Human AI

Human AI

Assessment of personality and soft skills with AI

Human AI

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WHO WE ARE

Human AI was born as a research, development and co-design project between the educational, business and university sectors. Today it is a company that combines science and technology to create innovative solutions that improve human well-being and development. Our team is made up of experts in artificial intelligence, psychology, neuroscience, employment, education and health, who work together to design products and services that respond to the real needs of people and society.

Our vision is to create a more human world, where technology is a tool to enhance people's capabilities and values. Therefore, we apply ethical and quality principles in all our projects, seeking a balance between social and economic benefit. At HumanAI, we believe that artificial intelligence can be an ally to positively transform the world. And help those who help.

Learn more about us here.

> **Our vision is to create a more human world, where technology is a tool to enhance people's capabilities and values.**

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WHAT WE DO

Our NLP and ML algorithms analyze personality based on the Big 5/OCEAN model of personality (McRae & John 1992), which is the most scientifically accepted model. **With a text of at least 800 words in natural language, you can learn about 35 parameters of personality and socio-emotional skills without a test** (SES, based on the OECD model), comparing them with a large global database and accompanying the results with guidelines and recommendations.

A simple, immediate and reliable method, thanks to advances in psycholinguistics and artificial intelligence, which avoids self-perception bias, social desirability and other biases associated with self-assessment tests. The service is offered through a web app that allows working with individual and collective data and with an API, for entities with their own platforms. Users (B2B) agree to comply with the code of digital ethical conduct implied by our use conditions, consistent with our responsible AI policy and our adherence to the Montreal Declaration for the ethical development of AI. Read also our opinion regarding Regulation 2024/1689 and personality assessment.

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II. Application areas

Education, employment and HR, entrepreneurship, sports and well-being

Currently, there is evidence in a growing body of empirical research on the importance of personality characteristics in areas of society with a life impact (Gutman and Schoon, 2013; Heckman and Kautz, 2012; Kautz et al, 2014; Roberts et al. ., 2007).

In particular, these studies suggest that **various personality attributes have a substantial influence on education, achievement, employment status, productivity, job and life satisfaction, and health, among other areas.**

A concept closely related to personality that should be introduced is that of soft skills, considered as the skills or competencies of the 21st century (Murnane and Levy, 1996), which are associated with personality traits (Kyllonien 2012). They are non-cognitive skills (for example, perseverance, self-control, or growth mindset) that facilitate efforts toward goal achievement, healthy social relationships, and appropriate decision making, and predict academic, economic, social, and psychological performance. and people's physical well-being (Duckworth and Yeager, 2015).

EDUCATION
throughout life

In the educational field, personality assessments allow us to detect early signs that can influence academic performance and personal future. Furthermore, in Secondary Education and Higher Training they provide key information to guide the development of skills for future employment opportunities.

The OECD began evaluating SES internationally in 2021:

SES are a key factor in academic, professional and life performance and, most importantly, they are malleable (Chernyshenko et al., 2018)

OECD structure of socio-emotional competencies adapted from the Big Five

SOURCE: OECD (2023)

EDUCATION
throughout life

TutorIA Project

The TutorIA project seeks to streamline and enhance the evaluation and development of SES in both students and educators.

- Social and emotional learning (SEL) offers advantages to students, enhancing not only their personal and social development but also their academic performance.
- In certain instances, these skills can assist students in completing their studies and, over the long term, enhance their employability. They also impact the attainment of life goals, encompassing educational success, social relationships, civic engagement, health, and personal well-being.

CASE

Educational innovation for socio-emotional advancement

Jesuitinas School in Pamplona

View the video here.

Or read the paper here.

To avoid bias, carry out continuous evaluation and act individually and collectively, HumanAI collaborates with Primary, Secondary, Higher Education, Vocational Training and Continuing Training educational centers, providing assessments based on the OECD model.

Are SES currently measured in teachers and students?

How do you measure teachers' SES?

How do you measure students' SES?

Employment and Human Resources

In the workplace, particularly within the realm of Human Resources, the advantages of such assessments provide insights into how personalities influence behavior in a professional setting. This enables professionals to comprehend how candidates interact, address challenges, and regulate their emotions, thereby facilitating the establishment of suitable professional development trajectories.

Recruiters and career development professionals may sift through candidates for a specific job position based on fundamental personality traits. For instance, when seeking to hire or train a business analyst, they will prioritize traits such as critical thinking, assertive communication, problem-solving, conflict management, negotiation skills, and multilingual capabilities. There is substantial evidence indicating that an adequate level of emotional regulation is pertinent to effective leadership, and that high professional performance correlates with elevated levels of extraversion and openness to experience (Barrick & Mount, 1993; Bono & Judge, 2004; Hogan & Holland, 2003; Judge et al., 2002). Indeed, through personality assessment, current traits and future behavioral potential can be evaluated, offering a more comprehensive understanding than merely measuring specific competencies (Susing & Cavanagh, 2013).

Fuente: Ramos (2017)

Vocational education and workforce readiness

CASE
Assessment and guidance of socio-emotional skills through artificial intelligence: a pioneering approach to enhancing employability in vocational training at CIFP Del Mar.

The employability development model, utilizing the HumanAI application and implemented by the CIFP del Mar, presents an opportunity to systematize a methodology for the assessment and comprehensive enhancement of employability skills. This initiative aids students in improving their understanding of socio-emotional skills, recognizing them as opportunities and strengths, which can be effectively integrated into their curriculum vitae and personal branding. Furthermore, this model facilitates both group and individual activities throughout the course across various subjects within the training curriculum, fostering the training and development of these essential skills. Additionally, it prioritizes the learning of socio-emotional skills deemed critical for employability by companies in the maritime fishing sector. Finally, it enables the monitoring of students post-graduation to assess their degree of professional integration and correlate it with their socio-emotional competencies.

View the video here.

Or read the paper here (SES Development in workforce readiness: implementation of a standarized model of evaluation using AI)

Entrepreneurship

In the realm of entrepreneurship, while technical skills are essential, socio-emotional competencies (SES) are crucial for achieving success. Scientific research has demonstrated that attributes such as open-mindedness (Obschonka et al., 2019; Wu et al., 2019; Zhao et al., 2010), intellectual curiosity (Zhao et al., 2010), cooperation (Li et al., 2009; Liu and White, 2001), boldness (Dilli et al., 2020; Park et al., 2017), assertiveness (Liñán and Chen, 2009; Miao and Wang, 2019), and cordiality (Olokundun et al., 2018) are among the most significant SES for an entrepreneurial profile. The methodology employed to identify the SES with the most substantial impact on entrepreneurship involved, firstly, a narrative review of the specialized scientific literature on SES and entrepreneurship. Secondly, the Delphi method was utilized to consult 40 experts associated with entrepreneurship (including entrepreneurs, business leaders, advisors, investors, and academics) to evaluate, based on their experience and expertise, which factors and dimensions were deemed more or less critical for an entrepreneurial individual. The findings enabled the identification of 26 out of 35 SES linked to the entrepreneurial personality, categorizing them by importance into three groups: "Critical" or "Relevant," "Necessary," and "Optional." This classification facilitates the provision of a detailed report to entities within the entrepreneurship ecosystem and supports the development of field studies in collaboration with international university networks, which are subsequently presented at academic conferences and featured on our blog.

Academic publication

- IA aplicada a la evaluación de SES vinculadas al emprendimiento:

Entrepreneurship

Report on socio-emotional competencies associated with entrepreneurship

Discover how we developed our report on socio-emotional competencies associated with entrepreneurship through the presentation delivered at the 1st International Congress on Artificial Intelligence, Innovation, Economy, and Business (CIECEM).

Keys to cultivating an entrepreneurial mindset

We participated in the seminar organized by Red WINN (Women Innovation) at the University of Navarra titled "Socio-emotional Skills and Entrepreneurship: Research, Teaching Proposal, and Workshop." During this event, we presented the findings of a study on Self-confidence and Female Entrepreneurship, which provided key insights for cultivating an entrepreneurial personality.

Methods for assessing and improving the entrepreneurial profile

Entrepreneurship resembles a long-distance race, demanding substantial passion, effort, and commitment. Furthermore, **a crucial element for success throughout this journey is the well-being and emotional state of the entrepreneur.** Is it feasible to assess and improve the entrepreneurial profile?

Read more

Sport

Sport serves as an excellent medium for acquiring and enhancing social skills that ensure inclusion and effective emotional management strategies (Rodríguez-Bravo et al., 2020). It is recognized for fostering the acquisition of values that encourage responsibility, decision-making capabilities, tolerance for frustration, and the cultivation of resilience.

Successful athletes possess specific psychological traits that facilitate the attainment of their goals, including, but not limited to, the capacity to manage anxiety and overcome challenges, self-assurance, a competitive spirit, intrinsic motivation, the ability to minimize distractions, and the skill to establish and accomplish objectives (Allen et al., 2011; Gould et al., 2002).

Individuals with elevated self-confidence are more likely to achieve success compared to athletes characterized by low self-confidence.

(De Francesco & Burke, 1997; Gould et al., 2002; Pickens et al., 1996)

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III. Our differential value

AI vs traditional tools

Traditional personality and competency assessment tools are too complex and slow for everyday use.

- Long, tedious and difficult to understand questionnaires.
- Self-perception and social desirability biases of the tests.
- Limited professional resources to manage, interpret and report results.
- High cost of time invested by the qualified professional.
- Limited and inflexible analysis of groups, normative references and comparative statistics.

AI vs traditional tools

The objective of the AI evaluation model is to resolve the limitations of psychometric tests to evaluate personality and socio-emotional competencies by optimizing the evaluation, processing and reporting time, so that you obtain the analysis in a few minutes.

- Application of psycholinguistics to new, immediate and easy-to-use evaluation methodologies.
- It helps human development professionals (educators, counselors, psychologists, and human resources managers) by offering them personalized intervention recommendations, based on objective and reliable evaluations.
- It is based on the most current empirical knowledge and validated in the field and scientifically.
- The procedure is more dynamic and agile for the user, since through a user's text our solution uses natural language processing (NLP) of the individual (spoken or written), extracting the linguistic, semantic and contextual characteristics that allow us to infer the traits of his personality.
- Provides evaluation and statistical results and reports automatically.
- Available in Spanish and English.
- Avoid self-perception bias.

Field validation studies on self-perception bias

At Human AI, we have proven it: if you ask a sample of hundreds of people from different countries to evaluate how organized and modest they are, the majority will respond in a positively biased way, with a high score.

To what degree do you consider yourself an organized person?

291 people surveyed

Countries: Bolivia, Peru, Colombia, Spain, Ecuador and Argentina

To what degree do you consider yourself a modest person?

In the perception that human beings have of themselves and their behavior, they systematically tend to make interpretations that allow them to maintain a positive vision of the self (Gignac & Zajenkowski, 2020), which frequently leads to a biased interpretation of reality and self-deception in self-perception. This self-perception bias is reflected in personality tests in any self-assessment situation, where social desirability is a conditioning factor (Paulhus, 2002; Ziegler et al., 2012).

OCEAN model of personality

The name of the OCEAN model refers to the English acronym of the 5 factors of which it is made up (Openness, Responsibility, Extraversion, Agreeableness and Neuroticism).

The model arises from different parallel and independent investigations that concluded through factor analysis that the different personality traits can be statistically grouped into 5 large categories (McCrae & Costa, 2003).

Source: Comín (2020)

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OCEAN compared to other models

	OCEAN	DISC	MBTI
Test measurement	30 (espectrum)	4 (quadrant)	4 (binary)
Results	∞	12 profiles	16 personalities
Reliability	**High** Considered one of the most reliable and consistent personality models in psychological research. It has been shown to have high reliability in both self-report and observational studies (Costa & McCrae, 1992).	**Questionable** Some studies have found that DISC results are not consistent over time or between different raters (Hartmann & Gehlert, 1994).	**Questionable** Some studies have found that MBTI results are not consistent over time or between different raters (Pittenger, 2005).
Validity	**High** Considered one of the most valid personality models. It has been shown to have high predictive validity in a wide variety of contexts, including the workplace, education, and mental health (Ozer & Benet-Martinez, 2006).	**Questionable** Some studies have found that it is unclear which dimensions of the DISC model correlate with dimensions of other personality models (Hartmann & Gehlert, 1994).	**Questionable** Some studies have found that it is not clear which dimensions of the MBTI model correlate with dimensions of other personality models (Pittenger, 2005).
Prediction	**Wide** It has been used to predict a wide variety of outcomes, including job performance, academic success, and mental health (Roberts et al., 2007).	**Unclear** Although it has been used to predict job performance in some studies (e.g., Schmidt et al., 1986), the ability of the DISC model to predict outcomes in other contexts is unclear.	**Unclear** Although it has been used to predict job performance in some studies (e.g., Barrick & Mount, 1991), the ability of the MBTI model to predict outcomes in other contexts is unclear.

Chart 1. OCEAN compared to other modelos

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OCEAN compared to other models

	PERSONALITY ENNEAGRAM	Leadership Circle Profile
Assessment metrics	9 personality types.	4 action indices.
Results	Questionable. The reliability values do not adhere to robust psychometric standards.	Questionable. The evidence is inadequate to assert high reliability.
Reliability	Questionable. The evidence is inconsistent and frequently inadequate to assert high construct or predictive validity.	Questionable. The evidence is inadequate to assert high construct or predictive validity.
Validity	Ambiguous. It is predominantly utilized in self-help contexts, rather than for precise forecasts in professional or clinical environments.	Unclear. Nevertheless, it is extensively utilized in leadership development, executive coaching, team building, communication enhancement, and leadership training.
Prediction	**Wide** It has been employed to forecast a diverse range of outcomes, including job performance, academic achievement, and mental well-being (Roberts et al., 2007).	**Unclear** While the DISC model has been utilized to forecast job performance in certain studies (e.g., Schmidt et al., 1986), its efficacy in predicting outcomes in other contexts remains ambiguous.

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Relationship between the study of language and the study of personality

Current models of personality trait theory consider the lexical hypothesis plausible, according to which the most salient and/or socially relevant individual differences will be encoded in language (John and Srivastava, 1999; McCrae and John, 1992).). In this way, language analysis would be a reliable source of information to describe the characteristics that can define and build human personality (Sánchez and Ledesma, 2007; Sanz et al., 1999).

Personality

- Pattern of behavior that characterizes us (way of thinking, feeling, reacting).
- Differentiate one person from another.
- Has a consistency/continuity across different circumstances or situations.
- Describes the person: values, self-knowledge, self-efficacy.
- It develops throughout a socialization process.

Artificial Intelligence

Our IA

Our Artificial Intelligence is based on the same technology on which the great language models that are so successful in all fields related to NLP are based.

These models are capable of processing natural language in its context, that is, taking into account the grammatical structure and semantic relationships of the words in a text, even if it involves information that is separated by several sentences or paragraphs.

They are huge models, pre-trained on large data sets containing millions of texts and capturing information in hundreds of thousands of parameters, allowing complex language patterns and characteristics to be inferred in a wide variety of contexts.

Our models are fine-tuned using supervised learning techniques, where they are fed large amounts of data labeled according to the parameters that make up the personality traits of the OCEAN model and learn to infer the syntactic and semantic relationships between words, understanding the context in which they are used according to characteristic personality traits.

Artificial intelligence

How is it done?

The attention technique used in language models takes into account several linguistic aspects:

- **The relative frequency of words** and the frequency of words that appear together.
- **The distance between words,** which may be more or less important depending on the distance that separates them in the text.
- **The syntax of a sentence,** since the grammatical structure allows us to determine the relative importance of each word in the context.
- **Cohesion, the relationship between ideas in a text and how they relate to each other,** identifying the most relevant words in a given context.

These linguistic aspects occur differently in different personality traits and our AI uses them to differentiate a text labeled with a certain personality trait from another, learning how these linguistic aspects vary in the natural language of thousands of people with different traits. of personality.

Most common linguistic parameters:

- **The type and function of the antecedent:** the antecedent is the word or phrase to which a relative refers, such as where, what, or who. The type of the antecedent can be nominal, verbal, prepositional or adverbial, and its function can be subject, object, complement or modifier.
- **The value of the relative:** the relative is the word that introduces a subordinate clause that modifies the antecedent. The value of the relative can be locative, temporal, causal, final or modal, depending on the meaning it contributes to the sentence.
- **The type and category of the verb:** the verb is the word that expresses the action, state or process of a subject. The type of the verb can be transitive, intransitive, copulative or auxiliary, and its category can be regular, irregular, pronominal or impersonal, depending on its form and function.
- **The presence or absence of a preposition:** the preposition is the word that introduces a complement that modifies the verb or noun. The presence or absence of a preposition can affect the meaning or grammaticality of a sentence.
- **The type of relative construction:** the relative construction is the structure formed by the antecedent and the subordinate clause introduced by the relative. The type of relative construction can be specifying, explanatory or free, depending on whether it restricts, clarifies or expands the meaning of the antecedent.

An explainable method

We carry out studies that are yielding promising results in which, using linguistic computing tools, especially salient linguistic pieces are extracted in one corpus (focus corpus) in comparison to another (reference corpus), based on the comparison of the normalized frequencies of all the linguistic elements that make up the two corpora. Those that register a greater mismatch in their frequency in the two corpora obtain a higher result (score), which means assigning them a greater degree of salience in one corpus compared to the other; In other words, these will be linguistic-discursive features that are especially characteristic of the focus corpus compared to the reference corpus.

A preliminary corpus has been established from the texts gathered across various populations involved in the research studies conducted, identifying the linguistic features that serve as critical indicators for the developed tools to attribute specific personality traits to each text. Thus, the linguistic validation of the tool is currently in progress.

Corpus Christi Group	No. of words
Opening HIGH	369.117
Opening Minimum	312.595
HIGH Neuroticism	721.671
Low Neuroticism	236.288
Extraversion: Elevated	307.444
Extraversion: Low	294.342
Responsibility: High	381.250
Responsibility: Low	703.858
Kindness Elevated	632.645
Kindness Minimal	141.687

Table 2. Key terms in the differentiation of traits exhibiting high and low levels across five dimensions.

A precise method

In different studies carried out with hundreds of people, Human AI is comparing the results of the evaluations with its AI tool with the evaluations of external observers.

1235

students from 13 schools and VET centers have benefited from analysis with our prototypes in 2021.

85%

of the 340 teachers rated it as accurate or very accurate.

1265

professionals (HR, psychology and psychiatry) from more than 10 countries have tested the prototypes, increasing their self-knowledge and considered the report very accurate.

60

Counselors from Public Employment Services have piloted the prototypes, giving feedback on their ease of use.

A reliable approach

We conduct studies aimed at assessing the ability of these language models to recognize the personality traits within a population, based on the patterns previously analyzed in relation to the OCEAN model (Big5).

Our AI enables us to deduce the relationships among the personality traits of a population based on these patterns, effectively identifying the connections between various personality traits within the population.

In our validation results, we note how the model discerns relationships among personality traits, successfully generating outcomes that reflect the anticipated correlations between these traits, as established in prior studies utilizing the OCEAN model and other assessment methods (McCrae and Costa, 1992). This also corroborates a tendency to align with psychometric instruments (NEO PIR, NEO JS, IPIP).

View chart in next page:

Example of correlation between the 35 facets of the OCEAN Model evaluated with our tool
Study carried out in 2022

Source: Human AI

Moreover, the model effectively illustrates the anticipated trends in the development of these traits over time, particularly highlighting that minors typically exhibit lower indices in specific facets when compared to adults. Our research reveals notable disparities in the outcomes for minors and adults, reflecting the same trends identified in pertinent studies concerning the personality traits of the OCEAN Big Five model and their variations with age (Chopik & Kitayama, 2017; Costa et al., 2019; Roberts et al., 2006; Schwaba & Bleidorn, 2017; Soto et al., 2011).

An example of the number of facets with values exceeding the 75th percentile (highlighted_factors, highlighted areas, blue) and those falling below the 25th percentile (improvement_factors, areas for improvement, red) across the age range in the study sample. It is noted that minors exhibit a higher number of areas for improvement, whereas adults demonstrate a greater number of highlighted areas. The study was conducted in 2022.

Source: Human AI

In this manner, the model's ability to reproduce the anticipated behavior in results across various samples is examined and confirmed, thereby affirming the model's suitability and reliability as an evaluation method.

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