
tolerant					-0.49		
tranquil			0.39		-0.58		
attentive		0.37				-0.47	
conscientious		0.31				-0.36	
diligent						-0.59	
disorganized	R					0.73	
inattentive	R					0.51	
inaccurate	R	-0.3				0.51	

reckless	R				0.32	0.4	
undisciplined	R					0.66	
organized						-0.75	
accurate			0.32			-0.58	
who appreciate art							-0.71
uninterested in art	R						0.65
conventional	R						0.52
curious							-0.47
innovative							-0.61
intellectual							-0.41
uncreative	R						0.62
original				-0.36			-0.41
unoriginal	R						0.59
traditional	R					-0.31	0.46

Note. Only loadings  $> .|30|$  are reported.

### Scale Scores

All the six trait scales had satisfactory levels of internal consistency. Markers can be reliably aggregated to calculate scale scores. We averaged values after reverse coding the reversed key markers.

Trait	N of Adjectives	mean	SD	$\alpha$	$\omega$
H	10	5.65	.68	0.81	0.85
E	10	3.88	.90	0.82	0.86
X	10	3.91	.96	0.85	0.9
A	10	5.20	.86	0.85	0.9
C	10	5.30	.75	0.82	0.92
O	10	4.60	.79	0.75	0.95

Note. Internal consistency of each scale. Mean and standard deviation (SD) of each scale score is reported.

### Convergent Validity

We hypothesize that the HAS measures will converge with corresponding HEXACO-60 scales with a large effect size ( $r > .5$ ). This was achieved for all the dimensions.

		HAS					
		H	E	X	A	C	O
HEXACO-PI-R	H	<b>0.55***</b>	0.07	-0.13*	0.32***	0.29***	0.05
	E	0.09	<b>0.61***</b>	-0.1	-0.19***	0.07	-0.01
	X	-0.02	-0.19***	<b>0.76***</b>	-0.21***	0.13*	0.2***
	A	0.32***	-0.17**	-0.13*	<b>0.7***</b>	0.1	0.13*
	C	0.32***	-0.05	0	0.16**	<b>0.62***</b>	0.12*
	O	0.12*	-0.1	0.03	0.28***	0.11	<b>0.65***</b>

Note. Correlations among homologous scales are in bold. HAS = HEXACO Adjective Scales. \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .



### Criteria Validity

H is significantly associated with Undependability with a medium effect size and Drug use with a small effect size. E is associated with Communication and Drug Use with a small effect size. X is associated with Friendliness with a medium effect size and Drug Use with small effect size. A is associated with Undependability and Drug Use with a small effect size. C is associated with Undependability with a strong effect size. It is also associated with Drug Use with a small effect size. Finally, O is associated with a medium effect size with Creativity and a small effect size with Communication.

<b>Behavioural Criteria</b>	<b>HAS</b>					
	<b>H</b>	<b>E</b>	<b>X</b>	<b>A</b>	<b>C</b>	<b>O</b>
<i>Undependability</i>	-0,33***	0,08	-0,01	-0,17**	-0,50***	0,05
<i>Communication</i>	0,08	0,17**	0,08	0,04	0,12*	0,19***
<i>Creativity</i>	-0,11*	-0,04	0,14**	0,01	-0,04	0,35***
<i>Drug</i>	-0,22***	-0,23***	0,26***	-0,15**	-0,25***	0
<i>Friendliness</i>	0,2***	0,05	0,45***	-0,03	0,14**	0,06
<i>Erudition</i>	0	0,11*	-0,03	0,01	0,08	0,12*

Note. HAS = HEXACO Adjective Scales. \*  $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

### Brief Discussion

The scope of this brief report is to provide initial elements of validation for the English translation of the HEXACO adjective scales (HAS), a recently developed instrument aimed at measuring the main dimension of personality for the HEXACO model (Romano et al., 2022).

A non-validated translation of the adjectives from the Italian to English was already provided with the original validation paper, with the warning that the adjectives were only translated but not validated in English (Romano et al., 2022). We slightly deviated and improved upon from that list by substituting four markers. These were substituted by adjectives that empirically worked better in English. This might also depend on the fact that the four new adjectives are more frequently used than the four excluded ones, they are more common words. This may reflect a more precise

semantic representation, resulting in a better performance describing individuals' personality. The final list of the adjectives is reported in the appendix of this draft.

Results support the validity of the translated list of markers as provided in the present draft. We have been able to recover satisfactorily the six-factor structure. All the markers consistently loaded on the expected factor.

The internal consistency of the derived scale scores is in line with the Italian version, and overall satisfactory. The average factor congruency is also acceptable, suggesting a substantial overlap between the Italian and the English loading matrices.

The convergence between the HEXACO-PI-R and the HAS is very good. The smallest correlation between homologous scales is .55 (H), the biggest is .76 (X). These values are also very similar to what we observed with the Italian version.

Finally, each factor anchored significantly to behavioral criteria. The strongest associations are those between undependability and C, friendliness and X, creativity and O. These are expected associations that support the validity of the English HAS.

Overall this short draft provided initial pieces of validation for the English translation of the HAS.

The list of markers showed positive results from a psychometric perspective and holds all the required features to be used in future studies. We recommend that this list is used for studies in the English language.

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# HEXACO ADJECTIVE SCALES (HAS)

## – English-validated version –

Romano, D., Costantini, G., Richetin, J., & Perugini, M. (2023). The HEXACO Adjective Scales and Its Psychometric Properties. *Assessment*, 0(0). <https://doi.org/10.1177/10731911231153833>

Please indicate how each of the following adjectives (or short expressions) describes you. We know that, in many cases, the answer depends on the specific situation. Please answer by thinking about how much each adjective describes you "on average" through different situations.

Use the following response scale

1	2	3	4	5	6	7
It does not describe me at all						It describes me completely
1. ___ haughty		21. ___ extraverted		41. ___ reckless		
2. ___ courageous		22. ___ hostile		42. ___ uncreative		
3. ___ cheerful		23. ___ disorganized		43. ___ sincere		
4. ___ aggressive		24. ___ curious		44. ___ secure		
5. ___ attentive		25. ___ hypocritical		45. ___ solitary		
6. ___ who appreciates art		26. ___ unemotional		46. ___ quarrelsome		
7. ___ greedy		27. ___ introverted		47. ___ undisciplined		
8. ___ emotional		28. ___ peaceful		48. ___ original		
9. ___ asocial		29. ___ inattentive		49. ___ poser		
10. ___ calm		30. ___ innovative		50. ___ stable (emotionally)		
11. ___ conscientious		31. ___ loyal		51. ___ shy		
12. ___ uninterested in art		32. ___ hypersensitive		52. ___ tolerant		
13. ___ dishonest		33. ___ silent		53. ___ organized		
14. ___ fragile		34. ___ patient		54. ___ unoriginal		
15. ___ exuberant		35. ___ inaccurate		55. ___ humble		
16. ___ choleric		36. ___ intellectual		56. ___ vulnerable		
17. ___ diligent		37. ___ honest		57. ___ vivacious		
18. ___ conventional		38. ___ fearful		58. ___ tranquil		
19. ___ faithful		39. ___ sociable		59. ___ accurate		
20. ___ impassive		40. ___ overbearing		60. ___ traditional		

**Please check: Did you write a number in front of each statement?**

*Scale scoring ("R" denotes reverse-scored items)*

Honesty-Humility (H):	1R	7R	13R	19	25R	31	37	43	49R	55
Emotionality (E):	2R	8	14	20R	26R	32	38	44R	50R	56
eXtraversion (X):	3	9R	15	21	27R	33R	39	45R	51R	57
Agreeableness (A):	4R	10	16R	22R	28	34	40R	46R	52	58
Conscientiousness (C):	5	11	17	23R	29R	35R	41R	47R	53	59
Openness to Experience (O):	6	12R	18R	24	30	36	42R	48	54R	60R