



Behavioural Intelligence: Unlocking New Opportunities in Person Assessment

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PART 3 of 6

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Human behaviour is a window into internal psychological functions. A fair understanding of the connections between behaviours and what drives them brings value wherever humans are at the centre of processes such as managing a company's workforce. **Human factors** such as personality, soft skills, and emotions **are the main drivers of successful matches between people and their environment**: their job, team members, personalized consumables and services.

Until recent years, firms relied on small windows of behavioural data to gain insight into human factors affecting their business. However, thanks to massive technological innovations in the past decade, **we have entered an age of ubiquitous computing, multiplying and magnifying the windows by which we can observe and interpret human behaviour**. In particular, high-quality video has become widely available thanks to cameras in smartphones and user-friendly sharing platforms.

These innovations unlock new opportunities in the field of human-machine interactions. Coupled to recent developments in behavioural psychology on the one side and AI/machine learning on the other side, **automatic detection, analysis and understanding of human behaviour have become a reality**.

As a leader in that field, Vima is ideally positioned to help global companies develop new capabilities thanks to its **scientifically validated and proprietary solutions in Behavioural Intelligence**. Applications are multiple: **human resources** (recruitment and **organizational development**), eSport, market research (consumer behaviour), health and safety).

These scientifically oriented series outline the field of Behavioural Intelligence and explain the **core psychological phenomena** and how to measure them. **New computational technologies** are introduced and explained how they help to understand human behaviour. Vima is situated at this intersection, offering the best understanding of human behaviour using behavioural AI solutions.

Table of Contents:

In part 1 of our white paper series, we talk about Behavioural Intelligence, the intersection of social and computational sciences, and set the scientific foundations of psychological concepts:

- 1.1. Emotion
- 1.2. Mood
- 1.3. Personality trait
- 1.4. Skill

In part 2 we explain “How we can measure internal traits and states? A behaviour-based approach”

- 2.1. Non-verbal behaviour
- 2.2. Inferences from non-verbal behaviour
- 2.3. Linking expression and perception
- 2.4. Implication for measurement techniques

In part 3 we talk about the past and future in person assessment

- 3.1. Verbal self-report
- 3.2. The future in person assessment

In part 4 we introduce computational technologies and AI for automated behaviour analysis and person assessment

- 4.1. Development of a prediction model
- 4.2. Behaviour extraction and prediction of personality traits and soft skills
- 4.3. Language-specific modelling and cultural diversity
- 4.4. Ground truth in person assessment

In part 5 we talk about bias in human judgment

- 5.1. What is bias?
- 5.2. Understanding bias in professional interviews
- 5.3. How does Vima limit bias?

In part 6 we talk about the application prediction models and conclude these series.

- 6.1. Application: Ready-to-go and customized prediction models
- 6.2. Conclusion of the White Paper Series

In Part 2, we explained how internal states and traits such as emotion, personality, and skills, can be measured. The focus was on behaviour-based observation, for which accuracy depends both on fostering appropriate expression, ensuring reliable perception, and maximizing behaviour extraction from multiple modalities (face, voice, body, language). Vima's technology is deeply anchored in these scientific principles and infers internal traits and states by capturing the behaviours that human experts consistently perceive and use in their assessment.

In Part 3, we apply the scientific principles of measuring states and traits based on behaviour observation in the context of person assessment ("the past and future in person assessment").

PART 3. The past and future in person assessment

3.1. Verbal self-report

A behaviour analysis approach, as described in Part 2 of these series, **offers a relatively direct way to assess emotion, personality or skills, and is thus complementary to traditional approaches that rely on indirect measures using verbal self-report.**

Traditional psychometrics produce psychological scales aimed to reliably measure variables such as emotional experience, personality, intelligence, attitudes, etc. Published reports in social sciences offer several instruments that have been carefully calibrated on hundreds or thousands of participants. In personality assessment for example, a scale comprises multiple items **probing how the test-taker believes he or she generally thinks, feels or behaves in hypothetical situations.** Response formats are mostly standardized (multiple choice, Likert scale, etc). An individual's composite score on a psychological scale is interpreted in relation to the distribution of scores of a norm group of people.

However, **psychometric questionnaires are challenged by various self-report biases** such as social desirability (tendency to report what you think is expected from you). The **risk of insincere answers** to self-report questionnaires is **particularly high in the context of job recruitment** (you will bend the truth in order to get hired). The interpretation accuracy is further **constrained by the amount of self-knowledge** the responder has. We know from research that introspection can be quite inaccurate and that it shows large interindividual differences. This is why researchers often ask close colleagues, friends or family members to also fill in the same questionnaire about the tested individual.

Self-report questionnaires may not always provide the most valid measure of personality or skills. They are likely to draw a distorted picture in contexts where the respondents see a clear benefit of presenting themselves in a certain way and have an inexpensive way of doing so voluntarily. **Behaviour assessment provides a complementary alternative because it is more difficult and less obvious how to monitor or control expressive behaviour than it is to adapt verbal responses written on a questionnaire.** In sum, behavioural measures may provide a **more genuine and direct assessment of someone's emotion, personality or skills.**

3.2. The future in person assessment

In the light of these considerations, the **future in person assessment is likely to include multimodal behavioural measures** to overcome the challenges presented by psychometric questionnaires.

In effect, verbal and nonverbal behaviours are observable, visible manifestations of psychological traits and states. **They can be measured objectively using standardized behaviour expert observation** (which can be modelled and reproduced using algorithms, see Part 4) **or using performance-based tests** (such as emotion recognition tests). More subjective measures include intuitive impressions through self-report using non-expert behaviour observations (see [Figure 2](#)). However, **objective measures can free person assessment from inaccuracies such as biases and everyday beliefs** that are not grounded in scientific study. These distort and trouble the lens through which interviewees are observed and judged. Several parameters have already been found to systematically relate to expressions of temporary states such as emotions as well as more stable traits such as personalities. Scientific research indicates that **verbal and nonverbal behaviours play a particularly important role in impression formation** such as during the job interview. In short: You are what you *do*, not what you *say* you do.

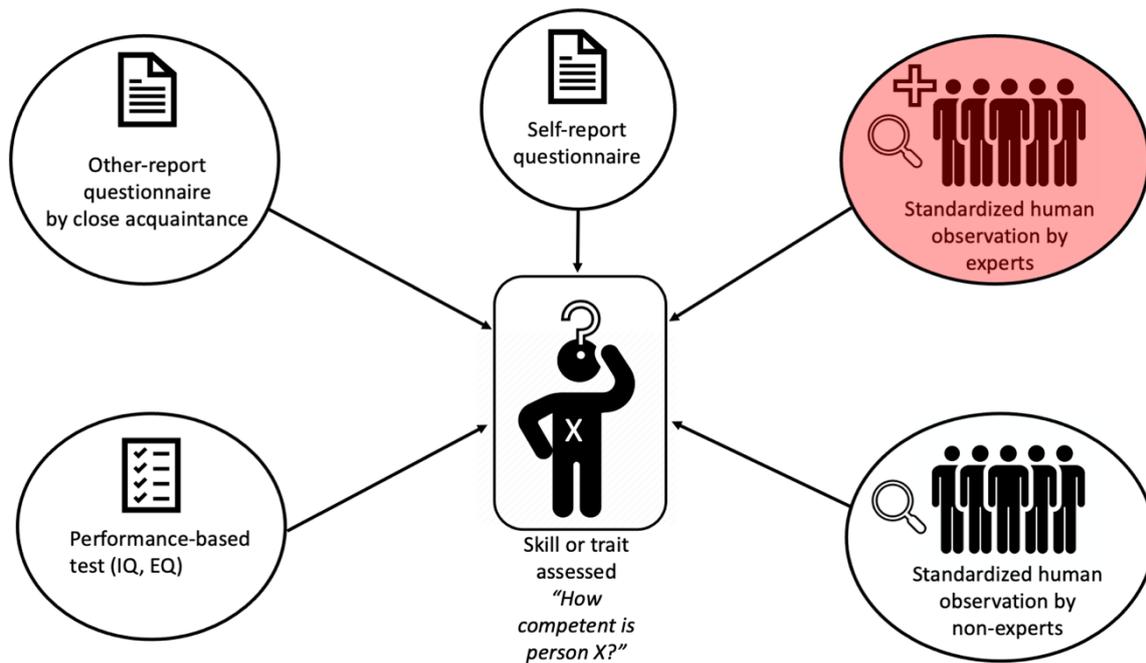


Figure 2. Different ways to assess a person (red indicates current focus of Vima)

By carefully blending state-of-the-art sensing methods for behavioural feature extraction, powerful computational analysis and subject matter expertise from behavioural psychology, **Vima effectively takes a wide angle integrating verbal and nonverbal behaviours to accurately predict personality traits and soft skills.**

In Part 3, we applied a behavioural analysis approach in the context of person assessment to remedy some of the challenges faced by traditional psychometrics that rely on self-report. We conclude that behavioural measures complement traditional questionnaires and provide a more genuine and direct person assessment. In the end, you are what you *do*, not what you *say* you do.

References

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