

TECHNICAL MANUAL & USER GUIDE

PROFESSIONAL PROFILE 2

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This manual has been created by the psychologists from the Science and Innovation department of Central Test.

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Introduction

The **PROFESSIONAL PROFILE 2©** is a personality questionnaire that analyses an individual's preferences, motivations and values at work. Consisting of 112 questions, it is a useful tool for employee recruitment, training and career development.

The assessment provides an in-depth analysis of a candidate's personality profile and job temperament based on 14 fundamental opposing dimensions of the human character (e.g. introversion - extraversion, team work - autonomy). The scale was specifically developed to evaluate personality traits in the workplace, identify a candidate's strengths, potential weaknesses and areas for development. Profiles generated by the **PROFESSIONAL PROFILE 2©** will help decision-makers to optimise job, team and organisational fit.

The **PROFESSIONAL PROFILE 2©** has been validated with more than a thousand professionals from a variety of occupations, educational levels and age groups. Due to its robust psychological approach and practitioner-based results, the assessment is utilised by HR personnel, managers, psychologists, coaches, training and recruitment consultants all over the world. There are several features that distinguish the **PROFESSIONAL PROFILE 2©** from other work-based personality assessments. These include:

- More contemporary and business relevant items
- Significantly shorter with only 112 items
- Average completion time of 15 minutes
- Measured dimensions based on both theory and competency requirements specified by HR practitioners, line managers, recruitment and training consultants
- Developed in multiple languages simultaneously with professionals across the globe
- Ipsative scaling to guard against social desirability and impression management
- Built-in response audit to ensure face validity
- Valid and reliable with studies conducted with professionals from 4 continents (North America, Europe, East Asia and Australasia)
- Developed using state-of-the-art psychometric techniques such as Thurstonian Item Response Theory
- User-friendly and customizable reports that can be easily tailored by the administrator
- Practical and easy-to understand reports
- Information on job fit, team fit, organisational fit, individual strengths and areas for development as standard.

In this manual & user guide you will find useful information about the questionnaire's development, theoretical background, psychometric properties and practical applications.

Chapters 1, 2, 3 and 8 are specifically tailored for HR practitioners whilst chapters 4, 5, 6 and 7 comprise of detailed technical information and psychological information.

1. General Description and Applicability

The **PROFESSIONAL PROFILE 2©** provides an in-depth analysis of a candidate's personality profile and professional aspirations based on fourteen fundamental aspects of the human character. The assessment combines values, motivations and personality in order to enable recruiters, HR professionals and psychologists to accurately assess fit between a job and a candidate. This dual approach is valuable as:

- Personality traits influence how an individual is likely to act, adapt to and function effectively in a given situation
- Motivations and values influence choices and decisions and therefore shed light on what drives an individual to act

Personality

The **PROFESSIONAL PROFILE 2©** measures seven opposing pairs of personality dimensions within the context of work. The assessment is based on established models of personality – like the “Five Factor Model” and the “Theory of Psychological Types”, as well as documented evidence on the value of personality measurement to organisational effectiveness. Dimensions represent an individual's approach to communicating, conflict handling, coping with pressure, interacting with others, managing ambiguity, decision-making and problem solving respectively. The seven paired dimensions of personality are defined as:

Persuasiveness

The ease with which an individual is able to convince and influence others using tact and adapt his/her speech for an audience, whilst **Straightforwardness** refers to being authentic and direct in communication, with a need to remain transparent. High persuasiveness scorers tend to be strategic and influential. High straightforwardness scorers generally thrive in settings where transparency is essential.

Flexibility

A willingness to be open to making concessions when dealing with others in order to seek consensus and avoid conflict, whilst **Firmness** refers to a tendency to defend one's own point of view and remain determined during exchanges with others. High flexibility scorers are generally good at taking others' perspectives into account during discussions. High firmness scorers are well suited for roles that require bargaining and tough negotiations.

Emotional Distance

The tendency to stay calm and composed even when faced with stressful or unsettling situations, whilst **Emotional Sensitivity** refers to the tendency to react to stress, take things to heart and readily express emotions. High emotional distance scorers are best suited for stressful settings that require a cool head and emotional control at all times. High emotional sensitivity scorers tend to be the first in a team to react to subtleties in the environment.

Extraversion

The tendency to be outgoing and lively, seeking to develop many friendly contacts, whilst **Introversion** refers to being reserved and formal, choosing to maintain only a few close relationships. High extraversion scorers thrive in positions that require much relationship building and public speaking. High introversion scorers generally remain productive and motivated even without social contact.

Improvisation

Being spontaneous and acting without clear planning, and at ease when facing unexpected situations, whilst **Structure** refers to a preference for being organised, methodical and referring to procedures. High structure scorers are best suited for projects that have very strict deadlines and require detailed planning well in advance. High improvisation scorers tend to find solutions even in very ambiguous circumstances.

Focus on facts

The tendency to be objective, logical, analytical and rational when evaluating information and making decisions, whilst **Intuition** refers to the tendency to appraise situations and make choices based on personal insights, instincts, impressions and 'gut feeling'. High intuition scorers are assets to environments that demand sharp instincts and immediate remedies. Individuals who have a high focus on facts score excel in settings where objective analysis is required and quick decisions costly.

Rule-following

The tendency to respect and comply with established guidelines and standards set by the organisation and society, whilst **Free-thinking** is the tendency to create or modify rules if existing ones are considered inefficient and impractical. High free-thinking scorers tend to thrive in organisations that encourage productivity without clearly-defined rules. High rule-following scorers are best suited for positions that require enforcement of regulations for quality, safety or legal reasons.

Values and Motivations

The **PROFESSIONAL PROFILE 2©** also measures seven opposing pairs of values and motivations within the context of work. These dimensions are based on extensive evidence highlighting the importance of values, needs and drives for employee success. Modern ways of working are more complex, fluid, integrated and demanding than roles of yesteryear. Employee engagement, work-life balance, well-being, career-management, cross-functional and cross-border team working are key issues facing the twenty-first century organisation (Cruise, 2011; Judge & Kammeyer-Mueller, 2012; Sonnentag, Kuttler, & Fritz, 2010; Stiglbauer, Selenko, Batinic, & Jodlbauer, 2012). Managers and recruiters therefore need to understand the value employees place on work, as well as their; a) commitment orientation; b) leadership orientation; c) task preferences; d) achievement values; e) teamwork orientation; and f) adaptability orientation.

The seven paired dimensions of values and motivations are defined as:

Involvement at work

The importance given to work and an individual's emotional bonding with an organisation, whilst **Personal balance** refers to a preference for separating one's personal and professional lives and balancing the two. High involvement at work scorers are well suited for organisations with a culture of

full dedication and commitment. High personal balance scorers are best suited for organisations that encourage and advocate work-like balance.

Desire to lead

The inclination to take charge in situations and to seek roles that require leading people, whilst **Desire for guidance** refers to the preference for supervision, regular feedback, and clearly defined directives. High desire to lead scorers are likely to take the lead on projects and are eager to take up responsibilities. High desire for guidance scorers thrive in positions that offer opportunities for direct mentorship and learning.

Need for action

A tendency to be dynamic and prefer short term projects that deliver quick and concrete results, while **Need for reflection** refers to a preference for complex, long term projects that yield results in the future and require more strategy, patience and reflection. High need for action scorers excel in settings characterised by a fast work pace and speedy decision-making. High need for reflection scorers are assets to roles characterised by strategic tasks spread over long periods of time.

Ambition

The competitive drive towards success and achievement, setting high and risky goals, whilst **Humility** refers to the tendency to be satisfied with one's current status and be comfortable with professional stability. High ambition scorers tend to thrive in organisations that are highly pressurised and competitive. High humility scorers enjoy stability at work and thrive in harmonious environments.

Autonomy

A preference for independence and freedom while working. **Team work** refers to the tendency to enjoy group work, be cooperative and focus on team cohesiveness. High autonomy scorers are well-suited for projects that require self-reliance and individual focus. High team work scorers excel in organisations that demand idea generation through collaboration.

Altruism

The inclination to be concerned about people and generous with one's time and resources, wanting to contribute to the greater good. **Individualism** refers to being practical and realistic with a focus on one's personal objectives. High altruism scorers excel in organisations that actively promote social responsibility and people development. High individualism scorers tend to thrive in highly results-oriented settings.

Novelty seeking

Being inquisitive with an inclination to explore and experiment with new ways of doing things. **Familiarity seeking** refers to being more comfortable with what one is accustomed to and follow proven methods over experimental approaches. High novelty seeking scorers are committed to innovation and improving outdated practices. High familiarity seeking scorers are assets to organisations that require the use of methods that have a proven track record.



Figure 1. Personality, Values and Motivation Dimensions Measured by the **PROFESSIONAL PROFILE 2**©.

1.1. Main areas of application

The **PROFESSIONAL PROFILE 2©** was specifically designed to help HR professionals, managers and business practitioners recruit, select and develop employees across the globe. It may be used throughout an employee's career life-span and is suitable for both management and non-management employees. The questionnaire can also be used in conjunction with other occupational-based assessments to acquire a more comprehensive profile of individuals in specific roles. For example, combining the **PROFESSIONAL PROFILE 2©** with the *Sales Profile R®* provides in-depth insight into how well a sales person is likely to integrate into a team, the type of sales s/he would be best suited for and the organisational setting s/he is likely to thrive in.

Applications are varied. The **PROFESSIONAL PROFILE 2©** is suitable for individuals, teams and organisational assessment. Specifically, it is designed for use in: a) individual recruitment, career management, career guidance, coaching and development; b) team development, profiling, conflict resolution and effectiveness; and c) organisational succession planning; performance evaluation, performance management, job analyses, culture and engagement audits.

1.2. Question structure

The **PROFESSIONAL PROFILE 2©** consists of 84 core questions and 28 audit questions. Questions are presented in forced-choice format, whereby each question is comprised of two general statements that require the candidate to choose the option that best represents their preference. Each question assesses different components of either personality or motivation dimensions. This means that each dimension is measured by 16 items - 8 items for each factor. The questionnaire therefore measures 224 behaviours whilst appearing significantly shorter. Items are mirrored so that each response option assesses a different dimension – personality items are paired with personality items and motivation items are paired with motivation items. This combined approach means that both, the individual's personality trait and motivation orientation associated with a targeted behaviour, are captured. This results in a more realistic measurement of human behaviour as personality and motivation at work have traditionally been measured with separate instruments. This item structure also reduces the likelihood of respondent fatigue and response bias. Furthermore, forcing respondents to choose one of two options safeguards against impression management and candidates' attempts to fake results.

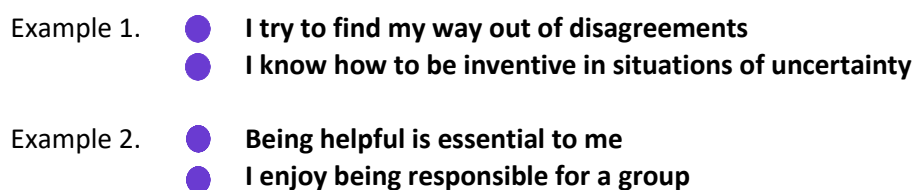
- 
- Example 1. ● **I try to find my way out of disagreements**
● **I know how to be inventive in situations of uncertainty**
- Example 2. ● **Being helpful is essential to me**
● **I enjoy being responsible for a group**

*Figure 2. Examples of Two Forced-choice Items on the **PROFESSIONAL PROFILE 2©**.*

In addition to the core 84 questions, the **PROFESSIONAL PROFILE 2©** has a built-in response audit scale comprised of 28 questions; the items were generated from statistical computations and are based on correlations from the trait and dimension factor structures. The total number of questions to be completed by each candidate is 112. The audit scale uses pairs of forced-choice descriptors, which measures the same dimension in order to directly assess the main and opposing factors of each dimension (e.g. Introversion vs. Extraversion). As individuals tend to be more experienced with Likert-scale work assessments in which they can position themselves in relation to a trait, the response audit

facilitates both a pleasant test-taking experience, as well as the face validity of results. Figure 3 shows an example of an item from the response audit used in the **PROFESSIONAL PROFILE 2©**.



*Figure 3. Example of an item on the response audit of the **PROFESSIONAL PROFILE 2©**.*

1.3. Mode of administration, languages and special requirements

PROFESSIONAL PROFILE 2© is administered online and works with all modern computer operating systems including Windows, MAC-OS and Linux. A PDF version of the questionnaire is available if required. Like other modern personality questionnaires, the assessment can be administered remotely and without supervision. However, should standardised group assessments be required, this can easily be accommodated. Reports are solely generated online. Therefore, if the test has been administered in paper-format, an administrator must manually enter candidate responses into the online platform of the questionnaire to generate candidate reports.

The questionnaire is currently available in Arabic, English and French and will soon be available in Dutch, German, Portuguese and Spanish. For more information on language availability please contact the *Central Test Consulting Service* (consulting@centraltest.com).

PROFESSIONAL PROFILE 2© was designed to be easily used by individuals from diverse backgrounds and those with a range of special needs. All test-takers are able to adjust visual screen specifications based on individual requirements. For example, respondents with visual impairments or those requiring a larger font size for comfort, may increase the font size by enlarging the computer screen's display (by pressing "**CTRL**" and "**+**"). Similarly, respondents are able to access test instructions throughout the course of the assessment. It is also possible to navigate through questions or change answers as desired by selecting on-screen prompts. Alternatively, for blind candidates or those with severe visual disabilities, items may be read aloud by a trained administrator. Individuals with hearing impairments are not excluded from taking the questionnaire since all content is presented visually.

Although the average time for completion is 15 minutes, the **PROFESSIONAL PROFILE 2©** has no set time limit. Therefore, individuals with learning disabilities are able to take the time they need to complete the assessment. Administrators are encouraged to consider whether a candidate who needed an unusual amount of time to take the test may have special needs. Please contact the test publisher for guidance on administering the questionnaire to individuals or groups with special requirements.

1.4. Social desirability

Social desirability is the tendency to present oneself in a manner that will be viewed favourably by others. When done unintentionally, it is referred to as self-deception. When done intentionally it is referred to as impression management (Tett & Simonet, 2011). As people are social by nature, they are generally inclined to seek some degree of social acceptance. Unlike aptitude tests, the results of personality questionnaires like the **PROFESSIONAL PROFILE 2©** are affected by impression management. An individual's attempt to present himself/herself in a favourable light negatively

impacts test results, whether the questionnaire is completed online or in paper-based format (Dodou & de Winter, 2014).

Social desirability is a particular concern in the context of recruitment, as a candidate is usually tempted to answer in a way to impress the recruiter even though there are no 'right' or 'wrong' answers. Candidates may provide responses according to what they feel, recruiters may expect from them to fulfil a role. As a result, social desirability is a significant risk to the validity of assessments (Mueller-Hanson, Heggstad, & Thornton, 2003). If social desirability was equivalent across all candidates, then test administrators would be able to factor it into the scoring and interpretation of results. However as faking differs across individuals, distortions in scores may result in an increased likelihood of the wrong candidate being hired (e.g. Rosse, Stecher, Miller, & Levin, 1998).

The **PROFESSIONAL PROFILE 2©** actively guards against social desirability with the use of an ipsative questionnaire format and built-in response audit. Research has found ipsative measures to be more resistant to distorted responding compared to more commonly used Likert-scales (Bowen, Martin, & Hunt, 2002; Kluger, Reilly, & Russell, 1991). Not only does the ipsative format reduce candidates' ability to improve their scores, items are combined in such a manner that makes it difficult for candidates to conceive a response strategy as items are paired with equally appealing response options.

1.5. Test-taker requirements and recommendations

The **PROFESSIONAL PROFILE 2©** was designed for members of the general population 20 years and older and is suitable for all occupational roles. It is recommended that candidates receive notification of the objective of the assessment, conditions under which it will be administered, how data will be handled and stored, and the nature of any feedback well in advance. Potential candidates should also be asked to inform the test administrator beforehand of any special needs or requirements.

Previous test-taking experience is not required to take the **PROFESSIONAL PROFILE 2©**. Similarly, advanced education and work experience are not requirements to successfully take the assessment.

1.6. Administrator qualifications and recommendations

The assessment was developed to be used by human resource (HR) professionals, training and executive development professionals, counsellors and psychologists. To administer the **PROFESSIONAL PROFILE 2©**, practitioners must complete standardised training and/ or possess accredited testing standards qualifications. Training is designed to ensure administrators are able to administer the assessment under standardised conditions; score and norm results; interpret scores and generate written and verbal feedback for a range of organisational needs.

It is recommended that all administrators take the **PROFESSIONAL PROFILE 2©**, prior to administering the assessment making sure to comply with all instructions. This will enable practitioners to become familiar with the assessment and therefore anticipate questions or challenges that may be identified by candidates.

Test administration must be in accordance with the organisation's code of practice, as well as legal assessment guidelines on the use of psychometric assessments for employment purposes. All steps must be taken to ensure test administration is objective and fair. Therefore, it is particularly recommended that administrators are aware of international and country laws governing; a) Data

Protection, b) Gender Discrimination, c) Age Discrimination, d) Race and Ethnicity Relations, e) Disabilities Discrimination, and f) Religious Discrimination prior to administration.

Additionally, prior to use administrators must be familiar with *Central Test's* conditions of use and code of ethics and adhere to its quality charter. Administrators must:

- Ensure that the appropriate test has been chosen to meet the specified organisational need.
- Make sure that the candidate is informed about the assessment and its purpose prior to administration.
- Achieve candidates' consent prior to administration
- Use appropriate norms to interpret results
- Provide candidates with feedback on results.
- Delete questionnaire results and personal candidate data upon demand.
- Treat results and candidate data confidentially and obtain candidate consent before transferring personal data or results to third parties.
- Ensure that only qualified personnel administer assessments and have access to data
- Ensure that test materials and reports are stored in secure environments

For more detailed information about *Central Test's* code of ethics, refer to *Central Test's* quality charter.

1.6.1. Testing conditions

For best results and candidate experience, the **PROFESSIONAL PROFILE 2©** should be administered in a quiet, well lit and ventilated environment. Candidates must be informed about the assessment in advance and should have sufficient time to take it. In order to reduce candidates' anxiety, the assessment should be referred to as a questionnaire and not as a test.

For online assessment, it is important that candidates have comfortable seating, adequate desk space, adequate computer screen size, a keyboard and a mouse. Prior to testing, administrators should ensure that all relevant candidate background information has been collected and verified in order to confirm that the candidate taking the assessment is the right individual.

In cases where individuals take the assessment in the privacy of their home or a convenient location, it is recommended that they do so using a computer they are familiar and comfortable with. For security purposes, all background information and candidate details must be provided to the administrator prior to a candidate taking the assessment. The background information is prefilled by the test administrator but can be corrected by the candidate after the completion of the assessment, when verifying 'Additional Information'. Candidates receive notification to take the questionnaire via e-mail with an embedded web link and login details. Web links to the questionnaire are password protected and unique to a candidate's account. It is possible to set expiration dates in order to ensure candidates complete the questionnaire within a specified time-frame. For additional security administrators can also configure the invitation to ensure that the assessment must be completed from the same IP address once the questionnaire has been accessed.

The **PROFESSIONAL PROFILE 2©** has no time restriction. However, candidates generally take between 12 and 20 minutes to complete the questionnaire. For monitoring purposes, completion times are recorded to ensure a pleasant candidate test-taking experience. It also allows administrators to see if a candidate rushed through the questionnaire or needed an unusual amount of time to complete the assessment. Candidates are encouraged to answer questions quickly in order to avoid spending too much time thinking about each statement. For personality questionnaires, it is generally

recommended that respondents answer spontaneously as there are no right or wrong answers. Candidates should also be urged to answer honestly as the built-in response audit is designed to identify inconsistencies in responses.

1.6.2. Answering questions

Although instructions for completing the **PROFESSIONAL PROFILE 2©** questionnaire are presented on-screen it is important that administrators establish and maintain rapport with candidates. Prior to starting the assessment, instructions should be read aloud by the administrator with candidates given an opportunity to ask questions before taking the assessment. Administrators should verify that candidates understand what they are required to do prior to starting the assessment session.

Guidelines for a few scenarios:

- If candidates have questions after the assessment session has begun, the administrator should try to answer them without disturbing other candidates.
- If a candidate does not understand a question, the administrator should answer carefully and avoid explaining the meaning of words or items in his/her own words in order to not lead the candidate toward specific responses. Instead, the administrator should check if the question is part of the lexical guide (contact *Central Test* for a copy). This guide contains standardised descriptions of items that could be potentially challenging for some individuals.
- If an administrator suspects that a candidate's lack of understanding is due to education level, the assessment should be abandoned.
- If an administrator suspects that a candidate's lack of understanding is due to language proficiency, the administrator should ask the candidate to take the assessment in the language they are most comfortable with (or language s/he dreams in).
- If an administrator suspects that a candidate's lack of understanding is due to overcautious responding, the candidate should be encouraged to endorse their most likely response.

1.6.3. Administration instructions

On screen administration instructions are the same for individual home-based and administrator-based assessment. Standardised instructions ensure that all participants are exposed to the same conditions during assessment; the assessment process is fair and objective and assessment conditions do not directly or indirectly give any individual or group an advantage.

Prior to assessment, administrators should ensure they have the following:

- This manual
- Welcome script to inform candidates of the purpose of the assessment, why the assessment is being used as part of the organisational process, and what will happen during the testing session
- Test log to verify candidate details and record incidents during the session
- In the case of paper-based assessment, printed PDF copies of the **PROFESSIONAL PROFILE 2©** questionnaire and pens
- Lexical guide to answer potential candidate questions

Candidates who take the **PROFESSIONAL PROFILE 2©** as a home-based assessment from their private computer are guided through the instructions on their screen. Administrators of group administrations may guide participants after the introduction screen for the **PROFESSIONAL PROFILE 2©** has been accessed and the candidate is seated in front of the computer or the printed PDF copies by reading out the following on-screen instructions:

The on-screen instructions will take you through the entire questionnaire. Please follow on your screen (paper) whilst I read the instructions out loud:
Welcome!

You are about to take the **PROFESSIONAL PROFILE 2©**, a work personality assessment. Please read the instructions that follow.

The following questionnaire will assess your personality at work.
This questionnaire is composed of 112 questions.
It should take you approximately 15 minutes to complete the assessment.

For each set, indicate which statement best describes your personality or your beliefs by clicking the corresponding box.

It is possible that neither of the statements describes you exactly.
In such instances, kindly choose the statement that describes you the closest.

After a brief pause say:

- *Do you understand what you are expected to do?*
- *If you would like to increase the screen size, please press CTRL +, if you would like to decrease the screen size, please press CTRL -. Please try this now (Pause and allow candidates to adjust screens).*
- *If you need help, please raise your hand and I will come by to help you.*
- *All questions have to be answered. If you forget to answer a question, an information box will appear and indicate the questions that you need to answer in order to be able to continue.*
- *At the end of the questionnaire you will be presented with some demographic questions. Please answer them honestly.*
- *Do you have any questions before we start?*

After a paper-pencil administration:

It is important that administrators verify that all questions have been answered as the scoring system does not allow for any questions to be left blank.

At the end of the assessment, administrators must collect all testing materials. Paper-pencil questionnaires need to be stored in a secure place and only be accessible to authorized individuals. Testing materials like questionnaires and reports need to be shredded by administrators to ensure appropriate disposal.

1.7. Technical and security issues

Below are guidelines governing the security of administering the **PROFESSIONAL PROFILE 2©**. Guidelines ensure that every administration of the **PROFESSIONAL PROFILE 2©** is a pleasant, objective

and fair process. Security specifications ensure that candidate information is protected both during administration and after assessment completion.

1.7.1. Respecting the ethical charter

As a publisher of online assessment tools, *Central Test* respects the legal conventions of French labour law and the regulatory provisions resulting from the law of 6 January 1978 pertaining to information technology, files and freedoms: Declaration N°1834067.

Test results may not be forwarded to a third person without the explicit consent of the test candidate. A candidate has a right to access his/her results.

The assessor must grant him/her access automatically or when the candidate requests it.

The candidate has the right to request that all his/her personal data be permanently deleted. To do this, s/he must contact either the organisation directly, who will delete his/her data, or *Central Test*.

1.7.2. Confidentiality and security of user data

Central Test guarantees the security and confidentiality of data generated during the administration of online tests. Access codes are encrypted in the database and cannot be accessed by anyone. Passwords are computationally generated and are not visible to companies. A URL rewriting module (secure link generator) is installed and has transparent parameter passing for the user.

Browsing and data exchange via the *Central Test* application can be secured and encrypted using SSL. Secure browsing is guaranteed by the https protocol, which is represented by an icon in the form of a padlock in the internet browser. The *Central Test* application has a « GeoTrust SSL True BusinessID » digital signature, issued and certified by GeoTrust®. This certificate is irrefutable evidence of our serious attitude towards security and protects all *Central Test* assessments from phishing attacks. Invitations to take tests are made via secured links that are of limited use (in terms of numbers and duration). The tests are timed and IP addresses are tracked. Access to questionnaires may be limited in terms of numbers and duration.

1.7.3. Hardware architecture and server availability

Central Test's architecture consists of a network of 10 physical dedicated servers providing high-quality service.

Each server is housed in a specialised data centre featuring:

- dedicated lines
- a guaranteed bandwidth of 100Mbps (for each server)
- redundant energy sources
- 4-hour Equipment Restoration Time
- 2-hour Incident Intervention Time
- onitoring and assistance 24/7/365

Access to server administration is restricted by the IP address and is password-secured. Data exchanges are secure.

The *Central Test* application has been tested using the following browsers:

- Internet Explorer 8 or above
- Firefox 21 or above
- Google Chrome 30 or above
- Safari 7 or above

1.7.4. Computer-generated reports

Reports can be generated within minutes of candidates completing the questionnaire. The **PROFESSIONAL PROFILE 2©** report is user friendly, customisable and available in several languages. Report content can be tailored depending on the needs of the administrator. Separate reports may be configured for the candidate and the company, recruiter, coach or psychologist. Reports are available in PDF format.

1.8. Supply, conditions and availability

Conditions of supply and availability for the **PROFESSIONAL PROFILE 2©** vary from country to country. However, the following points generally apply:

- The **PROFESSIONAL PROFILE 2©** is only available for Psychologists, HR practitioners and coaches.
- Training is compulsory prior to use and distribution.
- This manual is available to individuals who have been trained to use the **PROFESSIONAL PROFILE 2©**.
- The **PROFESSIONAL PROFILE 2©** can be ordered online, or by contacting any *Central Test* customer service representative or local partner worldwide (customer@centraltest.com).
- For information on **PROFESSIONAL PROFILE 2©** prices and related products and services, contact any *Central Test* customer service representative or local partner worldwide.
- For more information on the training, please contact *Central Test's* customer service or one of *Central Test's* partners.

2. Conceptual & Practical Scale Development

PROFESSIONAL PROFILE 2© was developed using robust theoretical concepts, practical and relevant work requirements and advanced scientific analyses. Unlike other work-based personality assessments, the item bank for the questionnaire was primarily derived from recruiter surveys, job board analyses and HR and training practitioner feedback. This empirically-based practitioner approach has resulted in the development of an administrator-friendly, work-relevant, valid assessment that candidates enjoy taking. All items in the item bank were piloted and pre-tested with professionals from four continents (North America, Europe, East Asia and Australasia) in order to ensure assessed work behaviours were contemporary, global and culture-free.

2.1. Theoretical background

2.1.1. The history and value of psychometric testing to personnel assessment

Historically, the Latin origin of the word personality (*persona*) referred to masks worn to represent roles that actors interpreted. Today, the term covers psychological characteristics common to all human beings and is used to explain human nature and individual differences. Analysis of individual differences dates back to 460-377BC, when Hippocrates proposed a biological model of personality arguing that temperament can be used to identify key human behaviours. This generated the first classification of personality as individuals were categorised as sanguine, phlegmatic, melancholic or choleric, that corresponded to traits of optimistic, relaxed, analytical or irritable respectively.

Considered the father of psychometrics, Sir Francis Galton (1884) was the first scientist to analyse the structure of personality using a lexical hypothesis. The lexical hypothesis is one of the most widely used underlying theories of personality and rests on two arguments; a) personality characteristics that are most important in people's lives will eventually become a part of their language; and b) more important personality characteristics are more likely to be encoded within language as a single word. This lexical hypothesis was used by Gordon Allport (1937) to generate a list of 17,953 unique terms to describe personality. Allport was the first to use the term "personality" in its modern application and produce an understandable classification of human traits that led to the clustering and later factor structure of personality traits by Raymond Cattell (1957) and Costa & McCrae (1985).

In the business world of the 21st century, psychometric measurement tools are increasingly used in the workplace as they help to predict behaviour and performance in a reliable way. Across the globe organisations utilise personality and ability assessments to make personnel decisions for recruitment, selection, promotion and development. Unlike judgements based on subjective perceptions, such as those derived from traditional job interviews, psychometric assessments offer a more objective, fair, reliable, valid and legally-defensible approach to identifying desired work behaviours. The measurement of personality represents a key component in identifying individuals who are best suited for particular situations, contexts and planned objectives as individual values, interests, preferences and abilities represent core composites of personality. Therefore the use of personality assessment is integral to any process where the individual is central to productivity (Cruise, 2012).

2.1.2. Personality and employee effectiveness

An assessment can be called psychometric insofar as it is standardised, applicable across groups and has proven reliability and validity. Personality testing remains one of the best predictors of both job performance and training potential and is certainly a better measure of 'fit' than traditional interviews

(Barrick & Mount, 1991; Robertson & Smith, 2001). Approaches to personality developed over the last 30 years have focused on accurately measuring individual behaviour in a professional context. The link between personality and work success has been long established with several studies showing that personality is a predictor of job performance (De Fruyt & Mervielde, 1999; Hurtz & Donovan, 2000; Salgado, 1997).

One study that has significantly influenced the use of personality tests in the workplace was conducted by Barrick and Mount (1991). Using the Five Factor Model (FFM) of personality (see page 21 for detailed description of the FFM), they found personality dimensions accurately predicted at least one aspect of performance at work in a variety of jobs including professionals, police, managers, sales staff, and skilled/semi-skilled workers. Another study showed that Extraversion and Conscientiousness predict job performance (De Fruyt & Mervielde, 1999), whilst Extraversion and Openness are positively related to job performance and creativity and higher levels of Neuroticism have a negative effect on individual work success (Rothmann & Coetzer, 2003).

Secondly, evidence has linked personality to social and emotional components of work such as social investment at work (Hudson, Roberts, & Lodi-Smith, 2012); job satisfaction (Christiansen, Sliter, & Frost, 2014a; Heller, Ferris, Brown, & Watson, 2009; Lam & Ozorio, 2012) and job commitment (Panaccio & Vandenberghe, 2012). For example, Christiansen et al. (2014), found individuals with lower levels of Agreeableness and Conscientiousness reported more distress while performing tasks related to those traits, whilst employees with higher levels of Neuroticism perceived tasks related to Extraversion as most stressful. Furthermore Mathieu (2013) found that narcissism was positively related to Extraversion and negatively related to Agreeableness and had a significant influence on job satisfaction. Findings are important for HR professionals in light of the high financial costs associated with employee satisfaction and turnover.

Thirdly, the relationship between personality and leadership has also been confirmed. De Vries (2012) for example found that personality predicts different leadership styles. Using the HEXACO personality model (Lee & Ashton, 2004), results showed direct effects of Honesty-Humility on ethical leadership; Extraversion on charismatic leadership, Agreeableness on supportive leadership and Conscientiousness on task-oriented leadership. Similarly, using the FFM model of personality, Craik et al. (2002) found Conscientiousness and Openness were characteristic of a strategic management style; Extraversion, Openness and lower levels of Agreeableness were typical of an interpersonal management style; and Extraversion and Openness were indicators of managerial potential. Due to its effect on CEO leadership, personality is therefore indirectly related to organisational effectiveness (Colbert, Barrick, & Bradley, 2014).

Fourthly, personality plays an important role in team settings. Interpersonal team-work behaviour is predicted by Agreeableness (Tasa, Sears, & Schat, 2011). However, while people who score high on Agreeableness tend to be great team players, they are less well suited to “fill the role of devil’s advocate” (LePine, Buckman, Crawford, & Methot, 2011). Researchers have also found that team-member-exchange engagement was related to higher levels of Extraversion but lower levels of Neuroticism (Liao, Yang, Wang, Drown, & Shi, 2013). With team fit being a key ingredient in modern organisational success, identifying individuals with personality traits that compliment business agenda is a primary concern for HR professionals.

Finally, personality is also linked to negative employee work behaviours. Brown et al. (2010) for example, found evidence that ethical decision making is not solely based on education but related to personality factors such as narcissism and empathy, whilst Kalshoven, Den Hartog & De Hoogh (2010) found Conscientiousness, Agreeableness and Emotional Stability to be related to ethical leadership. Furthermore, while organisational citizenship behaviours (voluntary extra role behaviours) are related to individual Agreeableness, Emotionality, Openness to Experience and low Honesty-Humility

(Bourdage, Lee, Lee, & Shin, 2012); dark personality traits (avoidant and narcissistic) are negative predictors of transformational leadership (Khoo & Burch, 2008). Negative personality traits particularly affect customer service experiences and harm overall performance of organisations. Furthermore, Harris and Ogbonna (2009) proposed that employees who deliberately sabotaged firms were generally Thrill Seekers, Apathetics, Customer Revengers and Money Grabbers. These findings emphasise the financial, social and psychological costs of selecting employees who poorly fit with roles, teams and organisations.

2.1.3. Different approaches to personality: type versus trait

There are two main approaches to classifying individuals in personality psychology: type versus trait approach. Type theories categorise personality as a set of interrelated elements that make an individual unique. People are assigned to discrete categories of personality that are different to each other (e.g. introversion – extraversion). Types express preferences that allow us to predict behaviour, understand changes in behaviour over time and identify how behaviours may be developed with intervention. Type theories regard opposing traits as two distinct classes and are therefore appropriate assessments for workplace development, career guidance and coaching.

Trait theories on the other hand, regard personality as degrees of expression along a continuum of behaviour. A trait could be defined as the tendency to act in a certain way and could be expressed by the behaviour of the individual in diverse situations (Nadeau, Acier, Miranda, Pervin, & John, 2004). For instance, when someone is described as a kind person it means that s/he tends to behave in a kind way, regardless of the situation. Trait approaches are commonly used in work assessments as they are effective predictors of stable behaviour. It is expected that a rigorous person will be a rigorous employee. For recruitment purposes, trait theories are recommended over type theories as they give a more detailed description of an individual's potential instead of allocating unique individuals to a limited number of personality types.

The Five Factor Model (FFM) of personality is considered the standard in trait personality measurement as it represents well researched global personality traits. The model is comprised of: **Openness** - the extent to which an individual is intellectually curious, has insight and is imaginative; **Conscientiousness** - the extent to which an individual is reliable, persistent and ambitious; **Extraversion** - the inclination to be sociable, desiring to be among others, thus requiring excitement and stimulation; **Agreeableness** - the tendency to be humanistic, cooperative and trusting of others; and **Neuroticism** - the inclination to feel negative emotions including fear, guilt, sadness and anger (John & Srivastava, 1999; Major, Turner, & Fletcher, 2006; Mooradian, Renzl, & Matzler, 2006). The **PROFESSIONAL PROFILE 2©** adopts the trait approach and measures stable personality traits in the workplace. The assessment allows practitioners to identify qualities such as ambition, desire to lead, or emotional resilience required for specific roles.

"A musician must make music, an artist must paint, a poet must write, if he is to be ultimately at peace with himself. What a man can be, he must be."

Abraham Maslow, (1954) pg. 93

2.1.4. Personality theories used in the PROFESSIONAL PROFILE 2©

In addition to the Five Factor Model (FFM) of personality, several established theories were used for the conceptual and practical development of the **PROFESSIONAL PROFILE 2©**. Other theoretical frameworks include C.G. Jung (1971) Theory of Psychological Types; William Schutz (1958) Fundamental Interpersonal Relations Orientation; Lee and Ashton (2004) HEXACO Model of Personality and J. Holland (1958) Occupational Themes (RIASEC). A combined theoretical approach was adopted

in order to ensure conceptual richness, practical pertinence and prevent content restriction that may result from a single model.

2.1.4.a. Theory of Psychological Types – Carl G. Jung (1921)

In 1921, Carl Gustav Jung categorised humans according to two attitude types (*Extraversion - Introversion*) and four functions. Functions describe how people perceive their environment (*Sensation – Intuition*) and how they judge what they perceive (*Thinking – Feeling*). Jung argued that much of behaviour that appears random is actually orderly and consistent due to differences in the way individuals prefer to use perception and judgement (*Perceiving – Judging*). For example, people who process information through Sensation will pay close attention to details, whereas an individual who perceives through Intuition will rely more on broad patterns. Individuals who tend to make use of the Thinking function base their judgments more on logic, whereas individuals with a preference for the Feeling function tend to make judgments based on personal values (Arnau, Green, Rosen, Gleaves, & Melancon, 2003). The combination of attitude type and functions results in 16 different personality types. For the development of dimensions and items on the **PROFESSIONAL PROFILE 2©**, how individuals judge what they see, make decisions and process information are considered key components for success at work.

2.1.4.b. Fundamental Interpersonal Relations Orientation (FIRO) – William Schutz (1958)

Schutz (1958) proposed that humans have three interpersonal needs; a need for inclusion, affection and control. The theory is based on the belief that when people get together to form a group there are three main interpersonal needs that they are looking to obtain. *Inclusion* – relates to whether an individual tends to include others in interaction or want others to include them and be recognised. *Affection* – refers to how an individual relates to others and how much someone invests in a relationship or desires another to demonstrate affection towards him/her. *Control* – differentiates between people who desire to be dominated and guided and those who prefer to be leading and take responsibility. Needs are either wanted or expressed by individuals when interacting with others. This results in six different dimensions namely: Expressed Inclusion (EI), Wanted Inclusion (WI), Expressed Affection (EA), Wanted Affection (WA), Expressed Control (EC) and Wanted Control (WC). The FIRO was included in the development of the **PROFESSIONAL PROFILE 2©**, as how much interaction an employee wants in the areas of socialising, leadership and responsibilities will inform organisations about an individual's potential team fit, culture fit and leadership effectiveness.

2.1.4.c. HEXACO Model of Personality – Lee and Ashton (2004)

Lee and Ashton (2004) proposed a 6-dimension, trait-based model of personality based on evidence of previous research on trait-based personality models. The model includes all dimensions measured by the FFM as well as the additional dimension of Honesty-Humility (H). Within the model dimensions are classified as: *Honesty-Humility (H)* – measures facets of sincerity, fairness, greed avoidance and modesty. *Emotionality (E)* – assesses fearfulness, anxiety, dependence and sentimentality. *Extraversion (X)* – identifies social self-esteem, social boldness, sociability and liveliness. *Agreeableness (A)* – measures forgiveness, gentleness, flexibility and patience. *Conscientiousness (C)* – assesses organisation, diligence, perfectionism and prudence. *Openness to Experience (O)* – examines an individual's tendency towards aesthetic appreciation, inquisitiveness, creativity and unconventionality. For the development of the **PROFESSIONAL PROFILE 2©**, facets measured by the (H) dimension of HEXACO were important as an individual's values and expression of said values significantly influence role, team and organisational fit as well as his/her approach to making decisions.

2.1.4.d. RIASEC Career Interest Model John Holland (1958)

Psychologist John Holland argued that the choice of a vocation is an expression of personality and the closer the match between an individual's personality type and chosen profession, the more successful and satisfied the individual will be. Holland therefore demonstrated the link between vocational environment and personality and developed a career interest model called RIASEC – an acronym for six personality types. Types are described as: **Realistic (Doers)** - those who prefer things to ideas or people. They are generally independent, stable, genuine and practical. **Investigative (Thinkers)** – individuals who tend to enjoy solving problems and conducting research. They are generally analytical, rational and prioritise intellectual or scientific activities. **Artistic (Creators)** – those who prefer to work with ideas, abstractions and concepts. They are generally, creative, sensitive, expressive and intuitive. **Social (Helpers)** – individuals who prefer tasks that help, support or teach others. They are generally caring, cooperative, empathetic and friendly. **Enterprising (Persuaders)** – those who prefer work that involves leadership, politics, business and public-speaking. They are generally ambitious, assertive, confident and risk-taking. **Conventional (Organisers)** – individuals who value precision and accuracy. They are generally efficient, thorough, orderly and detail-oriented. The RIASEC model was included in the development of the **PROFESSIONAL PROFILE 2©** given documented evidence on the financial, productivity and psychological costs associated with employee turnover, negative work behaviours and poor performance. Understanding employee career preferences is important for HR and recruitment professionals to identify and manage individuals who are poorly suited for specific roles, tasks and environments. Whilst these six categories are not definitive of the types of people that exist, they do allow a simple ordering of vocational personalities. Figure 4 depicts the hexagonal model of the RIASEC framework.

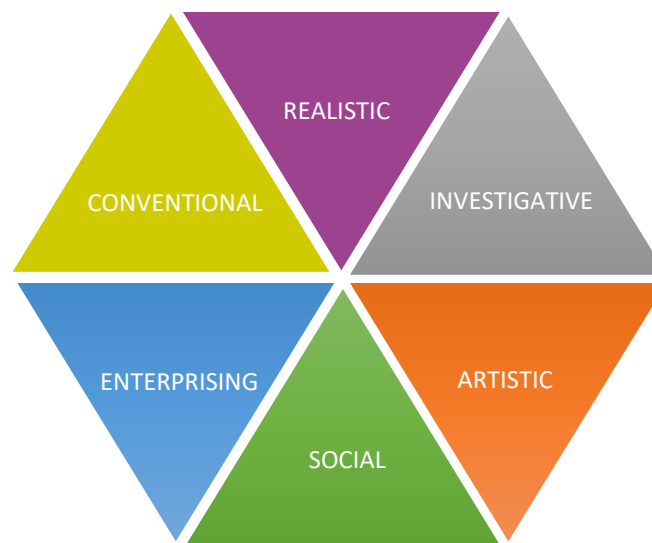


Figure 4. Holland's (1977) RIASEC Model of Occupational Themes.

2.1.5. Motivations and values in the workplace

The relationship between individual values, motivations and work success has been long documented. Several theories point to the role of motivation and values in determining an individual's life goals, the decisions s/he makes and explains why individuals behave in certain ways on a day to day basis.

Values are principles or standards of behaviour that govern one's judgement of what is important in life. Sociologist Morris Massey (1979) argued that values are formed during three periods: a) The **Imprint Period** – until the age of seven our values are blindly absorbed from our parents; b) The

Modelling Period – lasts between seven and approximately thirteen years of age, other sources such as teachers and role models influence our values and we try to imitate others; c) The **Socialization Period** – during adolescence and early adulthood (13 to 21 years) we are mainly influenced by our peers and actively seek others who are like us and share our values. Developed personal values therefore influence our attitudes and behaviours as they determine what we consider appropriate, right or wrong.

Values may be considered as long-term objectives that develop and adapt as a result of life experience. Important values influence our decision-making and the way we experience our surroundings. Finegan (2000) suggests a multidimensional approach based on two sets of factors: **Humanity Factors** such as courtesy, consideration, cooperation, fairness, forgiveness and moral integrity; and **Vision Factors** such as development, initiative, creativity and openness. An organisation that values both Vision and Humanity factors is likely to be perceived positively, and accordingly, employees are more likely to be affectively committed. However, this effect only occurs when employees attach importance to these values. Job applicants tend to look for companies that share the same values (Anderson, Fornell, & Mazvancheryl, 2004; Barnard, 1968; Chatman, 1989; Schneider, 1987).

The relationship between employee values and job performance was established from as early as 1956 (Pelz) when it was found that employees working in medical research who had a strong emphasis on science-related values showed higher levels of performance. Current research indicates that employees who report a high value congruence with their organisation are generally more satisfied with their job (Amos & Weathington, 2008). High value congruence also leads to organisational commitment and lower intent to quit (Kristof-Brown, Zimmerman, & Johnson, 2005; Meglino, Ravlin, & Adkins, 1989). However, if there is a mismatch between these values, strain occurs and employees are more likely to become stressed (Edwards, 1996). Thus it is necessary for organisations to be able to communicate their values in order to succeed.

Motivation is the desire or willingness to do something and provides underlying reasons for an individual behaving in a particular way. Motivation influences emotional, social and cognitive forces that lead to behaviour. There are two types of motivation: **Extrinsic** and **Intrinsic**. **Extrinsic** motivation refers to factors external to the individual that influence their beliefs, attitudes, decisions and behaviours. In the context of work, extrinsic motivators include salary, job perks/benefits, status and work conditions. **Intrinsic** motivation, on the other hand, refers to behaviour that is driven by internal rewards or feelings of personal satisfaction unique to an individual. In the context of work, intrinsic motivators include recognition, challenging work, purposeful work, achievement and opportunities for personal growth. In the **PROFESSIONAL PROFILE 2©**, values and motivations are considered essential to determine how individuals are likely to behave at work, the type of tasks that will keep him/her driven and satisfied, and the work environment s/he is likely to flourish in.

Research on the relationship between employee motivation and job and organisational success is extensive. There is clear evidence establishing a link between motivation and employee job performance (Alonso & Lewis, 2001; Bright, 2007; Locke & Latham, 2002; Locke, Shaw, Saari, & Latham, 1981); retention (Rainlall, 2004) and work attitudes (Kovach, 1995; Porter, Bigley, & Steers, 2003). With the recruitment and loss of talented employees associated with high financial and productivity costs, identifying motivated employees remain a primary objective of HR practitioners.

*2.1.6. Motivations and values theories used in the **PROFESSIONAL PROFILE 2©***

Several established motivation and values theories were used for the conceptual and practical development of the **PROFESSIONAL PROFILE 2©**; these included A. Maslow's (1943) Theory of Human Motivation; Value-based Decision-making model (VBDM) based on E. Spranger's (1928) values; and S. Schwartz's (2012) Value Theory.

2.1.6.a. Theory of Human Motivation – Abraham Maslow (1943)

What makes us choose one activity over another? What causes us to act in a particular way and what makes us go to work? Motivation, consciously or unconsciously, triggers action and is considered as the origin of individual behaviour. In 1943, Abraham Maslow theorised that individuals have universal needs at work, which were sources of motivation. Needs can be classified in a pyramid to visualise the order in which they appear in an individual. Maslow argued that satisfaction of needs at lower levels elicit needs at the next level and concluded that humans can only reach the top of the pyramid if lower-level needs were satisfied. Figure 5 depicts Maslow's theory of motivation and hierarchy of needs.

There are several theories of need-based motivation, with the majority agreeing on three key points:

- i. The existence of needs. Individuals feel basic needs which they seek to satisfy. These needs induce action.
- ii. The existence of objectives. Individuals are motivated to take action in order to achieve a goal.
- iii. Motivation is a personal phenomenon. Individuals do not have the same needs or problems nor solve them in the same way. Therefore both needs and motivation are individual.

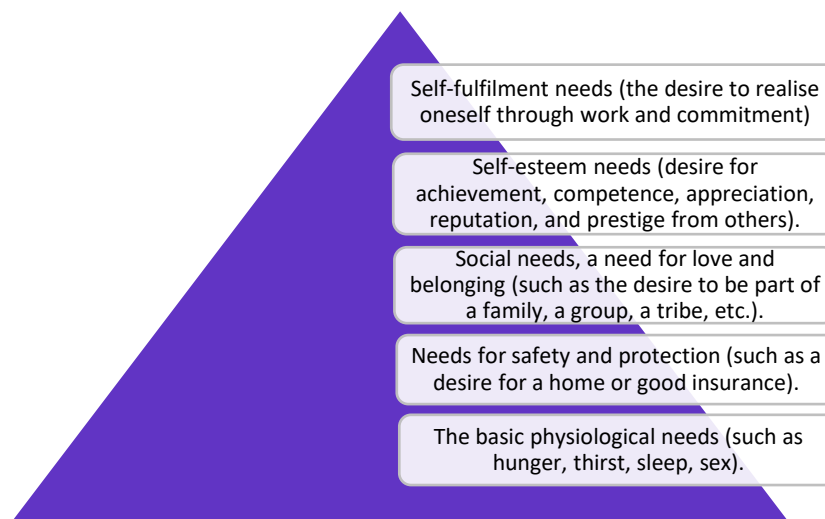


Figure 5. Maslow's Theory of Motivation and Hierarchy of Needs.

2.1.6.b. Value-Based Decision-Making – Eduard Spranger (1928)

In his seminal book *Types of Men*, Eduard Spranger (1928) proposed six types of personal values that form part of an individual's thinking and help us to choose between alternatives during the decision making process. Values, he argued, allow us to analyse and refine judgement. Values in the workplace are important as they reduce conflict between organisational members (Courtney, 2001) and effectively lead to the management of organisational knowledge, particularly during periods of restructuring and change (Hall, Guo, & Davis, 2003).

Values are categorised as follows: **Theoretical** - refers to comprehension of the truth and knowledge that has been attained in a rational, scientific manner. **Social** - relates to a philanthropic view as represented by a search for social interaction and being aware of the impact of our decisions on other people, groups, and organisations. **Political** - concerns a power-oriented view in relation to the prestige and power that could arise at the cost of others. **Religious** - this value aspires to make the world a better place. It is usually based on philosophical and interpretative views. **Aesthetic** - views the world through an artistic, interpretative view and seeks to find form and harmony in a given setting.

Economic - refers to the search for usability and material goods. It arises from a functional, practical view.

2.1.6.c. Value Theory – Shalom Schwartz (2012)

According to Shalom Schwartz (2012), values are concepts or beliefs that relate to a purpose or desirable behaviour. They transcend specific situations and reflect motivations designed to achieve specific objectives, such as safety, performance and autonomy. Values guide our choices and allow the evaluation of behaviour towards people or events. Schwartz conducted extensive research and identified 10 cross cultural value types. **Power** relates to the need for a prestigious social status and is related to values of authority, wealth, social power, public image and social recognition. **Achievement** is characterised by personal success and is related to values of ambition, orientation towards success, competence, influence and self-respect. **Stimulation** is the desire for variety in order to maintain an optimum level of activity and is related to values of audacity, an exciting and varied life. **Hedonism** is the need for pleasure and satisfaction and is related to values of pleasure, love life, having fun. **Universalism** is the understanding, tolerance and protection of the welfare of the whole world and nature. Related values include equality, a world at peace, tolerance and social justice. **Benevolence** is the maintenance of the welfare of people with whom one is in personal contact and is related to values of helpfulness, loyalty, honesty and responsibility. **Tradition** is commitment and approval of the customs and ideas advocated by traditional culture or religion. Related values included respect for tradition, humility, spiritual life and moderation. **Conformity** moderates actions, trends and desires that upset, hurt others or violate social norms. The emphasis here is on self-control in the interactions of everyday life with relatives. Related values are obedience, politeness, self-discipline, and honouring parents and elders. **Security** is characterized by the pursuit of harmony and stability within society, relationships and the self. Some values of this type are essentially individual interests (such as being healthy) and others are community interests (such as national security). Related values relate to maintaining social order, family safety, and cleanliness. **Self-Direction** is the independence of thought and action, characterised by choosing, creating and exploring. Related values are creativity, freedom and independence.

Table 1 details the **PROFESSIONAL PROFILE 2©** dimensions mapped onto corresponding dimensions of established psychological theories and frameworks.

Table 1. **PROFESSIONAL PROFILE 2© Dimensions Mapped onto other Psychological Theoretical Frameworks.**

PROFESSIONAL PROFILE 2© Dimensions		Corresponding Dimension	Reference Model/Framework
Personality			
1.	Flexibility/ Firmness	Thinking/Feeling Agreeableness	Theory of Psychological Type (Jung, 1921) FFM (Costa & McCrae, 1985)
2.	Extraversion/Introversion	Extraversion/Introversion	Theory of Psychological Type (Jung, 1921) FFM (Costa & McCrae, 1985)
3.	Focus on Facts/Intuition	Sensing/Intuition	Theory of Psychological Type (Jung, 1921)
4.	Improvisation/Structure	Enterprising/Conventional Conscientiousness	RIASEC (Holland, 1958) FFM (Costa & McCrae, 1985)
5.	Persuasiveness/ Straightforwardness	Honesty/Humility	HEXACO (Lee & Ashton, 2004)
6.	Emotional distance/ Emotional sensitivity	Artistic Emotional Stability Emotionality	RIASEC (Holland, 1958) FFM (Costa & McCrae, 1985) HEXACO (Lee & Ashton, 2004)
7.	Rule-following/ Free-thinking	Judging/Perceiving Openness	Theory of Psychological Type (Jung, 1956) FFM (Costa & McCrae, 1985)
Motivation			
1.	Ambition/Humility	Achievement Need Achievement Political	Motivation Theory (Maslow, 1943) Value Theory (Schwartz, 2012) VBDM (Spranger, 1928)
2.	Autonomy/Team work	Social Need Social/Artistic	Motivation Theory (Maslow, 1943) RIASEC (Holland, 1958)
3.	Altruism/Individualism	Religious Achievement Need Social Agreeableness Practical	VBDM (Spranger, 1928) Motivation Theory (Maslow, 1943) RIASEC (Holland, 1958) FFM (Costa & McCrae, 1985) VBDM (Spranger 1928)
4.	Need for action/Need for reflection	Investigative/Realistic Extraversion/Introversion	RIASEC (Holland, 1958) FFM (Costa & McCrae, 1985)
5.	Novelty seeking/Familiarity seeking	Investigative/Artistic Openness	RIASEC (Holland, 1958) FFM (Costa & McCrae, 1985)
6.	Desire to lead/Desire for guidance	Power Control Achievement Need	Value Theory (Schwartz, 2012) FIRO (Schutz, 1958) Motivation Theory (Maslow, 1943)
7.	Involvement at work/ Personal balance	Emotional Stability Hedonism	FFM (Costa & McCrae, 1985) VBDM (Spranger, 1928)

2.2. Development of PROFESSIONAL PROFILE 2©

The **PROFESSIONAL PROFILE 2©** was developed from a thorough multi-stage process. The precursor to the questionnaire was first developed in 2002 – a time in which the structure of work was more defined and targeted work competencies more predictable. However, work in the twenty-first century is characterised by more flexible ways of working, cross-cultural team work, technological innovation and more complex performance indicators. Questionnaire items and dimensions were therefore revamped in order to ensure; a) items reflected contemporary ways of working; b) effective prevention of faking and social bias; c) practitioners had a tool that improved the accuracy of assessment decisions; and d) individuals were clearly guided when assessing fit with desired roles and careers.

2.2.1. Dimensions and item construction

The **PROFESSIONAL PROFILE 2©** was developed from the bank of items for the original professional profile questionnaire. The original questionnaire underwent review that resulted from client interviews, training workshop feedback forms and advertised job competences. The original questionnaire assessed 12 dimensions from 98 questions, presented as paired statements (the equivalent of 196 items). Questions were divided into two sections: Part A comprised of 74 paired statements in which respondents chose the statement that best reflected them. Part B consisted of 24 paired adjectives or descriptors that required the respondent to choose a single response from the pair. A practitioner-based review ensured dimensions identified were clearly defined and items targeting each dimension accurately reflected modern and business-relevant behaviours. There were three primary recommendations for changes:

- i. Greater differentiation between personality and motivation dimensions
- ii. Inclusion of dimensions that target organisational and team fit
- iii. Clearer item structure and wording

This practitioner review process was followed by item and dimension review by a team of ten (10) experts comprised of Human Resource managers, recruitment consultants and psychologists. Items were grouped into themes and categorised into global dimensions generated from literature reviews of practitioner and academic research on personality, motivation, values and attitudes in the workplace. This process produced two additional dimensions; free-thinking/ rule following and familiarity seeking/ novelty seeking.

New and amended items for the **PROFESSIONAL PROFILE 2©** were written simultaneously in simple French and English to promote ease of response as well as facilitate candidates' mental connection and understanding with statements. As the questionnaire aimed to capture work-behaviours in multiple contexts, items were checked for cultural bias, clarity, offensiveness and language accuracy. Two examples of changed items resulting from this process are depicted in Table 2 below.

Table 2. Examples of Changed Items Resulting from Expert Review and Practitioner Feedback.

Dimension	Original Item	PROFESSIONAL PROFILE 2©
Team Work/ Autonomy	I find it stimulating to work in a team	I prefer working closely with others
Flexibility/ Firmness	I try to avoid power struggles	I try to find my way out of disagreements

2.2.2. Ipsative response format

Response options for the Items on the **PROFESSIONAL PROFILE 2©** are written in binary forced-choice format. In contrast to Likert-scales, respondents choose between descriptors according to the extent to which the descriptor captures their preference. Ipsative formats have been found to reduce response bias (Chan, 2003; Saville & Willson, 1991; ten Holt, van Duijn, & Boomsma, 2010). The fact that respondents cannot endorse all items eliminates acquiescence (the tendency to agree with all items on a questionnaire), reduces susceptibility to impression management and means that it is generally more difficult to fake (Brown & Maydeu-Olivares, 2011a). Ipsative formats make it impossible to provide the same response on all items, thereby resulting in greater differentiation of scores within a profile. Ipsative scales are also beneficial because there is no need to include negatively-worded items in order to balance dimensions. Rather, mirrored items facilitate measurement of behaviours for different traits along the same domains. In Likert scales, it is necessary to include negatively-worded items in order to balance responses and monitor acquiescence (Brown & Maydeu-Olivares, 2013; Edwards & Kenney, 1946). With ipsative formats, all items are worded positively yet both positive and negative behavioural indicators are captured.

Despite such advantages, ipsative questionnaires are underutilised in work-based assessments due to challenges for traditional normative scoring methodology, construct validation and interpretation (Cornwell & Dunlap, 1994; Loo, 1999; Meade, 2004).

In an ipsative test, the respondent must make a comparative judgement between two or more items to give an answer. Conversely, in a normative test, judgement is viewed in absolute terms for each evaluated personality trait and preferences are not compared between different traits. Classic test theory (CTT) scoring does not reflect the psychological process of comparison, as it ignores the fact that respondents indicate a preference not an absolute judgement. As a consequence, ipsative test scores that are generated from CTT scoring approaches might be distorted. The potential solution therefore is to keep the ipsative format but change the way the scores are calculated, in order to reflect realistic comparative judgements.

2.2.3. Thurstonian Item Response Theory (IRT) and ipsative responses

To solve the problem of ipsative scoring, researchers relied on the work of Thurstone (1927, 1931) who proposed the law of comparative judgements, which assigns the result of a comparative judgment to the "relative utility" of objects compared for each individual. Applied to personality assessment, the notion of utility refers to the degree to which there is a match between the item and the personality trait of the respondent. Therefore, an individual will choose the item that corresponds to them the most.

Despite its potential benefits, Thurstonian models were previously not utilised in ipsative test as (Brown, 2010):

- i. There was no efficient estimation method available
- ii. Computer technology was not powerful enough to facilitate analysis
- iii. Previous statistical programmes did not facilitate the calculation of scores because the variance of error for each question is 0

Recent changes were made to the Thurstonian second order model to produce the Thurstonian IRT model (Brown & Maydeu-Olivares, 2011, 2013). This model bypasses the notion of latent utility, and directly connects the choice made by the respondents to the latent personality traits measured by the test. This change simplifies the model and allows for it to be applied to much longer questionnaires.

Brown & Maydeu-Olivares (2011, 2013) showed that when applied to an ipsative questionnaire with blocks of four items, this method allows not only to correct the distortion of the scores, but also to recover the levels of "absolute" personality traits from responses based on comparative judgements. The scores provided were similar to those of a normative test.

The nature of this scoring procedure, based on the Maximum a posteriori estimator (MAP), was completely different from that of the CTT, which "adds" the dimension points for each selected item. MAP is an estimation procedure which has the goal to find a parameter value theta (the value on the latent trait continuum) that best explains the data (the pattern of binary outcome responses) by assuming a joint distribution on both, the data and the theta, with theta governing the distribution on the data (i.e. the posterior distribution). More simply, with the Maximum a posteriori estimator, the overall response pattern of the test is taken into account for the calculation of the score. By comparing the choice and preference indicated by the respondent while taking into account the specific characteristics of the items, the method is able to deduce (or recover) their absolute level of personality trait for each dimension.

For the **PROFESSIONAL PROFILE 2©**, Thurstonian IRT was used to revise, rewrite and validate both items and dimensions. Figure 6 displays the model of Thurstonian IRT used to analyse items and dimensions on the questionnaire.



*Figure 6. Model of Thurstonian IRT Analyses Utilised in the Development of the **PROFESSIONAL PROFILE 2©**.*

2.2.3.a. Item facility

Item facility refers to an item's ability to differentiate between respondents and identify floor or ceiling effects. An item has floor or ceiling effects when the probability of endorsing a response option is much lower or greater than the probability of endorsing the alternate option. As items for the **PROFESSIONAL PROFILE 2©** were binary, item facility was examined from the proportion of responses for each option. The more equivalent the proportion the more balanced the item. For the **PROFESSIONAL PROFILE 2©**, items with floor or ceiling effects were discarded or modified. The facility of changed or new items was then examined with subsequent pre-tests.

2.2.3.b. Item difficulty & discrimination

Item difficulty is the first parameter of an IRT model. It is defined as the location on the ability continuum, where the probability of endorsing the item is equal to 50% of the participants. In a personality assessment, the difficulty parameter reflects the level of trait needed for participants to have a 50% chance of choosing the item. An item is said to be "easy" when the probability that 50% of individuals who endorsed it only have a low level on the trait measured by the item (e.g. an "easy" item measuring Extraversion might be chosen by 50% of participants having only a low level of trait for Extraversion). On the contrary, an item is said to be "difficult", when the probability that 50% of individuals who endorsed it have a high level of trait (e.g. a "difficult" item measuring Extraversion might reach the probability of being chosen by 50% of the participants only if they have a high level of trait for Extraversion).

Item difficulty can be visualised on the Item characteristic curves (ICC). The ICC is an S-shaped curve that represents the relationship between ability levels of the latent trait and the probability of endorsing an item. It is obtained by modelling the probability of endorsing the items using logistic model (see figure 7).

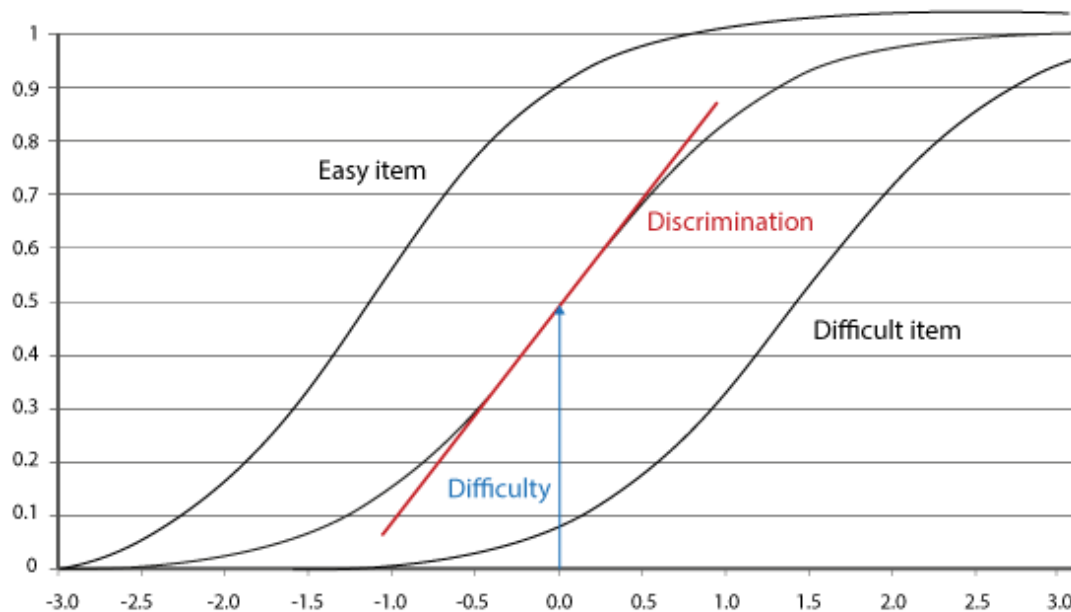


Figure 7. Item Characteristic Curves of an Easy, Moderate and Difficult Item from an Ability Test.

Note: The probability that 50% of the participants chose the correct answer can be observed when the ability level is -1.3 for the easy item, 0 for the moderately difficult item and 1.4 for the difficult item (the ability level is represented as a Z score, 0 being the mean).

Item discrimination is the second parameter of the IRT model and refers to the shape of the curve. It is a measure of an item's ability to distinguish between respondents on the target construct. A high discrimination parameter value reflects a high ability to differentiate between participants; the probability of choosing the correct answer (or endorsing the item for a personality assessment) increases more rapidly as the ability (or level of trait) increases.

As the Thurstonian IRT model is conceptualised from a factor analysis perspective, item difficulty is referred to as "threshold" instead of "difficulty" and item discrimination parameter as "factor loadings". Factor loadings and threshold were examined for all Items. Items that were too difficult, too easy or did not discriminate enough were modified or removed.

2.2.3.c. Item and dimension reliability

Item reliability is the degree to which items on a questionnaire have no error. The reliability of an item is determined by the internal consistency of the item and its relationship with other items that measure the same dimension. Internal reliability was measured using composite reliability generated from item factor loadings. Composite reliability ranges from 0 to 1 with a recommended coefficient of 0.7. For the **PROFESSIONAL PROFILE 2©**, items with the smallest factor loadings were changed or deleted. Modified questionnaires were then trialled with successive pre-tests.

2.2.4. Pre-tests and pilots

Pre-tests were conducted with a range of male and female professionals across the globe to ensure items were accurate, relevant, clear, concise, culture-free, bias-free and reflected targeted work behaviours. After 2 French and 2 English pre-tests, the final questionnaire was piloted with 345 English-speaking professionals from the United States and 209 French-speaking professionals from France. Pre-test samples comprised of native French and English speakers from different continents in order to establish the questionnaire as an international measure of work personality and motivation. Unlike other personality measures, the **PROFESSIONAL PROFILE 2©** was developed to ensure items were culturally equivalent from the early stages of development, rather than focus on cultural adaption after the questionnaire's validity has been established within a single context – the typical practice of test developers. Tables 4 and 5 detail sample characteristics of all pre-tests and pilots conducted for French and English working-age samples.

Composite reliabilities for each dimension were calculated from generated item factor loadings. Dimensions were flagged if reliabilities were less than 0.55. Dimensions that did not converge were inspected for poorly-performing items which were then reviewed, modified or changed then subjected to another round of pre-test. The overall scale composite reliability for the Pilot study was .998 (France) and .990 (USA). Composite reliability for personality dimensions ranged from .663 – 1.00 (France) and .768 -1.00 (USA), whilst reliability for motivation dimensions ranged from .832 – 1.00 (France) and .683 - .892 (USA). As shown in Table 3, dimensions not emerging as valid did not produce item loadings therefore reliabilities were not calculated. Detailed information on the validity of each domain for each pre-test can be seen in Chapter 6- Validity.

*Table 3. Dimension Reliabilities for French and English Pre-tests and Pilots for the **PROFESSIONAL PROFILE 2©**.*

		P ₁	P ₂	P ₃	P ₄	P ₅	P ₆	P ₇	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇
French	Pre-test 1	.79	.64	.75	.75	.57	.79	.64	.81	.98	.99	.85	.98	.86	1.0
	(N=143)	5	7	8	6	9	3	3	7	2	5	1	3	4	0
	Pre-test 2	.93	.97	.92	.89	.81	.74	1.0	.64	.65	.73	.75	.87	.71	.73
	(N=189)	4	8	0	3	7	6	0	5	7	7	6	6	8	0
	Pilot	.66	.97	.86	1.0	1.0	.99	.94	.94	.98	1.0	.93	1.0	.83	.97
	(N=209)	3	1	1	0	0	2	3	9	5	0	2	0	2	8
English	Pre-test 1	.72	.97	.48	.54	.86	.84	.79							
	(N=105)	9	1	7	9	1	3	9							
	Pre-test 2								.99	.92	1.0	1.0	.88	.96	.91
	(N=118)								6	9	0	0	2	8	0
	Pilot	.99	.89	.96	.86	.76	.83	1.0	.68	.76	.78	.68	.74	.89	.86
	(N=345)	5	0	5	9	8	9	0	4	4	4	3	5	2	9

P₁ – Flexibility/Firmness P₂ – Extraversion/Introversion P₃ – Focus on facts/Intuition P₄ – Improvisation/Structure P₅ – Persuasiveness/Straightforwardness P₆ – Emotional distance/Emotional sensitivity P₇ – Rule-following/Free-thinking M₁ – Ambition/Humility M₂ – Autonomy/Team work M₃ – Altruism/Individualism M₄ – Need for reflection/Need for action M₅ – Novelty seeking/Familiarity seeking M₆ – Desire to lead/Desire for guidance M₇ – Involvement at work/Personal balance

Table 4. Sample Characteristics for Pre-tests and Pilot Samples used to Develop the **PROFESSIONAL PROFILE 2©** - French.

Pre-Tests and Pilots Sample Characteristics					
	Gender (% male)	Age	Ethnic Composition	Occupational Composition	
French	Pre-test 1 (N=143)	30.77%	(M=40.08; SD =10.30) Range 20-68 years	88.81 % - French Europe 04.20 % - French Africa 03.50 % - French North America 03.50 % - French Other	14.69% - Manual and semi-skilled workers 17.48% - Entrepreneurs and specialist professionals 09.79% - Junior executives (business administration, sales) 02.10% - Retirees & Househusbands or housewives 34.27% - Senior executives (civil service, business, intellectual or artistic professions) 04.20% - Technical and skilled workers 11.19% - Unemployed 06.29% - University students
	Pre-test 2 (N=189)	37.03 %	(M= 37.09; SD = 10.02) Range 19-67 years	82.54 % - French Europe 13.23 % - French Africa 01.06 % - French North America 03.17% - French Other	15.87% - Manual and semi-skilled workers 15.34% - Entrepreneurs and specialist professionals 10.05% - Junior executives (business administration, sales) 30.16% - Senior executives (civil service, business, intellectual or artistic professions) 07.94% - Technical and skilled workers 12.70% - Unemployed 07.41% - University students 00.53% - Service providers (B2C)
	Pilot (N=209)	34.45%	(M=41.89; SD =10.48) Range 23- 65 years	100% - French Europe	15.31% - Manual and semi-skilled workers 15.79% - Entrepreneurs and specialist professionals 06.70% - Junior executives (business administration, sales) 01.44% - Retirees & Househusbands or housewives 40.67% - Senior executives (civil service, business, intellectual or artistic professions) 05.26% - Technical and skilled workers 09.09% - Unemployed 04.78% - University students 00.96% - Service providers (B2C)

Table 5. Sample Characteristics for Pre-tests and Pilot Samples used to Develop the **PROFESSIONAL PROFILE 2©** - English.

Pre-Tests and Pilots Sample Characteristics				
	Gender (% male)	Age	Ethnic Composition	Occupational Composition
English	Pre-test 1 (N= 105)	50.48%	(M=37.73; SD =11.5) Range 20 - 70 years	27.62% - English Europe 26.67% - English Africa 0.95 % - English North America 40.95 % - English Asia 3.81 % - English Other
				15.24% - Manual and semi-skilled workers 27.62% - Entrepreneurs and specialist professionals 13.33% - Junior executives (business administration, sales) 00.95% - Retirees & Househusbands or housewives 16.19% - Senior executives (civil service, business, intellectual or artistic professions) 10.48% - Technical and skilled workers 05.71% - Unemployed 06.67% - University students 03.81% - Service providers (B2C)
	Pre-test 2 (N=118)	57.63%	(M=35; SD =11.7) Range 16 - 62 years	14.41% - English Europe 21.19% - English Africa 05.93% - English North America 55.08% - English Asia 03.39% - English Other
				12.71% - Manual and semi-skilled workers 19.49% - Entrepreneurs and specialist professionals 10.17% - Junior executives (business administration, sales) 05.08% - Retirees & Househusbands or housewives 22.03% - Senior executives (civil service, business, intellectual or artistic professions) 05.08% - Technical and skilled workers 08.47% - Unemployed 16.10% - University student 00.85% - Service providers (B2C)
	Pilot (N=345)	49.86%	(M=39.63; SD =11.34) Range 20-64 years	100% - English North America
				31.01% - Managers 86.99% - Non-managers

2.2.5. IRT scoring: Case study

To our knowledge, the Thurstonian IRT model has been previously used only once on an ipsative personality assessment (Brown & Maydeu-Olivares, 2011, 2013). To investigate the benefits of using the scoring procedures based on the Thurstonian IRT model with the maximum a posteriori estimator instead of the classical test theory based scoring, we performed a case study on the final French and English version of the **PROFESSIONAL PROFILE 2©** questionnaire. The objective was to compare the impact of the two ways of calculating scores (IRT versus classical) on the face validity of the questionnaire.

2.2.5.a. Participants & methods

Thirteen participants, 8 French-speaking (5 females) and 5 English-speaking (1 female) took the **PROFESSIONAL PROFILE 2©** online.

They were given 3 different reports including personalised comments for each personality trait measured. One report was based on the IRT score, a second one was based on CTT scores. A third report based on a random score was added as a baseline condition in order to control for acquiescence bias (control condition). The random report was different for English speaking versus French speaking individuals, but identical for participants from the same country. It was always presented in the second position, while the position of the IRT or CTT score based report (place 1 versus 3) was counterbalanced between participants.

Task 1: For each report, participants were asked to rate on a scale from 0 (not agree at all) to 10 (completely agree) if they agreed with the comments on each dimension.

Task 2: Then, for each dimension, they were asked to choose the comments which described them best. Sometimes, IRT, CTT or Random based report converged to the same score for one dimension and therefore reports displayed the same personalised comment for one dimension. In that particular case, participants were asked to select both comments.

2.2.5.b. Analyses

Task 1: The median and mode of agreement for each dimension were computed for the IRT, classical and random report (cf. see Figure 8 and Table 6).

Task 2: For each type of report, the frequency and percentage of the preferred comments were calculated for each dimension and each participant. When the preferred comments based on IRT or classical score were identical, the answers of the participant were considered for both of them. However, when the comments were identical across IRT or CTT and the random report, the score was attribute only to the experimental condition and not to the random report.

2.2.5.c. Results

Task 1. Results show that the median score on the satisfaction scale for each comment ranges from 7 to 9 (average 8) for the report based on the CTT scoring method, from 5 to 8 (average 7) for the report based on the IRT scoring method, and from 2 to 8 (average 6) on the random report. Whilst the mode score ranges from 7 to 9 (average 8) for the report based on the CTT scoring method, from 0 to 9 (average 8) for the report based on the IRT scoring method, and from 2 to 8 (average 6.5) on the random report. We also considered the number of times participants rated a score below 5 on the 10 point scale, to determine how many times they disagreed with the report comments. Disagreement

scores decreased from the random report (17.6%), then IRT report (15.9%) and then to the CTT report (9.3%).

It was the report based on the CTT scoring methods that raised the best agreement scores and the least disagreement scores (see Figure 8 and Table 6).

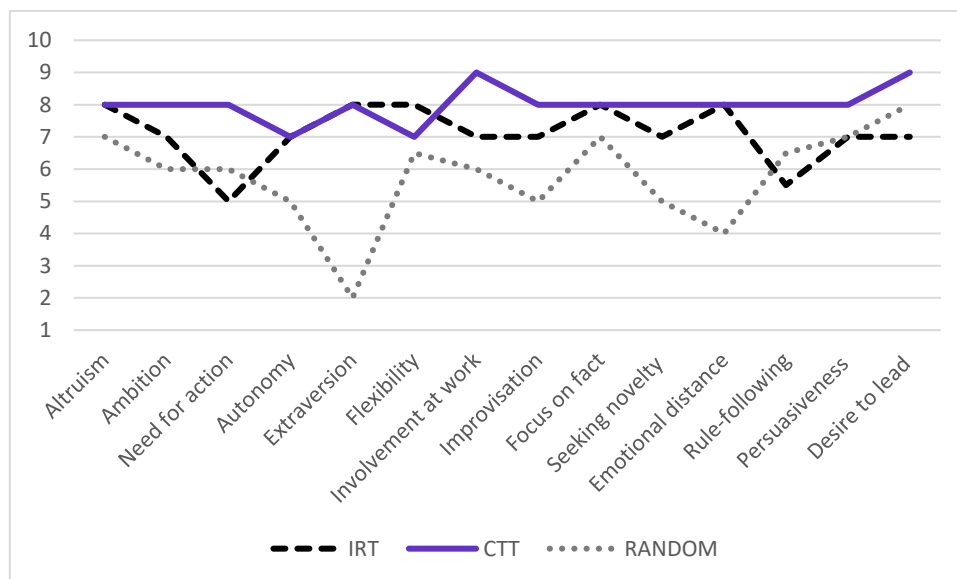


Figure 8. Median Score (out of 10) of Satisfaction Score for the Comments of Each Dimension and Each Type of Report.

Note. Report based on CTT score (solid red line, CTT); report based on IRT score (black dashed line, IRT), report based on random score (grey dotted line, random).

Table 6. Median and Mode Scores for the PROFESSIONAL PROFILE 2® on the Agreement Scale for the Comments on Each Dimension and Type of Report.

	IRT			CTT			RANDOM		
	Median	Mode	Score <5	Median	Mode	Score <5	Median	Mode	Score <5
Altruism	8	9	1	8	8	2	7	7	2
Ambition	7	7	1	8	7	1	6	6	2
Need for action	5	8	4	8	9	2	6	3	1
Autonomy	7	7	0	7	7	2	5	2	3
Extraversion	8	8	2	8	8	0	2	0	4
Flexibility	8	9	2	7	8	1	6.5	8	4
Involvement at work	7	8	3	9	9	1	6	8	1
Improvisation	7	8	2	8	8	1	5	8	4
Focus on fact	8	8	2	8	8	2	7	8	0

Novelty seeking	7	7	3	8	7	1	5	2	2
Emotional distance	8	10	3	8	8	0	4	2	5
Rule-following	5.5	5	4	8	8	2	6.5	3	3
Persuasiveness	7	7	0	8	8	1	7	7	0
Desire to lead	7	7	2	9	9	1	8	9	1
Total	7	8	29 (15.9%)	8	8	17 (9.3%)	6	6.5	32 (17.6%)

Note. Score <5 corresponds to number of times participants disagree with personalised comments and gave a score < 5 on the 10 point scale. CTT: Report based on Classical Test Theory score, IRT: Report based on IRT score, Random: report based on random score.

Task 2. Results show that 9 dimensions of the report, based on the CTT scoring methods, were preferred over the IRT and random report, while 4 dimensions of the report based on the IRT scoring were preferred over the other two reports (see Table 7).

Table 7. Frequency of Distribution and Percentage of Preference for Each Type of Report.

	Random		CTT		IRT	
	Frequency	%	Frequency	%	Frequency	%
Altruism	4	30.77	3	23.08	9	69.23
Ambition	1	07.69	10	76.92	8	61.54
Need for action	1	07.69	9	69.23	5	38.46
Autonomy	3	23.08	9	69.23	8	61.54
Extraversion	3	23.08	7	53.85	8	61.54
Flexibility	4	30.77	5	38.46	10	76.92
Involvement at work	0	00.00	11	84.62	4	30.77
Improvisation	0	00.00	10	76.92	7	53.85
Focus on fact	1	07.69	6	46.15	9	69.23
Novelty seeking	1	07.69	9	69.23	7	53.85
Emotional distance	2	15.38	7	53.85	8	61.54
Rule-following	2	15.38	9	69.23	6	46.15
Persuasiveness	4	30.77	7	53.85	5	38.46
Desire to lead	5	38.46	8	61.54	3	23.08

Note. CTT: Report based on classical score, IRT: Report based on IRT score, Random: report based on random score.

Results of this study indicate a preference for reports based on CTT scoring over IRT scoring. Moreover, participants were more satisfied by the report based on CTT scoring compared to the IRT scoring methods. Even if the median scores on the agreement scale are close for both IRT and CTT report, analyses show that IRT scoring led to a higher amount of scores below 5 compared to the CTT report, indicating that from the participants' perspective the first method generates more inaccurate results than the second one.

Finding that CTT scoring of an ipsative test was more accurate than IRT scoring was surprising, as literature emphasised the issue of distorted results when using a CTT method for the scoring of an ipsative test. However, practitioners already highlighted with empirical evidences that forced-choice and normative questionnaire might produce comparable results, especially when a large number of dimensions are being measured (Baron, 1996; Karpatschhof & Elkjaer, 2000). Each **PROFESSIONAL PROFILE 2©** dimension indeed includes 2 opposing factors, which means that the questionnaire assesses 28 constructs, and therefore might fall into the category of a questionnaire measuring a sufficient number of dimensions to retrieve people's absolute level of trait.

Other factors may explain the superiority of CTT scoring methods for the **PROFESSIONAL PROFILE 2©** questionnaire, such as the addition of the Audit Scale, which contains only pairs of items measuring the same traits. The 28 items composing the Audit Scale directly assess the two opposing factors of the 14 dimensions of the questionnaire, and may correct the distortion caused by the forced-choice format measuring two different dimensions. More research is needed to find a scoring methods that works empirically and is coherent from a statistical perspective. In the meantime, as suggested by empirical evidence, the CTT scoring methods will be used in the **PROFESSIONAL PROFILE 2©**.

3. Scoring

A raw score is the total number of responses endorsed by a candidate for each trait. In the context of work-based assessment, raw scores mean little as they do not provide effective or appropriate comparisons between candidates across a specific trait. Norms enable HR practitioners, managers and recruiters to evaluate an individual's score relative to the score of other delegates who completed the same assessment.

3.1. The relationship between raw scores and norms

The best norm group is one that is most representative of the characteristics of the individuals taking a test. Applied assessment assumes personality traits, motivations, values, attitudes and perceptions are distributed along a normal probability or bell-shaped curve. Therefore, norm groups effectively identify individual scores across this distribution. In any given population, levels of a target attribute may be found. Therefore, for a given attribute or trait, the normal curve represents the norm or average performance of a population and the scores that are above and below the average for that population (Kaplan & Saccuzzo, 2008). For norms to be meaningful, the sample used must reflect the intended population of test takers. If a test is developed for engineers, the norm sample must consist of engineers in the population. Similarly if an assessment was developed for nurses, it is not appropriate for use in the selection of chemists. Norm groups can range in size from a few hundred to a hundred thousand. However the larger the norm group sample size the closer the approximation to a normal population distribution. Figure 9 shows the normal bell curve.

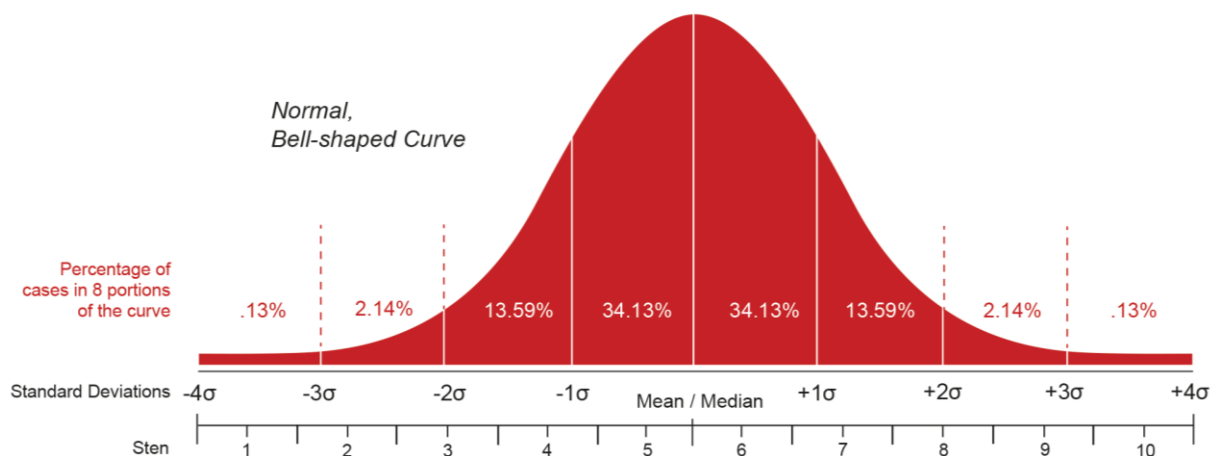


Figure 9. Normal Bell-shaped Curve showing the Distribution of Percentages, Standard Deviations and Standard Ten (Sten).

Key to the creation of norms is the conversion of raw scores into derived scores. This process provides a system of common metrics that readily facilitate the interpretation of test scores. For the **PROFESSIONAL PROFILE 2©** the forms of score standardization used were: 1) Mean; 2) Median; 3) Standard deviation; 4) Standard score; 5) Standard ten (sten); and 6) Standard error of measurement.

Table 8 describes the various types of derived scores used in the validation of the **PROFESSIONAL PROFILE 2©**.

*Table 8. Types of Derived Scores used to Standardize the **PROFESSIONAL PROFILE 2©**.*

Derived Score	Symbol	Definition and Characteristics
1. Mean	μ	The average score of all participants who complete an assessment. The mean is calculated by dividing the sum of all scores by the number of participants. The formula for calculating the mean is: $\bar{x} = \frac{1}{n} \sum_{i=1}^n x_i$
2. Median	$\sim x$	The median is the score that separates the highest scores from the lowest. The median can be found by arranging all scores in order from lowest to highest and selecting the score in the middle. Like the mean, median is a measure of the general tendency of a group of scores.
3. Standard Deviation	σ	A measure of the amount of variation across scores for candidates who take an assessment. A small standard deviation indicates scores are close to the mean while a large value tells us there is much variability across individuals. $\sigma_x = \sqrt{E[(X - E[X])^2]}$ Whereby E denotes the average or expected value of a variable X.
4. Standard Score	Z	Estimates whether an individual's score is above average, average or below average compared to peers. Scored on a scale from -4 to 4 with zero in the middle representing average. Positive scores are above average while negative scores are below average. Z scores are calculated using the formula $z = (score - \mu/\sigma)$. Whereby $score$ is the candidate's raw score, μ is the mean of raw scores for all candidates and σ is the standard deviation of raw scores on the standardisation sample.
5. Standard Ten	Sten	A standard score with scores ranging from 1 – 10. Here the mean is 5.5 and the standard deviation equals 2. The formula for calculating Sten scores is $= \left(X - \frac{\mu}{\sigma}\right) 2 + 5.5$. Whereby X is the candidate's raw score, μ is the mean of raw scores for all candidates, σ is the standard deviation of raw scores on the standardisation sample, multiplied by 2 + 5.5. Sten scores are rounded to the nearest whole number with values less than 1 or greater than 10 rounded up or down respectively.

6.	Standard Error of Measurement	SEM	SEM is related to test reliability and provides an indication of the dispersion of measurement errors associated with test scores from a group of candidates. It helps us to identify level of errors when estimating candidate's true scores from their observed scores. The smaller the SEM, the more accurate are the assessments that are being made. $SEM = \sigma \times \sqrt{(1 - reliability)}$.
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3.2. Transforming raw scores to standardised scores

For the 112 items on the **PROFESSIONAL PROFILE 2©** the minimum and maximum overall score for each trait are -8 and 8. The conversion of raw scores to standardised scores is achieved using a four-step process.

Step 1 Ipsative scores are calculated for each scale by summing all forced-choice responses for each trait. For each response, 1 is assigned to the response that is endorsed and 0 for the response that is not endorsed.

Scores are repositioned on a scale from 0 to 10 by using the following formula:

Step 2

$$score = \left(\frac{\text{raw score} - (\min)}{(\max) - (\min)} \right) * 10$$

Whereby *max* refers to the maximum possible score of each scale and *min* refers to the minimum possible score of each scale.

Step 3 To enable the comparisons between individuals, scores for each scale are standardized using the mean and standard deviation across respondents. This process produces a z score using the formula:

$$z = (score - (\mu/\sigma))$$

Step 4 Standardised scores are then transformed into sten scores from 1 to 10 using the formula:

$$sten = z * 2 + 5.5$$

The importance of standardized scores can be illustrated with the following example:

For 9 out of 10 times, a test-taker chooses items describing Extraversion over items describing other dimensions (i.e. in 90 % of all cases). However on 6 out of 10 times, the test-taker chooses items corresponding to the dimension of Rule-Following. If the test-taker is compared to a group with a high mean for Extraversion, the 90 % may not be extraordinary. However, if the comparison group is characterised by a very low mean score on Rule-Following, the 60 % is meaningful. Thus, a score has to be regarded in relation to the population in order for it to be interpreted appropriately.

3.3. Standard error of measurement

No test score is perfect. Therefore we need an estimate of the possible amount of error present within a score. The amount of error associated with a score is known as the standard error of measurement (SEM). SEM helps us to understand what is a candidate's true score and the extent to which it differs from the obtained score (Harvill, 1991). In an ideal world, the SEM would be calculated by having an individual take an assessment on many occasions over a long period of time. The extent to which there was variation across each score obtained by the candidate would be classified as the standard error of measurement. However, as it is not feasible to assess candidates multiple times, the SEM must be calculated using a different approach.

The SEM is an estimate that is added to or subtracted from a candidate's score in order to establish a level of confidence about a score. From this confidence band, we are able to determine the extent to which a score may vary. Standard error of measurement is related to reliability. Therefore as reliability increases, SEM decreases. For a series of scores, approximately 68% of the time, an observed score will lie within +1.0 and -1.0 SEM of the true score. On 95% of occasions, the observed score will be between +1.96 and -1.96 SEM of the true score. Whilst 99% of the time, the observed score will lie within +2.58 and -2.58 SEM of the true score. The 95% confidence band of a score is calculated using the formula:

$$\text{Confidence Band} = \text{score} \pm 1.96 \times \text{SEM}$$

Therefore for the **PROFESSIONAL PROFILE 2®**, a dimension with a score of 5 and SEM of 0.2, has a confidence band of 4.608 - 5.392. This means we can be 95% confident that an individual's true score lies between this range.

3.4. Choosing an appropriate norm group

Norms give meaning to an individual's score. The interpretation of the same score may therefore differ depending on whether a score was obtained by a graduate, administrator or senior manager. For accurate interpretation, it is necessary to compare an individual's score with a group that is most similar to him/her. To choose the appropriate norm, first identify the country of the candidate. Then from that country identify the age, gender, educational level, number of years work experience, social professional status, industry or occupational group most appropriate for the candidate.

Alternatively it is possible to create your own internal norms, based on the candidates that have already been assessed.

3.5. Creating in-house norms

It is possible to generate internal organisational norms if there is a sample of 50 or more individuals who have worked in the specified role, department or sector. In-house norms ensure that comparisons between individuals and the reference group reflect the target role, tasks and work environment as closely as possible. In-house norms are particularly valuable in situations where standard norms are not available, roles are new, the organisation has a unique client-base or business function and in cases where the applicant pool for a role is significantly higher or lower than expected.

To create in-house norms, first calculate the mean and standard deviation for each dimension on the **PROFESSIONAL PROFILE 2®** and score the results based on the step by step guide outlined in section

3.2. Organisations will then be able to compare individual applicants or employees to a local normal group.

3.6. Link between scores and report comments

Personalised comments on **PROFESSIONAL PROFILE 2©** reports reflect the scoring process. For each dimension, an individual receives a score of 0 to 10 (as demonstrated in Step 2). Comments provide an extensive interpretation of all dimensions of the assessments and are chosen from six levels according to the score of the candidate. They describe individual preferences and orientation toward traits with higher scores accompanied by stronger descriptors. For example, a candidate with a mean score on a trait may be classified as 'somewhat' in relation to behaviours associated with the trait, whilst someone with a high score is described as having a 'strong preference for' that trait. Candidates with low scores on dominant traits are described in positive terms in relation to the opposing trait in order to avoid the use of negative terminology in reports.

3.7. Scoring the profile fit percentages

The report presents profile fit percentages computed for an individual's General Profile (e.g. reflective, cooperative, conscientious, dynamic, devoted), orientation towards desired organisational potentials (e.g. decision-making, conflict resolution, team building, stress management, result orientation) and potential fit with 58 professional careers (e.g. legal, tourism, administrative, business-oriented). Percentages reflect the degree of correspondence between a candidate's scores on relevant dimensions and the scores of the target profile. A perfect match corresponds to a score of 100%. These sections are additional components that can be added to standard **PROFESSIONAL PROFILE 2©** reports.

The percentages should be interpreted in relative terms. This means that the order of the targeted profiles is more important than their absolute score. We consider that beyond a threshold for a specific dimension, such as extraversion, a score equal to or greater than this threshold corresponds to an optimal level of approximation for the Profile Fit (for example, a score of 7, 8, 9 or 10 on extraversion will be equivalent and considered as optimal for a threshold set at 7). The logic remains the same for opposing dimensions. A score equal to or lower than the threshold corresponds to an optimal level of approximation (e.g. a score of 0, 1, 2 or 3 to a threshold of 3).

This method of calculation thus takes into account only the dimensions for which the score for a participant does not match the defined threshold. Calculations are also weighted according to the strength of their threshold. A threshold set at 9 or 10 for example will have more weight than a threshold of 6 or 7.

4. Norms

Norms help us to compare an individual's score on a test with the scores of others who completed the same assessment, usually under similar conditions. These individuals who took the test at the same time are representative of the population for which an assessment is intended and are therefore referred to as the norm group. The closer the match between the characteristics of the sample and the target population, the more accurate the distribution will be as a ranking guide. With norms, test developers and psychologists are able to establish comparisons between individuals and make more objective decisions. Norm groups enable us to attribute meaning to test scores and quantify an individual's performance, or level of an attribute or trait relative to his/her peers.

In the case of work-based assessments, norm groups help HR Managers, recruiters and coaches to:

- Determine a candidate's suitability for a role relative to the job specification
- Evaluate a candidate's abilities across a range of desired competencies
- Identify an employee's skill deficits and tailor training for development
- Identify a candidate's potential team and organisational culture fit
- Determine how a candidate is likely to respond to stress or changes in the work environment
- Establish objective metrics of performance.

4.1. Standardisation studies

The 112 item **PROFESSIONAL PROFILE 2©** was administered to professional working samples from three countries namely France (N= 849), UK (N= 378) and USA (N=345). Employees represented technical, administrative, service, managerial and non-managerial roles and worked for a range of industries including banking and professional services, marketing and the service sector, manufacturing and product development, information technology, education and research, civil service and non-governmental organisations.

While reports automatically adjust scores based on the country of the participant, additional norms need to be looked up in the following tables in order to increase the match between the participant and the target population.

4.2. Sample description and French norms

The sample for the French standardisation comprised of 849 professionals (339 men; 510 women) ranging in age from 20 to 64 years ($\mu = 43.68$; $\sigma = 11.26$). All participants were native French speakers and represented a range of occupational groups. Data were collected from the *Central Test* Research Study Group and clients. To ensure the quality of data obtained, participants who completed the questionnaire more than once or in less than 8 minutes were excluded from analyses.

Norms were generated separately for the total sample and specific groups such as gender, managerial level, educational level, socio-professional category and industry. Tables 10-13 detail the norms for the French population and includes Sten scores across groups.

Table 9. Participant Characteristics for Professionals in French Standardisation of the **PROFESSIONAL PROFILE 2®**.

French Standardisation Sample Characteristics (N = 849)				
Gender (% male)	Age	Ethnic Composition	Occupational Composition	
39.93 %	(M=38.88; SD =10.18) Range 21-65 years	95.99 % - France and DOM-TOM 03.30 % Belgium 00.71 % Suisse	18.14 %	Employees (unskilled) (civil service, business); Manual labourers
			12.49 %	Senior executives (civil services, business, intellectual or artistic professions)
			09.30 %	Seeking work and other people without employment
			06.60 %	Company – Industrial Sector
			06.24 %	Technicians, foremen, supervisors and skilled tradespeople
			05.42 %	Company – Service Sector
			05.19 %	Banking / Insurance and Corporate consulting
			04.24 %	Business owners and independent professionals
			04.00 %	Students, Schools / training institute
			03.07 %	Junior executives
			01.88 %	Advertising or PR agency, website
			00.71 %	Tourism
			00.59 %	Recruitment agency / Temping agency
			17.55 %	Unspecified / isolated

Table 10. FRENCH NORMS YEARS EXPERIENCE – Means (μ), Median, Standard Deviations (σ) and Standard Error of Measurement (SEM) for the **PROFESSIONAL PROFILE 2**.

Years	N		P ₁	P ₂	P ₃	P ₄	P ₅	P ₆	P ₇	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇
Student	27	Mean (μ)	4.88	6.30	5.92	4.75	6.59	5.77	7.40	7.40	4.67	5.37	5.51	5.22	4.79	6.12
		Median	4.60	5.70	5.60	4.60	6.20	5.60	7.80	7.50	4.60	5.50	5.10	5.80	5.00	6.50
		SD (σ)	2.10	1.82	2.39	2.13	2.10	2.61	2.14	1.83	1.92	2.32	2.06	2.54	2.46	1.95
		SEM	0.48	0.41	0.54	0.48	0.48	0.60	0.49	0.28	0.30	0.36	0.32	0.39	0.38	0.30
Less than 1 year	21	Mean (μ)	5.50	4.99	4.64	6.73	6.02	4.67	4.67	5.28	6.05	6.06	5.02	5.78	4.96	5.77
		Median	6.00	5.10	4.20	7.10	5.50	5.00	4.70	5.30	5.30	6.30	6.00	5.80	4.30	5.10
		SD (σ)	2.44	2.39	2.61	2.25	2.25	2.13	2.16	2.43	2.24	2.94	3.32	1.92	2.22	2.43
		SEM	0.56	0.54	0.60	0.51	0.51	0.49	0.49	0.38	0.35	0.46	0.51	0.30	0.34	0.38
1 to 2 years	49	Mean (μ)	5.83	4.78	6.47	4.64	5.82	5.78	6.30	5.92	5.95	5.40	5.14	5.22	4.43	5.28
		Median	5.30	4.50	7.00	4.00	5.50	5.60	6.30	6.00	6.00	5.80	5.10	5.80	4.30	5.10
		SD (σ)	2.45	2.58	2.11	2.12	2.51	2.26	2.45	2.26	2.57	2.12	2.58	2.41	2.20	2.44
		SEM	0.56	0.59	0.48	0.48	0.57	0.51	0.56	0.35	0.40	0.33	0.40	0.37	0.34	0.38
3 to 5 years	61	Mean (μ)	5.64	5.90	5.47	5.35	5.62	5.67	5.73	6.06	5.44	5.53	5.66	5.78	5.63	5.01
		Median	5.30	5.70	5.60	5.30	5.50	5.60	6.30	6.00	5.30	6.30	6.00	5.80	5.80	4.30
		SD (σ)	2.17	2.16	2.39	2.45	2.61	2.36	2.31	2.13	2.13	2.53	2.61	2.48	2.47	2.60

5 to 10 years	124	<i>SEM</i>	0.49	0.49	0.55	0.56	0.60	0.54	0.53	0.33	0.33	0.39	0.40	0.38	0.38	0.40
		<i>Mean (μ)</i>	5.91	5.53	5.70	5.27	5.24	5.31	5.29	5.17	5.80	5.25	5.61	5.42	5.80	5.60
		<i>Median</i>	6.00	5.70	5.80	4.60	4.80	5.00	5.60	5.20	6.00	4.80	5.10	5.80	5.80	5.80
		<i>SD (σ)</i>	2.37	2.61	2.38	2.22	2.55	2.49	2.42	2.50	2.61	2.55	2.79	2.44	2.40	2.52
		<i>SEM</i>	0.54	0.59	0.54	0.51	0.58	0.57	0.55	0.39	0.40	0.39	0.43	0.38	0.37	0.39
10 to 15 years	123	<i>Mean (μ)</i>	5.11	5.50	5.59	5.36	5.65	5.87	5.67	5.55	5.70	5.12	5.25	5.46	5.99	5.37
		<i>Median</i>	5.30	5.70	5.80	5.30	5.50	6.10	5.60	5.20	5.30	4.80	5.10	5.80	6.50	5.10
		<i>SD (σ)</i>	2.28	2.34	2.57	2.38	2.47	2.38	2.34	2.38	2.25	2.40	2.43	2.46	2.33	2.39
		<i>SEM</i>	0.52	0.53	0.59	0.54	0.56	0.54	0.53	0.37	0.35	0.37	0.38	0.38	0.36	0.37
More than 15 years	203	<i>Mean (μ)</i>	5.31	5.56	5.22	6.01	5.07	5.42	5.13	5.03	5.47	5.58	5.63	5.76	5.83	5.54
		<i>Median</i>	5.30	5.70	4.90	6.00	4.80	5.60	5.00	5.00	5.30	5.50	6.00	5.80	5.80	5.10
		<i>SD (σ)</i>	2.45	2.30	2.32	2.40	2.40	2.33	2.34	2.44	2.57	2.44	2.11	2.39	2.43	2.45
		<i>SEM</i>	0.56	0.52	0.53	0.55	0.55	0.53	0.53	0.38	0.40	0.38	0.33	0.37	0.38	0.38

P_1 – Flexibility/Firmness P_2 – Extraversion/Introversion P_3 – Focus on facts/Intuition P_4 – Improvisation/Structure P_5 – Persuasiveness/Straightforwardness P_6 – Emotional distance/Emotional sensitivity P_7 – Rule-following/Free-thinking M_1 – Ambition/Humility M_2 – Autonomy/Team work M_3 – Altruism/Individualism M_4 – Need for reflection/Need for action M_5 – Novelty seeking/Familiarity seeking M_6 – Desire to lead/Desire for guidance M_7 – Involvement at work/Personal balance

Table 11. FRENCH EDUCATIONAL LEVEL NORMS – Means (μ), Median, Standard Deviations (σ) and Standard Error of Measurement (SEM) for the **PROFESSIONAL PROFILE 2@**.

Educational Level	N		P ₁	P ₂	P ₃	P ₄	P ₅	P ₆	P ₇	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇
Apprenticeship/ Trade School/ No High School Diploma	60	Mean (μ)	5.60	5.60	5.20	5.00	5.20	5.80	5.90	5.20	5.60	5.80	5.90	5.00	5.20	5.40
		Median	6.00	5.70	5.60	4.60	5.30	6.20	6.30	5.20	6.00	6.30	6.00	5.00	5.80	5.40
		SD (σ)	2.00	2.29	2.22	1.99	2.19	2.13	2.20	2.14	2.70	2.26	2.03	2.62	2.69	2.44
		SEM	1.36	1.31	1.27	1.06	1.22	1.40	1.44	0.33	0.42	0.35	0.32	0.41	0.42	0.38
High School Diploma	96	Mean (μ)	5.60	5.70	5.30	5.50	5.60	5.60	5.80	5.40	5.70	5.70	5.60	5.10	5.20	5.80
		Median	6.00	5.70	5.20	5.30	5.30	5.60	5.60	5.30	5.30	5.60	5.10	5.00	5.00	5.80
		SD (σ)	2.40	2.34	2.32	2.13	2.44	2.38	2.18	2.34	2.55	2.49	2.52	2.24	2.27	2.18
		SEM	0.55	0.53	0.53	0.49	0.56	0.54	0.50	0.36	0.39	0.39	0.39	0.35	0.35	0.34
2 Years College. Vocational or University Studies	180	Mean (μ)	5.20	5.70	6.00	4.70	5.80	6.00	6.30	5.90	5.00	5.70	5.50	5.20	5.40	5.90
		Median	5.30	5.70	6.30	4.60	5.50	6.50	6.40	6.00	5.30	5.60	6.00	5.00	5.00	5.80
		SD (σ)	2.41	2.35	2.27	2.13	2.37	2.41	2.40	2.36	2.28	2.26	2.27	2.37	2.43	2.44
		SEM	0.55	0.54	0.52	0.49	0.54	0.55	0.55	0.37	0.35	0.35	0.35	0.37	0.38	0.38
Bachelor Degree/ First Year Masters	127	Mean (μ)	5.80	5.00	5.10	6.20	5.00	5.00	4.50	5.00	6.10	5.30	5.30	5.70	5.70	5.30
		Median	5.30	5.10	5.60	6.70	4.80	5.00	4.30	4.00	6.00	5.50	5.10	5.80	5.80	5.10
		SD (σ)	2.25	2.20	2.51	2.50	2.31	2.38	2.04	2.48	2.22	2.50	2.76	2.59	2.31	2.17

Master Degree/ MBA/ PhD/Postgraduate Qualification	369	<i>SEM</i>	0.51	0.50	0.57	0.57	0.53	0.54	0.47	0.38	0.34	0.39	0.43	0.40	0.36	0.34
		<i>Mean (μ)</i>	5.50	5.50	5.50	5.70	5.50	5.40	5.30	5.60	5.50	5.30	5.40	5.80	5.70	5.40
		<i>Median</i>	5.30	5.70	5.60	5.30	5.20	5.60	5.60	6.00	5.30	5.50	5.10	5.80	5.80	5.10
		<i>SD (σ)</i>	2.57	2.46	2.45	2.39	2.49	2.28	2.45	2.34	2.52	2.53	2.49	2.40	2.39	2.53
		<i>SEM</i>	0.59	0.56	0.56	0.55	0.57	0.52	0.56	0.36	0.39	0.39	0.39	0.37	0.37	0.39
Student Other	17	<i>Mean (μ)</i>	5.70	5.90	4.30	6.30	6.10	4.90	5.50	6.30	5.30	6.50	6.80	5.40	5.00	4.40
		<i>Median</i>	6.00	5.70	4.20	7.40	6.20	5.00	5.60	6.00	5.30	6.30	6.90	5.80	5.00	3.60
		<i>SD (σ)</i>	1.95	2.39	2.06	2.68	2.14	2.30	2.46	2.87	2.03	1.99	3.15	2.50	2.43	2.61
		<i>SEM</i>	0.44	0.54	0.47	0.61	0.49	0.52	0.56	0.44	0.31	0.31	0.49	0.39	0.38	0.40

P_1 – Flexibility/Firmness P_2 – Extraversion/Introversion P_3 – Focus on facts/Intuition P_4 – Improvisation/Structure P_5 – Persuasiveness/Straightforwardness P_6 – Emotional distance/Emotional sensitivity P_7 – Rule-following/Free-thinking M_1 – Ambition/Humility M_2 – Autonomy/Team work M_3 – Altruism/Individualism M_4 – Need for reflection/Need for action M_5 – Novelty seeking/Familiarity seeking M_6 – Desire to lead/Desire for guidance M_7 – Involvement at work/Personal balance

Table 12. FRENCH OCCUPATION GROUP NORMS – Means (μ), Median, Standard Deviations (σ) and Standard Error of Measurement (SEM) for the PROFESSIONAL PROFILE 2@.

Occupational Group	N		P ₁	P ₂	P ₃	P ₄	P ₅	P ₆	P ₇	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇
Banking/Insurance	20	Mean (μ)	5.06	5.89	5.73	6.53	5.10	5.36	5.29	6.64	4.97	5.15	5.05	6.28	5.29	5.97
		Median	5.30	6.10	5.60	7.00	4.80	5.30	5.60	6.70	5.30	5.10	4.20	7.10	5.00	5.80
		SD (σ)	2.58	2.88	2.35	2.34	2.36	1.55	2.24	2.57	1.97	2.16	2.97	2.62	1.81	2.82
		SEM	0.59	0.66	0.53	0.53	0.54	0.35	0.51	0.40	0.31	0.33	0.46	0.41	0.28	0.44
Corporate Consulting	24	Mean (μ)	5.78	5.59	4.47	6.39	5.90	5.17	4.77	5.61	6.46	4.48	4.48	6.37	6.54	5.33
		Median	6.40	5.70	4.60	7.00	5.90	4.80	5.00	5.30	6.40	4.80	3.70	6.70	6.50	5.80
		SD (σ)	2.79	2.07	2.73	2.88	2.70	2.08	1.80	2.34	1.66	2.52	2.36	2.12	2.30	2.55
		SEM	0.64	0.47	0.62	0.66	0.62	0.47	0.41	0.36	0.26	0.39	0.37	0.33	0.36	0.39
Industrial Sector Employees	56	Mean (μ)	5.20	5.00	6.40	5.20	5.60	5.40	5.20	5.40	5.70	5.00	5.60	5.60	6.00	5.70
		Median	5.60	5.40	7.00	4.60	5.50	5.60	5.00	5.30	6.00	5.50	6.00	5.80	5.80	5.80
		SD (σ)	2.67	2.32	2.27	2.31	2.60	2.45	2.20	2.87	2.58	2.72	2.51	2.28	2.59	2.27
		SEM	0.61	0.53	0.52	0.53	0.59	0.56	0.50	0.44	0.40	0.42	0.39	0.35	0.40	0.35
Services Sector Employees	45	Mean (μ)	5.90	4.70	5.80	5.80	4.60	5.70	4.60	4.90	5.80	4.80	5.10	6.10	5.90	5.60
		Median	6.00	5.10	5.60	5.90	3.90	6.10	4.30	4.50	6.00	4.00	5.10	6.70	5.80	5.80
		SD (σ)	2.17	2.24	2.53	2.20	2.73	2.49	2.24	2.41	2.63	2.94	2.45	2.37	2.61	2.46

		<i>SEM</i>	0.50	0.51	0.58	0.50	0.62	0.57	0.51	0.37	0.41	0.46	0.38	0.37	0.40	0.38
Administrative Employees (Civil Service. Business)	146	<i>Mean (μ)</i>	6.00	5.30	5.50	5.40	5.00	5.30	5.50	5.10	5.90	5.80	5.60	5.00	4.90	5.30
		<i>Median</i>	6.00	5.40	5.60	5.30	4.70	5.00	5.60	5.20	6.00	6.00	6.00	5.00	5.00	5.10
		<i>SD (σ)</i>	2.34	2.40	2.26	2.37	2.35	2.26	2.41	2.31	2.64	2.56	2.46	2.43	2.29	2.56
		<i>SEM</i>	0.53	0.55	0.52	0.54	0.54	0.51	0.55	0.36	0.41	0.40	0.38	0.38	0.35	0.40
Information Technology Sector Employees	20	<i>Mean (μ)</i>	6.00	5.10	5.80	5.50	5.00	5.30	5.20	5.50	5.70	6.00	5.30	5.90	6.70	5.10
		<i>Median</i>	6.00	5.10	6.40	5.30	5.50	5.00	5.60	5.30	6.00	6.30	6.00	5.80	7.30	5.10
		<i>SD (σ)</i>	1.78	2.16	2.43	2.48	2.11	2.22	1.98	2.01	1.99	2.05	2.24	1.61	2.60	2.37
		<i>SEM</i>	0.41	0.49	0.55	0.57	0.48	0.51	0.45	0.31	0.31	0.32	0.35	0.25	0.40	0.37
Independent Professionals/Entrepreneurs	29	<i>Mean (μ)</i>	5.40	6.00	5.40	5.40	5.80	4.80	5.40	6.30	5.20	6.00	5.80	5.10	5.90	4.90
		<i>Median</i>	5.30	6.50	5.80	4.40	5.80	4.40	5.30	6.00	5.30	5.80	5.50	5.00	5.80	5.10
		<i>SD (σ)</i>	2.08	2.59	2.49	2.37	2.42	2.13	2.23	2.10	2.54	2.18	2.59	2.69	2.14	2.28
		<i>SEM</i>	0.47	0.59	0.57	0.54	0.55	0.49	0.51	0.33	0.39	0.34	0.40	0.42	0.33	0.35
Junior Executives (business administration, sales, marketing)	20	<i>Mean (μ)</i>	4.40	6.20	5.60	4.70	6.70	6.80	7.00	5.40	5.00	5.40	5.50	4.60	5.80	6.70
		<i>Median</i>	3.50	6.40	5.60	5.00	5.80	7.30	7.10	6.00	4.60	6.00	5.10	4.60	5.00	6.30
		<i>SD (σ)</i>	2.15	2.21	2.07	1.97	2.69	1.84	1.69	2.11	2.33	2.73	2.22	1.97	2.74	2.44
		<i>SEM</i>	0.49	0.50	0.47	0.45	0.61	0.42	0.42	0.33	0.36	0.42	0.34	0.30	0.42	0.38
Senior Executives/Managers	106	<i>Mean (μ)</i>	5.20	5.50	5.60	5.50	5.80	5.50	5.40	5.30	5.20	5.20	5.60	5.50	5.80	5.60

Technicians/Foremen/Supervisors	48	<i>Median</i>	4.90	5.70	5.70	5.30	5.50	5.60	5.60	5.20	5.30	4.80	6.00	5.80	5.80	5.80
		<i>SD (σ)</i>	2.65	2.22	2.32	2.18	2.23	2.35	2.44	2.24	2.70	2.21	2.42	2.33	2.06	2.52
		<i>SEM</i>	0.60	0.51	0.53	0.50	0.51	0.54	0.56	0.35	0.42	0.34	0.38	0.36	0.32	0.39
		<i>Mean (μ)</i>	5.20	6.00	6.10	4.90	5.20	6.40	6.40	6.40	4.00	6.10	5.40	5.60	5.30	6.00
		<i>Median</i>	5.30	5.70	6.30	4.50	4.70	6.70	6.50	6.30	3.90	6.00	5.50	5.80	5.00	5.80
		<i>SD (σ)</i>	2.07	2.15	2.06	2.04	2.34	2.38	2.42	1.96	1.74	1.99	2.01	2.58	2.38	2.28
		<i>SEM</i>	0.47	0.49	0.47	0.46	0.53	0.54	0.55	0.30	0.27	0.31	0.31	0.40	0.37	0.35

P₁ – Flexibility/Firmness P₂ – Extraversion/Introversion P₃ – Focus on facts/Intuition P₄ – Improvisation/Structure P₅ – Persuasiveness/Straightforwardness P₆ – Emotional distance/Emotional sensitivity P₇– Rule-following/Free-thinking M₁– Ambition/Humility M₂– Autonomy/Team work M₃– Altruism/Individualism M₄– Need for reflection/Need for action M₅– Novelty seeking/Familiarity seeking M₆– Desire to lead/Desire for guidance M₇– Involvement at work/Personal balance

Table 13. FRENCH GENDER NORMS – Means (μ), Median, Standard Deviations (σ) and Standard Error of Measurement (SEM) for the **PROFESSIONAL PROFILE 2@**.

Gender	N		P ₁	P ₂	P ₃	P ₄	P ₅	P ₆	P ₇	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇
Males	339	Mean (μ)	5.25	5.27	5.91	5.29	5.91	6.25	5.88	6.01	5.07	5.08	5.20	5.66	5.88	5.61
		Median	5.30	5.10	6.30	5.30	5.50	6.70	5.60	6.00	5.07	5.08	5.20	5.66	5.88	5.61
		SD (σ)	2.29	2.31	2.31	2.38	2.49	2.23	2.38	2.38	2.43	2.40	2.29	2.32	2.38	2.44
		SEM	0.52	0.53	0.53	0.54	0.57	0.51	0.54	0.37	0.38	0.37	0.36	0.36	0.37	0.38
Females	510	Mean (μ)	5.67	5.65	5.23	5.64	5.23	5.00	5.25	5.16	5.78	5.78	5.70	5.40	5.25	5.43
		Median	5.30	5.70	5.60	5.30	4.80	4.80	5.60	5.20	6.00	6.30	6.00	5.80	5.00	5.10
		SD (σ)	2.50	2.42	2.43	2.33	2.33	2.28	2.39	2.32	2.43	2.44	2.58	2.50	2.37	2.42
		SEM	0.57	0.55	0.56	0.53	0.53	0.52	0.54	0.36	0.38	0.38	0.40	0.39	0.37	0.37

P₁ – Flexibility/Firmness P₂ – Extraversion/Introversion P₃ – Focus on facts/Intuition P₄ – Improvisation/Structure P₅ – Persuasiveness/Straightforwardness P₆ – Emotional distance/Emotional sensitivity P₇– Rule-following/Free-thinking M₁– Ambition/Humility M₂– Autonomy/Team work M₃–Altruism/Individualism M₄– Need for reflection/Need for action M₅– Novelty seeking/Familiarity seeking M₆– Desire to lead/Desire for guidance M₇– Involvement at work/Personal balance

4.3. Sample description and UK norms

The final sample for the UK standardisation included 378 professionals (225 men; 153 women) ranging in age from 20 to 64 years ($\mu = 43.68$; $\sigma = 11.26$). All participants were native English speakers and represented a range of occupational groups. Samples were provided via professional research and sampling firm *Qualtrics* who contacted respondents directly. Participants were selected using screening question for age and professional status. Respondents were invited to take part online and received compensation for their participation. To ensure the quality of data obtained participants who completed the questionnaire more than once or in less than 8 minutes were excluded from analyses. Table 14 describes the characteristics of participants for the UK standardisation.

*Table 14. Participant Characteristics for Professionals in UK Standardisation of the **PROFESSIONAL PROFILE 2**®.*

UK Standardisation Sample Characteristics (N = 378)				
Gender (% male)	Age	Ethnic Composition	Occupational Composition	
59.52%	(M=43.68; SD =11.26) Range 20-64 years	100% - British English	20.37%	Employees (unskilled) (civil service, business)
			18.25%	Junior executives (business administration, sales)
			12.17%	Skilled tradespeople
			11.90%	Independent professionals
			11.11%	Senior executives (civil service, business, intellectual or artistic professions)
			08.47%	Business owners
			06.88%	Technicians, foremen, supervisors
			06.08%	Manual labourers
			02.38%	Service providers B2B
			01.85%	Merchants or vendors
			00.26%	Farmers or agricultural workers
			00.26%	Unemployed / Seeking work

Norms were generated separately for the total sample, gender, managerial level, educational level, socio-professional category and industry. Tables 15-19 detail the norms for the UK population and include classical Sten scores across groups.

Table 15. UK EDUCATIONAL LEVEL NORMS – Means (μ), Median, Standard Deviations (σ) and Standard Error of Measurement (SEM) for the **PROFESSIONAL PROFILE 2@**.

Educational Level	N		P ₁	P ₂	P ₃	P ₄	P ₅	P ₆	P ₇	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇
Apprenticeship/ Trade School/ No High School Diploma	40	Mean (μ)	6.00	5.20	5.70	5.40	5.40	5.50	5.60	5.30	6.30	5.30	6.00	5.00	5.00	5.50
		Median	5.90	4.70	5.20	5.00	5.40	5.40	5.50	5.40	6.60	5.50	6.50	5.20	5.10	5.40
		SD (σ)	2.00	1.90	2.20	2.20	1.80	2.20	2.30	1.60	2.20	1.60	2.10	2.00	1.90	1.70
		SEM	0.46	0.42	0.51	0.51	0.41	0.51	0.51	0.24	0.32	0.24	0.32	0.29	0.28	0.25
High School Diploma	15	Mean (μ)	5.60	5.60	5.50	5.60	5.40	5.50	5.80	5.20	5.50	5.70	5.60	5.30	5.50	5.40
		Median	5.30	5.90	5.90	5.30	5.40	6.00	6.40	4.80	6.00	5.80	5.80	5.20	5.40	5.40
		SD (σ)	2.00	2.10	1.80	2.00	2.00	2.00	1.70	2.00	1.90	1.90	1.90	1.70	2.00	2.00
		SEM	0.46	0.47	0.40	0.45	0.46	0.47	0.40	0.29	0.28	0.29	0.28	0.26	0.29	0.30
2 Years College. Vocational or University Studies	68	Mean (μ)	5.30	5.80	5.10	5.30	5.60	5.8	5.3	5.4	5.5	5.5	5.8	5.4	5.5	5.2
		Median	5.30	5.90	4.90	5.30	5.40	6.0	5.8	5.4	5.4	5.8	5.8	5.9	5.4	5.4
		SD (σ)	2.10	2.20	1.90	1.80	1.70	1.90	2.00	1.90	2.10	1.80	1.70	2.00	1.90	2.10
		SEM	0.48	0.50	0.43	0.41	0.39	0.43	0.46	0.29	0.31	0.26	0.26	0.29	0.28	0.31
Bachelor Degree/ 1 Year Masters	102	Mean (μ)	5.50	5.40	5.40	5.60	5.60	5.30	5.30	5.60	5.20	5.30	5.30	5.70	5.60	5.80
		Median	5.90	5.30	5.90	5.30	5.40	5.40	5.80	5.40	5.40	5.10	5.00	5.90	5.40	5.40
		SD (σ)	1.80	2.00	2.20	2.10	2.20	2.00	2.00	2.20	1.90	2.20	2.10	2.10	2.10	2.00
		SEM	0.42	0.46	0.50	0.48	0.49	0.46	0.46	0.32	0.28	0.33	0.31	0.32	0.31	0.30

Master Degree/ MBA/ PhD/Postgraduate Qualification	53	<i>Mean (μ)</i>	5.30	5.40	5.90	5.40	5.40	5.50	5.40	6.20	5.40	5.60	4.80	6.00	5.70	5.50
		<i>Median</i>	5.30	5.30	5.90	5.30	5.40	5.40	5.80	6.10	5.40	5.80	5.00	6.60	5.40	5.40
		<i>SD (σ)</i>	2.10	1.70	2.00	2.00	2.20	1.80	2.20	2.00	2.00	2.30	2.10	2.20	2.10	2.10
		<i>SEM</i>	0.48	0.39	0.46	0.45	0.50	0.42	0.50	0.29	0.30	0.34	0.31	0.33	0.31	0.30

P_1 – Flexibility/Firmness P_2 – Extraversion/Introversion P_3 – Focus on facts/Intuition P_4 – Improvisation/Structure P_5 – Persuasiveness/Straightforwardness P_6 – Emotional distance/Emotional sensitivity P_7 – Rule-following/Free-thinking M_1 – Ambition/Humility M_2 – Autonomy/Team work M_3 – Altruism/Individualism M_4 – Need for reflection/Need for action M_5 – Novelty seeking/Familiarity seeking M_6 – Desire to lead/Desire for guidance M_7 – Involvement at work/Personal balance

Table 16. UK INDUSTRY NORMS – Means (μ), Median, Standard Deviations (σ) and Standard Error of Measurement (SEM) for the **PROFESSIONAL PROFILE 2©**.

Industry	N		P ₁	P ₂	P ₃	P ₄	P ₅	P ₆	P ₇	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇
Medical / Pharmaceutical / Biological Sciences	22	Mean (μ)	5.80	5.10	5.90	5.50	4.90	4.90	5.60	4.40	5.60	6.40	6.40	5.30	5.90	5.20
		Median	6.50	4.70	5.90	5.30	4.30	4.30	5.80	3.90	6.30	6.50	6.50	5.90	5.70	5.10
		SD (σ)	2.10	1.70	2.30	2.10	2.10	2.00	2.10	2.30	2.20	2.20	1.80	2.80	1.90	1.70
		SEM	0.47	0.40	0.53	0.48	0.47	0.46	0.48	0.34	0.32	0.33	0.27	0.41	0.29	0.25
Manufacturing / Production / Distribution	138	Mean (μ)	5.30	5.70	5.20	5.50	5.70	5.70	5.60	5.80	5.50	5.20	5.50	5.30	5.60	5.50
		Median	4.70	5.90	5.20	5.30	5.40	6.00	5.80	5.70	5.70	5.70	5.00	5.20	5.40	5.40
		SD (σ)	2.00	2.00	1.90	1.80	2.00	2.00	1.80	2.00	1.90	1.90	1.90	1.90	2.00	1.80
		SEM	0.47	0.47	0.44	0.41	0.45	0.46	0.41	0.29	0.28	0.28	0.28	0.28	0.29	0.27
Banking / Finance / Business & Professional Services	72	Mean (μ)	5.20	5.50	5.90	5.70	5.40	5.40	5.50	5.90	5.50	5.30	5.30	5.70	5.40	5.70
		Median	4.70	5.90	5.90	5.30	5.40	5.40	6.40	6.10	5.40	5.10	5.80	5.90	5.40	5.40
		SD (σ)	2.00	2.00	2.10	2.40	2.30	2.00	2.00	2.00	2.20	2.10	2.10	2.10	2.00	2.20
		SEM	0.46	0.46	0.48	0.54	0.53	0.46	0.45	0.30	0.33	0.31	0.31	0.32	0.30	0.33
Energy / Utilities / Oil & Gas	15	Mean (μ)	5.40	4.80	5.60	5.50	5.90	5.70	5.30	5.80	6.10	5.30	4.00	5.80	5.10	5.60
		Median	5.90	4.70	5.20	5.30	6.20	5.40	5.10	5.40	6.60	5.80	3.50	5.90	4.70	5.40
		SD (σ)	2.10	1.80	2.00	2.10	2.00	1.50	2.80	1.60	2.00	1.60	2.10	1.60	1.80	2.00
		SEM	0.50	0.40	0.50	0.50	0.50	0.30	0.60	0.20	0.30	0.20	0.30	0.20	0.30	0.30
Education & Research	47	Mean (μ)	5.80	5.50	5.30	5.40	5.80	5.40	5.80	5.40	5.00	6.20	5.60	5.60	5.20	6.00

		<i>Median</i>	5.90	5.30	5.20	5.30	6.20	5.40	6.40	5.40	4.80	6.50	5.80	5.90	5.40	6.10
		<i>SD (σ)</i>	1.90	2.10	1.70	1.90	1.70	1.90	2.20	2.00	2.00	1.70	1.90	1.90	2.00	2.20
		<i>SEM</i>	0.44	0.47	0.39	0.43	0.39	0.43	0.51	0.29	0.30	0.25	0.28	0.28	0.30	0.32
Arts / Fine Arts / Humanities	16	<i>Mean (μ)</i>	4.60	5.80	4.90	6.00	4.40	5.70	4.10	4.80	6.30	5.00	4.90	6.40	5.40	5.80
		<i>Median</i>	4.70	5.60	4.90	5.30	3.90	6.00	3.30	4.20	6.60	4.40	5.00	7.00	5.40	5.40
		<i>SD (σ)</i>	1.60	1.90	2.20	2.60	1.30	2.20	2.50	2.00	1.90	2.10	2.20	2.20	1.10	2.40
		<i>SEM</i>	0.40	0.40	0.50	0.60	0.30	0.50	0.60	0.30	0.30	0.30	0.30	0.30	0.20	0.40
Governmental / Civil Service	52	<i>Mean (μ)</i>	6.20	5.10	5.90	4.90	5.60	5.50	5.70	5.20	5.60	5.60	5.90	5.40	5.40	4.70
		<i>Median</i>	5.90	5.30	5.60	4.60	5.80	5.40	5.80	5.40	6.00	5.80	5.80	5.20	5.10	4.80
		<i>SD (σ)</i>	1.80	1.70	1.90	1.80	1.90	2.00	1.90	1.70	1.90	2.10	2.10	1.90	2.30	1.90
		<i>SEM</i>	0.41	0.39	0.44	0.40	0.43	0.47	0.42	0.26	0.28	0.31	0.30	0.29	0.33	0.28
NGO / Charities	16	<i>Mean (μ)</i>	6.00	6.00	5.30	5.70	4.30	4.80	4.90	4.00	5.40	6.20	6.00	5.70	5.90	5.90
		<i>Median</i>	5.90	7.10	4.90	6.00	4.30	3.20	5.10	4.20	5.40	5.80	6.50	5.90	5.70	6.10
		<i>SD (σ)</i>	1.90	2.70	2.20	2.20	1.70	2.30	1.60	1.90	1.80	2.30	2.00	1.70	2.40	1.90
		<i>SEM</i>	0.40	0.60	0.50	0.50	0.40	0.50	0.40	0.30	0.30	0.30	0.30	0.30	0.40	0.30

P_1 – Flexibility/Firmness P_2 – Extraversion/Introversion P_3 – Focus on facts/Intuition P_4 – Improvisation/Structure P_5 – Persuasiveness/Straightforwardness P_6 – Emotional distance/Emotional sensitivity P_7 – Rule-following/Free-thinking M_1 – Ambition/Humility M_2 – Autonomy/Team work M_3 – Altruism/Individualism M_4 – Need for reflection/Need for action M_5 – Novelty seeking/Familiarity seeking M_6 – Desire to lead/Desire for guidance M_7 – Involvement at work/Personal balance

Table 17. UK MANAGEMENT LEVEL NORMS – Means (μ), Median, Standard Deviations (σ) and Standard Error of Measurement (SEM) for the **PROFESSIONAL PROFILE 2©**.

Management Level	N		P ₁	P ₂	P ₃	P ₄	P ₅	P ₆	P ₇	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇
Non-Managers	166	Mean (μ)	5.70	5.30	5.60	5.70	5.00	5.50	5.40	5.10	6.10	5.60	5.80	5.60	4.80	5.20
		Median	5.90	5.30	5.20	5.30	4.70	5.40	5.80	4.80	6.00	5.80	5.80	5.50	4.70	4.80
		SD (σ)	2.10	2.10	1.90	2.10	2.00	2.10	2.10	1.90	1.90	2.00	2.00	2.10	1.80	1.90
		SEM	0.49	0.48	0.44	0.48	0.46	0.48	0.48	0.28	0.28	0.30	0.29	0.31	0.27	0.28
Junior Managers	61	Mean (μ)	6.10	5.30	6.10	5.00	5.40	5.10	6.20	5.20	5.20	6.10	5.30	4.90	5.50	5.60
		Median	5.90	5.30	6.60	4.60	5.40	4.90	6.40	4.80	6.00	6.50	5.00	4.50	5.40	5.40
		SD (σ)	1.80	2.00	1.90	1.80	1.90	1.90	1.60	2.20	1.80	1.90	1.70	1.90	1.90	2.10
		SEM	0.42	0.46	0.44	0.41	0.44	0.44	0.36	0.32	0.27	0.28	0.26	0.28	0.28	0.31
Middle Managers	94	Mean (μ)	5.60	5.90	5.20	5.30	6.20	5.40	5.80	6.10	5.40	5.10	5.40	5.90	5.70	5.40
		Median	5.60	5.90	5.20	5.30	6.20	5.40	5.80	0.38	0.44	0.47	0.43	0.43	0.43	0.46
		SD (σ)	1.70	1.90	2.10	1.90	1.90	1.90	2.00	1.90	2.00	1.90	2.10	1.80	2.00	2.00
		SEM	0.38	0.44	0.47	0.43	0.43	0.43	0.46	0.28	0.30	0.28	0.32	0.27	0.30	0.30
Senior Managers	57	Mean (μ)	4.40	5.90	5.10	5.60	6.10	5.90	5.30	6.50	4.40	5.30	5.20	5.50	6.90	6.30
		Median	4.10	5.90	5.20	5.30	6.20	6.00	5.80	6.70	3.60	5.10	5.00	5.20	6.70	6.10
		SD (σ)	1.90	1.70	2.10	2.00	1.90	2.00	1.90	1.90	1.90	2.10	2.10	2.10	1.70	2.00
		SEM	0.42	0.39	0.47	0.45	0.43	0.45	0.42	0.29	0.28	0.31	0.31	0.31	0.25	0.30

P_1 – Flexibility/Firmness P_2 – Extraversion/Introversion P_3 – Focus on facts/Intuition P_4 – Improvisation/Structure P_5 – Persuasiveness/Straightforwardness P_6 – Emotional distance/Emotional *sensitivity* P_7 – Rule-following/Free-thinking M_1 – Ambition/Humility M_2 – Autonomy/Team work M_3 –Altruism/Individualism M_4 – Need for reflection/Need for action M_5 – Novelty seeking/Familiarity seeking M_6 – Desire to lead/Desire for guidance M_7 – Involvement at work/Personal balance

Table 18. UK SOCIAL PROFESSIONAL CATEGORY NORMS – Means (μ), Median, Standard Deviations (σ) and Standard Error of Measurement (SEM) for the PROFESSIONAL PROFILE 2®.

Social Professional Category	N		P ₁	P ₂	P ₃	P ₄	P ₅	P ₆	P ₇	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇
Business owners	32	Mean (μ)	4.80	5.80	5.00	6.50	4.90	5.40	4.40	6.00	5.70	5.30	5.40	5.70	5.70	5.70
		Median	4.70	5.90	4.90	6.00	5.10	6.00	4.50	6.10	6.00	5.10	5.00	5.50	5.40	5.40
		SD (σ)	2.00	1.80	2.30	2.10	1.80	2.10	2.10	2.00	2.30	2.00	1.80	2.10	2.20	2.00
		SEM	0.45	0.40	0.53	0.49	0.42	0.47	0.48	0.29	0.34	0.30	0.27	0.32	0.33	0.30
Employees (unskilled) (civil service, business)	77	Mean (μ)	6.10	5.10	5.70	5.20	5.50	5.50	5.70	5.00	5.70	5.80	5.90	5.10	5.00	5.20
		Median	5.90	4.70	5.20	4.60	5.40	5.40	5.80	4.80	6.00	5.80	5.80	5.20	4.70	5.40
		SD (σ)	2.00	2.00	1.80	1.90	1.80	2.10	1.60	1.90	2.10	1.90	1.60	2.00	1.80	2.10
		SEM	0.45	0.45	0.42	0.43	0.40	0.47	0.38	0.28	0.31	0.28	0.24	0.30	0.27	0.31
Independent professionals	45	Mean (μ)	5.50	5.60	5.20	5.60	5.30	5.30	5.30	5.30	5.70	5.50	5.60	6.10	5.40	5.60
		Median	5.30	5.30	5.20	5.30	5.40	5.40	5.80	5.40	6.00	5.80	5.00	5.90	5.40	5.40
		SD (σ)	2.00	1.90	2.20	1.80	2.40	1.80	2.30	2.00	1.90	2.20	2.20	2.00	2.00	2.00
		SEM	0.47	0.44	0.51	0.41	0.55	0.42	0.52	0.30	0.28	0.33	0.33	0.30	0.29	0.29
Junior executives (business administration, sales)	69	Mean (μ)	5.90	5.90	5.20	5.30	5.40	4.90	6.40	5.50	5.40	5.80	5.50	5.10	5.50	5.50
		Median	5.60	5.80	5.50	5.40	5.70	5.20	5.80	5.40	5.40	5.80	5.80	5.90	5.40	5.40
		SD (σ)	1.90	2.00	1.90	2.20	2.10	1.70	1.80	2.00	1.90	2.00	2.00	2.20	2.00	2.00
		SEM	0.44	0.47	0.44	0.51	0.48	0.40	0.41	0.29	0.28	0.30	0.30	0.32	0.29	0.30

Manual labourers	23	<i>Mean (μ)</i>	5.50	6.10	5.10	5.80	5.40	5.80	5.90	5.20	5.50	5.30	5.80	5.60	5.30	5.30
		<i>Median</i>	5.90	5.90	4.60	6.00	5.40	5.40	6.40	5.40	5.40	5.10	5.80	5.90	5.40	5.40
		<i>SD (σ)</i>	2.10	2.30	1.80	1.70	1.80	2.20	2.10	1.80	1.90	1.70	1.60	1.60	1.60	1.80
		<i>SEM</i>	0.47	0.52	0.40	0.38	0.41	0.50	0.47	0.27	0.28	0.25	0.24	0.24	0.24	0.27
Senior executives (civil service, business, intellectual or artistic professions)	42	<i>Mean (μ)</i>	4.90	5.40	5.70	5.50	6.40	5.60	5.60	6.50	4.70	5.10	4.60	5.90	6.30	6.00
		<i>Median</i>	5.30	5.60	5.90	5.30	6.20	5.70	5.80	6.70	4.80	5.10	4.20	5.50	6.70	6.10
		<i>SD (σ)</i>	2.00	1.70	1.70	2.10	1.30	2.00	2.00	1.80	1.80	2.20	2.60	2.00	2.10	2.20
		<i>SEM</i>	0.45	0.39	0.40	0.47	0.30	0.46	0.47	0.27	0.27	0.32	0.39	0.30	0.32	0.33
Skilled tradespeople	46	<i>Mean (μ)</i>	5.10	5.40	5.40	5.90	5.00	5.80	5.30	5.70	5.90	5.20	5.80	5.80	5.50	5.40
		<i>Median</i>	5.30	5.30	5.20	6.00	4.70	6.00	5.50	6.10	6.00	5.10	5.80	5.90	5.70	5.40
		<i>SD (σ)</i>	1.80	2.00	2.10	1.80	2.20	2.10	2.10	1.90	2.10	2.00	1.80	1.60	2.10	2.00
		<i>SEM</i>	0.40	0.46	0.48	0.41	0.50	0.47	0.47	0.29	0.31	0.29	0.27	0.24	0.31	0.30
Technicians, foremen, supervisors	26	<i>Mean (μ)</i>	5.80	5.00	6.10	4.70	5.50	5.30	5.50	5.40	5.00	5.70	4.90	5.30	5.60	6.00
		<i>Median</i>	5.60	4.70	5.90	4.30	5.40	5.10	5.80	5.40	5.70	5.80	5.00	5.20	6.00	6.50
		<i>SD (σ)</i>	1.90	2.00	2.10	2.10	2.00	2.00	2.10	2.30	1.90	2.00	1.90	1.80	2.10	1.90
		<i>SEM</i>	0.44	0.45	0.49	0.47	0.45	0.47	0.49	0.34	0.28	0.30	0.29	0.27	0.31	0.28

P_1 – Flexibility/Firmness P_2 – Extraversion/Introversion P_3 – Focus on facts/Intuition P_4 – Improvisation/Structure P_5 – Persuasiveness/Straightforwardness P_6 – Emotional distance/Emotional sensitivity P_7 – Rule-following/Free-thinking M_1 – Ambition/Humility M_2 – Autonomy/Team work M_3 – Altruism/Individualism M_4 – Need for reflection/Need for action M_5 – Novelty seeking/Familiarity seeking M_6 – Desire to lead/Desire for guidance M_7 – Involvement at work/Personal balance.

Table 19. UK GENDER NORMS – Means (μ). Standard Deviations (σ) and Standard Error of Measurement (SEM) for the **PROFESSIONAL PROFILE 2®**.

Gender	N		P ₁	P ₂	P ₃	P ₄	P ₅	P ₆	P ₇	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇
Males	225	Mean (μ)	4.70	5.30	5.20	5.30	5.40	6.00	5.80	5.40	5.40	5.10	5.00	5.90	5.40	5.40
		Median	4.70	5.30	5.20	5.30	5.40	6.00	5.80	5.40	5.40	5.10	5.00	5.90	5.40	5.40
		SD (σ)	2.00	2.00	2.00	2.00	2.10	2.00	2.00	2.00	2.10	2.00	2.00	1.90	2.10	1.90
		SEM	0.46	0.46	0.46	0.45	0.47	0.46	0.45	0.29	0.30	0.29	0.29	0.29	0.31	0.28
Females	153	Mean (μ)	6.00	5.60	5.40	5.30	5.50	5.10	5.60	5.30	5.70	5.80	5.80	5.30	5.30	5.50
		Median	5.90	5.90	5.20	4.60	5.40	5.40	6.40	5.40	6.00	5.80	5.80	5.20	5.40	5.40
		SD (σ)	1.90	2.00	2.00	2.10	1.90	1.90	2.00	2.00	1.90	2.00	2.00	2.10	1.90	2.10
		SEM	0.43	0.45	0.45	0.47	0.44	0.43	0.46	0.30	0.28	0.30	0.30	0.31	0.27	0.32

P₁ – Flexibility/Firmness P₂ – Extraversion/Introversion P₃ – Focus on facts/Intuition P₄ – Improvisation/Structure P₅ – Persuasiveness/Straightforwardness P₆ – Emotional distance/Emotional sensitivity P₇ – Rule-following/Free-thinking M₁ – Ambition/Humility M₂ – Autonomy/Team work M₃ – Altruism/Individualism M₄ – Need for reflection/Need for action M₅ – Novelty seeking/Familiarity seeking M₆ – Desire to lead/Desire for guidance M₇ – Involvement at work/Personal balance

4.4. Sample description and USA norms

The final sample for the USA standardisation comprised of 345 professionals (172 men; 173 women) ranging in age from 20 to 64 years ($\mu = 39.63$; $\sigma = 11.35$). All participants were native English speakers and represented both managerial and non-managerial roles. The sample was provided via professional research and sampling firm *Qualtrics* who contacted respondents directly. Participants were selected based on screening criteria for gender and professional status. Respondents were invited to take part online and received compensation for their participation. To ensure the quality of data obtained, participants who completed the questionnaire more than once or in less than 8 minutes were excluded from analyses. Table 20 describes the characteristics of participants for the USA standardisation. Tables 21-22 detail the norms for the US population and include classical Sten scores across groups.

Table 20. Participant Characteristics for Professionals in US Standardisation.

USA Standardisation Sample Characteristics (N = 345)			
Gender (% male)	Age	Ethnic Composition	Occupational Composition
49.86%	($M=39.63$; $SD=11.35$) Range 20-64 years	100% English North America	31.01% - Managers 68.99% - Non-managers

Table 21. USA MANAGEMENT LEVEL NORMS – Means (μ), Standard Deviations (σ) and Standard Error of Measurement (SEM) for the **PROFESSIONAL PROFILE 2@**.

Management Level	N		P ₁	P ₂	P ₃	P ₄	P ₅	P ₆	P ₇	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇
Non-Managers	238	Mean (μ)	5.71	5.44	5.57	5.48	5.30	5.33	5.46	5.42	5.73	5.52	5.68	5.40	5.06	5.34
		Median	5.81	5.11	5.56	5.62	5.63	5.40	4.78	5.40	5.60	5.11	5.45	5.23	5.27	5.60
		SD (σ)	2.00	1.87	2.01	1.94	2.01	1.98	1.97	1.95	2.08	1.94	1.96	1.98	1.95	1.94
		SEM	0.20	0.22	0.19	0.18	0.16	0.22	0.20	0.36	0.43	0.35	0.31	0.37	0.37	0.35
Managers	107	Mean (μ)	5.04	5.64	5.35	5.54	5.94	5.88	5.58	5.68	5.04	5.11	4.67	5.89	7.20	5.60
		Median	5.19	5.68	5.56	5.62	6.43	5.97	5.41	6.06	5.04	5.11	4.67	5.89	7.20	5.60
		SD (σ)	1.93	2.27	1.99	2.13	1.92	2.00	2.08	2.10	1.72	2.13	2.04	2.04	1.76	2.10
		SEM	0.20	0.22	0.19	0.18	0.16	0.22	0.20	0.36	0.43	0.35	0.31	0.37	0.37	0.35

P₁ – Flexibility/Firmness P₂ – Extraversion/Introversion P₃ – Focus on facts/Intuition P₄ – Improvisation/Structure P₅ – Persuasiveness/Straightforwardness P₆ – Emotional distance/Emotional sensitivity P₇– Rule-following/Free-thinking M₁– Ambition/Humility M₂– Autonomy/Team work M₃–Altruism/Individualism M₄– Need for reflection/Need for action M₅– Novelty seeking/Familiarity seeking M₆– Desire to lead/Desire for guidance M₇– Involvement at work/Personal balance

Table 22. USA GENDER NORMS – Means (μ), Standard Deviations (σ) and Standard Error of Measurement (SEM) for the **PROFESSIONAL PROFILE 2©**.

Gender	N		P ₁	P ₂	P ₃	P ₄	P ₅	P ₆	P ₇	M ₁	M ₂	M ₃	M ₄	M ₅	M ₆	M ₇
Males	172	Mean (μ)	5.73	5.68	5.56	5.62	5.63	4.84	5.41	5.54	5.75	5.50	5.62	5.61	5.06	5.39
		Median	5.81	5.68	5.56	5.62	5.63	4.84	5.41	5.40	5.60	5.11	5.45	5.23	5.27	4.91
		SD (σ)	2.05	2.05	1.94	1.93	1.98	2.04	1.94	1.98	1.90	1.91	1.96	1.97	1.99	1.96
		SEM	0.20	0.22	0.19	0.18	0.16	0.22	0.20	0.36	0.43	0.35	0.31	0.37	0.37	0.35
Females	173	Mean (μ)	5.27	5.34	5.48	5.74	5.45	5.94	5.55	5.46	5.25	5.50	5.38	5.40	5.94	5.61
		Median	5.19	5.11	5.56	6.30	5.63	5.97	5.41	5.40	5.04	5.11	5.45	5.23	5.92	5.60
		SD (σ)	1.92	2.05	2.08	2.00	1.97	1.97	2.01	2.02	2.07	2.09	2.03	2.03	1.92	2.03
		SEM	0.20	0.22	0.19	0.18	0.16	0.22	0.20	0.36	0.43	0.35	0.31	0.37	0.37	0.35

P₁ – Flexibility/Firmness P₂ – Extraversion/Introversion P₃ – Focus on facts/Intuition P₄ – Improvisation/Structure P₅ – Persuasiveness/Straightforwardness P₆ – Emotional distance/Emotional sensitivity P₇– Rule-following/Free-thinking M₁– Ambition/Humility M₂– Autonomy/Team work M₃–Altruism/Individualism M₄– Need for reflection/Need for action M₅– Novelty seeking/Familiarity seeking M₆– Desire to lead/Desire for guidance M₇– Involvement at work/Personal balance

5. Reliability

Reliability refers to the extent to which an assessment is free from error and the degree to which items on a scale are measuring the same construct. For a measure to be reliable, the same results must be consistently generated over time. Reliability is important for assessment as it enables us to have confidence that scores on a test are really typical of an individual's behaviour, attitude or aptitude. A primary concern when developing and using tests, is the extent to which random measurement errors influence test performance. If a test is unreliable it is impossible for it to be valid, as accuracy of results (*validity*) depends on the consistency with which the same results are produced. In the context of work-based assessment, reliability helps recruiters, decision-makers and HR personnel have greater confidence that scores obtained reflect how a job candidate or employee is likely to behave in the workplace, work on specific tasks or interact with others. High reliability of an assessment also helps to guard against biases that may be caused from errors in human judgment during the recruitment and selection process.

5.1. Internal reliability

Internal reliability is a measure of the degree to which items on a scale are internally consistent and measure the same global construct or dimension of a construct. Composite reliability is a robust technique used to assess the internal consistency of items on a scale. It is mathematically defined as the amount of scale score variance accounted for by all underlying factors. Cronbach alpha, while a popular way of determining a measure's internal reliability, has a major weakness in that it assumes all items on a scale are equally important and therefore weighs all items similarly. As a consequence, if there is an increase in the number of items, reliability would artificially increase even though loadings may be low and not significant.

Therefore composite reliability is a recommended alternative as it makes use of both item loadings and measurement error (Dunn, Baguley, & Brunsden, 2014; Raykov, 1997; Schmitt, 1996). Internal reliability values vary from 0 to 1, with higher values more desirable. As a rule of thumb, a reliability of 0.70 or higher is recommended (Nunnally, 1978), with values greater than 0.9 (*excellent*); 0.7 to 0.9 (*good*); 0.6 to 0.7 (*acceptable*); 0.5 to 0.6 (*poor*) and values less than 0.5 (*unacceptable*). Composite reliability should be ≥ 0.70 .

The formula for Composite Reliability (CR) is:

$$CR = \frac{(\sum \lambda_i)^2}{(\sum \lambda_i)^2 + \sum Var(\epsilon_i)}$$
$$CR = \left[\frac{(\text{sum of standardized loading})^2}{(\text{sum of standardized loading})^2 + (\text{sum of indicator measurement error})} \right]$$

The composite reliability for the **PROFESSIONAL PROFILE 2©** was computed for both personality and motivation dimensions on the standardisation samples for French (N=849), British (N=378) and American (N=345) professionals. Table 23 describes the internal reliability of the **PROFESSIONAL PROFILE 2©** across countries, global dimensions and traits.

Table 23. Internal Reliability of the **PROFESSIONAL PROFILE 2®** across Countries, Global Dimensions and Traits.

		Internal Reliability (Composite)		
		France (N=849)	UK (N=378)	US (N=345)
Personality		.948	.948	0.990
1.	Flexibility	.758	.608	0.995
2.	Extraversion	.757	.821	0.89
3.	Focus on facts	.848	.588	0.965
4.	Improvisation	.735	.638	0.869
5.	Persuasiveness	.595	.766	0.768
6.	Emotional distance	.701	.799	0.839
7.	Rule-following	.728	.754	1
Motivation		.976	.978	0.963
1.	Ambition	.899	.876	0.684
2.	Autonomy	.742	.861	0.764
3.	Altruism	.871	.680	0.784
4.	Need for action	.830	.856	0.683
5.	Novelty seeking	.800	.751	0.745
6.	Desire to lead	.866	.936	0.892
7.	Involvement at work	.920	.934	0.869
Overall Scale		.981	.983	0.999

5.2. Split-half reliability

Split-half reliability measures the reliability of a scale by randomly dividing the test in two to make two half-size versions. By splitting a test in two, we are able to determine the extent to which all parts of the test contribute to the construct that is being measured. A test may be split in half several ways, most common of which are the first half and second half or by odd and even numbers. An advantage of the split half approach is that it only requires a single test administration. To compute the reliability, two scores are taken for each individual, one from each half. Scores from each half are then correlated with each other. This correlation coefficient indicates the reliability for half the test. For normative tests (tests measured using Likert scales), split-half reliability is computed from raw scores using the Pearson Product Moment Correlation and the Spearman Brown formula. However, on ipsative tests raw data is binary and there is no assumption of linearity. Therefore, response item factor loadings

(instead of conventional raw scores) were used to generate composite reliability coefficients for each half of the randomised sets. Thereafter Spearman Brown Prophecy, and Flanagan-Rudon formulae were used to calculate the reliability of the full test.

The formula for Spearman Brown Prophecy is:

Reliability_{test} =

$$\rho_{xx'}^* = \frac{N \rho_{xx'}}{1 + (N - 1)\rho_{xx'}}$$

*** where N = the number of tests combined and Pxx¹ is the reliability of the current test.

The formula for Flanagan-Rudon is:

$$Reliability_{test} = \frac{1 - Sd^2}{Sx^2}$$

*** where Sd = standard deviation (σ) of items on first half

Sx = standard deviation of items on second half

The Split-half reliability for the **PROFESSIONAL PROFILE 2©** was calculated using a sample of American managerial and non-managerial professionals (N=345) with mean age 39.63 (σ =11.35). 49.86% of men and 50.14% women participated. Composite reliability coefficients were calculated for six randomly selected sets of samples. For set one, personality and motivation dimensions were separated. For set two, samples were created using odd versus even questionnaire items. For set three, items on the questionnaire were split in two based on the first half versus the second half of the questionnaire. For set four, the test was split based on first half and second half response options. For set five, dimensions written on post-it notes were alternately selected from boxes. All personality dimensions were in one box, with all motivation dimensions in the other. Boxes were unmarked and dimensions selected by a researcher who was unaware of the contents of each box. Finally, for set six all dimensions were placed in one unmarked box, with the first seven randomly selected representing one set, and the remaining seven representing the other. All items from each dimension were then included in each set of analyses. Table 24 shows Split-half reliabilities for the six sets of samples.

Table 24. Split-half Reliability for the Six Randomised Sets of PROFESSIONAL PROFILE 2© Items.

	Split Criteria	Composite Reliability Half ₁	Composite Reliability Half ₂	Spearman-Brown Full Reliability	Flanagan-Rudon Full Reliability
1.	Personality vs motivation dimensions	.990	.963	.995	.965
2.	Odd vs even items	.978	.983	.995	.995
3.	First half vs second half items	.990	.964	.995	.964
4.	First half vs second half response options	.977	.983	.995	.994
5.	Randomised alternate dimensions	.978	.943	.995	.993

6.	Randomised first seven dimensions vs second seven dimensions	.982	.979	.995	.994
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(N=345; USA)

5.3. Test-retest reliability

Test-retest reliability involves administering a test twice to the same respondents under similar conditions and comparing the results for each individual. The more similar the score on the first administration (Time₁) to the score on the second administration (Time₂) the greater the reliability. Test-retest reliability enables us to determine the consistency of a test score over time. The Pearson Product Moment Correlation Coefficient gives us the correlation between the two administrations and ranges between 0 and 1. The closer the correlation is to 1, the greater the reliability. The formula for the Pearson Product Moment Correlation is:

$$r = \frac{\sum_{i=1}^n (X_i - \bar{X})(Y_i - \bar{Y})}{\sqrt{\sum_{i=1}^n (X_i - \bar{X})^2} \sqrt{\sum_{i=1}^n (Y_i - \bar{Y})^2}}$$

where $\bar{X}$ and $\bar{Y}$ are the two samples means and X, Y are the values of each of the two variables.

For the **PROFESSIONAL PROFILE 2©** test-retest reliability was calculated on a sample of working British professionals (N=163) at two time points six weeks apart. Participants ranged in age from 21 to 65 years ($\mu = 44.25$; $\sigma = 10.96$) and 37.42% were male. Both managerial and non-managerial roles were represented. Test-retest reliability was computed from individual scores for both personality and motivation dimensions. Thereafter, the correlation between the two scores was calculated using the Pearson Product Moment Correlation Coefficient. Table 25 shows the composite reliability of the **PROFESSIONAL PROFILE 2©** for each dimension at Time₁ and Time₂ and the correlation coefficient between Time₁ and Time₂.

Table 25. Test-retest Reliability of the **PROFESSIONAL PROFILE 2©** across Dimensions.

		Time ₁ Reliability	Time ₂ Reliability	Time ₁ & Time ₂ Correlation
Personality		.963	.977	-
1.	Flexibility/Firmness	.505	.615	.640**
2.	Extraversion/Introversion	.828	.914	.724**
3.	Focus on facts/Intuition	.781	.980	.689**
4.	Improvisation/Structure	.815	.863	.646**
5.	Persuasiveness/Straightforwardness	.759	.787	.460**
6.	Emotional distance/Emotional sensitivity	.816	.958	.754**
7.	Rule-following/Free-thinking	.873	.960	.693**

Motivation		1.000	.976	-
1.	Ambition/Humility	.912	.933	.665**
2.	Autonomy/Team work	.811	.768	.652**
3.	Altruism/Individualism	.852	.701	.541**
4.	Need for action/Need for reflection	.731	.880	.559**
5.	Novelty seeking/Familiarity seeking	1.000	.827	.639**
6.	Desire to lead/Desire for guidance	1.000	.936	.652**
7.	Involvement at work/Personal balance	1.000	.786	.601**

(N=163; UK)

* Correlation significant $p \leq .05$

** Correlation significant at $p \leq .01$

6. Validity

Validity refers to the extent to which what an assessment claims to measure is well-founded and accurately corresponds to actual behaviours. In psychometrics, validity relates to the degree to which practical evidence and scientific theory support the interpretations of test scores. Whilst reliability of an assessment relates to the degree to which results are consistent over time, validity tells us the degree to which results of an assessment are accurate and enable us to confidently make predictions about a target outcome. Therefore, a test can be reliable but not valid (one can consistently get the wrong answer) but it cannot be valid without being reliable, as confidence in the accuracy of results depends on the consistency with which we obtain the same results. In the context of work-based assessment, validity helps recruiters, decision-makers and HR personnel to identify effective associations between assessed ability or personality, and target organisational outcomes such as job performance, job satisfaction, job commitment, motivation and leadership effectiveness. Established validity also protects practitioners from faulty, costly, unethical and legally risky personnel decisions.

Validity is derived from the Latin *validus*, which means strong. According to the *Standards for Educational and Psychological Testing (Standards; APA, AERA, & NCME, 2014)*, validation is a process of providing evidence for the scientific basis of interpreting assessment scores. The process of validation therefore depends on evidence supporting: a) test content, b) response processes, c) internal structure, d) relations to other variables, and e) consequences of testing. The **PROFESSIONAL PROFILE 2©** was validated following a thorough multi-stage process that ensured items, dimensions and global traits were accurate, representative, consistent, clear, fair and culturally free. The questionnaire was administered to professional groups from four continents across the globe. Items were reviewed and tested until they met scientific standards of robustness and generated evidence for seven elements of validity. Figure 10 shows the conceptual representation of the different components of the validation process for the **PROFESSIONAL PROFILE 2©**.

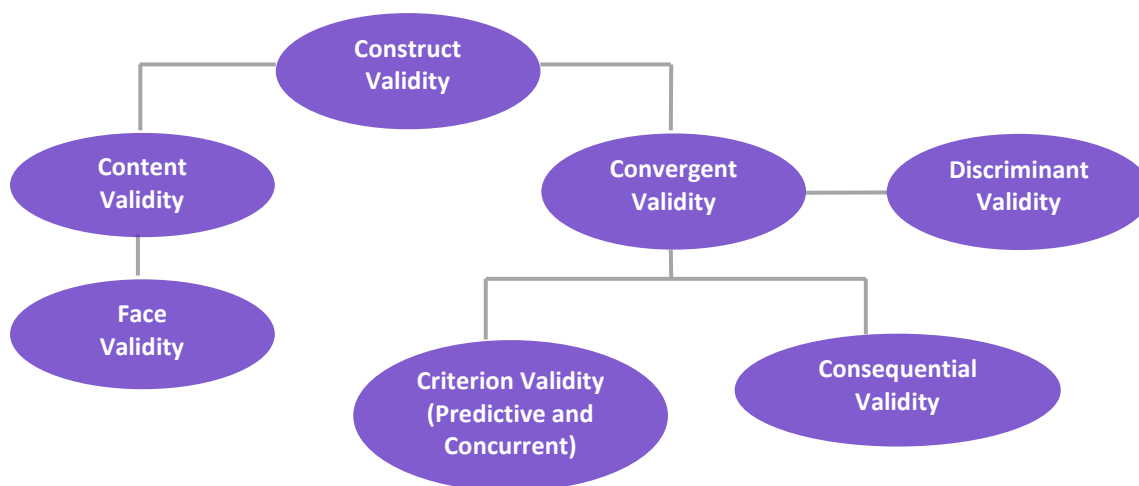


Figure 10. Conceptual Representation of the Relationship between the Different Types of Validation Achieved for the **PROFESSIONAL PROFILE 2©**.

6.1. Content validity

Content validity refers to the extent to which a measure represents all facets of a target construct and addresses the match between items on a questionnaire and the trait or attribute they are intended to capture. An assessment is content valid when it accurately, representatively and sufficiently taps into the various aspects of the target domain. Content validity evidence comes from the judgements of people who are experts in the measurement of the attribute, experts in the content area of the attribute or experts in the behaviours generated from the attribute (Lawshe, 1975). Content validity is important for HR and training professionals, as it helps to evaluate the extent to which items on a scale reflect the breadth and depth of knowledge required for a given role or job skill. For the **PROFESSIONAL PROFILE 2©**, content validity was established with the help of subject matter, technical and practical experts, who developed the scale to ensure items and dimensions reflected existing knowledge and practice and are contextually relevant. Specifically experts: a) defined traits and attributes in relevant work-based terms to facilitate lexical representativeness, b) reviewed items on dimensions to ensure accuracy and comprehensiveness, c) developed appropriate response options to ensure distinctiveness in answers and prevent systematic scale bias (Matthews & Oddy, 1997), d) identified relevant descriptors to represent the range of practical behaviours, and e) generated content to safeguard the accurate interpretation of scores and personalised analyses (See section 2.2.1: *Item Construction*).

Content validity addresses the question ‘Do traits and dimensions on the **PROFESSIONAL PROFILE 2©** represent the range of work-based personality and motivation behaviours identified by theory and evidence?’. Data from an invalid questionnaire can over-represent, omit or underrepresent some facets of the construct under investigation and may reflect variables outside the construct’s domain. An assessment that is content-invalid could therefore erroneously indicate the presence or absence of significant relationships. Furthermore, items will not show significant magnitudes of covariance and fail to confirm the hypothesized latent structure if an assessment has insufficient content validity. This is the case when an instrument does not adequately cover the facets of the construct or if the instrument measures variables that are not within the construct domain (Haynes, Richard, & Kubany, 1995). As content validity indices are specific to a scale’s function, an instrument’s construction should be guided by its intended function (DeVellis, 2011).

For the **PROFESSIONAL PROFILE 2©**, content validity was established using Lawshe’s (1975) content validation approach. A team of experts comprised of HR Managers, Psychologists and Learning and Development Consultants rated the degree to which items on the questionnaire were ‘essential’, ‘useful but not essential’ and ‘not essential’ in relation to the dimension they represented. In a four-step process, the power of items were examined first with study groups representing the target population and later with professional groups. From this process the following emerged:

- i. 13 of the 196 items from the original questionnaire were retained
- ii. 10 of the original 196 items were linguistically changed to ensure clarity, simplicity and cultural transferability
- iii. 41 of the original 196 items were developed to form the response audit scale to ensure face validity (see Section 6.5 : *Face Validity* for detailed discussion)
- iv. 160 items were newly developed based on modern work performance criteria and behaviours. This means that 71.43% of the items on the **PROFESSIONAL PROFILE 2©** are new.

For each stage of the item verification process, items generating R square (R^2) with a p value of more than .05 were changed or substituted followed by a round of expert review. R^2 coefficient of determination provides a measure of how well items predict the model of personality and motivation proposed by the **PROFESSIONAL PROFILE 2©**. Ranging from 0 to 1, R^2 tells us the power of an item in

predicting a target dimension. The closer the value to 1, the more powerful the item. Table 26 shows the step by step content validation process for a sample of six items.

6.2. Construct validity

Construct validity refers to the appropriateness of inferences made on the basis of observation or measurement. Construct validity is essential to the overall validity (perceived and actual) of a scale and is particularly valuable when there is much subjectivity to concepts. When a construct is not clearly or thoroughly defined, we are unable to make direct inferences between the construct and other behaviours (Cronbach & Meehl, 1955). Often there is no accepted unit of measurement for constructs, even fairly well known ones such as intelligence are open to debate. Therefore the construct validity of a scale may be threatened if the construct is: a) defined as too broad or too narrow, b) mislabelled as a specific dimension of or component within the construct, c) confounded by other related constructs that mask the effects of the main construct (for example the relationship between self-esteem, self-confidence and self-worth), or d) the construct was developed with insufficient research. Therefore, in order to develop a scale that measures work-based personality and motivation, both constructs must reflect known theories that define both personality and motivation, identify the components that each is comprised of and pin points positive and negative behaviours associated with each dimension.

For work-based assessments, construct validity is particularly important as it: a) adds legitimacy and acceptability to the standardised measurement of employee behaviours, b) facilitates understanding of organisational implications of findings, and c) enables organisations and individuals to tailor interventions to meet desired performance targets. Construct validity addresses the question ‘Does the **PROFESSIONAL PROFILE 2©** define and classify work-based personality and motivation in a way that represents theoretical and practical understanding?’ For the **PROFESSIONAL PROFILE 2©**, construct validity was established using two approaches: subscale inter-correlations and item response modelling.

“If a measurement matters at all, it is because it must have some conceivable effect on decisions and behaviour. If we can't identify a decision that could be affected by a proposed measurement and how it could change those decisions, then the measurement simply has no value”.

Douglas W. Hubbard (2010), pg. 47

Table 26. Step by Step Content Validation Process for a Sample of Six English Items on the **PROFESSIONAL PROFILE 2@**.

Sample Item	Original Item	Step 1 Item Review & Development	Step 2 Item and Model Verification with IRT	Step 3 Item and Model Verification with IRT	Step 4 Item and Model Verification with IRT
		Practical and Technical, Experts (N=10)	Pretest 1 Study Group (N=105)	Pretest 2 Professional Group (N=118)	Final Pilot Study Professional Group (N=345)
1.	I follow advice from my superiors.	I look for advice from my superiors.	I feel more assured when I consult my manager. No convergence	I consult with my manager to find the right way. R² = 0.189	I consult with my manager to find the right way. R² = 0.093
2.	New Dimension (Novelty Seeking)	I like doing things the way I usually do.	I am rather vigilant concerning new practices. No convergence	I prefer specialising over diversifying my skills. R² = 0.135	I prefer specialising over diversifying my skills. R² = 0.134
3.	I always do things the way I have been told to.	I seek my boss's approval before making a decision.	I appreciate being managed in order to succeed. No convergence	I prefer to be directed in order to succeed. R² = 0.351	I prefer to be directed in order to succeed. R² = 0.407
4.	I think about work even when I am off.	I seldom disconnect from my job.	I want to know what is going on at work during my holidays. No convergence	I want to know what is going on at work during my holidays. R² = 0.129	I like to stay updated on projects when absent. R² = 0.251
5.	I am sensitive to people's judgement.	I am sensitive to criticism.	I am responsive to pressure. R² = 0.276	I am responsive to pressure. No convergence	I am responsive to pressure. R² = 0.165

6.	I can say no when necessary.	I can say 'no' when necessary.	I firmly defend my point of view.	I firmly defend my point of view.	I firmly defend my point of view.
			$R^2 = 0.275$	No convergence	$R^2 = 0.208$

6.2.1. *Subscale inter-correlations*

Inter-correlations of scale dimensions help us to determine the degree to which dimensions on a construct are related and consistent. Dimensions that are theoretically and empirically related must generate higher correlation scores. Similarly, dimensions on a scale not proven to be linked should generate correlation values that reflect this lack of or negative relationship. Subscale inter-correlations provide an effective guide to identify the degree to which dimensions on a scale are logical, appropriate and typical of the target behaviour. Related dimensions tell us the strength of relationships between dimension and criteria, and therefore help us to make inferences about the relationship between an attribute and desired outcomes.

The correlation coefficient is a numerical way to quantify the relationship between two variables and ranges between -1 and 1. The closer the value to 1, the stronger the relationship. Subscale inter-correlations provide evidence for convergent and discriminant validity. Whilst the correlation coefficient is easy to calculate and interpret it does not imply causality, merely the association between two variables. Traditionally, subscale inter-correlations are measured using Pearson (1895) correlation. Tables 27- 29 detail the sub-scale inter-correlations of dimensions for the **PROFESSIONAL PROFILE 2©** for samples of French (N=209), UK (N=378) and USA (N=345) professionals respectively.

Table 27. Inter-subscale Correlations of Personality and Motivation Dimensions of the **PROFESSIONAL PROFILE 2©** - France.

		P1	P2	P3	P4	P5	P6	P7	M1	M2	M3	M4	M5	M6	M7
P1	Flexibility	1**													
P2	Extraversion	0.664**	1**												
P3	Focus on facts	0.826**	0.253**	1**											
P4	Improvisation	0.830**	0.702**	0.551**	1**										
P5	Persuasiveness	0.977**	0.632**	0.772**	0.787**	1**									
P6	Emotional distance	0.613**	-0.013	0.693**	0.550**	0.635**	1**								
P7	Rule-following	-0.847**	-0.575**	-0.705**	-0.934**	-0.777**	-0.605**	1**							
M1	Ambition	-0.496**	-0.280**	-0.460**	-0.323**	-0.487**	-0.305**	0.390**	1**						
M2	Autonomy	-0.344**	-0.210**	-0.325**	-0.252**	-0.333**	-0.200**	0.282**	0.826**	1**					
M3	Altruism	-0.277**	-0.039	-0.310**	-0.192**	-0.285**	-0.302**	0.284**	0.667**	0.476**	1**				
M4	Need for action	-0.339**	-0.139*	-0.337**	-0.266**	-0.337**	-0.285**	0.345**	0.790**	0.691**	0.885**	1**			
M5	Novelty seeking	-0.422**	-0.153*	-0.446**	-0.209**	-0.420**	-0.313**	0.303**	0.858**	0.616**	0.788**	0.775**	1**		
M6	Desire to lead	-0.489**	-0.226**	-0.481**	-0.314**	-0.483**	-0.347**	0.396**	0.947**	0.769**	0.784**	0.881**	0.924**	1**	
M7	Involvement at work	-0.381**	-0.166*	-.378**	-0.258**	-0.379**	-0.298**	0.339**	0.903**	0.765**	0.878**	0.914**	0.885**	0,914**	1**

(N = 209: France)

Table 28. Inter-subscale Correlations of Personality and Motivation Dimensions of the **PROFESSIONAL PROFILE 2©** - UK.

		P1	P2	P3	P4	P5	P6	P7	M1	M2	M3	M4	M5	M6	M7
P1	Flexibility	1**													
P2	Extraversion	-0.334**	1**												
P3	Focus on facts	0.300**	-0.361**	1**											
P4	Improvisation	-0.220*	0.043	-0.460**	1**										
P5	Persuasiveness	-0.212*	0.118	-0.164	-0.107	1**									
P6	Emotional distance	-0.353**	-0.04	-0.027	-0.187	-0.051	1**								
P7	Rule-following	0.368**	0.054	0.362**	-0.262**	0.116	0.097	1**							
M1	Ambition	-0.485**	0.215*	-0.205*	0.034	0.321**	0.153	-0.13	1**						
M2	Autonomy	0.162	-0.268**	0.022	0.051	-0.162	-0.119	-0.232*	-0.220*	1**					
M3	Altruism	0.222*	0.065	0.024	-0.084	-0.168	-0.009	0.247*	-0.317**	-0.286**	1**				
M4	Need for action	0.231*	0.083	0.034	0.068	-0.016	-0.267**	0.094	-0.329**	-0.021	-0.084	1**			
M5	Novelty seeking	-0.317**	0.135	-0.272**	0.341**	-0.087	0.096	-0.338**	0.176	-0.144	-0.082	-0.294**	1**		
M6	Desire to lead	-0.375**	0.284**	-0.156	0.023	0.269**	0.178	-0.063	0.239*	-0.345**	-0.205*	-0.042	-0.022	1**	
M7	Involvement at work	-0.028	0.122	-0.028	0.077	0.094	-0.145	0.152	0.079	-0.274**	0.032	-0.083	-0.075	-0.063	1**

(N = 378: UK)

Table 29. Inter-subscale Correlations of Personality and Motivation Dimensions of the **PROFESSIONAL PROFILE 2©** - USA.

		P1	P2	P3	P4	P5	P6	P7	M1	M2	M3	M4	M5	M6	M7
P1	Flexibility	1**													
P2	Extraversion	0.377**	1**												
P3	Focus on facts	0.979**	0.381**	1**											
P4	Improvisation	0.820**	0.690**	0.842**	1**										
P5	Persuasiveness	0.489**	0.816**	0.559**	0.800**	1**									
P6	Emotional distance	0.130*	0.500**	0.210**	0.631**	0.679**	1**								
P7	Rule-following	-0.929**	-0.613**	-0.945**	-0.959**	-0.742**	-0.428**	1**							
M1	Ambition	-0.104	0.339**	-0.093	0.095	0.255**	0.225**	-0.023	1**						
M2	Autonomy	0.189**	-0.388**	0.186**	-0.129*	-0.245**	-0.360**	-0.003	-0.242**	1**					
M3	Altruism	-0.190**	0.202**	-0.213**	-0.055	0.030	0.083	0.126*	0.568**	-0.300**	1**				
M4	Need for action	0.058	-0.207**	0.039	-0.165**	-0.217**	-0.304**	0.080	0.145**	0.684**	0.339**	1**			
M5	Novelty seeking	-0.149**	0.436**	-0.143**	0.146**	0.307**	0.337**	-0.030	0.831**	-0.632**	0.702**	-0.179**	1**		
M6	Desire to lead	-0.162**	0.411**	-0.146**	0.114*	0.321**	0.313**	-0.014	0.797**	-0.500**	0.712**	-0.066	0.912**	1**	
M7	Involvement at work	-0.172**	0.209**	-0.168**	-0.022	0.108*	0.134*	0.085	0.745**	-0.224**	0.795**	0.299**	0.770**	0.822**	1**

(N = 345: USA)

6.2.2. Confirmation of factor structure

Exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) are two approaches used to examine the internal robustness of a scale. Both investigate the theoretical constructs or factors that may be represented by a set of items as well as the quality of individual items (Brown, 2006; Tabachnick & Fidell, 2000). However, whereas the goal of EFA is to identify and maximise the importance (percentage of variance) of each dimension, CFA is a hypothesis driven approach that determines the degree to which observed indicators (descriptors) reflect the underlying construct (Schreiber, Nora, Stage, Barlow, & King, 2006) by specifying the number of dimensions expected and classifying the value of expected relationships. In so doing, CFA provides a numerical estimate of the degree to which the proposed factor structure is an accurate fit of the phenomenon in the real world. CFA therefore investigates the degree to which measures of a construct are consistent with established understanding and theoretical arguments for that construct.

Due to the dichotomous nature of response options, ipsative data does not lend itself to standard confirmatory factor analysis (Baron, 1996; Brown & Maydeu-Olivares, 2013; Jackson & Alwin, 1980; Meade, 2004). A solution to model forced choice data was developed by Brown and Maydeu-Olivares (2011). This model is an IRT formulation of the Thurstonian model for comparative data embedded in a structural equation modelling framework, which is suitable for forced choice questionnaires. Therefore, the factor structure of the **PROFESSIONAL PROFILE 2©** was established using Thurstonian Item Response Theory (IRT).

6.2.2.a. Goodness of Fit indices

The degree to which a proposed model fits the data is one of the most important steps in structural equation modelling (Yuan, 2005). To evaluate the extent to which a scale measuring a construct is consistent with knowledge and evidence, statistics tell us the degree to which the data is a good fit. Several statistical tests are used to determine how well the model fits the data in structural equation modelling (SEM). The closer fit indices meet statistical requirements, the better the model. The *Chi Square* (X^2) statistic is considered the primary index of goodness-of-fit. However, due to problems associated with reliance on the X^2 (sensitivity to sample sizes and inappropriateness when distributional assumptions are violated), measures of relative fit are strongly recommended. The X^2 is a measure of absolute fit, and provides a fundamental indication of how well the proposed theory fits the data and does not rely on comparison with a baseline model (Jöreskog & Sörbom, 1993).

For the validation of the **PROFESSIONAL PROFILE 2©**, the Root Mean Square Error of Approximation (RMSEA) (Steiger & Lind, 1980), the Bentler Comparative Fit Index (CFI) and the Tucker-Lewis Index (TLI) were chosen as additional measures of fit as they are the least to be affected by sample size while reflecting parsimony (Fan, Thompson, & Wang, 1999). Furthermore, using a variety of indices is necessary as different indices reflect different aspects of model fit (Hooper, Coughlan, & Mullen, 2008). Like the X^2 , the RMSEA is a measure of absolute fit that assesses the amount of error associated with a proposed model. The lower the RMSEA, the more robust the model; indices of 0.005 – 0.075 are considered as a good fit (Hu & Bentler, 1999). This is because RMSEA is related to the residuals in the model and assesses the degree to which the proposed model is inaccurate. Both the CFI and TLI are incremental or relative fit indices that assess overall improvement of a proposed model compared with an independence model where observed variables are uncorrelated (Hooper et al. 2008, Holtzman & Vezzu, 2011). Whilst higher values of the CFI and TLI (0.9 and above) indicate good fit, it should be noted that a CFI or TLI of 0.90 or higher may not correspond to a RMSEA of .05 or less (Hu & Bentler, 1999). Table 30 outlines the different types of goodness-of-fit indices used to validate the **PROFESSIONAL PROFILE 2©**.

6.2.2.b. Modification indices

For a model to be an accurate representation of ‘real world’ indicators, it must be properly identified. If there is too little information available on which to base the parameter estimates, the model is under-identified and relationships between attributes of the model cannot be appropriately estimated (Brown, 2006). Modification indices show the improvement in model fit if a particular coefficient were to become unconstrained, (the relationship between two or more attributes of the model allowed to correlate based on research and practical evidence).

Statistically, the modification index reflects an estimation of how much the overall Chi-square of the model would decrease if the fixed or constrained parameter was freely estimated (Hox & Bechger, 1998). Essentially, modification indices help us to evaluate the degree to which the theoretical and practical assumptions made in analysing data are reasonable. When a modification has been applied, changes in the goodness-of-fit statistics tell us the degree to which the model has been improved and is more representative of actual behaviours. For the validation of the model of personality and motivation measured by the **PROFESSIONAL PROFILE 2©**, structural modifications were included if proposed relationships were based on theoretical, practical and research evidence.

6.2.2.c. Thurstonian (IRT)

“Item response theory (IRT) refers to a set of mathematical models that describe, in probabilistic terms, the relationship between a person’s response to a survey question and his or her level of the ‘latent variable’ being measured by the scale” (Hays & Fayers, 2005, p.55). In ipsative tests, a respondent must make a comparative judgement between two or more items to give an answer. Conversely in normative tests, judgement is measured in absolute terms for each evaluated personality trait and does not compare preferences between different traits. Classical test scoring does not reflect this psychological process of comparison, but rather ignores the fact that respondents indicate a preference not an absolute judgement. Thurstone’s law of comparative judgements (Thurstone, 1927; 1931) generates results based on the comparative judgements of individuals. In order to analyse the data using Thurstonian IRT modelling, raw data was converted into binary outcomes following the procedure describe by Brown and Maydeu-Olivares (2011) for Item response modelling of paired comparisons and ranking data. For the **PROFESSIONAL PROFILE 2©**, the 84 questions consisted of blocks of 2 items (response options). The observed responses to the paired comparisons were coded using the formula below.

$$y_l = \begin{cases} 1 & \text{if item } a \text{ is preferred over item } b \\ 0 & \text{if item } b \text{ is preferred over item } a \end{cases}$$

where l indicates the pair $\{a, b\}$.

The Thurstonian IRT model was fit to the binary outcomes of paired comparisons with a structure of 14 correlated latent factors. In total, 84 binary outcomes were generated from 84 blocks of two items. Mplus version 7.1 (Muthén & Muthén, 2014) was used to estimate item parameters from tetrachoric correlations using the unweighted least squares (ulsmv) algorithm. Figures 11-16 show the structural models of personality and motivation measured by the **PROFESSIONAL PROFILE 2©** for French, English and American professionals, whilst Table 31 outlines the construct validity indices for models across all three countries.

Table 30. Goodness of Fit Indices used to Validate Personality and Motivation Constructs Measured by the **PROFESSIONAL PROFILE 2®**.

Goodness of Fit Indicator	Symbol	Definition and Characteristics
1. Chi-Square	χ^2	Indicates the difference between observed and expected relationships in a model via a covariance matrix. Sensitive to sample sizes and inappropriate when distributional assumptions are violated (when data is non-normal). Values closer to 0 indicate a better fit as there are smaller differences between observed and expected relationships (Pearson, 1900).
2. Degrees of Freedom	df	Refer to the number of values in the final calculation of a statistic that are free to vary. Relative to sample size – larger sample sizes produce better estimates of variance. There are $n-1$ degrees of freedom for a sample size of n . Knowing the extent to which responses in the data may vary improves accuracy. The larger the degree of freedom the more accurate the fit index (Kenny, Kaniskan, & McCoach, 2014).
3. Chi-Square/Degrees of Freedom	χ^2/df	Indicates the ratio between the power of the model and the amount of error in the data. A good fit is indicated by a small χ^2 value relative to its degrees of freedom (a χ^2/df ratio of 3 or less is considered as a good indicator) (Kline, 2011).
4. Significance	p	The p -value quantifies the degree of significance of evidence. It tells us the probability of rejecting the assumption that there is no relationship between variables under investigation. In research there is always the possibility that an observed effect is due to sampling error alone. However, with a p -value that is less than the significance level (usually $p \leq 0.05$), we can conclude that the effect is very likely to happen in the 'real world' (Cowles & Davis, 1982; Neyman & Pearson, 1933).
5. Root Mean Square Error of Approximation	RMSEA	The lower the RMSEA the better the model fits the data. The RMSEA measures error of approximation and can be considered as a 'badness of fit' index. Indeed, a value of 0 indicates the best fit and higher values indicate worse fit. Ideally it should be less than .06 (Hu & Bentler, 1999) with an upper limit of .07 (Steiger, 2007).
6. Upper and Lower Level RMSEA Confidence Band	CI	Confidence bands tell us the degree of uncertainty associated with a statistical value. However carefully a scale has been constructed, an element of error is likely to exist. The upper confidence limit tells us the maximum amount of deviation expected from the true score, whilst the lower confidence limit refers to the minimum amount of error associated with a score. Low CI should be close to 0 whilst the upper limit should be less than 0.08 (McQuitty, 2004).
7. Comparative Fit Index	CFI	The CFI assesses the relative improvement in fit of the model compared with a baseline model. Values greater than 0.95 may indicate reasonably good fit (Hu & Bentler, 1999). In a field in which former models generate CFI values of .70 only, a CFI value of .85 should be acceptable since it signifies progress (Bollen, 1989).
8. Tucker-Lewis Index	TLI	Like CFI assesses the fit of the model relative to a baseline. Benefit of not being affected by sample size and robust against normality violations. The TLI ranges from 0 to 1 with a recommended TLI greater than .095 (Hu & Bentler, 1999).

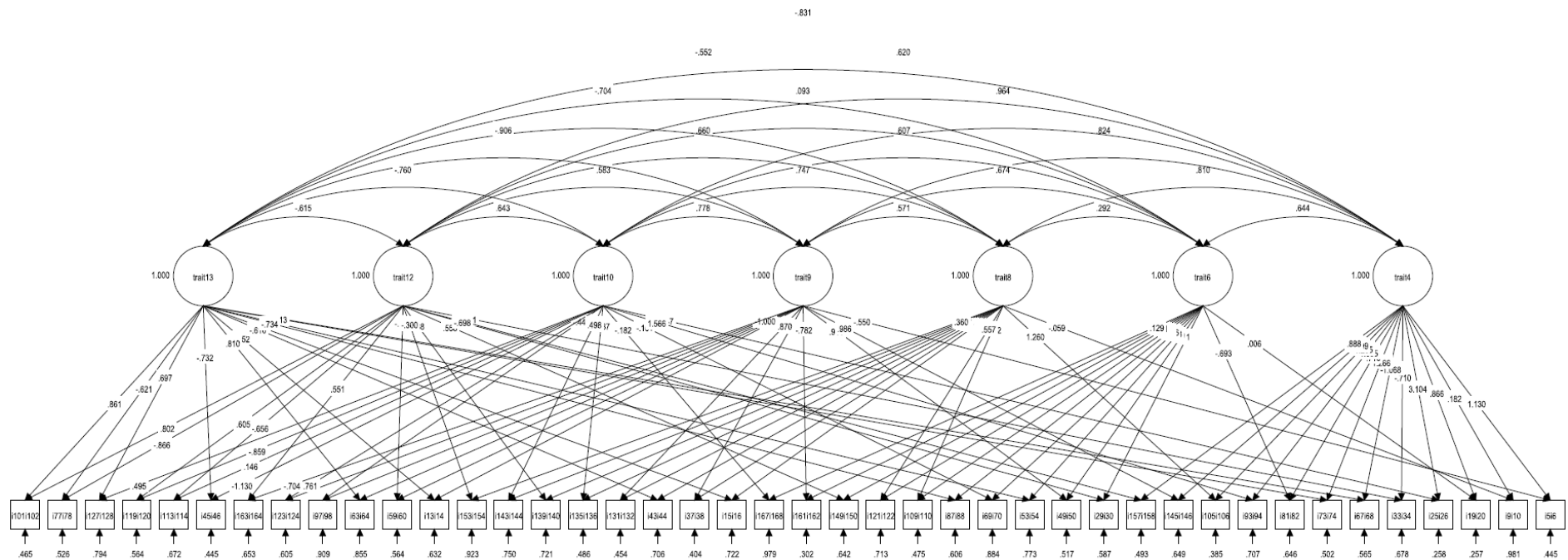


Figure 11. PROFESSIONAL PROFILE 2© Structural Model of Personality Dimensions for France Professionals.

Trait 4 – Flexibility (Firmness) · Trait 6 – Extraversion (Introversion) · Trait 8 – Focus on facts (Intuition) · Trait 9 – Improvisation (Need for Structure) · Trait 10 – Persuasiveness (Straightforwardness) · Trait 12 – Emotional distance (Emotional sensitivity) · Trait 13 – Rule-following (Free-thinker).

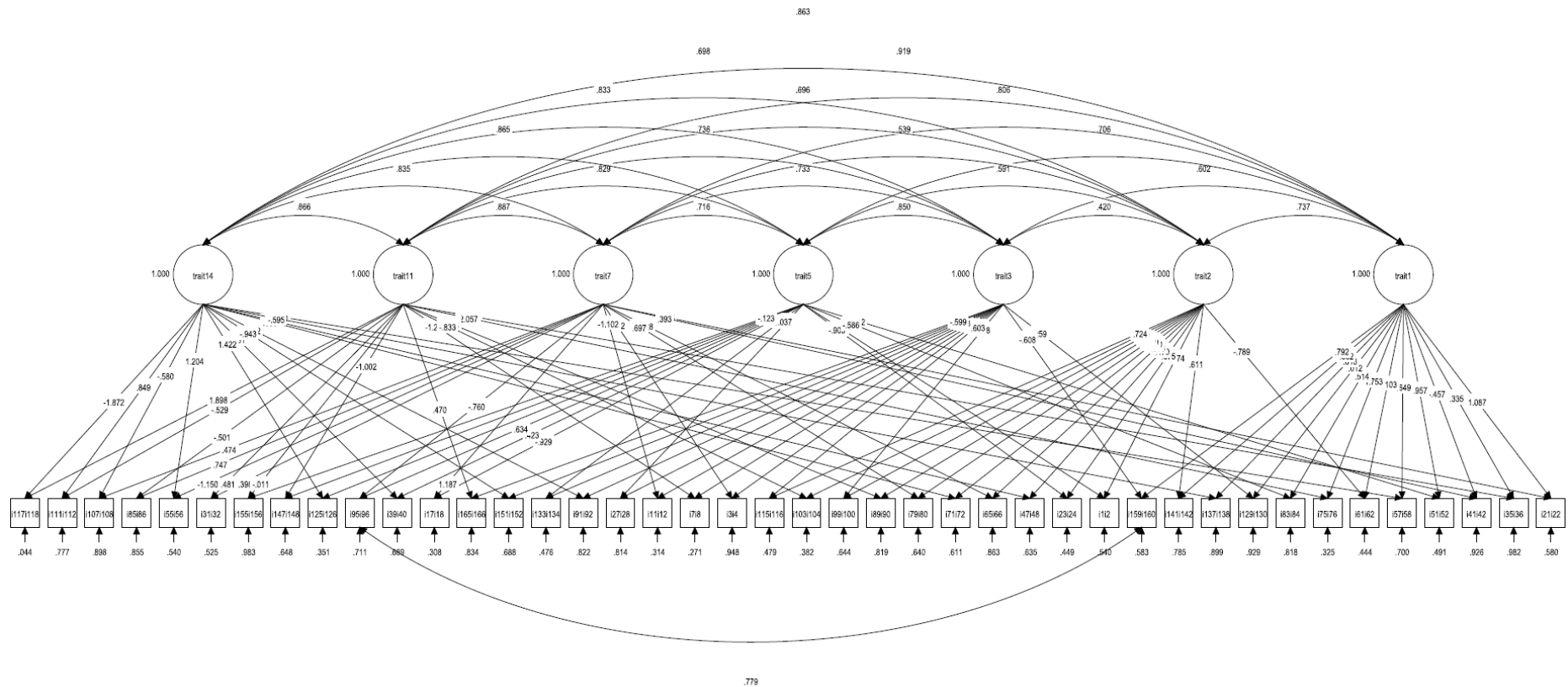


Figure 12. PROFESSIONAL PROFILE 2© Structural Model of Motivation Dimensions for France Professionals.

Trait 1 – Ambition (Humility) · Trait 2 – Autonomy (Team work) · Trait 3 – Altruism (Individualism) · Trait 5 – Need for action (Need for reflection) · Trait 7 – Novelty seeking (Familiarity Seeking) · Trait 11 – Desire to lead (Need for guidance) · Trait 14 – Involvement at work (Personal balance).

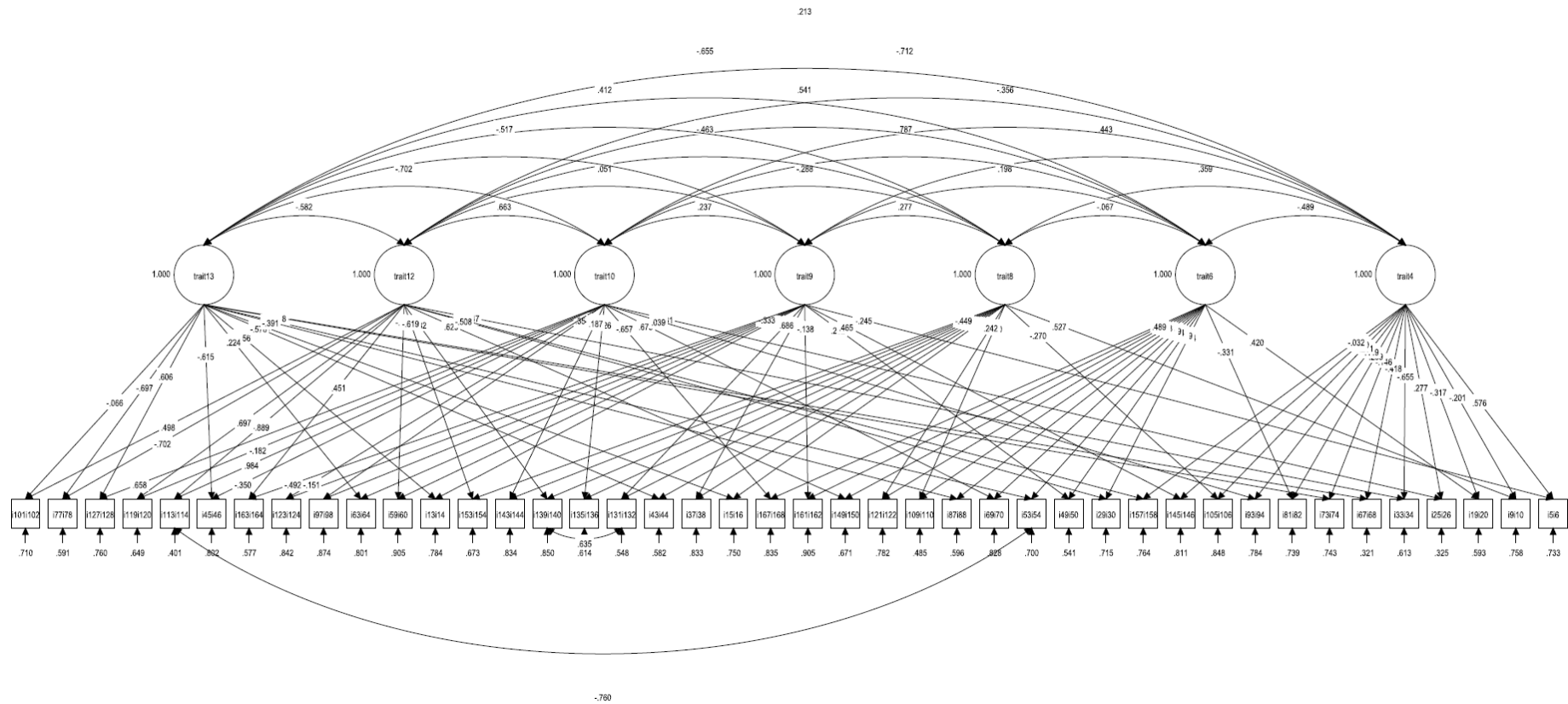


Figure 13. PROFESSIONAL PROFILE 2© Model of Personality Dimensions for UK Professionals.

Trait 4 – Flexibility (Firmness) · Trait 6 – Extraversion (Introversion) · Trait 8 – Focus on facts (Intuition) · Trait 9 – Improvisation (Need for Structure) · Trait 10 – Persuasiveness (Straightforwardness) · Trait 12 – Emotional distance (Emotional sensitivity) · Trait 13 – Rule-following (Free-thinker).

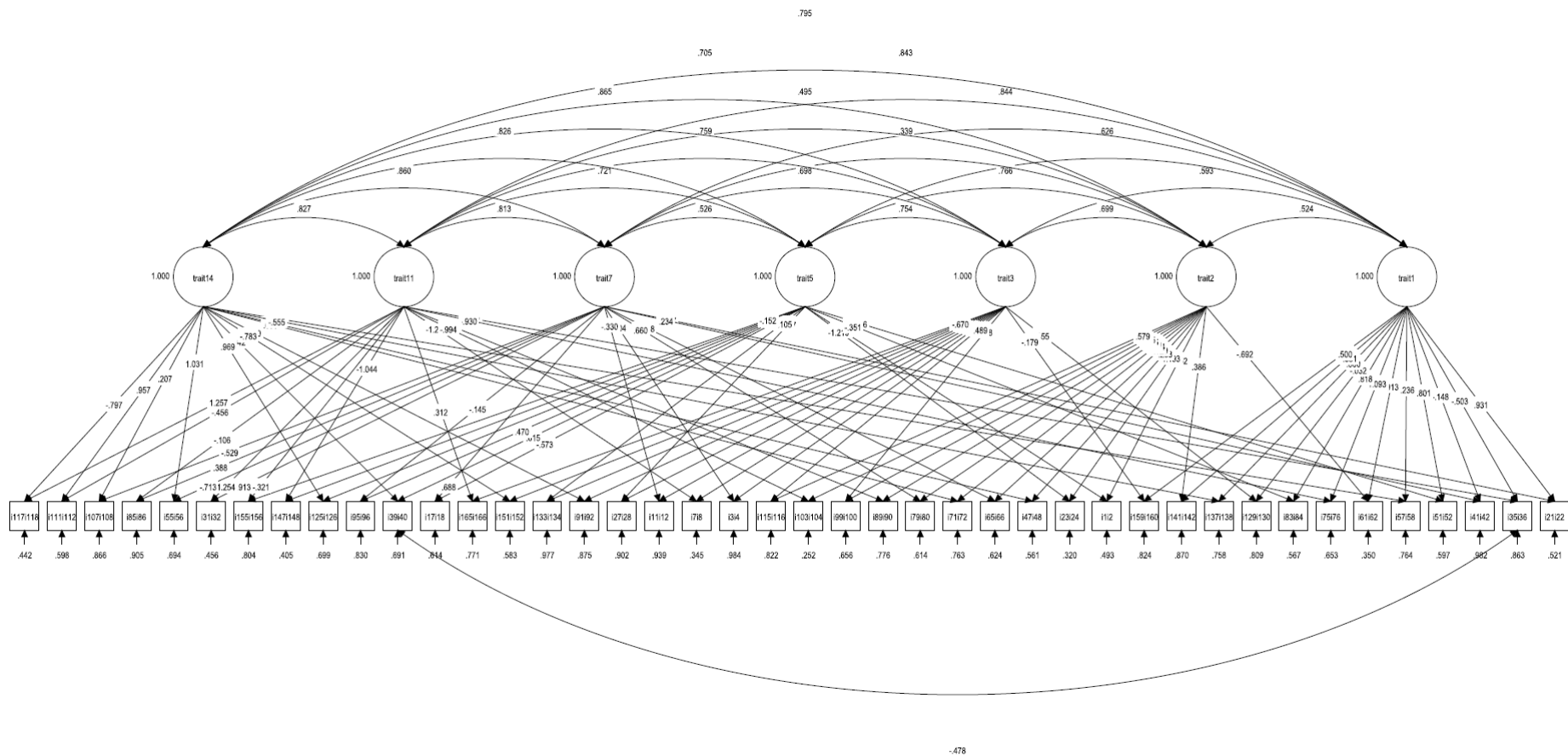


Figure 14. PROFESSIONAL PROFILE 2© Model of Motivation Dimensions for UK Professionals.

Trait 1 – Ambition (Humility) · Trait 2 – Autonomy (Team work) · Trait 3 – Altruism (Individualism) · Trait 5 – Need for action (Need for reflection) · Trait 7 – Novelty seeking (Familiarity seeking) · Trait 11 – Desire to lead (Need for guidance) · Trait 14 – Involvement at work (Personal balance).

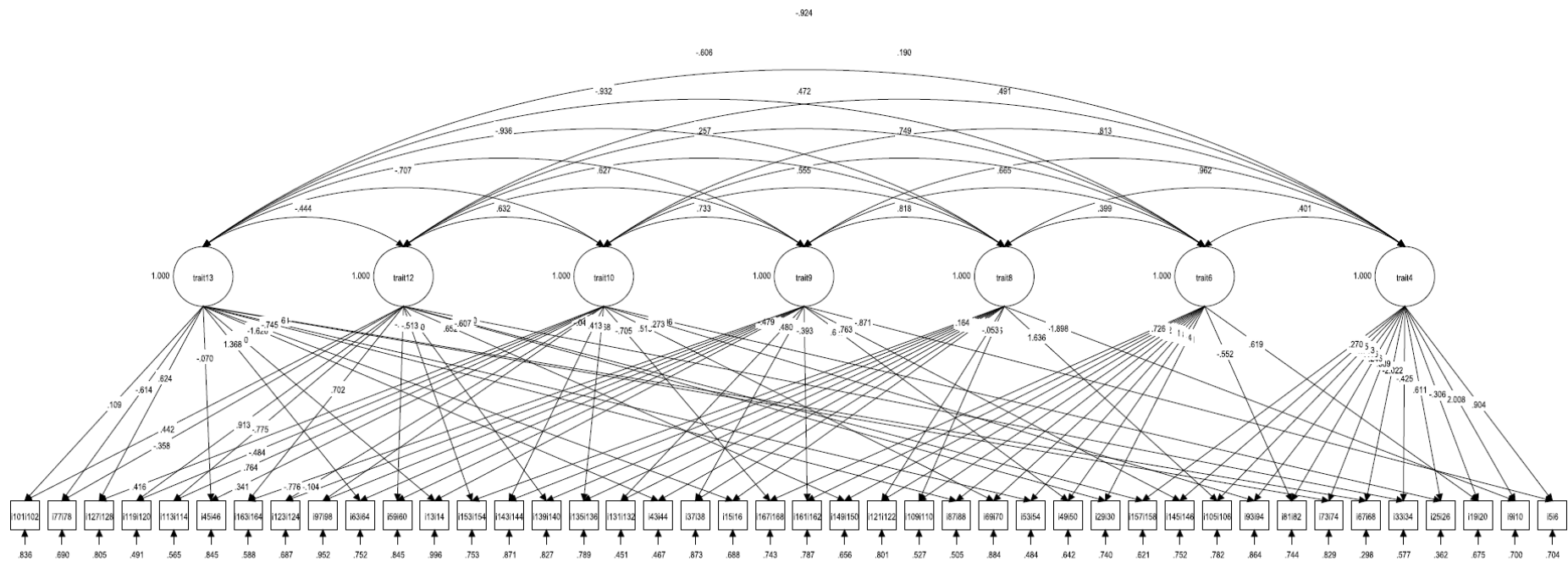


Figure 15. PROFESSIONAL PROFILE 2© Model of Personality Dimensions for USA Professionals.

Trait 4 – Flexibility (Firmness) · Trait 6 – Extraversion (Introversion) · Trait 8 – Focus on facts (Intuition) · Trait 9 – Improvisation (Need for Structure) · Trait 10 – Persuasiveness (Straightforwardness) · Trait 12 – Emotional distance (Emotional sensitivity) · Trait 13 – Rule-following (Free-thinker)

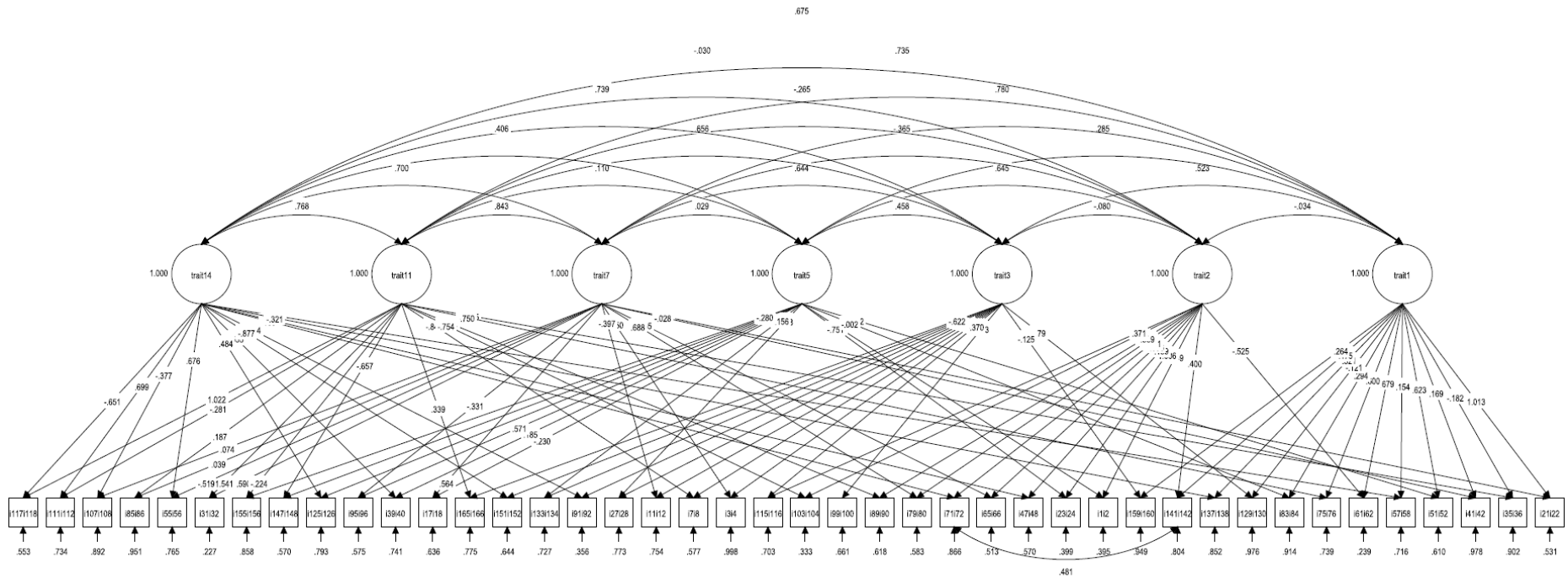


Figure 16. PROFESSIONAL PROFILE 2© Model of Motivation Dimensions for USA Professionals.

Trait 1 – Ambition (Humility) · Trait 2 – Autonomy (Team work) · Trait 3 – Altruism (Individualism) · Trait 5 – Need for action (Need for reflection) · Trait 7 – Novelty seeking (Familiarity seeking) · Trait 11 – Desire to lead (Need for guidance) · Trait 14 – Involvement at work (Personal balance).

Table 31. Construct Validity Indices of Personality and Motivation Dimensions for the **PROFESSIONAL PROFILE 2©** - France, UK and USA.

Country	Domain	N	χ^2	df	χ^2/df	p	RMSEA	low 90 Percent C.I.	high 90 Percent C.I.	CFI	TLI
France	<i>Personality</i>	209	887.930	756	1.175	0.0000	0.032	0.026	0.037	0.786	0.756
	<i>Motivation</i>	209	883.050	755	1.169	0.0000	0.028	0.019	0.036	0.811	0.785
United Kingdom (UK)	<i>Personality</i>	378	1047.432	754	1.389	0.0000	0.032	0.027	0.037	0.802	0.773
	<i>Motivation</i>	378	958.337	754	1.269	0.0000	0.027	0.021	0.032	0.863	0.844
United States of America (USA)	<i>Personality</i>	345	1017.660	756	1.346	0.0000	0.032	0.026	0.037	0.786	0.756
	<i>Motivation</i>	345	891.122	755	1.180	0.0004	0.023	0.016	0.029	0.883	0.867

6.3. Discriminant and convergent validity

Convergent validity ensures that scales which measure the same construct, and theoretically *should* be related to each other, are in fact observed to be related as evidenced by higher positive correlation coefficients. Similarly, measures of constructs that theoretically should *not* be related to each other, are in fact observed to be unrelated, as evidenced by lower or negative correlation coefficients (discriminant validity). Convergent validity helps us to establish construct validity evidence, when two different measurement procedures and research methods are used to collect data about one construct (Kaplan & Saccuzzo, 2008). Similarly, discriminant validity is important because it is common to create a definition for a construct that actually captures more than one phenomena. This is so because human behaviour is interrelated, multifaceted and complex. Thinking, feeling and acting do not occur separately and in a specified order. Rather, all three activities operate in tandem and are often influenced by context resulting in overlaps. Discriminant validity leads to construct validity by demonstrating that the construct of interest is different from other constructs that may be present.

Convergent validity addresses the question, “To what extent does the **PROFESSIONAL PROFILE 2©** measure the same work-based personality and motivation dimensions as other established personality questionnaires?” Convergent and discriminant validity for the **PROFESSIONAL PROFILE 2©** were established with studies using the Big Five Inventory-10 (BF-10) and the Ten-Item Personality Inventory (TIPI). The multitrait-multimethod approach by Raykov (2011) was used to generate correlation coefficients.

The multitrait-multimethod (MTMM) approach, as a technique for evaluating convergent and discriminant validity, was first proposed by Campbell & Fiske (1959). MTMM generates a matrix of correlations of traits in a scale that are arranged to facilitate interpretations about construct validity. Specifically, MTMM identifies traits that are conceptually similar and dissimilar thereby providing evidence for convergent and discriminant validity simultaneously. However, since its first introduction, there has been limited application of MTMM by researchers to establish convergent and discriminant validity of scales, as ongoing debate about the use of population versus sample correlation coefficients has led to incorrect conclusions about the validity of instruments. In 2011, Raykov proposed a model of MTMM that uses latent variable modelling and comprises of linear relationships among several traits evaluated by different measurement methods, and allows to account for sampling error affecting the correlation estimates. Raykov’s model of MTMM allows us to estimate an interval for the convergent and discriminant validity coefficient, and thus their relationship with the population.

MTMM analyses of convergent validity include correlations between measures of the same construct assessed with different methods, referred to as monotrait-heteromethod coefficient (MTHM). High MTHM coefficients for a trait provide evidence for construct validity for that trait. MTMM discriminant validity is assessed with two types of correlations coefficients: correlations between measures of different traits furnished by the same methods of measurement, referred to as heterotrait-monomethod coefficient (HTMM), and correlations between measures of different traits measured with different methods, referred to as heterotrait-heteromethod coefficient (HTHM). A lower HTMM and HTHM coefficients compared to MTHM coefficient provides support for discriminant validity. All analyses were conducted using MPLUS version 7 software.

6.3.1. The **PROFESSIONAL PROFILE 2©**, the BF-10 and TIPI

A total of 378 professional participants (225 men; 153 women) ranging in age from 20 to 64 years ($\mu = 43.67$; $\sigma = 11.26$) completed the **PROFESSIONAL PROFILE 2©**, BF-10 and TIPI personality questionnaires as part of a validation study. Participants were screened and recruited by professional research and sampling firm *Qualtrics*, who contacted respondents directly. Participants were selected using screening questions for gender, age and professional status, and invited to take part online. Participants comprised of management (56%) and non-management (43%) professionals from the UK. Participants who completed all questionnaires received compensation.

6.3.1. a. Results – The relationship between the **PROFESSIONAL PROFILE 2©** and the BF-10 and TIPI

Findings from MMTM analyses indicate that dimensions on the **PROFESSIONAL PROFILE 2©** are theoretically similar to corresponding dimensions on the BF-10 and TIPI. As shown in Table 32 and 33, the discriminant validity coefficients are lower than convergent validity indices. The overall differences between the 10 convergent validities coefficients and the 50 divergent validities coefficient was .349, with a confidence interval from .319 to .378; thereby providing evidence of robust construct validity. Traits agreeableness, openness and conscientiousness have low to moderate correlations, particularly with the BF-10. This may be due to the items on the BF-10 measuring different components of the targeted dimension than those measured by the **PROFESSIONAL PROFILE 2©**.

Table 32. Convergent Validity of the **PROFESSIONAL PROFILE 2©** with MTHM (Monotrait-Heteromethod) Findings.

		PROFESSIONAL PROFILE 2© factor	RHO	SE (RHO)	CI Low	CI High
BF10	Agreeableness	Altruism	0.373	0.044	0.284	0.456
	Extraversion	Extraversion	0.633	0.031	0.568	0.690
	Openness	Novelty seeking	0.023	0.051	-0.077	0.122
	Neuroticism (reversed)	Emotional distance	0.521	0.037	0.445	0.590
	Conscientiousness	Improvisation (reversed)	0.159	0.050	0.060	0.255
TIPI	Agreeableness	Altruism	0.330	0.046	0.237	0.417
	Extraversion	Extraversion	0.639	0.030	0.576	0.694
	Openness	Novelty seeking	0.414	0.043	0.326	0.495
	Emotional sensitivity	Emotional distance	0.596	0.033	0.527	0.657
	Conscientiousness	Improvisation (reversed)	0.307	0.047	0.212	0.396

Note. **PROFESSIONAL PROFILE 2©** Improvisation and BF-10 neuroticism responses were reversed in order to match the direction of the scales; $N = 378$.

Table 33. Discriminant Validity of the **PROFESSIONAL PROFILE 2©** with HTMM (Heterotrait-Monomethod) Findings.

		PROFESSIONAL PROFILE 2© factor	RHO	SE (RHO)	CI Low	CI High
PROFESSIONAL PROFILE 2©	Altruism	Extraversion	0.065	0.051	-0.035	0.164
	Altruism	Novelty seeking	-0.082	0.051	-0.181	0.018
	Altruism	Emotional distance	-0.009	0.051	-0.109	0.091
	Altruism	Improvisation	0.084	0.051	0.016	0.183
	Extraversion	Novelty seeking	0.135	0.05	0.036	0.231
	Extraversion	Emotional distance	-0.04	0.051	-0.139	0.060
	Extraversion	Improvisation	-0.043	0.051	-0.142	0.057
	Novelty seeking	Emotional distance	0.096	0.051	-0.005	0.195
	Novelty seeking	Improvisation	-0.341	0.045	-0.426	-0.25
	Emotional distance	Improvisation	0.187	0.05	0.087	0.283

Table 34. Discriminant Validity of the **PROFESSIONAL PROFILE 2©** with HTHM (Heterotrait-Heteromethod Coefficient) Findings.

		PROFESSIONAL PROFILE 2© factor	RHO	SE (RHO)	CI Low	CI High
BF10	Agreeableness	Extraversion	0.047	0.051	-0.053	0.146
	Agreeableness	Novelty seeking	-0.13	0.051	-0.228	-0.029
	Agreeableness	Emotional distance	0.115	0.051	0.014	0.213
	Agreeableness	Improvisation	0.153	0.05	0.054	0.249
	Extraversion	Altruism	-0.028	0.051	-0.127	0.072
	Extraversion	Novelty seeking	0.16	0.05	0.061	0.256
	Extraversion	Emotional distance	0.145	0.05	0.046	0.241
	Extraversion	Improvisation	-0.038	0.051	-0.137	0.062
	Openness	Altruism	0.085	0.051	-0.015	0.184
	Openness	Extraversion	-0.033	0.051	-0.132	0.067
	Openness	Emotional distance	0.037	0.051	-0.063	0.136
	Openness	Altruism	-0.014	0.051	-0.113	0.086

	Neuroticism	Altruism	-0.002	0.051	-0.102	0.098
	Neuroticism	Extraversion	0.241	0.048	0.145	0.333
	Neuroticism	Novelty seeking	0.202	0.049	0.104	0.296
	Neuroticism	Improvisation	-0.018	0.051	-0.117	0.082
	Conscientiousness	Altruism	0.086	0.051	-0.014	0.185
	Conscientiousness	Extraversion	0.034	0.051	-0.066	0.133
	Conscientiousness	Novelty seeking	-0.078	0.051	-0.177	0.022
	Conscientiousness	Emotional distance	0.252	0.048	0.156	0.343
TIPI	Agreeableness	Extraversion	0.014	0.051	-0.086	0.113
	Agreeableness	Novelty seeking	-0.048	0.051	-0.147	0.052
	Agreeableness	Emotional distance	0.137	0.05	0.038	0.233
	Agreeableness	Improvisation	0.159	0.05	0.060	0.255
	Extraversion	Altruism	-0.035	0.051	-0.134	0.065
	Extraversion	Novelty seeking	0.244	0.048	0.148	0.336
	Extraversion	Emotional distance	0.079	0.051	-0.021	0.178
	Extraversion	Improvisation	-0.118	0.051	-0.216	-0.017
	Openness	Altruism	-0.061	0.051	-0.16	0.039
	Openness	Extraversion	0.221	0.049	0.123	0.315
	Openness	Emotional distance	0.101	0.051	0.000	0.200
	Openness	Improvisation	-0.191	0.050	0.091	0.287
	Neuroticism	Altruism	0.066	0.051	-0.034	0.165
	Neuroticism	Extraversion	0.177	0.050	0.078	0.273
	Neuroticism	Novelty seeking	0.143	0.050	0.044	0.239
	Neuroticism	Improvisation	0.079	0.051	0.021	0.178
	Conscientiousness	Altruism	0.088	0.051	-0.013	0.187
	Conscientiousness	Extraversion	0.026	0.051	-0.074	0.125
	Conscientiousness	Novelty seeking	-0.047	0.051	-0.146	0.053
	Conscientiousness	Emotional distance	0.245	0.048	0.149	0.337

As shown in Table 34, correlations between dimensions that are conceptually dissimilar are negative or lower than correlations between dimensions that are conceptually similar. Thereby providing evidence of the construct validity of the **PROFESSIONAL PROFILE 2©**.

6.3.2. The **PROFESSIONAL PROFILE 2©** and the IPIP

A total of 805 UK professional participants, who had already completed the **PROFESSIONAL PROFILE 2©**, were re-contacted 3 weeks later and asked to complete 12 scales of the International Personality Item Pool (IPIP) (Goldberg et al., 2006) as part of a validation study. Participants were screened and recruited by professional research and sampling firm CINT, who contacted respondents directly. Participants were selected using screening questions for gender, age and professional status, and invited to take part online. Participants who completed all questionnaires received compensation.

391 out of the 805 contacted professionals completed the IPIP scales. After excluding the participants who responded in less than 5 minutes or more than 1 hour from the analysis, 258 UK professionals (118 men; 140 women), aged from 20 to 64 years ($\mu = 42.61$; $\sigma = 11.92$), were included.

6.3.2. a. The International Personality Item Pool (IPIP)

The International Personality Item Pool (IPIP) is a collection of 2413 public domain personality items. The project was initiated in 1996 and is freely available in over 25 languages.

The IPIP questionnaire for this study was extracted from the IPIP Website (<http://ipip.ori.org/>). The IPIP website is an online scientific computer supported system that contains psychometric characteristics for IPIP scales, keys for scoring scales, and numerous items related to personality, and enables the development of research into personality and other individual differences. There are 302 different IPIP scales measuring 230 different constructs similar to their parent scales, such as the NEO-PI-R (Costa & McCrae, 1992), 16 Personality Factor Questionnaire (16PF: Conn & Rieke, 1994), and California Psychological Inventory (CPI: Gough & Bradley, 1996). All scales can be found in an alphabetical index and be compiled as desired.

The authors of this manual selected 12 IPIP scales that were considered to be related to 12 out of 14 **PROFESSIONAL PROFILE 2©** scales based on item similarity and commonality of concepts. IPIP items are like **PROFESSIONAL PROFILE 2©** items in that they are short verbal phrases. No closely related scales could be found for the **PROFESSIONAL PROFILE 2©** dimensions Need for action and Flexibility. The dimensions from the **PROFESSIONAL PROFILE 2©** were matched with IPIP dimensions, and a comparative analysis was run on the 12 selected pairs. IPIP - **PROFESSIONAL PROFILE 2©** pairs can be found in Table 35.

Participants were instructed to “Describe yourself as you generally are now, not as you wish to be in the future. Describe yourself as you honestly see yourself, in relation to other people you know of the same sex as you are, and roughly your same age. So that you can describe yourself in an honest manner, your responses will be kept in absolute confidence”. Participants were asked to rate each statement on a 5-point Likert scale from *Very Inaccurate* (1) to *Very Accurate* (5).

6.3.2.b. Results – The relationship between the **PROFESSIONAL PROFILE 2©** and the IPIP Scales

The discriminant and convergent validity was assessed by following Raykov’s (2011) MTMM method. A detailed description of this MTMM model can be found in section 6.3.

The overall differences between the 12 convergent validity coefficients and the 198 divergent validities coefficient was .422, with a confidence interval from .397 to .447; thereby providing evidence of robust construct validity. While IPIP and **PROFESSIONAL PROFILE 2©** can be considered as related, their definition and subtleties remain different.

The lowest correlation was found between the IPIP scale Sincerity and the **PROFESSIONAL PROFILE 2©** scale Straightforwardness. Sincerity measures a person's (un)willingness to be manipulative or dishonest in their dealings with other people in order to achieve a desired outcome. High scorers are unwilling to be dishonest or manipulative towards others. Straightforwardness however, refers to being authentic and direct in communication, with a need to remain transparent. The slightly different concepts are considered to be explanatory for the low correlation.

As shown in Tables 37 and 38, correlations between dimensions that are conceptually dissimilar are negative or lower than correlations between dimensions that are conceptually similar. Thereby providing evidence of the construct validity of the **PROFESSIONAL PROFILE 2©**.

*Table 35. Convergent Validity of the **PROFESSIONAL PROFILE 2©** with MTHM (Monotrait-Heteromethod) Findings.*

Factor name IPIP	PROFESSIONAL PROFILE 2© factor	RHO	SE (RHO)	CI Low	CI High
Sincerity (HEX: H-Sinc)	Straightforwardness	0.272	0.058	0.155	0.381
Toughness (AB5C: IV+/V+)	Emotional distance	0.638	0.037	0.56	0.705
Extraversion/ Surgency (Big-Five Domain)	Extraversion	0.683	0.033	0.613	0.742
Non-Planfulness (CAT-PD)	Improvisation	0.424	0.051	0.319	0.519
Emotion-based Decision-making (Bachard, 2001)	Intuition	0.505	0.046	0.409	0.59
Rebelliousness (TCI NS4)	Free-Thinking	0.579	0.041	0.493	0.654
Workaholism (CAT-PD)	Involvement at work	0.544	0.044	0.452	0.624
Leadership (6FPQ: EX2)	Desire to lead	0.488	0.047	0.391	0.575
Achievement (C4)	Ambition	0.391	0.053	0.282	0.49
Citizenship (VIA: Cit)	Team Work	0.565	0.042	0.477	0.642
Warmth (16 PF: A)	Altruism	0.487	0.047	0.39	0.574
Variety Seeking (TCI NS1)	Novelty Seeking	0.532	0.045	0.438	0.614

Note. $N = 258$; As cited on the IPIP Website: **16PF** = Cattell's 16 Personality Factor Questionnaire (Conn & Rieke, 1994). **6FPQ** = Six Factor Personality Questionnaire (Jackson, Paunonen, & Tremblay, 2000). **AB5C** = Abridged Big Five-dimensional Circumplex model (Hofstee, de Raad, & Goldberg, 1992). **HEX** = HEXACO Personality Inventory (Lee & Ashton, 2004). **TCI** = Temperament and Character Inventory (Cloninger et al., 1994). **CAT-PD** = Computerized Adaptive Test of Personality Disorder (Simms, et al., 2011).

Table 36. Discriminant Validity of the **PROFESSIONAL PROFILE 2©** with HTMM (Heterotrait-Monomethod) Findings.

PROFESSIONAL PROFILE 2© factor		RHO	SE (RHO)	CI Low	CI High
Professional Profile					
Emotional distance	Straightforwardness	0.104	0.062	-0.018	0.223
Extraversion	Straightforwardness	-0.086	0.062	-0.206	0.036
Improvisation	Straightforwardness	0.131	0.061	0.01	0.248
Intuition	Straightforwardness	-0.111	0.061	-0.228	0.01
Free-Thinking	Straightforwardness	0.214	0.059	0.096	0.326
Involvement at work	Straightforwardness	-0.183	0.06	-0.297	-0.063
Desire to lead	Straightforwardness	-0.129	0.061	-0.246	-0.008
Ambition	Straightforwardness	-0.09	0.062	-0.21	0.032
Team Work	Straightforwardness	-0.106	0.062	-0.225	0.016
Altruism	Straightforwardness	0.124	0.061	0.003	0.241
Novelty seeking	Straightforwardness	0.133	0.061	0.012	0.25
Extraversion	Emotional distance	-0.115	0.061	-0.232	0.006
Improvisation	Emotional distance	-0.128	0.061	-0.245	-0.007
Intuition	Emotional distance	-0.099	0.062	-0.218	0.023
Free-Thinking	Emotional distance	-0.107	0.062	-0.226	0.016
Involvement at work	Emotional distance	-0.066	0.062	-0.186	0.056
Desire to lead	Emotional distance	0.082	0.062	-0.04	0.202
Ambition	Emotional distance	0.177	0.06	-0.002	0.232
Team Work	Emotional distance	0.07	0.062	-0.052	0.19
Altruism	Emotional distance	0.058	0.062	-0.064	0.178
Novelty seeking	Emotional distance	0.077	0.062	-0.045	0.197
Improvisation	Extraversion	0.084	0.062	-0.038	0.204
Intuition	Extraversion	0.26	0.058	0.143	0.37
Free-Thinking	Extraversion	-0.184	0.06	-0.298	-0.064
Involvement at work	Extraversion	0.125	0.061	0.004	0.242
Desire to lead	Extraversion	0.202	0.06	0.082	0.316

Ambition	Extraversion	0.162	0.061	0.041	0.279
Team Work	Extraversion	0.338	0.055	0.226	0.441
Altruism	Extraversion	0.159	0.061	0.038	0.276
Novelty seeking	Extraversion	0.114	0.061	-0.007	0.231
Intuition	Improvisation	0.47	0.049	0.369	0.56
Free-Thinking	Improvisation	0.417	0.051	0.312	0.512
Involvement at work	Improvisation	-0.099	0.062	-0.218	0.023
Desire to lead	Improvisation	0.232	0.059	0.114	0.344
Ambition	Improvisation	0.075	0.062	-0.047	0.195
Team Work	Improvisation	0.044	0.062	-0.078	0.164
Altruism	Improvisation	-0.022	0.062	-0.143	0.099
Novelty seeking	Improvisation	0.468	0.049	0.367	0.558
Free-Thinking	Intuition	0.269	0.058	0.152	0.379
Involvement at work	Intuition	0.004	0.062	-0.117	0.125
Desire to lead	Intuition	0.087	0.062	-0.035	0.207
Ambition	Intuition	0.072	0.062	-0.05	0.192
Team Work	Intuition	0.116	0.061	-0.005	0.233
Altruism	Intuition	0.151	0.061	0.03	0.268
Novelty seeking	Intuition	0.273	0.058	0.156	0.382
Involvement at work	Free-Thinking	-0.211	0.059	-0.323	-0.093
Desire to lead	Free-Thinking	0.245	0.059	0.126	0.357
Ambition	Free-Thinking	0.08	0.062	-0.042	0.2
Team Work	Free-Thinking	-0.246	0.058	-0.356	-0.129
Altruism	Free-Thinking	-0.259	0.058	-0.369	-0.142
Novelty seeking	Free-Thinking	0.437	0.05	0.334	0.53
Desire to lead	Involvement at work	-0.077	0.062	-0.197	0.045
Ambition	Involvement at work	0.088	0.062	-0.034	0.208
Team Work	Involvement at work	0.376	0.053	0.268	0.475
Altruism	Involvement at work	0.139	0.061	0.018	0.256
Novelty seeking	Involvement at work	-0.191	0.06	-0.305	-0.071

Ambition	Desire to lead	0.166	0.061	0.045	0.283
Team Work	Desire to lead	0.073	0.062	-0.049	0.193
Altruism	Desire to lead	-0.279	0.057	-0.387	-0.164
Novelty seeking	Desire to lead	0.138	0.061	0.017	0.255
Team Work	Ambition	0.262	0.058	0.145	0.372
Altruism	Ambition	-0.264	0.058	-0.374	-0.147
Novelty seeking	Ambition	0.16	0.061	0.039	0.277
Altruism	Team Work	0.463	0.049	0.362	0.553
Novelty seeking	Team Work	0.117	0.061	-0.004	0.234
Novelty seeking	Altruism	-0.006	0.062	-0.127	0.115

Table 37. Discriminant Validity of the **PROFESSIONAL PROFILE 2©** with HTHM (Heterotrait-Heteromethod Coefficient) Findings.

Factor name IPIP	PROFESSIONAL PROFILE 2© factor	RHO	SE (RHO)	CI Low	CI High
IPIP					
Toughness	Straightforwardness	0.025	0.062	-0.096	0.146
Extraversion/ Surgency	Straightforwardness	-0.159	0.061	-0.276	-0.038
Non-Planfulness	Straightforwardness	-0.032	0.062	-0.152	0.089
Emotion-based Decision-making	Straightforwardness	-0.06	0.062	-0.18	0.062
Rebelliousness	Straightforwardness	0.088	0.062	-0.034	0.208
Workaholism	Straightforwardness	-0.101	0.062	-0.22	0.021
Leadership	Straightforwardness	-0.158	0.061	-0.275	-0.037
Achievement	Straightforwardness	-0.107	0.062	-0.226	0.016
Citizenship	Straightforwardness	-0.057	0.062	-0.177	0.065
Warmth	Straightforwardness	-0.082	0.062	-0.202	0.04
Variety Seeking	Straightforwardness	0.101	0.062	-0.021	0.22
Sincerity	Emotional distance	0.08	0.062	-0.042	0.2
Extraversion/ Surgency	Emotional distance	0.052	0.062	-0.07	0.172
Non-Planfulness	Emotional distance	-0.134	0.061	-0.251	-0.013
Emotion-based Decision-making	Emotional distance	-0.295	0.057	-0.402	-0.18

Rebelliousness	Emotional distance	-0.041	0.062	-0.161	0.081
Workaholism	Emotional distance	0.048	0.062	-0.074	0.168
Leadership	Emotional distance	0.217	0.059	0.099	0.329
Achievement	Emotional distance	0.173	0.06	0.053	0.288
Citizenship	Emotional distance	0.086	0.062	-0.036	0.206
Warmth	Emotional distance	-0.051	0.062	-0.171	0.071
Variety Seeking	Emotional distance	0.175	0.06	0.055	0.29
Sincerity	Extraversion	0.021	0.062	-0.1	0.142
Toughness	Extraversion	0.083	0.062	-0.039	0.203
Non-Planfulness	Extraversion	0.084	0.062	-0.038	0.204
Emotion-based Decision-making	Extraversion	0.275	0.058	0.158	0.384
Rebelliousness	Extraversion	-0.047	0.062	-0.167	0.075
Workaholism	Extraversion	0.009	0.062	-0.112	0.13
Leadership	Extraversion	0.161	0.061	0.04	0.278
Achievement	Extraversion	0.16	0.061	0.039	0.277
Citizenship	Extraversion	0.432	0.051	0.327	0.526
Warmth	Extraversion	0.443	0.05	0.34	0.536
Variety Seeking	Extraversion	0.221	0.059	0.103	0.333
Sincerity	Improvisation	-0.012	0.062	-0.133	0.109
Toughness	Improvisation	0.03	0.062	-0.091	0.15
Extraversion/ Surgency	Improvisation	0.151	0.061	0.03	0.268
Emotion-based Decision-making	Improvisation	0.302	0.057	0.187	0.409
Rebelliousness	Improvisation	0.333	0.055	0.221	0.436
Workaholism	Improvisation	0.033	0.062	-0.088	0.153
Leadership	Improvisation	0.098	0.062	-0.024	0.217
Achievement	Improvisation	-0.037	0.062	-0.157	0.084
Citizenship	Improvisation	-0.075	0.062	-0.195	0.047
Warmth	Improvisation	0.054	0.062	-0.068	0.174
Variety Seeking	Improvisation	0.374	0.054	0.264	0.475
Sincerity	Intuition	-0.061	0.062	-0.181	0.061

Toughness	Intuition	-0.029	0.062	-0.15	0.092
Extraversion/ Surgency	Intuition	0.245	0.059	0.126	0.357
Non-Planfulness	Intuition	0.353	0.054	0.243	0.454
Rebelliousness	Intuition	0.17	0.06	0.051	0.285
Workaholism	Intuition	0.004	0.062	-0.117	0.125
Leadership	Intuition	0.084	0.062	-0.038	0.204
Achievement	Intuition	0.11	0.062	-0.013	0.229
Citizenship	Intuition	0.07	0.062	-0.052	0.19
Warmth	Intuition	0.268	0.058	0.151	0.378
Variety Seeking	Intuition	0.277	0.057	0.162	0.385
Sincerity	Free-Thinking	-0.025	0.062	-0.146	0.096
Toughness	Free-Thinking	-0.043	0.062	-0.163	0.079
Extraversion/ Surgency	Free-Thinking	-0.114	0.061	-0.231	0.007
Non-Planfulness	Free-Thinking	0.234	0.059	0.116	0.346
Emotion-based Decision-making	Free-Thinking	0.091	0.062	-0.031	0.211
Workaholism	Free-Thinking	0.058	0.062	-0.064	0.178
Leadership	Free-Thinking	0.08	0.062	-0.042	0.2
Achievement	Free-Thinking	-0.07	0.062	-0.19	0.052
Citizenship	Free-Thinking	-0.342	0.055	-0.445	-0.23
Warmth	Free-Thinking	-0.166	0.061	-0.283	-0.045
Variety Seeking	Free-Thinking	0.116	0.061	-0.005	0.233
Sincerity	Involvement at work	-0.148	0.061	-0.265	-0.027
Toughness	Involvement at work	-0.069	0.062	-0.189	0.053
Extraversion/ Surgency	Involvement at work	0.171	0.06	0.052	0.286
Non-Planfulness	Involvement at work	0.021	0.062	-0.1	0.142
Emotion-based Decision-making	Involvement at work	0.097	0.062	-0.025	0.216
Rebelliousness	Involvement at work	-0.199	0.06	-0.313	-0.079
Leadership	Involvement at work	0.202	0.06	0.082	0.316
Achievement	Involvement at work	0.345	0.055	0.233	0.448
Citizenship	Involvement at work	0.127	0.061	0.006	0.244

Warmth	Involvement at work	0.181	0.06	0.061	0.296
Variety Seeking	Involvement at work	0.029	0.062	-0.092	0.15
Sincerity	Desire to lead	-0.17	0.06	-0.285	-0.051
Toughness	Desire to lead	0.185	0.06	0.065	0.299
Extraversion/ Surgency	Desire to lead	0.296	0.057	0.181	0.403
Non-Planfulness	Desire to lead	0.16	0.061	0.039	0.277
Emotion-based Decision-making	Desire to lead	0.006	0.062	-0.115	0.127
Rebelliousness	Desire to lead	0.304	0.057	0.189	0.411
Workaholism	Desire to lead	0.11	0.062	-0.013	0.062
Achievement	Desire to lead	0.112	0.061	-0.009	0.229
Citizenship	Desire to lead	-0.039	0.062	-0.159	0.082
Warmth	Desire to lead	0.009	0.062	-0.112	0.13
Variety Seeking	Desire to lead	0.149	0.061	0.028	0.266
Sincerity	Ambition	-0.095	0.062	-0.215	0.027
Toughness	Ambition	0.214	0.059	0.096	0.326
Extraversion/ Surgency	Ambition	0.287	0.057	0.172	0.394
Non-Planfulness	Ambition	0.029	0.062	-0.092	0.15
Emotion-based Decision-making	Ambition	0.023	0.062	-0.098	0.144
Rebelliousness	Ambition	0.054	0.062	-0.068	0.174
Workaholism	Ambition	0.262	0.058	0.145	0.372
Leadership	Ambition	0.484	0.048	0.385	0.572
Citizenship	Ambition	0.17	0.06	0.051	0.285
Warmth	Ambition	0.042	0.062	-0.068	0.151
Variety Seeking	Ambition	0.307	0.056	0.194	0.412
Sincerity	Team Work	0.038	0.062	-0.083	0.158
Toughness	Team Work	0.128	0.061	0.007	0.245
Extraversion/ Surgency	Team Work	0.384	0.053	0.276	0.483
Non-Planfulness	Team Work	0.05	0.062	-0.072	0.17
Emotion-based Decision-making	Team Work	0.167	0.061	0.046	0.284
Rebelliousness	Team Work	-0.257	0.058	-0.367	-0.14

Workaholism	Team Work	0.229	0.059	0.111	0.341
Leadership	Team Work	0.244	0.059	0.125	0.356
Achievement	Team Work	0.29	0.057	0.175	0.397
Warmth	Team Work	0.463	0.049	0.362	0.553
Variety Seeking	Team Work	0.357	0.054	0.247	0.458
Sincerity	Altruism	0.203	0.06	0.083	0.317
Toughness	Altruism	0.063	0.062	-0.059	0.183
Extraversion/ Surgency	Altruism	0.115	0.061	-0.006	0.232
Non-Planfulness	Altruism	-0.076	0.062	-0.196	0.046
Emotion-based Decision-making	Altruism	0.148	0.061	0.027	0.265
Rebelliousness	Altruism	-0.264	0.058	-0.374	-0.147
Workaholism	Altruism	0.023	0.062	-0.098	0.144
Leadership	Altruism	-0.13	0.061	-0.247	-0.009
Achievement	Altruism	0.124	0.061	0.003	0.241
Citizenship	Altruism	0.411	0.052	0.304	0.508
Variety Seeking	Altruism	0.206	0.06	0.086	0.32
Sincerity	Novelty seeking	0.118	0.061	-0.003	0.235
Toughness	Novelty seeking	0.192	0.06	0.072	0.306
Extraversion/ Surgency	Novelty seeking	0.238	0.059	0.119	0.35
Non-Planfulness	Novelty seeking	0.085	0.062	-0.037	0.205
Emotion-based Decision-making	Novelty seeking	0.149	0.061	0.028	0.266
Rebelliousness	Novelty seeking	0.206	0.06	0.086	0.32
Workaholism	Novelty seeking	-0.014	0.062	-0.135	0.107
Leadership	Novelty seeking	0.152	0.061	0.031	0.269
Achievement	Novelty seeking	0.13	0.061	0.009	0.247
Citizenship	Novelty seeking	0.139	0.061	0.018	0.256
Warmth	Novelty seeking	0.161	0.061	0.04	0.278

6.4. Predictive concurrent validity

Concurrent validity consists of providing evidence that two tests, which are believed to measure closely related attributes, correlate strongly and predict target outcomes to equivalent degrees. Concurrent validity is an appropriate means of validating instruments used for assessment and occurs when outcome measures are obtained at the same time. Thus, for concurrent validity to be established, personality components of the **PROFESSIONAL PROFILE 2©** must correlate highly with corresponding components on established personality and work-based questionnaires. The same is expected of motivation components. Concurrent validity therefore addresses the question *‘To what extent do personality and motivation dimensions of the PROFESSIONAL PROFILE 2© accurately reflect and predict personality and motivation dimensions of established questionnaires?’*

For the **PROFESSIONAL PROFILE 2©**, concurrent validity was established with a sample of 378 UK professionals who had taken the Big Five Inventory-10 (BF-10) and the Ten-Item Personality Inventory (TIPI, see Table 32). Another study with 69 UK professionals (24 men, 45 women) aged from 22 to 64 years old ($\mu = 43.43$, $\sigma = 11.53$) completed the Work Design Questionnaire (WDQ) in addition to the **PROFESSIONAL PROFILE 2©**. The Work Design Questionnaire (WDQ) was used as an outcome measure. Pearson correlations were computed for all scales with relationships between work design components and personality scales being compared (Table 38).

6.4.1. Measure – The Work Design Questionnaire

The Work Design Questionnaire (WDQ) by Morgeson and Humphrey (2006) is a job characteristics questionnaire that measures 4 global and 21 sub factors of work. Unlike the more popular Job Diagnostic Survey (Hackman & Oldham, 1975) that focuses on a narrow set of motivational job characteristics, the WDQ assesses task, knowledge, social and ergonomic components of work. All 21 sub factors ($\chi^2_{(2618)} = 5027$; χ^2/df ratio = 1.92; SRMR = .06; RMSEA = .04 and CFI = .91) have been shown to be valid for use with professionals across a range of occupational categories. Evidence also shows that the WDQ is linked to work outcomes. For example, in the validation study by Morgeson and Humphrey (2006), all five subcategories of knowledge components (job complexity, information processing, problem solving, skill variety and specialisation) are significantly related to job satisfaction ($.29 \leq r \leq .39$), training requirements ($.28 \leq r \leq .39$), and compensation requirements ($.21 \leq r \leq .37$). For validation of the **PROFESSIONAL PROFILE 2©**, participants completed questions on task, knowledge and social work components.

6.4.2. Results - The relationship between PROFESSIONAL PROFILE 2© and Work Design

As shown in Table 38, OCEAN Big Five dimensions on the **PROFESSIONAL PROFILE 2©** are significantly related to work components.

Results show that 5 out of 7 components attributed to task characteristic dimensions of the work design questionnaire correlate with the ‘Altruism’ dimension of the **PROFESSIONAL PROFILE 2©**. Altruism was also significantly related to all components of knowledge characteristics and 2 dimensions of the social characteristic components. ‘Emotional distance’ correlates positively with two traits of the WDQ: Feedback from Job and Feedback from others. ‘Extraversion’ and ‘Novelty seeking’ correlate only with the work scheduling Autonomy trait. While an increasing level of Extraversion is associated with a decreasing level of self-assessed work scheduling Autonomy, an increasing level of Novelty seeking as measured by the **PROFESSIONAL PROFILE 2©** is correlated with an increasing level of self-assessed work scheduling Autonomy. Finally, the dimension ‘Improvisation’

of the **PROFESSIONAL PROFILE 2©** is negatively correlated with task significance. As scores on Improvisation increase, scores on self-assessed task significance decrease.

*Table 38. Correlation Between the OCEAN Big Five Related Dimensions on the **PROFESSIONAL PROFILE 2©** and the Work Components of the Work Design Questionnaire.*

Big 5 Dimensions	N	A	E	O	C
PROFESSIONAL PROFILE 2© Dimensions	Emotional distance	Altruism	Extraversion	Novelty seeking	Improvisation
Task characteristics	0.213	0.329**	-0.122	0.179	-0.127
Work scheduling autonomy	0.160	0.306**	-0.281*	0.286*	-0.01
Decision-making autonomy	0.051	0.243*	-0.104	0.197	-0.007
Work methods autonomy	0.152	0.309**	-0.122	0.183	-0.121
Task variety	0.200	0.218	-0.101	0.193	-0.092
Significance	0.205	0.334**	-0.043	-0.034	-0.255*
Task identity	0.211	0.256*	-0.082	0.219	-0.089
Feedback from job	0.225*	0.222	-0.012	0.055	-0.097
Knowledge characteristics	0.086	0.264*	-0.074	0.096	-0.149
Job complexity	-0.036	-0.333**	0.086	-0.085	-0.124
Information processing	0.126	0.256*	-0.159	0.055	-0.153
Problem solving	0.099	0.276*	-0.079	-0.021	-0.177
Skill variety	-0.046	0.355*	0.026	0.130	-0.017
Specialisation	0.154	0.280*	-0.120	0.210	-0.052
Social characteristics	0.159	0.286*	-0.052	0.067	-0.126
Social support	0.137	0.194	-0.025	0.035	-0.174
Initiated interdependence	0.189	0.198	-0.2	0.161	0.023
Received interdependence	-0.042	0.22	-0.053	0.035	-0.076
Interaction outside organisation	0.074	0.315**	0.039	-0.021	-0.114
Feedback from others	0.275*	0.205	-0.011	0.097	-0.089

Note. N = 69; *p<.05; **p<.01

6.4.3. Measure – The RIASEC Questionnaire

Predictive concurrent validity of the **PROFESSIONAL PROFILE 2©** was examined in a study with the RIASEC career dimensions, in order to assess personality traits in relation to professions. The RIASEC questionnaire measures six dimensions that define different personality types in relation to career orientations namely Realistic (Doers), Investigative (Thinkers), Artistic (Creators), Social (Helpers), Enterprising (Persuaders) and Conventional (Organisers) - (also see page 22). Armstrong, Allison and Rounds (2008) published public domain RIASEC marker scales, consisting of two forms (A and B) with 48 Likert-scale items (8 per scale). For this study, interest profile items from form B were used and participants were asked to rate each item from *strongly dislike* (1) to *strongly like* (5).

6.4.4. Results - The relationship between **PROFESSIONAL PROFILE 2©** and RIASEC

A total of 396 UK professional participants (183 men; 213 women) ranging in age from 20 to 64 ($\mu = 41.68$; $\sigma = 11.75$) completed the **PROFESSIONAL PROFILE 2©** and RIASEC questionnaire as part of a validation study. Participants were screened and recruited by professional research and sampling firm CINT who contacted respondents directly.

Multiple regression analyses were performed to assess the relationship between **PROFESSIONAL PROFILE 2©** traits and the RIASEC questionnaire (Armstrong, Allison, Rounds, 2008). Hierarchical regression analyses were conducted, whereby the 14 traits of **PROFESSIONAL PROFILE 2©** questionnaire were introduced as predictors in one step (forced entry). Table 39 shows which of the **PROFESSIONAL PROFILE 2©** dimensions significantly predict these RIASEC scores.

Table 39. Regression Analyses for the **PROFESSIONAL PROFILE 2©** Personality and Motivation Traits and the RIASEC Profiles.

RIASEC	Best PROFESSIONAL PROFILE 2© Predictor	b	F	t	p	R ²
Realistic	Model		1.790		0.038	0.027
	Emotional distance	0.156		2.455	0.015	
	Involvement at work	0.155		2.605	0.01	
Investigative	Model		3.408		<.001	0.11
	Flexibility	-0.143		-1.903	0.058	
	Novelty Seeking	0.146		2.209	0.028	
Artistic	Model		4.218		<.001	0.134
	Improvisation	0.116		1.792	0.074	
Social	Model		9.122		<.001	0.224
	Focus on facts	-0.138		-2.134	0.033	
	Involvement at work	0.138		2.594	0.01	
	Altruism	0.312		4.695	<.001	

Enterprising	Model		10.116	<.001	0.271
	Focus on facts	-0.160	-2.498	0.013	
	Rule following	0.187	2.903	0.004	
	Involvement at work	0.133	2.540	0.011	
	Desire to lead	0.165	2.975	0.003	
	Ambition	0.150	2.529	0.012	
Conventional	Model		4.668	<.001	0.146
	Involvement at work	0.107	1.891	0.059	
	Novelty Seeking	-0.119	-1.827	0.068	

Note. $N = 396$; A negative weight reflects a negative relationship between the predictor and the dependant variable.

Multiple regression analyses, conducted for the *Realistic* profile, revealed that the overall model, with all dimensions of **PROFESSIONAL PROFILE 2©** questionnaire, explained a significant part of the variance for this profile ($R^2 = .027$; $F_{(14,395)} = 1.790$; $p = .038$). However, only the Emotional distance and Involvement at work dimensions significantly contributed to the variance. Higher scores on these two dimensions predicted the *Realistic* profile.

Results for the *Investigative* profile showed that the overall regression model, with all dimensions of the **PROFESSIONAL PROFILE 2©** entered in the equation, explained a significant part of the variance for this profile ($R^2 = .11$; $F_{(14,395)} = 3.408$; $p < .001$). Among these dimensions, only Flexibility and Novelty Seeking significantly contributed to the variance. Lower scores on Flexibility and higher scores on Novelty Seeking were predictive of the *Investigative* profile.

Analyses for the *Artistic* profile showed that the overall model, with all dimensions of the **PROFESSIONAL PROFILE 2©**, explained a significant part of the variance for this competency ($R^2 = .134$; $F_{(14,395)} = 4.218$; $p < .001$). Among these dimensions, only Improvisation significantly contributed to the variance. High levels on this trait were predictive of the *Artistic* profile.

Regression analyses for the *Social* profile showed that the overall model, with all dimensions of the **PROFESSIONAL PROFILE 2©** entered in the equation, explained a significant part of the variance of this competency ($R^2 = .224$; $F_{(14,395)} = 9.122$; $p < .001$). Among these dimensions, only Focus on Facts, Involvement at work and Altruism significantly contributed to the variance. Lower levels on Focus on Facts and higher trait levels on Involvement at work and Altruism were predictive of the *Social* profile. Findings of regression analyses for the *Enterprising* profile showed that the overall model, with all dimensions of the **PROFESSIONAL PROFILE 2©** entered in the equation, explained a significant part of the variance of this profile ($R^2 = .271$; $F_{(14,395)} = 10.116$; $p < .001$). Among these dimensions, Focus on Facts, Rule Following, Involvement at work, Desire to lead and Ambition significantly contributed to the variance. Lower trait levels on Focus on Facts and higher trait levels on the remaining four dimensions were predictive of the *Enterprising* profile.

Analyses for the *Conventional* profile showed that the overall model, with all dimensions of the **PROFESSIONAL PROFILE 2©**, explained a significant part of the variance for this domain ($R^2 = .146$; $F_{(14,395)} = 4.668$; $p < .001$). Among these dimensions, only Involvement at work and Novelty Seeking

significantly contributed to the variance. Higher trait levels on Involvement at work and lower trait levels on Novelty seeking were predictive of the *Conventional* profile.

Overall, findings demonstrate a high level of predictive criterion validity for the **PROFESSIONAL PROFILE 2©** questionnaire, with R^2 ranging from .02 to .27 across RIASEC profiles.

6.4.5. The **PROFESSIONAL PROFILE 2©**, Multidimensional Work Ethic Profile, Organizational Citizenship Behavior Checklist and Utrecht Work Engagement Scale

6.4.5.a. Sample and procedures

A validation study was also conducted with the **PROFESSIONAL PROFILE 2©** and desirable organisational outcomes such as work ethic, organisational citizenship and work engagement. A total of 409 UK professional participants (194 men; 215 women) ranging in age from 20 to 65 ($\mu = 41.73$; $\sigma = 11.92$) completed the **PROFESSIONAL PROFILE 2©** as well as the 28-item Multidimensional Work Ethic Profile short form (MWEP-SF; Meriac, Woehr, Gorman and Thomas, 2013), the 10-item version of the Organizational Citizenship Behavior Checklist (OCB-C; Fox, Spector, Bruursema, Kessler, and Gohet, 2007), and the 9-item Utrecht Work Engagement Scale (UWES; Schaufeli, Bakker, & Salanova, 2006) as part of a validation study. Participants were screened and recruited by professional research and sampling firm *CINT*, who contacted respondents directly.

Multiple regression analyses were performed to assess the relationship between **PROFESSIONAL PROFILE 2©** traits and the three questionnaires; MWEP-SF, OCB-C and UWES. Hierarchical regression analyses were conducted, whereby the 14 traits of **PROFESSIONAL PROFILE 2©** questionnaire were introduced as predictors in one step (forced entry). Table 40 illustrates which of the **PROFESSIONAL PROFILE 2©** dimensions significantly predict these scores.

6.4.5.b. Measures

The Multidimensional Work Ethic Profile (MWEP) is a widely-used Likert scale consisting of 65 items to assess ethics at work (Miller, Woehr & Hudspeth, 2002) whereby respondents rate the items on a 5-point Likert scale from *Strongly Disagree* (1) to *Strongly Agree* (5). The short version of the questionnaire, the MWEP-SF, was developed by Meriac, Woehr, Gorman and Thomas (2013) and includes 28 items and seven subscale dimensions namely; 1) *Centrality of Work*, a belief that work is important ($\alpha = .87^1$); 2) *Hard Work*, a belief that a high level of effort results in effective task completion ($\alpha = .89^1$); 3) *Self-reliance*, a dependence on oneself rather than others ($\alpha = .79^1$); 4) *Delay of Gratification*, an ability to postpone rewards until later ($\alpha = .84^1$); 5) *Leisure*, a value on activities outside work ($\alpha = .78^1$); 6) *Morality/Ethics*, a tendency to be moralistic ($\alpha = .79^1$); and 7) *Wasted Time*, a value on productivity ($\alpha = .79^1$). The short version MWEP-SF strongly correlates with both the full version, and with measures of Big Five personality, manifest needs, and attitudinal work outcomes.

The Organizational Citizenship Behavior Checklist (OCB-C-10) is a short form of the 42 item OCB-C developed by Spector, Bauer and Fox (2010). The OCB-C measures performance-related behaviours that help (in contrast to behaviours that harm) and are not part of the main job tasks (e.g. 'Helped new employees get oriented to the job'). Designed to avoid antithetical items, the checklist is based on performance related behaviours and events reported by employees and experts in this field who were asked to generate examples, so called 'critical incidents'. Respondents indicate, on a 5-point Likert scale how often they have shown the listed behaviours during their present job (from *never* (1) to *every day* (5)). Cronbach's alpha for this scale was .87¹.

¹ All Cronbach's Alphas refer to the current sample

The Utrecht Work Engagement Scale (UWES) originally introduced in 1999, measures work engagement as “a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption” (Schaufeli, Salanova, González-Romá, & Bakker, 2002, p. 74). Work engagement focuses on positive organisational behaviours, and refers to a pervasive and persistent affective-cognitive state that does not focus on a specific individual, behaviour, event or object. The UWES now exists in 3 forms comprised of different lengths (9 items, 15 items and 17 items). The 9 item UWES version was used for the current study (Schaufeli, Bakker, Salanova, 2006). The items are equally split between three interrelated dimensions: a) *Vigor* ($\alpha = .86^1$) - mental resilience and high levels of energy while at work, and the willingness to put effort into one’s work and be persistent even when faced with difficulties; b) *Dedication* ($\alpha = .91^1$) - being invested in one’s work and experiencing “a sense of significance, enthusiasm, inspiration, pride, and challenge” (Schaufeli, Bakker, Salanova, 2006, p. 702) ; and c) *Absorption* ($\alpha = .84^1$) - being happily immersed in and fully concentrated on one’s work, so much so that time passes quickly and detaching oneself from work becomes difficult. Cronbach’s alpha for the overall scale was .94¹. Respondents were asked to rate how often they feel as described in the 9 statements (from never (0) to always/every day (6)).

6.4.6. Results - The **PROFESSIONAL PROFILE 2©** Personality and Motivation Traits and the Multidimensional Work Ethic Profile, the Organizational Citizenship Behavior Checklist and the Utrecht Work Engagement Scale

Findings in Table 40 show that the **PROFESSIONAL PROFILE 2©** is a significant predictor for all scales except *Centrality*. Between 8% (Morality) and 22% (Wasted Time) of the variance in the different work ethic scales can be explained by the listed dimensions of the **PROFESSIONAL PROFILE 2©**. A negative weight reflects a negative relationship between the **PROFESSIONAL PROFILE 2©** predictor and the dependant variable. A positive weight indicates that higher trait levels on the **PROFESSIONAL PROFILE 2©** dimension predicts a higher level on the concerned work ethic profile. In relation to organisational citizenship behaviour, results show that higher trait levels on the **PROFESSIONAL PROFILE 2©** dimensions Involvement at work, Desire to lead, Ambition and Altruism significantly predict Organisational Citizenship Behavior ($R^2 = .26$; $F_{(14,394)} = 10.002$; $p < .001$). Finally, as displayed in Table 40, some dimensions of the **PROFESSIONAL PROFILE 2©** are a significant predictor for all three work engagement scales. The explained variance ranges from 28% (Dedication) to 30% (Absorption) to 34 % (Vigor). A negative weight reflects a negative relationship between the Professional Profile 2 predictor and the dependant variable. A positive weight indicates that higher trait levels on the **PROFESSIONAL PROFILE 2©** dimension predicts a higher level on the concerned work ethic profile.

Table 40. Regression Analyses for the **PROFESSIONAL PROFILE 2©** Personality and Motivation Traits and the Multidimensional Work Ethic Profile, the Organizational Citizenship Behavior Checklist and the Utrecht Work Engagement Scale.

Best PROFESSIONAL PROFILE 2© Predictor		b	F	t	p	R ²
Multidimensional Work Ethic Profile (MWEPSF)						
Gratification	Model		2.444		.003	.08
	Flexibility	-0.154		-2.205	.028	
	Rule following	.144		2.096	.037	
	Involvement at work	.170		3.043	.002	

Centrality		Model NS			
Hard work	Model		6.572	<.001	.189
	Rule following	.195	3.029	.003	
	Involvement at work	.255	4.856	<.001	
	Ambition	.179	2.894	.004	
Leisure	Model		5.420	<.001	.161
	Emotional distance	-0.147	-2.457	.014	
	Rule following	.178	2.718	.007	
	Involvement at work	-0.329	-6.172	<.001	
	Seeking novelty	.134	2.133	.034	
Morality	Model		2.413	.003	.079
	Persuasiveness	-0.123	-2.122	.035	
	Flexibility	-0.140	-2.002	.046	
	Rule following	.144	2.094	.037	
	Altruism	.180	2.855	.005	
Self-reliance	Model		4.514	<.001	.138
	Ambition	.236	3.703	<.001	
	Autonomy	.224	3.374	.001	
Wasted Time	Model		7.771	<.001	.216
	Persuasiveness	-.147	-2.743	.006	
	Flexibility	-.197	-3.053	.002	
	Improvisation	-.190	-3.046	.002	
	Rule following	.196	3.093	.002	
	Involvement at work	.226	4.376	<.001	
	Need for action	-.119	-2.094	.037	
	Ambition	.174	2.866	.004	
Organizational Citizenship Behavior Checklist (OCB-C)					
OCB	Model		10.002	<.001	.262
	Involvement at work	.276	5.527	<.001	
	Desire to lead	.104	1.974	.049	

	Ambition	.180	3.053	.002	
	Altruism	.116	2.047	.041	
Utrecht Work Engagement Scale (UWES)					
Absorption	Model		11.840	<.001	.296
	Focus on facts	-.137	-2.140	.033	
	Involvement at work	.380	7.782	<.001	
	Ambition	.219	3.790	<.001	
Dedication	Model		11.085	<.001	.283
	Flexibility	-.162	-2.625	.009	
	Emotional distance	.106	1.917	.056	
	Rule following	.132	2.182	.030	
	Involvement at work	.355	7.191	<.001	
	Ambition	.212	3.640	<.001	
Vigor	Model		14.424	<.001	.339
	Emotional distance	.200	3.753	<.001	
	Involvement at work	.352	7.435	<.001	
	Ambition	.204	3.659	<.001	

Note. $N = 409$; A negative weight reflects a negative relationship between the predictor and the dependant variable.

6.5. Predictive criterion validity

Criterion validity is a measure of how well an assessment or attributes, measured by an assessment, predict a target outcome. It looks at the extent to which a measure is related to concrete criteria in the 'real world'. For HR and Training professionals, criterion validity is particularly important, as it provides evidence for the added value of assessments when predicting candidate job performance, job satisfaction, job commitment, leadership potential or any other work-based outcome.

Evaluating the robustness of a scale against specified criteria helps us to: a) investigate the theoretical relatedness and construct validity of a well-established measurement procedure, b) create shorter versions of well-established scales, and c) examine differences or similarities in the target construct within a new context, culture or location where well-established measurement procedures need to be modified or completely altered. Criterion validity therefore addresses the question '*To what extent do personality and motivation dimensions of the **PROFESSIONAL PROFILE 2**© accurately predict job performance and desired work behaviours?*'

For the **PROFESSIONAL PROFILE 2©** criterion validity was established with two studies. First, the relationship between the **PROFESSIONAL PROFILE 2©** and self-assessed work competencies was investigated, and the relationship between the **PROFESSIONAL PROFILE 2©** and organisational trust propensity was established.

6.5.1. The relationship between **PROFESSIONAL PROFILE 2©** and Self-assessed Work Competencies

The 378 professional participants (from study 6.3.1) also completed a self-assessment of work competencies. The work competencies were assessed, using *Central Test's* competency referential developed from recruiter and practitioner feedback. Termed 'potentials', competencies target work-based behaviours identified as being most valuable for effective modern day working.

Multiple regression analyses were performed to assess the relationship between **PROFESSIONAL PROFILE 2©** traits and identified competencies. Hierarchical regression analyses were conducted, whereby the 14 traits of **PROFESSIONAL PROFILE 2©** questionnaire were introduced as predictors in one step (forced entry). Table 41 shows which of the **PROFESSIONAL PROFILE 2©** dimensions significantly predict these competencies/potentials.

Table 41. Regression Analyses for the **PROFESSIONAL PROFILE 2©** Personality and Motivation Traits and the Self-assessed Competencies/Potentials.

Competencies/ Potentials	Best PROFESSIONAL PROFILE 2© Predictor	β	F	t	p	R ²
Stress Management	Model		2.708		0.001	0.095
	Desire to lead	-0.154		-2.309	0.022	
Positivity	Model		5.197		<.001	0.167
	Ambition	-0.200		-3.012	0.003	
	Desire to lead	-0.124		-1.941	0.053	
	Extraversion	-0.168		-2.592	0.01	
	Emotional distance	-0.196		-3.061	0.002	
Strategic Planning	Model		5.935		<.001	0.186
	Need for action	0.155		2.493	0.013	
	Improvisation	0.158		2.43	0.016	
Mentoring	Model		5.424		<.001	0.173
	Desire to lead	-0.188		-2.963	0.003	
Networking	Model		6.665		<.001	0.204
	Ambition	-0.211		-3.245	0.001	
	Desire to lead	-0.16		-2.574	0.01	

Results Oriented	Model	5.932		<.001	0.186
	Ambition	-0.205	-3.123	0.002	
	Involvement at work	-0.128	-2.309	0.022	
Business Acumen	Model	7.96		<.001	0.235
	Ambition	-0.195	-3.053	0.002	
	Need for action	0.132	2.187	0.029	
	Desire to lead	-0.151	-2.465	0.014	
Respecting Instructions	Model	6.402		<.001	0.198
	Focus on fact	-0.134	-1.984	0.048	
	Rule-following	-0.259	-3.823	<.001	
Quality Oriented	Model	2.429		0.003	0.086
	Ambition	-0.218	-3.13	0.002	
	Altruism	-0.15	-2.195	0.029	
Organisational Skills	Model	2.103		0.011	0.075
	NS				
Conflict Resolution	Model	6.394		<.001	0.198
	Altruism	-0.198	-3.096	0.002	
	Desire to lead	-0.192	-3.075	0.002	
	Extraversion	-0.19	-2.976	0.003	
	Persuasiveness	-0.196	-3.401	0.001	
	Emotional distance	-0.169	-2.698	0.007	
Team Leadership	Model	11.13		<.001	0.3
	Desire to lead	-0.317	-5.422	<.001	
	Flexibility	0.158	2.23	0.026	
Innovation	Model	6.35		<.001	0.197
	Ambition	-0.131	-2.004	0.046	
	Novelty seeking	-0.151	-2.375	0.018	
	Desire to lead	-0.181	-2.888	0.004	
Initiative	Model	2.861		<.001	0.099
	Ambition	-0.164	-2.372	0.018	

	Desire to lead	-0.151	-2.276	0.023	
Flexibility	Model		1.959	0.02	.07
	Altruism	-0.164	-2.384	0.018	
	Desire to lead	-0.147	-2.178	0.03	
	Involvement at work	-0.142	-2.393	0.017	
	Model		6.422	<.001	0.199
Team Building	Ambition	-0.143	-2.191	0.029	
	Altruism	-0.181	-2.831	0.005	
	Desire to lead	-0.278	-4.451	<.001	
	Rule-following	-0.162	-2.38	0.018	
	Model		1.851	0.03	0.067
Work Integrity	Emotional distance	-0.136	-2.008	0.045	
	Model		2.331	0.004	0.082
Curiosity	Ambition	-0.161	-2.314	0.021	
	Altruism	0.139	-2.022	0.044	
	Novelty seeing	-0.142	-2.097	0.037	
	Model		5.673	<.001	0.18
Communication & Influence	Desire to lead	-0.224	-3.537	<.001	
	Extraversion	-0.164	-2.538	0.012	
	Persuasiveness	-0.117	-2.016	0.044	
	Model		5.523	<.001	0.176
Challenge & Competition	Ambition	-0.232	-3.513	<.001	
	Model		3.372	<.001	0.115
Analytical reasoning & Judgement	Need for action	0.213	3.287	0.001	
	Focus on fact	-0.159	-2.252	0.025	
	Emotional distance	-0.149	-2.261	0.024	
	Model				

Note. $N = 378$. A negative weight reflects a positive relationship due to reverse coding of the Likert scale.

Multiple regression analyses, conducted for the *Stress Management* competency, revealed that the overall model, with all dimensions of **PROFESSIONAL PROFILE 2©** questionnaire, explained a significant part of the variance for this competency ($R^2 = .095$; $F_{(14,377)} = 2.708$; $p = .001$). However, only

the Desire to lead dimension significantly explained the variance as a higher level of Desire to lead predicted the *Stress Management* potential. We outline here that a negative regression weight reflects a positive relation between the trait and the competencies, as the latter was measured on a reverse coded Likert scale from 1 (definitely like me) to 5 (definitely not like me) and the former from 1 (e.g. low desire to lead) to 10 (e.g. high desire to lead) scale.

Findings for *Positivity* revealed that the overall model with all dimensions of the **PROFESSIONAL PROFILE 2©** explained a significant part of the variance for this competency ($R^2 = .167$; $F_{(14,377)} = 5.197$; $p < .001$). Among these dimensions, only Ambition, Desire to lead, Extraversion and Emotional distance significantly contributed to the variance. Higher scores on these four dimensions predicted the *Positivity* potential.

Results for the *Strategic Planning* potential showed that the overall regression model, with all dimensions of the **PROFESSIONAL PROFILE 2©** entered in the equation, explained a significant part of the variance for this competency ($R^2 = .186$; $F_{(14,377)} = 5.593$; $p < .001$). Among these dimensions, only Need for action and Improvisation significantly contributed to the variance. Lower scores on these dimensions were predictive of the *Strategic Planning* potential.

Regression analyses performed for the *Mentoring* potential showed that the overall model, with all dimensions of the **PROFESSIONAL PROFILE 2©**, explained a significant part of the variance of this competency ($R^2 = .173$; $F_{(14,377)} = 5.424$; $p < .001$). Among these dimensions, only Desire to lead significantly contributed to the variance. Higher levels on the *Desire to lead* dimension were predictive of *Mentoring* potential.

Results for the *Networking* potential showed that the overall regression model, with all dimensions of the **PROFESSIONAL PROFILE 2©**, explained a significant part of the variance of this competency ($R^2 = .204$; $F_{(14,377)} = 6.665$; $p < .001$). Among these dimensions, only Ambition and Desire to lead significantly contributed to the variance. Higher levels on these two dimensions were predictive of *Networking* potential.

Regression analyses for the *Results Oriented* potential showed that the overall model, with all dimensions of the **PROFESSIONAL PROFILE 2©** entered in the equation, explained a significant part of the variance of this competency ($R^2 = .186$; $F_{(14,377)} = 5.932$; $p < .001$). Among these dimensions, only Ambition and Involvement at work significantly contributed to the variance. Higher trait levels on these two dimensions were predictive of the *Results Oriented* potential.

Findings of regression analyses for the *Business Acumen* potential showed that the overall model, with all dimensions of the **PROFESSIONAL PROFILE 2©** entered in the equation, explained a significant part of the variance of this competency ($R^2 = .235$; $F_{(14,377)} = 7.960$; $p < .001$). Among these dimensions, only Ambition Need for action, and Desire to lead significantly contributed to the variance. Higher trait levels on Ambition and Desire to lead and a lower level on Need for action were predictive of the *Business Acumen* potential.

Regression analyses performed for the *Respecting Instructions* potential showed that the overall model, with all dimensions of the **PROFESSIONAL PROFILE 2©** entered in the equation, explained a significant part of the variance of this competency ($R^2 = .198$; $F_{(14,377)} = 6.402$; $p < .001$). Among these dimensions, only Focus on facts and Rule-following significantly contributed to the variance. High levels on these two traits were predictive of the *Respecting Instructions* potential.

Analyses for the *Quality Oriented* potential showed that the overall model, with all dimensions of the **PROFESSIONAL PROFILE 2©**, explained a significant part of the variance for this competency ($R^2 = .086$;

$F_{(14,377)} = 2.429$; $p=.003$). Among these dimensions, only Ambition and Altruism significantly contributed to the variance. High levels on these two traits were predictive of the *Quality Oriented* potential.

Regression analyses performed for the *Organisational Skills* potential showed that the overall model, with all dimensions of the **PROFESSIONAL PROFILE 2©**, explained a significant part of the variance of this competency ($R^2=.075$; $F_{(14,377)} = 2.103$; $p=.011$). However, none of the **PROFESSIONAL PROFILE 2©** dimension alone reached the threshold of significance.

Results of regression analyses conducted for the *Conflict Resolution* potential showed that the overall model, with all dimensions of the **PROFESSIONAL PROFILE 2©**, explained a significant part of the variance of this competency ($R^2=.198$; $F_{(14,377)} = 6.394$; $p<.001$). Among these dimensions, only Altruism, Desire to lead, Extraversion, Persuasiveness and Emotional distance significantly contributed to the variance. Higher levels on these traits were predictive of *Conflict Resolution*.

Regression analyses performed for the *Team Leadership* potential showed that the overall model, with all dimensions of the **PROFESSIONAL PROFILE 2©** entered in the equation, explained a significant part of the variance of this competency ($R^2=.30$; $F_{(14,377)} = 11.130$; $p<.001$). Among these dimensions, only Desire to lead and Flexibility significantly contributed to the variance. Higher levels on the Desire to lead dimension and lower levels on the Flexibility dimension were predictive of *Team Leadership* potential.

Results for the *Innovation* potential showed that the overall regression model, with all dimensions of the **PROFESSIONAL PROFILE 2©** entered in the equation, explained a significant portion of the variance of this competency ($R^2=.197$; $F_{(14,377)} = 6.350$; $p<.001$). Among these dimensions, only Ambition, Novelty Seeking and Desire to lead significantly contributed to the variance. Higher level for these traits were predictive of *Innovation* potential.

Regression analyses conducted for the *Initiative* potential showed that the overall model, with all dimensions of the **PROFESSIONAL PROFILE 2©**, explained a significant part of the variance for this competency ($R^2=.099$; $F_{(14,377)} = 2.861$; $p<.001$). Among these dimensions, only Ambition and Desire to lead significantly contributed to the variance. Higher levels of these traits were predictive of *Initiative* potential.

Analyses of the *Flexibility* potential showed that the overall regression model, with all dimensions of the **PROFESSIONAL PROFILE 2©** entered in the equation, explained a significant part of the variance of this competency ($R^2=.07$; $F_{(14,377)} = 1.959$; $p=.020$). Among these dimensions, only Altruism, Desire to lead and Involvement at work significantly contributed to the variance. Higher level for these traits were predictive of the *Flexibility* potential.

Regression analyses performed for the *Team Building* potential showed that the overall model, with all dimensions of the **PROFESSIONAL PROFILE 2©** entered in the equation, explained a significant part of the variance of this competency ($R^2=.199$; $F_{(14,377)} = 6.422$; $p<.000$). Among these dimensions, only Ambition, Altruism, Desire to lead and Rule-following significantly contributed to the variance. Higher level for these traits were predictive of *Team Building* potential.

Analyses conducted for the *Work Integrity* potential showed that the overall regression model, with all dimensions of the **PROFESSIONAL PROFILE 2©** entered in the equation, explained a significant part of the variance of this competency ($R^2=.067$; $F_{(14,377)} = 1.851$; $p=.030$). Among these dimensions, only Emotional distance significantly contributed to the variance. A higher level on this trait was predictive of *Work Integrity* potential.

Regression analyses performed for the *Curiosity* potential showed that the overall model, with all dimensions of the **PROFESSIONAL PROFILE 2©**, explained a significant part of the variance of this competency ($R^2 = .082$; $F_{(14,377)} = 2.331$; $p = .004$). Among these dimensions, only Ambition, Altruism, and Novelty seeking significantly contributed to the variance. Higher levels of Ambition, Novelty seeking and lower levels of Altruism were predictive of *Curiosity* potential.

Regression analyses conducted for the *Communication & Influence* potential showed that the overall model, with all dimensions of the **PROFESSIONAL PROFILE 2©**, accounted for a significant portion of the variance for this competency ($R^2 = .180$; $F_{(14,377)} = 5.673$; $p < .001$). Among these dimensions, only Desire to lead, Extraversion, and Persuasiveness significantly contributed to the variance. Higher level on these traits were predictive of the *Communication & Influence* potential.

Regression analyses performed for the *Challenge & Competition* potential showed that the overall model, with all dimensions of the **PROFESSIONAL PROFILE 2©** entered in the equation, explained a significant part of the variance of this competency ($R^2 = .176$; $F_{(14,377)} = 5.523$; $p < .001$). Among these dimensions, only Ambition significantly contributed to the variance. A higher level of this trait was predictive of *Challenge & Competition* potential.

Analyses conducted for the *Analytical reasoning & Judgement* potential showed that the overall model, with all dimensions of the **PROFESSIONAL PROFILE 2©**, explained a significant portion of the variance for this competency ($R^2 = .115$; $F_{(14,377)} = 3.372$; $p < .001$). Among these dimensions, only Need for action, Focus on facts and Emotional distance significantly contributed to the variance. Higher levels of Focus on facts and Emotional distance and lower levels of Need for action were predictive of *Analytical reasoning & Judgement* potential.

Overall, findings demonstrate a high level of predictive criterion validity for the **PROFESSIONAL PROFILE 2©** questionnaire, with R^2 ranging from .06 to .30 across desired work competencies.

6.5.2. The relationship between the **PROFESSIONAL PROFILE 2©** and reviewer-assessed work competencies

To further assess how the **PROFESSIONAL PROFILE 2©** predicts targeted work outcomes, an additional study was conducted to assess the relationship between personality traits (assessed by the **PROFESSIONAL PROFILE 2©**) and perceptions of work competencies in a real-life context. Companies located in the UK were asked to participate in an “external validation study” in exchange for receiving **PROFESSIONAL PROFILE 2©** reports and team audits.

Each participant was asked to complete the **PROFESSIONAL PROFILE 2©**, and for each participant, a reviewer was assigned by the company. Reviewers were either the participant’s manager or a colleague who had worked with the participant for a minimum of two months. The reviewer was asked to rate the participants on a list of 35 competencies from *very poor* (1) to *very good* (5), or to indicate the competency as ‘not applicable’. In addition to competencies, reviewers were asked to complete a performance indicators: “How do you rate the general performance of the person you are evaluating?” (from 1 to 5).

A total of 10 companies agreed to participate with 119 individuals in total, who were assessed by 10 different reviewers depending on the company they worked for. Reviewers who assessed the participants competencies in less than 2 minutes were excluded from the analyses. 80 participants (44 men, 36 women) aged from 23 to 55 years ($\mu = 34.19$, $\sigma = 9.55$) and 13 reviewers (7 men, 6 women)

aged from 25 to 59 (24-34 = 25%, 35-44 = 31%, 45-59 = 44%) were included in the analysis. Socio-demographic characteristic of the participants and reviewer are presented in Table 42.

It is essential to bear in mind, that ratings of this kind remain subjective and that the real level of competence was not evaluated directly. Peer reviews are prone to biases such as halo error, leniency effects and random responses (Viswesvaran, Schmidt, & Ones, 2005). Therefore, partial correlations were conducted to assess the relationship between **PROFESSIONAL PROFILE 2©** traits and perceived competencies. This method allows controlling for certain variables, that are assumed, to impact the correlation between two factors. Unlike in the previous study (6.5.1) where work competencies were self-evaluated by the same person who completed the **PROFESSIONAL PROFILE 2©** questionnaire, the data in this study stems from two different sources of information: the participant's **PROFESSIONAL PROFILE 2©** results and the reviewer's perception of the competencies. Therefore, age, gender, relationship between participant and reviewer and level of reviewer's education were controlled.

The partial correlations can be found in Table 43. The relationships found were overall coherent with the expectations. For example, the perceived competency Respecting Instructions correlated positively with Rule Following ($r = .42$), Involvement at work ($r = .33$), Altruism ($r = .23$), and negatively with Autonomy ($r = -.24$). Surprisingly, there was no significant correlation between the factor Emotional distance and the competency Stress management. The way people handle stress is often an internal process, reviewers might have had difficulties to rate this competency, which could again explain the non-significant correlation. The **PROFESSIONAL PROFILE 2©** factors Desire to lead, Autonomy and Novelty Seeking showed, in comparison to other dimensions, more significant correlations with perceived competencies. For example, all three competencies are related to Networking, Influencing Skills and Negotiation Skills. The perceived general performance correlated significantly with higher scores on Ambition, Novelty Seeking, Improvisation and Desire to lead. The results show that moderate to good correlations can be found between the work personality assessed by the **PROFESSIONAL PROFILE 2©** and the reviewer's perception of an individual's competencies for the UK sample ($.226 < r < .511$).

Table 42. Socio-demographics Characteristics of the Participants.

Education reviewer	Percentage
2 Years College. Vocational or University Studies	11.25%
Bachelor Degree/ 1 Year Masters	38.75%
High School Diploma	23.75%
Master Degree/ MBA/ PhD/Postgraduate Qualification	26.25%
<i>Relationship status of the reviewer to the participants</i>	
Subordinate	1.25%
Manager	61.25%
Your own manager	2.50%
Superior	21.25%
Co-worker	13.75%

Industry of the companies

Banking /Finance /Business & Professional Services	41.30%
Education & Research	3.80%
Health Care Products	10.00%
Manufacturing /Production /Distribution	16.30%
Medical /Pharmaceutical /Biological Sciences	3.80%
NGO / Charities	2.50%
Oil and gas	22.50%

Table 43. Correlations Between PP2 Dimensions and the Competencies Evaluated by Co-workers.

	ddl	P1	P2	P3	P4	P5	P6	P7	M1	M2	M3	M4	M5	M6	M7
[1. Interpersonal Skills]	73	-0.009	.313**	-0.143	-0.015	0.08	-0.173	0.031	0.119	-.357**	0.081	0.108	.308**	0.063	0.083
[2. Taking Responsibility]	73	-0.188	0.141	0.017	-0.039	0.179	0.054	0.099	0.21	-.292*	0.042	0.118	0.113	0.213	0.138
[3. Discretion]	73	0	-0.008	0.027	-0.055	0.073	-0.051	-0.005	0.211	-0.186	-0.134	-0.07	0.114	0.093	0.098
[4. Stress Management]	70	-0.147	0.21	-0.125	0.072	0.138	-0.061	-0.019	0.144	-0.113	-0.086	0.036	0.212	.267*	0.099
[5. Strategic Planning]	68	-0.148	0.003	-0.152	0.036	0.119	-0.027	-0.216	0.2	-0.153	-0.113	0.087	0.168	.359**	-0.092
[6. Mentoring]	62	-0.107	0.196	-0.186	0.11	0.114	0.065	-0.035	0.059	-0.158	0.093	.300*	0.003	.433***	0.034
[7. Networking]	68	-0.141	.378***	-.281*	0.031	0.219	-0.064	-0.07	0.164	-.431***	0.091	0.012	.438***	.332**	0.217
[8. Result Oriented]	73	-0.089	0.113	-0.15	-0.065	0.151	-0.001	-0.066	0.207	-.345**	0.033	-0.086	0.213	0.225	0.224
[9. Business Acumen]	55	-0.06	0.071	-0.051	0.077	-0.002	.277*	0.119	.267*	-0.067	-0.161	-0.205	0.166	.339**	0.097
[10. Respecting Instructions]	73	0.16	0.104	0.142	-0.189	0.084	-0.101	.424***	0.034	-.242*	.226*	-0.048	-0.038	-0.088	.333**
[11. Quality Oriented]	73	0.05	0.037	0.146	-0.164	0.07	-0.051	0.119	0.067	-0.207	0.055	0.019	0.018	0.023	0.088
[12. Organisational Skills]	73	0.019	0.054	0.086	-0.174	0.02	-.256*	-0.138	-0.013	-0.179	-0.023	0.145	-0.011	0.082	-0.105
[13. Conflict Resolution]	67	-0.004	0.213	0.036	0.008	.304**	-0.098	0.161	0.024	-0.084	-0.062	0.204	0.121	0.225	-0.073
[14. Innovation]	57	0.163	0.041	0.131	-0.171	-0.029	0.084	0.209	0.001	0.108	-0.051	-0.099	-0.093	0.132	-0.028
[15. Initiative]	73	0.037	0.131	0.097	-.228*	-0.023	-0.008	-0.032	0.086	-0.016	0.005	-0.037	-0.045	0.085	-0.014
[16. Versatility]	73	0.103	.276*	-0.008	-0.134	0.083	-0.121	0.089	0.157	-.332**	0.185	0.038	0.121	-0.025	0.087

[17. Team Cohesion]	72	-0.12	.383***	-0.19	0.05	0.18	-0.068	0.01	0.203	-.249*	0.035	0.05	.337**	0.199	.304**
[18. Sense of Duty]	73	-0.036	0.11	-0.095	-0.013	0.209	-0.104	-0.035	0.172	-.277*	-0.055	0.002	0.216	0.134	0.133
[19. Learning Agility]	73	-0.185	.243*	-0.19	0.147	0.033	-0.063	-0.148	0.197	-0.172	-0.205	0.012	.291**	0.111	0.059
[20. Influencing Skills]	72	-0.233	.275*	-0.227	0.099	0.211	-0.06	-0.123	0.226	-.230*	-.228*	0.101	.466***	.389**	-0.022
[21. Challenge & Competition]	72	-0.078	0.025	-0.146	-0.012	0.028	0.121	-0.155	0.196	-0.183	-0.198	0.034	0.195	.340**	0.064
[22. Analytical Thinking]	72	0.034	-0.063	0.051	-0.065	0.196	-0.06	-0.144	0.042	0.095	-0.166	-0.164	0.12	0.009	-0.001
[23. Strategic Communication]	69	0.002	0.174	-0.155	0.052	0.073	-.240*	-0.119	-0.025	-0.19	-0.022	0.004	.378***	0.105	0.075
[24. Managerial Courage]	49	-0.076	0.103	-0.245	0.063	0.136	0.089	-0.012	0.083	0.029	-0.226	0.176	0.075	.480***	-0.066
[25. Modesty]	73	-0.014	-0.01	0.122	-0.105	0.018	-0.005	0.079	0.052	0.014	-0.145	0.051	-0.009	-0.063	-0.043
[26. Openess to Diversity]	72	-0.049	0.163	-0.209	0.08	0.115	0.068	-0.028	0.215	-0.06	-0.159	0.082	0.227	0.107	-0.176
[27. Global Vision]	57	-0.067	-0.047	0.104	-0.127	-0.103	.326*	-0.008	0.053	0.012	0.146	-0.294	-0.044	.341**	0.23
[28. Conducting Change]	68	0.03	0.222	-.313**	0.014	.276*	-0.048	-0.127	0.13	-0.16	-0.127	0.183	0.191	.355**	0.057
[29. Prospecting Skills]	45	-0.25	0.278	-.443**	0.025	0.039	0.225	-0.056	0.233	-.291*	-0.111	-0.139	.511***	0.267	0.243
[30. Product Expertise]	69	-0.035	0.003	-0.068	0.16	-0.174	-0.195	-0.232	-0.012	-0.195	-0.037	0.066	.263*	0.079	-0.177
[31. Persistence]	73	-0.174	0.178	-0.169	0.181	0.012	0.065	-0.217	.228*	-0.226	-0.072	0.009	.307**	.367**	0.002
[32. Reactivity]	73	-0.036	0.152	-0.133	0.017	0.033	-.229*	-0.185	0.041	-.303**	-0.07	.229*	0.146	0.141	-0.092
[33. Self-appraisal]	73	0.082	0.064	-0.016	-0.09	0.123	-0.14	0.06	-0.045	-0.139	0.062	0.162	-0.051	0.075	0.076
[34. Sympathy]	73	0.121	0.108	-0.093	0.027	0.037	-0.133	-0.058	-0.093	-0.14	0.141	0.07	0.111	0.131	0.163

[35. Negotiation skills]	69	-.242*	0.178	-.269*	.243*	0.142	-0.005	-0.077	0.142	-.272*	-0.122	-0.007	.411***	.394***	-0.004
General performance of the person evaluated	44	-0.279	0.181	-0.253	.323*	-0.004	0.007	-0.081	.448**	-0.287	-0.002	0.034	.369*	.407**	-0.033

Note. $N = 80$; * $p < .05$, ** $p < .01$, *** $p < .001$

P_1 – Flexibility P_2 – Extraversion P_3 – Focus on facts P_4 – Improvisation P_5 – Persuasiveness P_6 – Emotional distance P_7 – Rule-following M_1 – Ambition M_2 – Autonomy M_3 – Altruism M_4 – Need for action M_5 – Novelty seeking M_6 – Desire to lead M_7 – Involvement at work

6.5.3. The relationship between the **PROFESSIONAL PROFILE 2©** and organisational trust propensity

Trust propensity is the degree to which individuals make attributions of others' actions with optimism or pessimism (DeNeve & Cooper, 1998). Trust propensity influences quality of relationships and is a dimension of the personality trait Agreeableness. If one has high trust propensity then they assume that others are honest and have good intentions, while low scorers are sceptical and assume the world is dishonest (Costa & McCrae, 1992). In a study of 6,528 South African employees across 22 companies, Martins (2002) found that a latent variable of the five factor model (FFM) predicted supervisory trust ($\beta = 0.24$; $p < .05$) and significant correlations between Agreeableness ($r = 0.589$; $p < .05$), Conscientiousness ($r = 0.568$; $p < .05$), Extraversion ($r = 0.420$; $p < .05$), Resourcefulness/ Openness ($r = 0.457$; $p < .05$), Emotional stability/Neuroticism ($r = 0.549$; $p < .05$) and supervisory trust. Trust propensity therefore plays an important role in healthy and effective work relationships.

6.5.3.a. Measure and analysis

Employee trust propensity was measured with the five-item instrument of Huff and Kelley (2003). Evaluated across seven nations, the scale has an aggregated Cronbach's alpha of 0.78, with country scores of 0.73 (China), 0.70 (Hong Kong), 0.79 (Japan), 0.70 (Korea), 0.72, (Malaysia), 0.80 (Taiwan) and 0.72 (USA). Statements are written in the first person, where respondents select the option that best reflect their views. An example is, "I believe that people usually keep their promises". For the **PROFESSIONAL PROFILE 2©** validation, hierarchical regression analyses were conducted for a sample of 378 UK professionals (same as study 6.3.1) to identify the personality dimensions that were the best predictors of trust propensity.

Regression analyses were conducted to determine the relationship between the seven personality dimensions of the **PROFESSIONAL PROFILE 2©** and trust propensity. *Professional Profil 2©* dimensions entered (forced entry) in the equation explained a significant portion of the variance ($R^2 = .054$; $F_{(7,377)} = 3.004$; $p = .004$). As shown in Table 44, among these dimensions, Rule-following ($\beta = 0.279$; $p < .001$), Flexibility ($\beta = -.02$; $p = .004$) and Persuasiveness ($\beta = -.14$; $p = .019$) were the best predictors of employee trust propensity. Higher scores on the Rule-following and lower scores on Persuasiveness and Flexibility were predictors of employee trust propensity.

Table 44. Regression Analyses for **PROFESSIONAL PROFILE 2©** Personality Traits as Predictors of Employee Trust Propensity.

PROFESSIONAL PROFILE 2© Dimension	β	F	t	p	R^2
Model		3.304		0.004	0.054
P1 - Flexibility	-0.200		-2.585	0.010	
P2 - Extraversion	-0.120		-1.832	0.068	
P3 - Intuition	-0.120		-1.674	0.095	
P4 - Improvisation	-0.040		-0.568	0.571	
P5 - Persuasiveness	-0.140		-2.348	0.019	
P6 - Emotional distance	-0.040		-0.542	0.588	

6.6. Face validity

Face validity examines whether an assessment looks like it is measuring what it claims to measure by those who will take it. Face validity refers to the acceptability of a questionnaire to a candidate and what the candidate thinks the questionnaire is measuring (Nevo, 1985). This is important in obtaining the candidate's co-operation and commitment. Research has found that a candidate's perception of an assessment influences their perceptions, of both the fairness of the selection process (procedural justice) as well as selection decisions (distributive justice) (Gilliland, 1993). Face validity and attitudes towards tests also influence candidates' motivation, concentration and test-taking anxiety (McCarthy & Goffin, 2003). Studies have also shown that assessment processes and decisions have an impact on candidates' attitudes to organisations and applicant decisions to stay in the job (Hausknecht, Day, & Thomas, 2004; Robertson, Iles, Gratton, & Sharpley, 1991). Face validity addresses the question '*Does the **PROFESSIONAL PROFILE 2©** look like it measures work-based personality and motivations to potential candidates?*'

Face validity plays a significant roles in the assessment process as it influences the quality of applicant pools and assessments, organisations are likely to invest in. Research by the CIPD (CIPD, 2011) found the average cost of hiring a candidate in the UK was £7,500 for senior managers/directors and £2,500 for other employees. Similarly, research by Forbes (2013) showed that businesses around the globe spend more than \$3,300 (USD) per hire on recruiting with US organisations spending almost \$72 billion per year on various recruiting services, staff and products. However, while face validity is important in the marketing of selection tools (because nobody will use a measure if they don't believe in it), it is important to keep in mind that it is not a true indicators for evidence of validity and can only be considered as a supplementary indicator.

For the **PROFESSIONAL PROFILE 2©**, face validity was assessed using a built-in response audit as well as with studies examining candidate perceptions.

6.6.1. Response audit

The Response Audit of the **PROFESSIONAL PROFILE 2©** consists of 28 questions designed to ensure responses are consistent across dimensions. 326 French and 378 UK participants from the *Central Test* Study group volunteered for a face validity study. The French sample comprised of 33% men and 67% women aged between 19 and 69 years, while the British sample consisted of 60% men and 40% women ranging in age from 20 to 64 years. Table 45 presents the correlation matrix for all items on the response audit and **PROFESSIONAL PROFILE 2©** dimensions for French participants, whilst Table 46 presents correlation data for UK participants. For the French sample, it can be seen that correlations were good ranging from $.527 > r < .742$ with an average correlation of $.607$ ($p \leq .01$) for personality dimensions. Similarly, correlations for motivation dimensions ranged from $.399 > r < .690$ with an average correlation of $.570$ ($p \leq .01$).

Similarly, as shown in Table 46, correlations were moderate to good for the UK sample, ranging from $.450 > r < .714$ with an average correlation of $.585$ ($p \leq .01$) for personality dimensions. Similarly, correlations for motivation dimensions ranged from $.376 > r < .692$ with an average correlation of $.548$ ($p \leq .01$).

Table 45. Correlations Between Audit Questions and Personality and Motivation Dimensions on the **PROFESSIONAL PROFILE 2©** for French Participants.

Audit questions		P1	P2	P3	P4	P5	P6	P7	M1	M2	M3	M4	M5	M6	M7
P1	1	0.527	-0.107	-0.072	-0.03	0.013	-0.07	0.107	-.262**	0.042	.157**	-0.092	-0.036	-.131*	-0.061
P1	2	0.593	-0.026	-0.065	0.045	0.006	-0.09	.192**	-.133*	-0.066	.260**	0.013	-0.06	-.170**	0.036
P2	1	-0.093	0.651	-.233**	.203**	0.107	-.192**	-0.058	0.048	-.170**	0.107	.197**	0.095	.164**	0.043
P2	2	-.200**	0.671	-.149**	0.069	0.066	0.052	0.09	.149**	-.207**	0.044	.219**	0.031	.178**	.129*
P3	1	-.112*	-.142*	0.495	-.198**	0.031	.150**	0.091	-0.034	-0.01	-0.052	-.158**	-.133*	0.025	0.051
P3	2	-0.095	-.143**	0.691	-.337**	0.004	.136*	.190**	0.004	-0.008	-.127*	0.084	-.142*	0.021	-0.036
P4	1	-0.067	.299**	-.387**	0.637	-0.037	-.133*	-.150**	0.086	-.170**	.114*	.124*	.173**	.175**	0.014
P4	2	-0.08	0.1	-.413**	0.734	0.036	-0.062	-.192**	0.078	-.116*	0.007	-0.05	.340**	0.098	0.01
P5	1	-.311**	.137*	-0.089	0.035	0.571	.240**	-0.014	.218**	-0.108	-.226**	-0.077	.136*	.285**	0.012
P5	2	-.199**	0.084	0.006	-0.065	0.683	0.077	0.049	.162**	-0.054	-.151**	-.161**	0.049	.142*	.111*
P6	1	-.242**	-0.087	-0.026	-0.051	0.087	0.761	-0.029	.221**	0.063	-.290**	-.132*	.129*	.344**	-.197**
P6	2	-.295**	0	-0.038	0.021	0.033	0.742	-0.01	.130*	-0.068	-.168**	-0.087	.125*	.325**	-.130*
P7	1	.289**	-0.05	.264**	-.322**	0.03	0.003	0.729	-0.075	-.117*	.110*	0.016	-.315**	-.315**	.116*
P7	2	.206**	-0.037	.231**	-.212**	-0.049	0.005	0.616	0.006	-.124*	0.062	0.045	-.250**	-.214**	0.064
M1	1	-.293**	.203**	-.204**	.205**	.180**	0.058	-.138*	0.646	-0.089	-.224**	-0.035	.193**	.305**	.133*
M1	2	-.382**	.203**	-0.029	-0.036	.202**	.176**	-0.039	0.677	-0.078	-.297**	-0.105	0.025	.290**	0.064

M2	1	-0.095	-0.013	-0.076	0.041	0.041	0.029	-0.081	0.072	0.517	-.276**	0.076	-0.058	0.048	-0.087
M2	2	-.178**	0.003	-.320**	.215**	0.011	0.034	-.431**	-0.012	0.399	-.127*	-0.063	.246**	0.092	-0.085
M3	1	.260**	0.045	-0.105	.136*	-.123*	-.255**	0.03	-0.097	-.137*	0.685	-0.053	-0.036	-.225**	.121*
M3	2	0.086	.159**	-0.086	.109*	-0.107	0.014	0.015	-0.108	-.379**	0.599	0.029	0.049	0.009	.151**
M4	1	-.147**	.324**	-.169**	.187**	-0.009	-0.018	-0.063	.116*	-.148**	0.043	0.501	.112*	.191**	0.032
M4	2	-.229**	.445**	-.211**	.143**	0.055	-0.077	-0.042	.156**	-0.092	0.031	0.465	0.002	.191**	0.102
M5	1	-.205**	.163**	-0.097	.193**	0.017	.122*	-.156**	.122*	-.168**	-0.046	-0.044	0.47	.239**	0.007
M5	2	-.177**	.167**	-.274**	.297**	0.069	.117*	-.267**	.202**	-.137*	-0.095	-.207**	0.681	.278**	-0.004
M6	1	-.252**	.149**	-.160**	0.072	.111*	.188**	-.197**	.110*	0.1	-.174**	0.09	0.061	0.538	-.111*
M6	2	-.388**	.286**	-.145**	.199**	.136*	.228**	-.193**	.232**	-.150**	-.189**	0.073	.229**	0.69	-0.023
M7	1	.247**	.181**	0.027	0.028	-0.076	-.565**	.113*	-0.092	-.115*	.198**	.180**	-.149**	-.282**	0.466
M7	2	-0.059	0.037	0.095	-0.043	0.049	0.003	.127*	.218**	-0.094	0.019	-0.061	-.164**	-0.073	0.656

Note. N=326**p<.01;*p<.05

P_1 – Flexibility/Firmness P_2 – Extraversion/Introversion P_3 – Focus on facts/Intuition P_4 – Improvisation/Structure P_5 – Persuasiveness/Straightforwardness P_6 – Emotional distance/Emotional sensitivity P_7 – Rule-following/Free-thinking M_1 – Ambition/Humility M_2 – Autonomy/Team work M_3 – Altruism/Individualism M_4 – Need for reflection/Need for action M_5 – Novelty seeking/Familiarity seeking M_6 – Desire to lead/Desire for guidance M_7 – Involvement at work/Personal balance

Table 46. Correlations Between Audit Questions and Personality and Motivation Dimensions on the **PROFESSIONAL PROFILE 2®** for UK Participants.

Audit questions		P1	P2	P3	P4	P5	P6	P7	M1	M2	M3	M4	M5	M6	M7
P1	1	.506**	-.156**	.176**	-.149**	-0.061	-0.02	.112*	-.264**	0.037	.120*	0.063	-0.062	-.169**	-0.084
P1	2	.564**	-.137**	.210**	-.189**	-0.003	-0.082	.369**	-.213**	0.002	.208**	.117*	-.243**	-.133**	0.021
P2	1	0.054	.468**	-.136**	.111*	-0.02	-.120*	0.025	-.161**	-0.088	.186**	0.081	0.096	0.03	-0.027
P2	2	-.229**	.633**	-.251**	0.035	.130*	.118*	-0.003	.157**	-.179**	0.018	0.067	.119*	.241**	0.063
P3	1	.197**	-.159**	.495**	-.276**	-0.03	-0.03	.128*	-0.048	.137**	0.023	-0.059	-.214**	-.127*	-0.058
P3	2	.103*	-.119*	.582**	-.259**	-0.042	.103*	.220**	-.103*	-0.074	-0.018	0.073	-.181**	0	-0.011
P4	1	-.119*	.120*	-.291**	.662**	-0.002	-.161**	-.215**	-0.025	0.034	-0.05	0.084	.256**	-0.013	0.036
P4	2	-.283**	.230**	-.399**	.579**	.112*	-0.028	-.233**	.247**	-0.081	-.144**	-0.066	.312**	.208**	.178**
P5	1	-.259**	0.02	-0.071	.113*	.450**	0.074	-.209**	.284**	0.055	-.264**	-0.098	.118*	.134**	-0.089
P5	2	-0.074	.169**	-0.029	-0.038	.587**	0.062	.135**	.112*	-.208**	-0.009	0.042	-0.026	.220**	0.051
P6	1	-.277**	0.041	0.008	-.155**	0.033	.695**	-0.015	.178**	-0.073	-.122*	-.192**	0.098	.196**	-.147**
P6	2	-0.068	0.062	0.016	-.124*	-0.083	.611**	.123*	-0.034	-0.044	-0.007	0.067	-.125*	0.071	-.123*
P7	1	.300**	-0.047	.330**	-.245**	0.052	0.05	.714**	-.125*	-.134**	.229**	0.012	-.295**	-.123*	0.016
P7	2	.339**	-0.073	.274**	-.283**	-0.006	-0.009	.650**	-.162**	-.122*	.236**	.118*	-.364**	-0.083	.115*
M1	1	-.398**	.208**	-.201**	0.099	.281**	0.094	-0.084	.625**	-.138**	-.192**	-.232**	.174**	.242**	.191**
M1	2	-.415**	.249**	-.177**	.152**	.131*	.129*	-.187**	.541**	-0.047	-.207**	-0.033	.146**	.229**	0.101

M2	1	-0.026	-.106*	-0.088	.120*	-0.1	-0.072	-.215**	-0.012	.630**	-.231**	-0.063	0.034	-.204**	-.130*
M2	2	-.208**	0.099	-.151**	0.094	.104*	0.062	-.223**	.231**	.376**	-.293**	-0.036	.125*	0.09	-0.011
M3	1	0.05	-0.037	0.022	.127*	-.128*	0.04	0.054	-.202**	-.161**	.574**	-0.064	0.028	-.127*	0.05
M3	2	0.101	.131*	0.008	-.123*	-0.002	-0.008	.275**	-0.067	-.315**	.631**	-0.044	-0.006	-0.039	.124*
M4	1	-0.04	.172**	-.194**	.219**	0.1	-.326**	-.137**	0.094	-0.078	-0.047	.405**	0.065	0.054	.135**
M4	2	0.067	.188**	-0.083	0.039	-0.078	-0.051	.136**	-0.1	-0.077	0.011	.509**	-.102*	0.067	0.046
M5	1	-.148**	0.094	-.246**	.344**	-.121*	-0.002	-.373**	0.022	0.099	-0.084	-0.046	.510**	-0.001	-0.039
M5	2	-.343**	.119*	-.274**	.242**	.124*	0.053	-.278**	.369**	-.138**	-.121*	-.285**	.623**	.177**	.120*
M6	1	-.379**	.224**	-.220**	.115*	.217**	0.082	-.158**	.291**	-.314**	-.180**	-0.015	.105*	.692**	.189**
M6	2	-.104*	.246**	-.115*	0.036	.184**	-0.013	0.042	.140**	-0.067	-0.037	0.056	-0.046	.510**	-0.003
M7	1	0.017	.221**	-.137**	.104*	-0.019	-.271**	0.048	0.062	-.147**	.134**	0.093	0.049	-0.018	.411**
M7	2	-0.083	0.078	0.045	-0.03	.146**	-0.017	.158**	.169**	-.200**	-0.008	-0.087	-.103*	.135**	.634**

Note. N = 378 ** p<.01; *p<.05

P_1 – Flexibility/Firmness P_2 – Extraversion/Introversion P_3 – Focus on facts/Intuition P_4 – Improvisation/Structure P_5 – Persuasiveness/Straightforwardness P_6 – Emotional distance/Emotional sensitivity P_7 – Rule-following/Free-thinking M_1 – Ambition/Humility M_2 – Autonomy/Team work M_3 – Altruism/Individualism M_4 – Need for reflection/Need for action M_5 – Novelty seeking/Familiarity seeking M_6 – Desire to lead/Desire for guidance M_7 – Involvement at work/Personal balance

6.6.2. Examining face validity: the **PROFESSIONAL PROFILE 2©** and candidates

A second study was conducted to determine the face validity of the **PROFESSIONAL PROFILE 2©**. 109 French speaking participants from 11 countries and 189 English speaking participants from 29 countries voluntarily participated in the study. Participants were selected from the *Central Test* study group, completed the **PROFESSIONAL PROFILE 2©** and given their generated report. They were then asked to rate on a scale of 1 (*Strongly Disagree*) to 10 (*Strongly Agree*) the extent to which the personalised comments for each dimension on the report accurately reflected them. Table 47 shows the composition of the French sample across countries whilst Table 48 shows the median and mode ratings for each dimension on the **PROFESSIONAL PROFILE 2©**. Table 49 further shows the frequency distribution for each score of the rating scale with the corresponding percentage in brackets.

Table 47. Country Composition of French Sample for **PROFESSIONAL PROFILE 2©** Face Validity Study.

Country	n	Percentage (%)
Tunisia	1	0.9
New Caledonia	1	0.9
Morocco	1	0.9
Madagascar	3	2.8
Lebanon	1	0.9
Germany	1	0.9
France	93	85.3
Congo	1	0.9
Canada	1	0.9
Belgium	4	3.7
Algeria	2	1.8
Total	109	100

Table 48. French Participants' Median and Mode Ratings for Accuracy of Dimension Scores on the **PROFESSIONAL PROFILE 2©**.

Dimension	Median	Mode
Persuasiveness - Straightforwardness	8	8
Flexibility - Firmness	8	10
Emotional Distance - Emotional Sensitivity	8	8 ^a
Extraversion - Introversion	8	10

Improvisation - Structure	8	9
Focus on Facts - Intuition	8	8
Rule-Following - Free-Thinking	8	10
Involvement at Work - Personal Balance	9	9
Desire to Lead - Desire for Guidance	8	10
Need for Action - Need for Reflection	8	8
Ambition - Humility	8	8
Autonomy - Team Work	8	10
Altruism - Individualism	8	10
Novelty Seeking - Familiarity Seeking	8	9

^a - Multiple modes exist. The smallest value is shown

Table 49. For Each Dimension of the **PROFESSIONAL PROFILE 2©** Questionnaire, the Table Shows the Frequency Distribution of the French Speaking Sample for Each Score of the Rating Scale with the Corresponding Percentage in Brackets.

Score	P1	P2	P3	P4	P5	P6	P7	M1	M2	M3	M4	M5	M6	M7
0	1 (0.9)	0 (0.0)	0 (0.0)	2 (1.8)	0 (0.0)	0 (0.0)	0 (0.0)	2 (1.8)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.9)	1 (0.9)
1	0 (0.0)	0 (0.0)	1 (0.9)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.9)	0 (0.0)	0 (0.0)	1 (0.9)	0 (0.0)	0 (0.0)
2	3 (2.8)	0 (0.0)	0 (0.0)	1 (0.9)	1 (0.9)	0 (0.0)	0 (0.0)	1 (0.9)	0 (0.0)	0 (0.0)	0 (0.0)	2 (1.8)	2 (1.8)	0 (0.0)
3	1 (0.9)	1 (0.9)	0 (0.0)	3 (2.8)	2 (1.8)	3 (2.8)	3 (2.8)	1 (0.9)	3 (2.8)	2 (1.8)	2 (1.8)	0 (0.0)	3 (2.8)	4 (3.7)
4	4 (3.7)	5 (4.6)	5 (4.6)	5 (4.6)	2 (1.8)	2 (1.8)	4 (3.7)	5 (4.6)	2 (1.8)	5 (4.6)	2 (1.8)	4 (3.7)	9 (8.3)	3 (2.8)
5	3 (2.8)	7 (6.4)	7 (6.4)	3 (2.8)	2 (1.8)	4 (3.7)	6 (5.5)	4 (3.7)	5 (4.6)	3 (2.8)	9 (8.3)	2 (1.8)	4 (3.7)	6 (5.5)
6	9 (8.3)	11 (10.1)	6 (5.5)	6 (5.5)	6 (5.5)	9 (8.3)	9 (8.3)	7 (6.4)	12 (11.0)	6 (5.5)	10 (9.2)	9 (8.3)	8 (7.3)	8 (7.3)
7	17 (15.6)	14 (12.8)	21 (19.3)	19 (17.4)	17 (15.6)	14 (12.8)	20 (18.3)	19 (17.4)	16 (14.7)	20 (18.3)	17 (15.6)	14 (12.8)	18 (16.5)	9 (8.3)
8	23 (21.1)	22 (20.2)	26 (23.9)	23 (21.1)	32 (29.4)	29 (26.6)	22 (20.2)	28 (25.7)	22 (20.2)	26 (23.9)	32 (29.4)	28 (25.7)	22 (20.2)	23 (21.1)
9	23 (21.1)	24 (22.0)	25 (22.9)	26 (23.9)	23 (21.1)	19 (17.4)	20 (18.3)	26 (23.9)	23 (21.1)	20 (18.3)	22 (20.2)	30 (27.5)	17 (15.6)	29 (26.6)
10	25 (22.9)	25 (22.9)	18 (16.5)	21 (19.3)	24 (22.0)	29 (26.6)	25 (22.9)	16 (14.7)	25 (22.9)	27 (24.8)	15 (13.8)	19 (17.4)	25 (22.9)	26 (23.9)

P_1 – Flexibility/Firmness P_2 – Extraversion/Introversion P_3 – Focus on facts/Intuition P_4 – Improvisation/Structure P_5 – Persuasiveness/Straightforwardness P_6 – Emotional distance/Emotional sensitivity P_7 – Rule-following/Free-thinking M_1 – Ambition/Humility M_2 – Autonomy/Team work M_3 – Altruism/Individualism M_4 – Need for reflection/Need for action M_5 – Novelty seeking/Familiarity seeking M_6 – Desire to lead/Desire for guidance M_7 – Involvement at work/Personal balance

Similarly, Table 50 shows the country composition for participants in the English face validity study. Participants represented countries from Europe, Asia, Africa, the Middle East, Latin America and the Caribbean, North America and Australasia. Table 51 further shows the median and mode ratings for the accuracy of scores for each dimension on the **PROFESSIONAL PROFILE 2©** and Table 52 shows the frequency distribution for each score of the rating scale with the corresponding percentage in brackets. Findings clearly show that test-takers of the **PROFESSIONAL PROFILE 2©** believe the questionnaire is an accurate measure of personality and motivation at work.

*Table 50. Country Composition of the English Sample for the **PROFESSIONAL PROFILE 2©** Face Validity Study.*

Country	n	Percentage (%)
Albania	1	.5
Australia	1	.5
Bangladesh	2	1.1
Bosnia and Herzegovina	1	.5
Botswana	2	1.1
Brazil	1	.5
Bulgaria	3	1.6
Canada	6	3.2
Cyprus	2	1.1
Denmark	1	.5
Dominica	1	.5
Egypt	1	.5
Ethiopia	1	.5
Falkland Islands	1	.5
France	1	.5
Germany	7	3.7
Ghana	1	.5
Greece	2	1.1
India	51	27.0
Indonesia	3	1.6
Ivory Coast	1	.5
Jamaica	1	.5

Jordan	1	.5
Kenya	3	1.6
Kuwait	1	.5
Lebanon	1	.5
Macedonia	1	.5
Malaysia	1	.5
Mauritius	1	.5
Netherlands	4	2.1
New Zealand	1	.5
Nigeria	5	2.6
Oman	1	.5
Pakistan	1	.5
Philippines	2	1.1
Romania	2	1.1
Russia	1	.5
Singapore	9	4.8
South Africa	7	3.7
Sweden	1	.5
Tanzania	2	1.1
Tunisia	1	.5
Uganda	1	.5
United Arab Emirates	3	1.6
United Kingdom	30	15.8
USA	15	7.9
Uzbekistan	1	.5
Zimbabwe	2	1.1
Total	189	100.0

Table 51. English Participants' Median and Mode Ratings for Accuracy of Dimension Scores on the PROFESSIONAL PROFILE 2®.

Dimension	Median	Mode
Persuasiveness - Straightforwardness	8	10
Flexibility - Firmness	8	10
Emotional Distance - Emotional Sensitivity	8	10
Extraversion - Introversion	8	10
Improvisation - Structure	8	10
Focus on Facts - Intuition	8	10
Rule-Following - Free-Thinking	8	10
Involvement at Work - Personal Balance	9	10
Desire to Lead - Desire for Guidance	8	10
Need for Action - Need for Reflection	8	9 ^a
Ambition - Humility	8	10
Autonomy - Team Work	8	10
Altruism - Individualism	8	10
Novelty Seeking - Familiarity Seeking	8	10

^a - Multiple modes exist. The smallest value is shown

Table 52. For Each Dimension of the **PROFESSIONAL PROFILE 2©** Questionnaire, the Table Shows the Frequency Distribution of the English Speaking Sample for Each Score of the Rating Scale with the Corresponding Percentage in Brackets.

Score	P1	P2	P3	P4	P5	P6	P7	M1	M2	M3	M4	M5	M6	M7
0	0 (0)	0 (0)	2 (1.1)	0 (0)	0 (0)	0 (0)	1 (0.5)	1 (0.5)	1 (0.5)	3 (1.6)	2 (1.1)	2 (1.1)	2 (1.1)	2 (1.1)
1	0 (0)	1 (0.5)	1 (0.5)	2 (1.1)	1 (0.5)	1 (0.5)	0 (0)	3 (1.6)	0 (0)	0 (0)	1 (0.5)	0 (0)	2 (1.1)	0 (0)
2	3 (1.6)	4 (2.1)	2 (1.1)	2 (1.1)	2 (1.1)	3 (1.6)	2 (1.1)	2 (1.1)	3 (1.6)	1 (0.5)	1 (0.5)	2 (1.1)	2 (1.1)	3 (1.6)
3	2 (1.1)	5 (2.6)	6 (3.2)	4 (2.1)	7 (3.7)	7 (3.7)	3 (1.6)	5 (2.6)	2 (1.1)	3 (1.6)	3 (1.6)	5 (2.6)	5 (2.6)	3 (1.6)
4	5 (2.6)	7 (3.7)	6 (3.2)	10 (5.3)	3 (1.6)	4 (2.1)	9 (4.8)	6 (3.2)	8 (4.2)	6 (3.2)	7 (3.7)	4 (2.1)	8 (4.2)	4 (2.1)
5	16 (8.5)	14 (7.4)	15 (7.9)	13 (6.9)	10 (5.3)	8 (4.2)	9 (4.8)	13 (6.9)	12 (6.3)	7 (3.7)	14 (7.4)	4 (2.1)	20 (10.6)	11 (5.8)
6	9 (4.8)	11 (5.8)	21 (11.1)	16 (8.5)	5 (2.6)	18 (9.5)	13 (6.9)	12 (6.3)	14 (7.4)	12 (6.3)	19 (10.1)	12 (6.3)	15 (7.9)	14 (7.4)
7	29 (15.3)	29 (15.3)	22 (11.6)	24 (12.7)	31 (16.4)	32 (16.9)	28 (14.8)	28 (14.8)	27 (14.3)	28 (14.8)	36 (19)	28 (14.8)	28 (14.8)	33 (17.5)
8	46 (24.3)	35 (18.5)	36 (19)	42 (22.2)	44 (23.3)	31 (16.4)	38 (20.1)	32 (16.9)	34 (18)	38 (20.1)	32 (16.9)	43 (22.8)	28 (14.8)	30 (15.9)
9	32 (16.9)	33 (17.5)	36 (19)	31 (16.4)	31 (16.4)	35 (18.5)	34 (18)	37 (19.6)	43 (22.8)	34 (18)	37 (19.6)	40 (21.2)	33 (17.5)	30 (15.9)
10	47 (24.9)	50 (26.5)	42 (22.2)	45 (23.8)	55 (29.1)	50 (26.5)	52 (27.5)	50 (26.5)	45 (23.8)	57 (30.2)	37 (19.6)	49 (25.9)	46 (24.3)	59 (31.2)

*P*₁ – Flexibility/Firmness *P*₂ – Extraversion/Introversion *P*₃ – Focus on facts/Intuition *P*₄ – Improvisation/Structure *P*₅ – Persuasiveness/Straightforwardness *P*₆ – Emotional distance/Emotional sensitivity *P*₇ – Rule-following/Free-thinking *M*₁ – Ambition/Humility *M*₂ – Autonomy/Team work *M*₃ – Altruism/Individualism *M*₄ – Need for reflection/Need for action *M*₅ – Novelty seeking/Familiarity seeking *M*₆ – Desire to lead/Desire for guidance *M*₇ – Involvement at work/Personal balance

6.7. Consequential validity

Consequential validity emerged from ethical concerns related to societal ramifications of assessments. It can be described as a type of validity evidence that concerns the intended and unintended, positive as well as negative, consequences related to the interpretation and use of assessments (Messick, 1995). Messick (1980, p. 1012) argued that “not only should tests be evaluated in terms of their measurement properties but that testing applications should be evaluated in terms of their potential social consequences”. Consequential validity is considered as an important component of the evaluation of validity rather than an isolated conceptualisation of it (Hubley & Zumbo, 2011).

Consequential validity is particularly important for work-based assessments given the financial costs associated with hiring a single candidate as well as employment legislation governing diversity and inclusion of specific demographic groups. Consequential validity therefore addresses the questions ‘*Are candidates and administrators of the **PROFESSIONAL PROFILE 2©** adversely affected by its use?*’ and ‘*To what extent does the HR community benefit from the **PROFESSIONAL PROFILE 2©**?*’

For the **PROFESSIONAL PROFILE 2©**, consequential validity was established using analyses to determine the measurement invariance of the questionnaire’s applications across gender, age and culture. This is discussed in detail in Chapter 7.

7. The PROFESSIONAL PROFILE 2© and Equal Opportunities

Organisations are increasingly under pressure to ensure that tools used to inform employee recruitment, selection, development, promotion and performance measurement decisions are fair, objective and accurate. This pressure stems from a progressively knowledgeable applicant pool, a more sophisticated labour force and stringent local and international employment legislation and testing standards. Equal opportunities therefore represent a critical consideration for any modern day work assessment, and an assessment is only considered to be truly valid when it is appropriate for use with different groups. The **PROFESSIONAL PROFILE 2©** is a fair and accurate measure of work-based personality and motivation. HR practitioners and psychologists can be confident of its diverse application.

Within the context of assessment, measures used must not result in adverse impact when applied to different groups. Adverse impact occurs when there is a significant difference in the rate of selection and employment decisions for one protected group over another. This is particularly important for organisations as there is a risk of selecting the wrong candidate for a job, as well as legal and financial costs associated with discrimination claims. Adverse impact is classified as discrimination when a candidate believes (and validity evidence fails to show otherwise) that not being offered a role was based on membership to certain demographics. For most countries across Europe, North America and Australia, fairness in the selection process is subject to legislation. Specifically for the USA, the Employee Testing and other Procedures Act 1971 (US Department of Labor) protects candidates against unfair assessment procedures, whilst fair employment assessment in the UK is protected by the following:

- Race Relations Act (1976)
- Sex Discrimination Act (1975;1986)
- Disability Act (1998)
- Employment Equality Regulation (2003)
 - Sexual Orientation
 - Religion and Belief
- Age Discrimination (2006)

7.1. Measurement equivalence

Measurement equivalence (ME) refers to the consistency of measurement across some specified group demarcation such as nationality, ethnicity and gender. The focus of ME is to ensure that individuals from different groups with the same standing on an attribute have the same set of observations on an assessment (Drasgow, 1987; McLeary & Cruise, 2012). Understanding ME is important in assessment in order to establish validity, confidence and equivalence across groups. Equivalence of measurement is obtained when candidates from different cultural backgrounds, age groups, ethnicities, genders and occupational groups with the same level on a trait, have an equal chance of being selected for a role that requires the desired level on this trait. ME helps to determine the extent to which respondents are interpreting items similarly, and identified differences across groups reflect actual differences in the trait being measured (Drasgow, 1984). One approach to assessing measurement equivalence is differential item functioning analysis.

7.1.1. Differential Item Functioning (DIF)

An item functions differently, or displays *DIF*, if respondents from different groups have different probabilities of endorsing the item, despite having the same level of the trait. When a different probability of endorsing an item remains constant across different levels of the trait, the *DIF* is said to be uniform. Here, the item of interest consistently gives one group an advantage across all levels of the trait. Conversely, when a different probability of endorsing an item varies along the level of the trait, the *DIF* is characterised as non-uniform (Clauser & Mazor, 1998; Hanson, 1998). Rather than a consistent advantage being given to the reference group across the ability continuum, an advantage to one group over another exists at different levels of the trait. For instance, an item may give the reference group an advantage at the higher end of the continuum, while a disadvantage at the lower end (see figure 18). Item Response Theory (IRT) facilitates *DIF* analysis by examining the probability of endorsing items through the item characteristic curve. Here, the logistic regression approach is used, whereby separate analyses are run for each item and maximum likelihood estimation used to calculate the probability of endorsing an item. Figures 17 and 18 show an example of item characteristic curves for uniform and non-uniform *DIF*.

The *DIF* analysis provides information on whether an item is perceived in a similar way across gender, age and culture. If there is no *DIF*, it means that there is no bias that would favour one group over another. For example, two individuals from different countries with a similar absolute level of extraversion will have the same probability of endorsing the items measuring extraversion. However, true differences between groups may exist (e.g. some cultures are more extraverted, others more introverted). Such true differences are reflected in the norms (see Chapter 4).

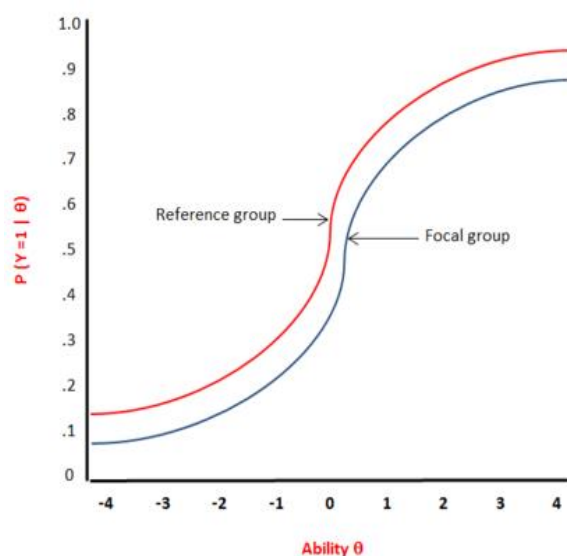


Figure 17. Item Characteristic Curve with Uniform DIF.

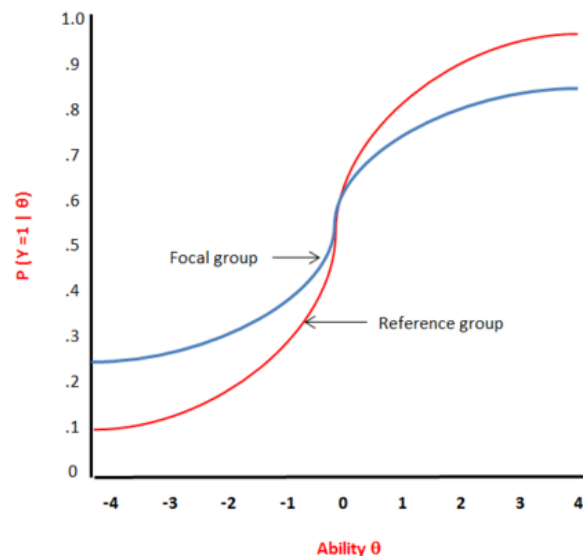


Figure 18. Item characteristic Curve with Non-uniform DIF.

7.2. DIF analyses for the PROFESSIONAL PROFILE 2©

To assess *DIF* in the **PROFESSIONAL PROFILE 2©** questionnaire, both the logistic regression procedure and the generalised logistic regression, an extension of Swaminathan and Rogers' (1990) approach to multiple focal group analysis developed by Magis, Raïche, Béland and Gérard (2011) were employed. The logistic regression procedure focuses on one item of interest, while all other items are assumed to

be *DIF*-free. For each analysis, the matching variable is the test score for each trait. Gender, cultural and age differences were separately subjected to *DIF* analyses for each trait. Both types of *DIF* effect were examined simultaneously, using the likelihood ratio test.

The likelihood ratio test, called Wilks' *lambda statistic* Λ (Wilks, 1938), compares a nested model referencing the null hypothesis (there is no difference between groups) to an alternative hypothesis. By comparing maximised likelihood values of both, the most suitable model is retained. Significance level was set to $p < .05$. The level of the effect size provided by the difference between the R^2 coefficients of the two nested models were classified as "negligible", "moderate" or "large" based on Zumbo and Thomas' (1997) scale of *DIF* effect. Analyses were performed using *R* software version 3.1.1 and the *DIFR* Package for *R* (Magis, Beland, & Raiche, 2015). To assess *DIF* with the logistic regression procedure, we classified an endorsement of the item related to the trait of interest as a correct answer. Negatively keyed items were considered incorrect answers in relation to the trait. Analyses were conducted on only the personality dimensions of the **PROFESSIONAL PROFILE 2©** due to documented evidence that personality traits are more stable than values (Kandler, Zimmermann, & McAdams, 2014) and constant over time (Cruise, 2012).

7.2.1. *DIF* Analysis: Gender

In order to discover if items performed differently across gender, we first defined two groups of professionals by gender.

7.2.1.a. Participants

Analyses were conducted with a total of 1128 participants; included in the analysis were 378 participants from the UK norm sample, 345 participants from the US norm sample, and 405 participants which were randomly selected from the French norm sample of 848. Participants were separated in two groups according to their gender. 580 men aged from 20 to 65 years ($\mu=42.1$; $\sigma=11.4$) and 548 women aged from 21 to 65 years ($\mu=38.7$; $\sigma=10.6$) were included in the analysis. Table 53 shows the country, age and gender distribution of the *DIF* analysis sample.

Table 53. Country, Age and Gender Distribution of DIF Analysis Sample for the PROFESSIONAL PROFILE 2©.

Country	N	Mean (μ) age	SD (σ) age	Gender	N
France	405	37.454	10.209	men	183
				women	222
UK	378	43.679	11.265	men	225
				women	153
USA	345	40.629	11.353	men	172
				women	173
Total	1128				

7.2.1.b. Results

Analyses identified 11 personality items with a *DIF* effect for gender. Table 54 shows the Likelihood Ratio *DIF* Statistics for this analysis. According to Zumbo and Thomas' (1997) classification of size effect (negligible (A), moderate (B), or large (C)), the size of the effect for the items flagged with *DIF* is negligible, except for 2 items which have a moderate size effect. Moreover, only 3 of these 11 items with *DIF* were part of the core items on the questionnaire. The results of these analyses show that the majority of items on the **PROFESSIONAL PROFILE 2©** do not function differently across genders.

Figures 19 and 20 give examples of items for personality traits *Emotional Distance* and *Improvisation*, which have moderate gender differences. When males (focal) have a low score on *Emotional Distance*, they are more likely than women (reference) to endorse the item. On the contrary, this tendency is reversed when respondents have high scores on this trait. Similarly, when male respondents have low scores on *Improvisation*, they are more likely than women to endorse the item. Adversely, when men score highly on this trait, they are less likely than women to endorse the item.

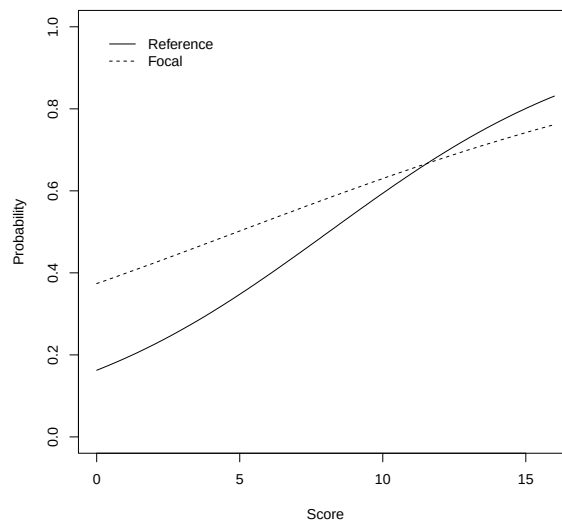


Figure 19. Item “I am untroubled”: Characteristic Curve for Gender *DIF* Analysis for *Emotional Distance*.

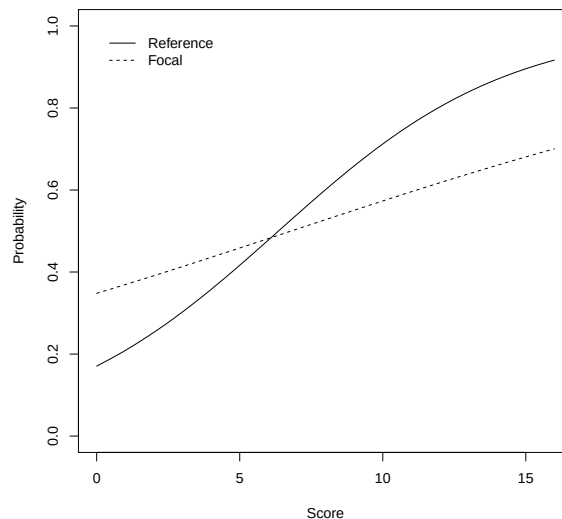


Figure 20. Item “I know how to deal with ambiguity”: Characteristic Curve for Gender DIF Analysis for Improvisation.

As only one personality item from the core questionnaire of the **PROFESSIONAL PROFILE 2©** generated a moderate gender difference, we can conclude that there is no gender effect on the overall score. The **PROFESSIONAL PROFILE 2©** is appropriate for use for both male and female professionals without causing any discrimination, and practitioners can be confident of obtaining valid, representative and fair results from its use.

Table 54. Gender DIF Effect on Personality Items of the **PROFESSIONAL PROFILE 2©**.

	LRT				Non-uniform DIF				Uniform DIF			
	X ²	p	R ²	ZT	X ²	p	R ²	ZT	X ²	p	R ²	ZT
Dimension - Core Items												
Extraversion	18.994	0.000	0.059	A	16.486	0.000	0.051	A	2.508	0.113	0.008	A
Extraversion	6.174	0.046	0.013	A	0.384	0.536	0.001	A	5.790	0.016	0.012	A
Focus on facts	6.436	0.040	0.027	A	0.171	0.679	0.001	A	6.265	0.012	0.026	A
Improvisation	12.983	0.002	0.166	B	8.197	0.004	0.105	A	4.786	0.029	0.061	A
Improvisation	10.863	0.004	0.059	A	8.805	0.003	0.048	A	2.057	0.152	0.011	A
Persuasiveness	7.528	0.023	0.051	A	0.111	0.739	0.001	A	7.417	0.007	0.050	A
Dimension - Audit Questions												
Extraversion	7.461	0.024	0.098	A	3.303	0.069	0.044	A	4.159	0.041	0.055	A

Persuasiveness	13.363	0.001	0.062	A	6.683	0.010	0.031	A	6.680	0.010	0.031	A
Persuasiveness	13.913	0.001	0.121	A	9.462	0.002	0.082	A	4.451	0.035	0.039	A
Emotional distance	14.850	0.001	0.130	A	10.593	0.001	0.092	A	4.258	0.039	0.037	A
Emotional distance	13.053	0.002	0.149	B	4.841	0.028	0.055	A	8.212	0.004	0.094	A

Note. ZT: Zumbo and Thomas' (1997) classification of size effect - negligible (A), moderate (B), or large (C); LRT: Likelihood Ratio Test.

7.2.2. DIF Analysis: Age

In order to investigate whether items performed differently across age groups, age was recoded into 3 groups: early career (20-35), middle career (36-50), and advanced career (51-65) professionals.

7.2.2.a. Participants

Middle career professionals were used as the reference group and comprised of 422 participants (50% men) aged from 36 to 50 years ($\mu = 42.9$; $\sigma = 4.1$). Focal group 1 included 443 participants (43% men) aged from 20 to 35 years ($\mu = 29$; $\sigma = 4$) and were classified as early career professionals. Whilst focal group 2 comprised of 263 participants (65% men) aged from 51 to 65 years ($\mu = 55.9$; $\sigma = 3.6$) and were classified as senior professionals.

7.2.2.b. Results

Analyses identified 3 core personality items and 6 audit questions with a significant *DIF* effect for age and a moderate to large size effect. However only 1 item from the audit scale related to the Emotional distance dimension displayed a large size effect. As shown in Figure 21, at low levels of the trait for Emotional distance, the probability of endorsing this item is higher for advanced career professionals compared to the other two professional groups. On the contrary, when the level of the trait increases, the probability of endorsing the item is lower for older professionals compared to the other two groups.

Table 55 shows the Likelihood Ratio *DIF* Statistics and Zumbo and Thomas' (1997) classification for items. All other items had a negligible effect size or were not detected as functioning differently across age.

Table 55. Age *DIF* Effect on Personality Items of the **PROFESSIONAL PROFILE 2**®.

	LRT				Non-uniform DIF				Uniform DIF			
	X ²	p	R ²	ZT	X ²	p	R ²	ZT	X ²	p	R ²	ZT
Dimension - Core Items												
Improvisation	14.566	0.006	0.154	B	1.023	0.600	0.011	A	13.543	0.001	0.143	B
Emotional distance	12.178	0.016	0.134	B	4.376	0.112	0.048	A	7.802	0.020	0.086	A
Rule-following	19.996	0.001	0.188	B	4.952	0.084	0.046	A	15.045	0.001	0.141	B

Dimension - Audit Questions

Flexibility	13.518	0.009	0.138	B	2.627	0.269	0.027	A	10.891	0.004	0.111	A
Extraversion	16.934	0.002	0.185	B	12.303	0.002	0.134	B	4.631	0.099	0.051	A
Focus on facts	31.394	0.000	0.143	B	7.225	0.027	0.033	A	24.169	0.000	0.110	A
Emotional distance	33.033	0.000	0.284	C	25.272	0.000	0.216	B	7.762	0.021	0.067	A
Rule-following	34.910	0.000	0.217	B	8.538	0.014	0.053	A	26.372	0.000	0.165	B
Rule-following	15.758	0.003	0.195	B	14.953	0.001	0.185	B	0.805	0.669	0.010	A

Note. ZT: Zumbo and Thomas' (1997) classification of size effect - negligible (A), moderate (B), or large (C); LRT: Likelihood Ratio Test.

The statistical analysis has shown that age related differences affect very few items. We may therefore conclude that there is no overall effect of age on the **PROFESSIONAL PROFILE 2©**. The assessment can be considered as suitable and equivalent for professionals across all ages and levels of experience. HR practitioners and managers may use either age or career specific norms to interpret scores, depending on the requirements of the organisation or role.

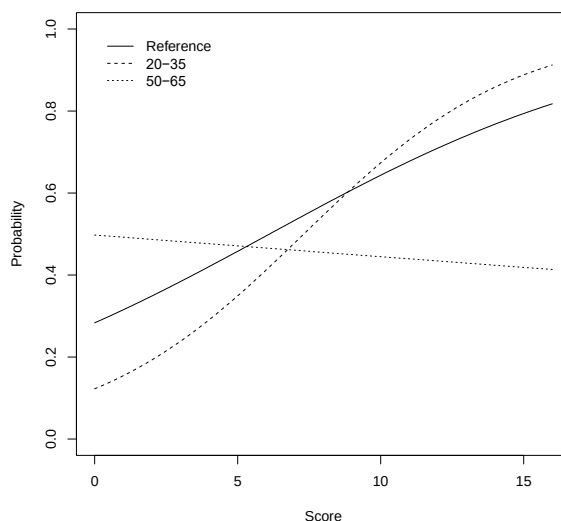


Figure 21. Item "I am untroubled": Characteristic Curve for Age DIF Analysis for Emotional Distance.

7.2.3. DIF Analysis: Country

A total of 31 core personality items and 10 audit questions were identified with a moderate or large *DIF* effect for country. Table 56 and Table 57 show the Likelihood Ratio *DIF* Statistics for this analysis. Country had a negligible effect size on all other items. Items demonstrating *DIF* related to all traits equally: Flexibility (7), Extraversion (5), Focus on facts (7), Improvisation (6), Persuasiveness (7), Emotional distance (3) and Rule-following (6). All these 41 items displayed a Uniform *DIF* for Country, while only 8 items, all from the audit scale part, displayed a non-uniform *DIF*.

Table 56. Country DIF Effect on Core Personality Items of the **PROFESSIONAL PROFILE 2®**.

	LRT				Non-uniform DIF				Uniform DIF			
	X ²	p	R ²	ZT	X ²	p	R ²	ZT	X ²	p	R ²	ZT
Flexibility	93.877	0.00 0	0.428	C	5.977	0.050	0.02 6	A	87.900	0.00 0	0.401	C
Flexibility	72.581	0.00 0	0.300	C	5.991	0.050	0.02 4	A	66.590	0.00 0	0.276	C
Flexibility	264.486	0.00 0	0.632	C	8.313	0.016	0.01 8	A	256.173	0.00 0	0.615	C
Flexibility	84.333	0.00 0	0.348	C	1.568	0.457	0.00 6	A	82.764	0.00 0	0.342	C
Flexibility	123.817	0.00 0	0.379	C	0.445	0.801	0.00 1	A	123.373	0.00 0	0.377	C
Extraversion	142.320	0.00 0	0.355	C	5.719	0.057	0.01 3	A	136.601	0.00 0	0.342	C
Extraversion	100.348	0.00 0	0.443	C	4.391	0.111	0.01 9	A	95.957	0.00 0	0.424	C
Extraversion	88.891	0.00 0	0.261	C	3.969	0.138	0.01 1	A	84.922	0.00 0	0.250	B
Extraversion	130.351	0.00 0	0.357	C	0.382	0.826	0.00 1	A	129.969	0.00 0	0.356	C
Focus on facts	299.970	0.00 0	0.833	C	1.193	0.551	0.00 3	A	298.777	0.00 0	0.830	C
Focus on facts	59.743	0.00 0	0.310	C	8.810	0.012	0.04 5	A	50.933	0.00 0	0.265	C
Focus on facts	166.671	0.00 0	0.408	C	4.002	0.135	0.00 9	A	162.669	0.00 0	0.399	C
Focus on facts	103.645	0.00 0	0.297	C	2.095	0.351	0.00 6	A	101.551	0.00 0	0.291	C
Focus on facts	285.546	0.00 0	0.770	C	0.345	0.842	0.00 1	A	285.202	0.00 0	0.769	C
Focus on facts	231.671	0.00 0	0.563	C	3.704	0.157	0.00 8	A	227.967	0.00 0	0.555	C
Improvisation	102.541	0.00 0	0.387	C	0.390	0.823	0.00 1	A	102.151	0.00 0	0.386	C
Improvisation	146.654	0.00 0	0.498	C	0.626	0.731	0.00 2	A	146.028	0.00 0	0.496	C
Improvisation	50.378	0.00 0	0.387	C	1.598	0.450	0.01 2	A	48.780	0.00 0	0.375	C
Improvisation	152.579	0.00 0	0.674	C	3.521	0.172	0.01 5	A	149.058	0.00 0	0.660	C
Persuasiveness	149.328	0.00 0	0.589	C	0.911	0.634	0.00 3	A	148.417	0.00 0	0.585	C
Persuasiveness	149.235	0.00 0	0.579	C	13.292	0.001	0.04 9	A	135.943	0.00 0	0.530	C
Persuasiveness	136.714	0.00 0	0.477	C	1.821	0.402	0.00 6	A	134.894	0.00 0	0.471	C
Persuasiveness	134.182	0.00 0	0.446	C	2.558	0.278	0.00 8	A	131.624	0.00 0	0.438	C
Persuasiveness	263.347	0.00 0	0.605	C	2.278	0.320	0.00 5	A	261.069	0.00 0	0.600	C
Emotional distance	195.277	0.00 0	0.469	C	7.818	0.020	0.01 7	A	187.459	0.00 0	0.452	C

Emotional distance	28.826	0.00 0	0.282	C	8.300	0.016	0.08 1	A	20.526	0.00 0	0.202	B
Emotional distance	320.136	0.00 0	0.845	C	4.391	0.111	0.01 0	A	315.745	0.00 0	0.835	C
Rule-following	87.087	0.00 0	0.343	C	4.602	0.100	0.01 7	A	82.485	0.00 0	0.325	C
Rule-following	103.214	0.00 0	0.273	C	0.127	0.939	0.00 0	A	103.087	0.00 0	0.272	C
Rule-following	144.688	0.00 0	0.613	C	15.316	0.001	0.06 1	A	129.372	0.00 0	0.552	C
Rule-following	53.209	0.00 0	0.503	C	2.129	0.345	0.02 0	A	51.081	0.00 0	0.483	C

Note. ZT: Zumbo and Thomas' (1997) classification of size effect - negligible (A), moderate (B), or large (C); LRT: Likelihood Ratio Test.

Table 57. Country DIF Effect on Audit Personality Questions of the **PROFESSIONAL PROFILE 2©**.

	LRT				Non-uniform DIF				Uniform DIF			
	X ²	p	R ²	ZT	X ²	p	R ²	ZT	X ²	p	R ²	ZT
Dimension - Core Items												
Flexibility	86.718	0.000	0.483	C	62.422	0.000	0.344	C	24.296	0.000	0.139	B
Flexibility	183.286	0.000	0.469	C	44.339	0.000	0.107	A	138.947	0.000	0.362	C
Extraversion	192.013	0.000	0.541	C	142.817	0.000	0.393	C	49.196	0.000	0.148	B
Focus on facts	246.194	0.000	0.546	C	108.400	0.000	0.226	B	137.794	0.000	0.320	C
Improvisation	194.961	0.000	0.621	C	102.872	0.000	0.314	C	92.089	0.000	0.307	C
Improvisation	313.903	0.000	0.725	C	229.080	0.000	0.509	C	84.823	0.000	0.216	B
Persuasiveness	80.041	0.000	0.271	C	38.460	0.000	0.128	A	41.581	0.000	0.143	B
Persuasiveness	209.273	0.000	0.653	C	106.066	0.000	0.316	C	103.207	0.000	0.337	C
Rule-following	196.968	0.000	0.642	C	155.507	0.000	0.497	C	41.461	0.000	0.145	B
Rule-following	493.169	0.000	0.739	C	259.223	0.000	0.348	C	233.946	0.000	0.391	C

Note. ZT: Zumbo and Thomas' (1997) classification of size effect - negligible (A), moderate (B) or large (C); LRT: Likelihood Ratio Test.

Researchers argue that *DIF* analysis across countries is more challenging than *DIF* analyses performed across groups using the same language, as translation between questionnaire versions may result in items being compared not necessarily being the same, despite precautions taken during the translation process (Sireci & Swaminathan, 1996).

Analyses of **PROFESSIONAL PROFILE 2©** showed that 17 of the items flagged with *DIF* (10 core and 7 audit) may be due to differences in meaning across language. However, these translation differences

only explain part of the *DIF* effect for countries since 41 items were flagged with *DIF*. Other sources of *DIF* often reported in the literature include cultural differences, e.g. inapplicability of item contents in different cultures, incidental difference in connotative meaning, difference in the familiarity with the item content, item related to additional trait in one culture (for a review, see He & van de Vijver, 2012; van de Vijver & Tanzer, 2004). Unfortunately, the precise sources of *DIF* in cross-cultural assessment are hard to investigate, as they often interact and confounding factor limit the interpretation of these search attempts.

In a first step to identify the source of country *DIF* for **PROFESSIONAL PROFILE 2©** items, we performed additional analyses to determine if *DIF* items found for country significantly impact dimension and trait scores, and prevent accurate comparisons of respondents from France, UK and US. To assess the impact of *DIF* items on the scoring of each scale in the 3 different countries, we computed the mean score of each scale before and after removing the item flagged with *DIF*. Then, for each scale and calculated score (with and without *Dif* items), the standardised mean difference was computed for France compared to US, France compared to UK, and US compared to UK. For each of these pairwise comparisons, the impact of the *DIF* item on scores was then calculated by subtracting the standardised mean difference of scale score with and without *DIF*.

Standardised mean difference was calculated using Cohen's *d* formula, which gives information about the size of an effect in terms of units of standard deviation. The smaller *Cohen's d*, the less difference there is between the two distributions.

$$Cohen's\ d = \frac{M_1 - M_2}{SD_{pooled}}$$

SD pooled was calculated using Cohen's (1988) formula:

$$SD_{pooled} = \sqrt{\frac{(SD_1^2 + SD_2^2)}{2}}$$

Finally, Cohen's *d* was converted into overlapping coefficient (OVL), using the formula by Reiser and Faraggis (1999).

$$OVL = 2\phi\left(-\frac{|\delta|}{2}\right)$$

where ϕ is the cumulative distribution function of the standard normal distribution, and δ the population Cohen's *d*. OVL, which reflects the percentage of overlap for the distribution of two groups, was used to ensure results were readily understood by individuals without specific statistical training (see Figure 22). Results are summarised in Table 58.

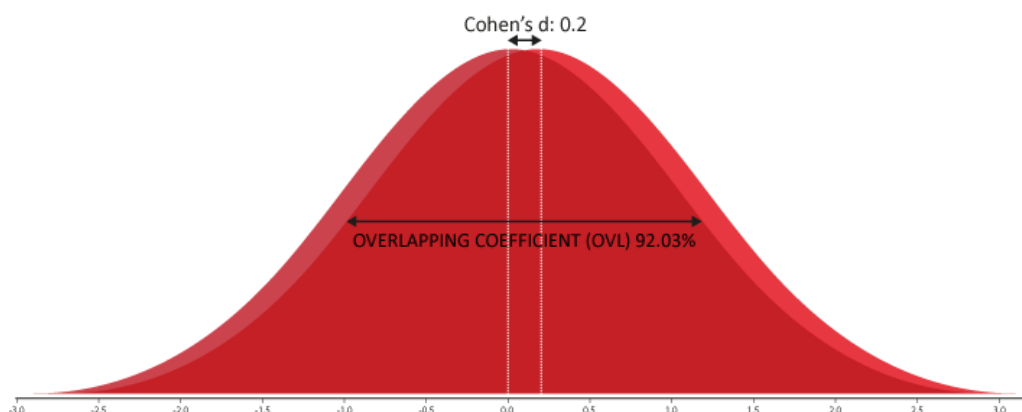


Figure 22. Two Indicators used to Compare Distributions: Cohen's d, an Indicator of the Size of the Difference between the Two Distributions in Terms of Units of Standard Deviation and the Overlapping Coefficient, which Reflects the Percentage of Overlap between the Distributions.

Table 58. Standardised Mean Difference Between Scale Scores With and Without DIF for France Versus US, France Versus UK and US Versus UK on the **PROFESSIONAL PROFILE 2®**.

PROFESSIONAL PROFILE 2® Personality Dimensions		FR - US	FR - UK	US - UK
P1	without DIF Items	0.474	-0.183	-0.629
	with DIF Items	0.117	-0.071	-0.195
	impact	-0.357	0.112	0.435
	OVL	86%	95%	83%
P2	without DIF Items	-0.044	0.240	0.358
	with DIF Items	-0.386	0.302	0.710
	impact	-0.342	0.062	0.352
	OVL	86%	97%	86%
P3	DIF Items	0.109	0.309	0.251
	with DIF Items	0.305	-0.049	-0.399
	impact	0.195	-0.359	-0.650
	OVL	92%	86%	74%
P4	without DIF Items	-0.180	-0.038	0.154
	with DIF Items	-0.020	0.118	0.142
	impact	0.160	0.156	-0.012
	OVL	94%	94%	99%
P5	without DIF Items	-0.328	-0.408	-0.082

	with DIF Items	-0.284	-0.329	-0.040
	impact	0.044	0.080	0.042
	OVL	98%	97%	98%
	without DIF Items	0.919	0.040	-0.850
P6	with DIF Items	0.595	0.100	-0.492
	impact	-0.324	0.060	0.358
	OVL	87%	98%	86%
	without DIF Items	0.260	-0.159	-0.421
P7	with DIF Items	0.015	-0.223	-0.246
	impact	-0.245	-0.064	0.175
	OVL	90%	97%	93%
	without DIF Items	0.260	-0.159	-0.421
mean OVL		90%	95%	88%

P_1 – Flexibility/Firmness P_2 – Extraversion/Introversion P_3 – Focus on facts/Intuition P_4 – Improvisation/Structure P_5 – Persuasiveness/Straightforwardness P_6 – Emotional distance/Emotional sensitivity P_7 – Rule-following/Free-thinking, OVL- overlapping coefficient.

As shown in Table 58, the impact of *DIF* items on scoring was small to moderate, with Cohen’s *d* ranging from -0.012 to -0.650. This means that trait score differences between countries, when *DIF* items are removed, would change from 0.1/10 to 6/10 of a standard deviation unit. Conversion of Cohen’s *d* into OVL indicates that 74 to 99 % of the distribution of dimension scores with and without *DIF* would overlap.

Mean overall OVL scores calculated for each pairwise comparisons of countries were 90% for France versus US, 94% for French versus UK, and 88% for US versus UK, demonstrating that the overall score distribution of *PP2*® across countries is only marginally affected by items with *DIF*. The dimension *P3* - Focus on facts was the most affected by *DIF* items, especially when comparing professionals from UK and US (OVL = 74%).

Figures 23 to 25 show characteristic curves for items with large country *DIF*. Figure 23 shows that when the level of Flexibility is low, the probability of endorsing the item is higher for French compared to American or British respondents. However, when the level of trait increases, the probability of endorsing the item is comparable between all the respondents. Secondly, Figure 24 shows that when the level of Extraversion is low, the probability of endorsing the item is comparable between French and British respondents but lower for Americans. When the level of Extraversion is intermediate, the probability of endorsing the items is the lowest for American respondents, intermediate for British respondents and the highest for French respondents. At high level of Extraversion, the probability of endorsing the item is similar across all respondents. Finally, Figure 25 shows that when the level of trait on the Emotional distance is low, the probability of endorsing the item is lower for French and British respondents compared to their American counterparts. When the level of trait is intermediate, the probability of endorsing the item increases from British to French and from French to American respondents. At high levels of the trait, the probability of endorsing the item is still the lowest for British respondents, but similar for American and French respondents.

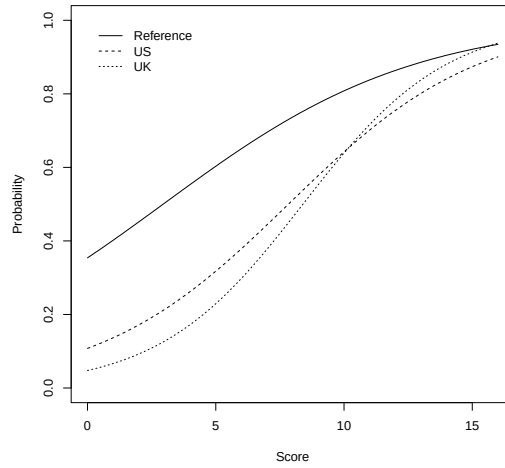


Figure 23. Item “I accommodate others' requests even at my cost”: Characteristic Curve for Country DIF Analysis for Flexibility.

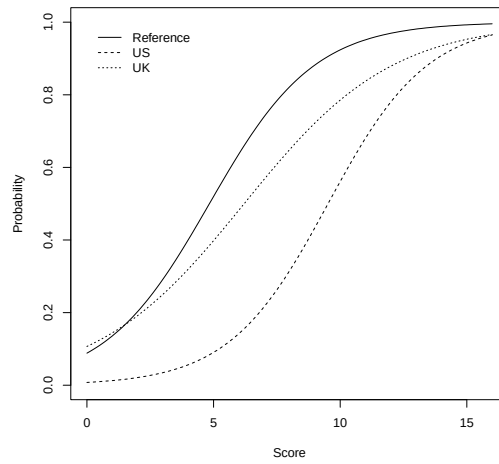


Figure 24. Item “I never get tired of meeting new people”: Characteristic Curve for Country DIF Analysis for Extraversion.

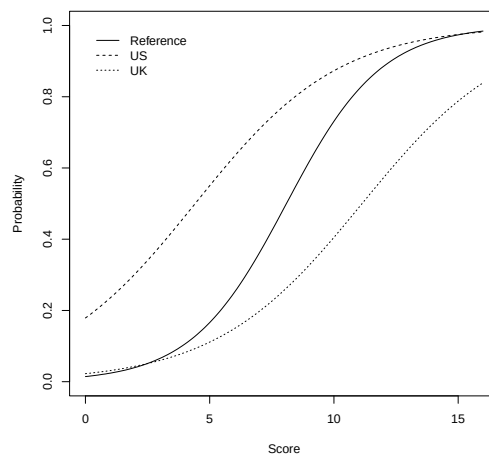


Figure 25. Item “I am rarely affected by criticism”. Characteristic Curve for Country DIF Analysis for Emotional Distance.

Findings clearly show that there is only a minor effect of *DIF* on the overall **PROFESSIONAL PROFILE 2©** score and we may conclude that the **PROFESSIONAL PROFILE 2©** is suitable and equivalent for professionals across all countries. We therefore encourage HR practitioners and managers to make sure that they use appropriate country norms to ensure the highest and best level of precision.

8. Additional Information and Considerations

The **PROFESSIONAL PROFILE 2©** was developed for use in a range of organisational settings. It is important that the appropriate norms, scores and interpretations are used in order to guide HR decisions for recruitment and selection, career development, coaching and performance management. Accurate interpretation of psychometric tests helps both administrators and candidates to: a) put the assessment into context; b) effectively compare candidates across target capabilities; c) accurately identify areas for development; d) maximise fit between job requirements and candidate abilities; and e) promote the organisation as a fair and objective place to work. The current chapter gives guidelines for HR practitioners to understand and successfully interpret candidate scores for the **PROFESSIONAL PROFILE 2©** for different organisational objectives.

The **PROFESSIONAL PROFILE 2©** report generation software provides graphs and personalised comments for all 14 dimensions that relate to the candidate's score. The report should only be interpreted by professionals who have completed *Central Test's* accredited training course and are familiar with this manual. Training in and knowledge of the assessment process are vital as scores should be interpreted in light of information regarding reliability, validity, standard error of measurement, and any accommodations to the assessment or assessment session that were made. Scores should be presented within the context of the assessment and in a clear, meaningful and appropriate way for the target audience.

8.1. Interpreting scores

It is important to note that all assessments by *Central Test* have been developed for HR purposes only. Therefore, no clinical conclusions can be drawn from the results – not even from extreme scores. There are six different levels of comments in total. Levels are determined by a candidate's score. Table 59 provides an example of descriptors used to describe different levels of a dimension. Extreme scores are defined as the lowest and highest possible values on a dimension. For the **PROFESSIONAL PROFILE 2©**, the minimum score is set at 0 and the maximum score is set at 10. Given the ipsative format of the assessment, it is impossible to obtain extreme scores on all dimensions.

Each dimension consists of two factors. Only one factor per dimension will be interpreted, and this will be the factor with which the candidate scores highest on. Meaning that if, for example, Extraversion has a score of 7 and Introversion a score of 3, we interpret Extraversion. If we have the reverse case (Introversion 7 and Extraversion 3), we interpret Introversion. High scores on a factor indicate that there is a high probability that the person who is being evaluated can be characterised by that factor. Middle scores (i.e. 4-7) indicate a high congruence with the norm group and may be less of a characteristic trait for the individual and should be addressed further during an interview, debriefing or feedback. All comments should be viewed as hypotheses that need to be confirmed with other sources of data, such as interviews or further assessments, CV content and references.

Table 59. Example Descriptors of Different Levels of a Trait in Report Comments for the **PROFESSIONAL PROFILE®**.

Level 1 Opposing factor	Level 2	Level 3	Level 4	Level 5	Level 6 Main factor
Enjoys, best suited for, very, driven to, more than most people, thrives in	Prefers, well-suited for, generally, likely to emphasise, quite	Likely to, somewhat, suited for, tends to, fairly, usually, rather	Likely to, somewhat, suited for, tends to, fairly, usually, rather	Prefers, well-suited for, generally, likely to emphasise, quite	Enjoys, best suited for, very, driven to, more than most people, thrives in

8.2. Organisational need: Recruitment and selection

One of the main applications of the **PROFESSIONAL PROFILE 2©** is the identification of 21st century work capabilities. Specifically, the **PROFESSIONAL PROFILE 2©** is an effective tool for the selection and recruitment of job candidates. Personality has been consistently shown to be a valid predictor of job performance and potential (e.g. Barrick, Mount, & Judge, 2001; Hurtz & Donovan, 2000; Salgado, 1997).

Recruitment and selection is an important organisational function which can be very time consuming and expensive. Furthermore, bad or wrong recruitment decisions have additional effects on organisational productivity, capability and sustainability. Whilst someone in financial and legal administration for example, may need to follow strict rules, someone working in marketing may be required to be more imaginative and creative. It is recommended that prior to administering the **PROFESSIONAL PROFILE 2©**, recruiters have a detailed job description and person specifications based on a job analysis.

The **PROFESSIONAL PROFILE 2©** helps recruiters to customise job profiles in their client account by specifying desired scores for each dimension. The assessment allows the recruiter to easily compare the target profile with a candidate's profile. This generates a score that shows the degree of convergence between the candidate's profile and the desired profile (see sample report in Appendix 1).

Results can be used for the job interview, and can enable recruiters and HR managers to target specific capabilities, ask relevant questions and probe skill deficits. The Interview Guide (available separate) provides guidance and sample questions that can be asked during feedback to interpret a candidate's results. Not just strengths, but also scores that are inconsistent with the desired job profile or organisational requirements can be discussed in detail. Reports should provide an accurate interpretation of the data, and give the administrator the chance to probe scores in accordance with other assessments, existing data and information.

The closer the match between the candidate and target profile, the more confident practitioners and HR recruiters can be with their selection decision. In addition, a higher match means that less "energy" needs to be invested by the candidate to meet the requirements of the job or the expectations of the environment. Conversely, employees may become distressed when asked to perform activities which require enhancing specific traits that are inconsistent with their own (Christiansen, Sliter, & Frost, 2014b). E.g. if an introvert is required to use mostly extraverted traits; this could lead to demotivation, resignation or burnout of the employee.

The **PROFESSIONAL PROFILE 2©** helps recruiters to make accurate, secure and legally defensible choices that save time and money while increasing efficiency. It is a fair and accurate method of measurement that improves the quality of decisions since it allows for the objective comparison of individuals.

8.3. Organisational need: Career guidance, coaching and development

Studies have consistently shown that personality is a significant predictor of career choices (Di Fabio & Saklofske, 2014; Rosenbloom, Ash, Dupont, & Coder, 2008), job satisfaction (Christiansen et al., 2014b; Heller et al., 2009) and job commitment (Panaccio & Vandenberghe, 2012). The **PROFESSIONAL PROFILE 2©** contributes to this tradition as a career guidance and professional development tool, for areas such as human resource development, career change, career management and exploration or other career related issues. The report should be interpreted and discussed with a trained career advisor, who will be able to support people with career-related challenges.

The section “How different professions suit you” (see Figure 26) provides a map of the convergence of the candidate’s profile with 138 modern jobs, divided into six separate sectors. Categories represent internationally recognised careers based on job descriptors from newspapers, job advertisements and job boards. The **PROFESSIONAL PROFILE 2©** is designed to enable career management advisors and consultants to support and guide individuals with career-related challenges.

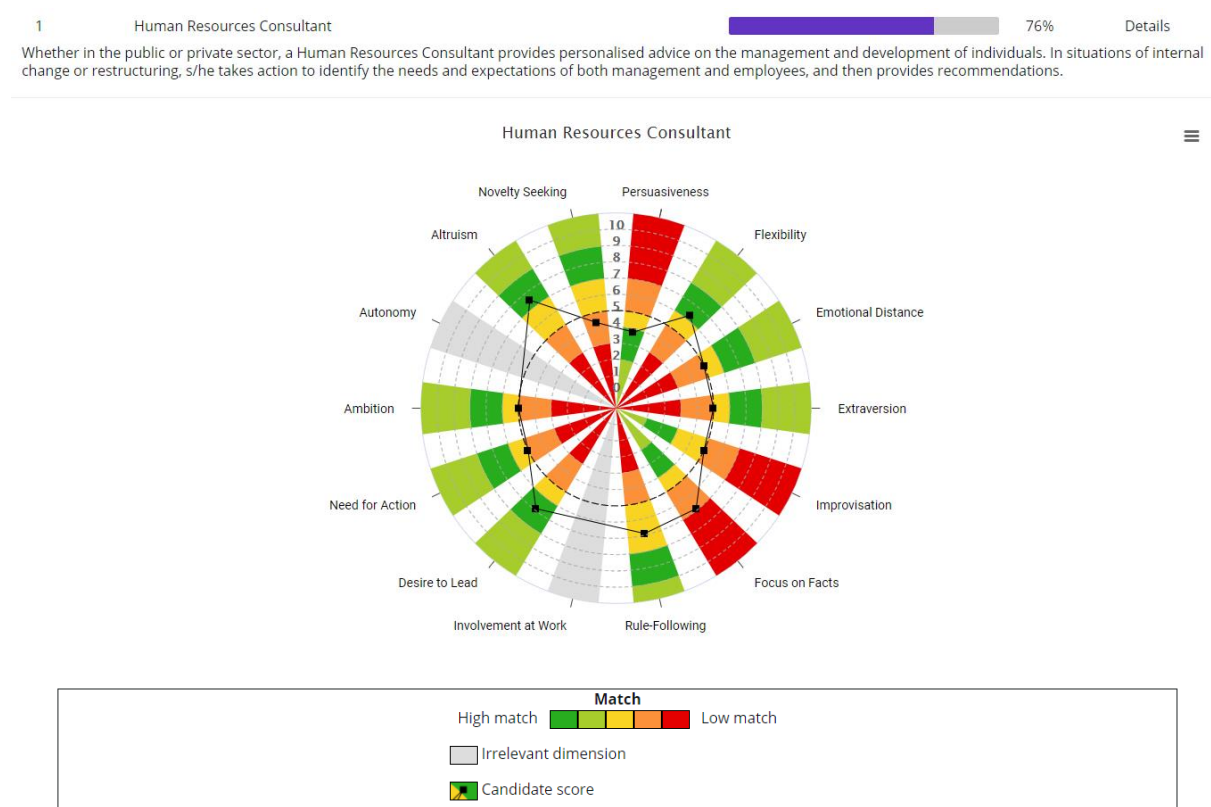


Figure 26. Convergence Between the Candidate’s Profile and the Profile for Human Resources Consultant.

The “Comments” of the report contain “Strengths” and “Potential weaknesses” which are relevant in the context of career & professional development. They allow for the career consultant, advisor or

coach and client to tailor developmental interventions and to work out strategies to build upon those professional capabilities.

Sections entitled “Environment and Roles” and “Interaction with others” can further help to determine the organisational settings that will enable the individual to realise his or her full potential and to maximise their contribution to the team. Motivations, aspirations and values have an impact on the kind of jobs and organisations that the individual will feel most comfortable with. These two are emphasised in the context of development, helping both the individual and organisation to identify underlying values and approaches to work.

We recommend that practitioners combine the questionnaire with other assessments, such as the “**OCCUPATIONAL INTEREST INVENTORY**®” for a more extensive career analysis.

8.4. Organisational need: Performance management & evaluation

Performance evaluations are a key component of employee development and success. Performance reviews should be a fair and balanced assessment of an employee’s achievements and capabilities, and give the opportunity to discuss expectations and accomplishments. The **PROFESSIONAL PROFILE 2©** supports HR practitioners with performance reviews that can help to discuss job performance in relation to personality and motivations. The assessment is a useful resource to assist in identifying underlying factors that determine performance, identify different levels of targeted behaviours and outputs, establish objective performance metrics and help to set goals for professional development. We recommend that managers and employees collaboratively set professional development goals and outline an “action plan” that clarifies how targets may be achieved. This will enable the employee to develop strategies and to conquer potential weaknesses.

Whilst the **PROFESSIONAL PROFILE 2©** is effective in identifying areas for development, it should not be used to directly track an employee’s performance progress. We therefore recommend the use of objective performance assessments or other evaluations in conjunction with the **PROFESSIONAL PROFILE 2©**.

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Appendix: Sample reports

a) Standard report

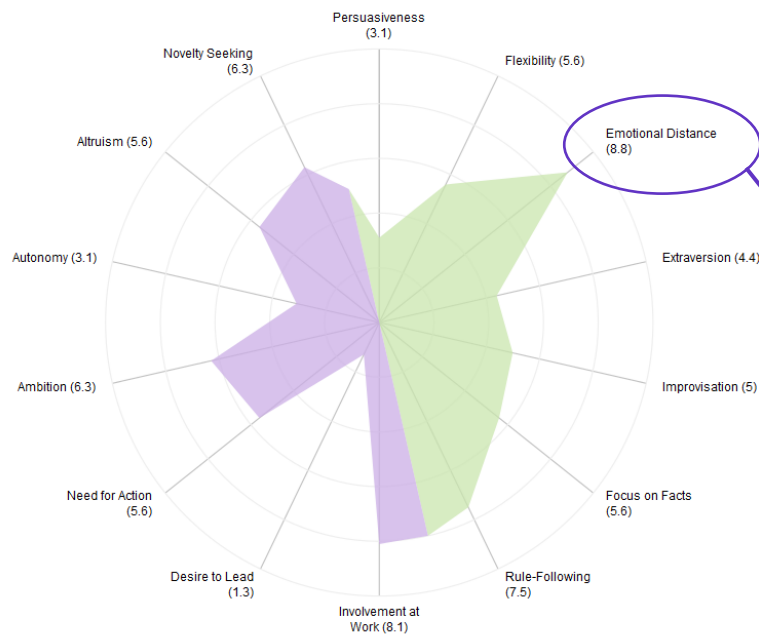
This section contains samples of reports that we believe to be very helpful for HR practitioners when interpreting the **PROFESSIONAL PROFILE 2©**. Report content may be adapted based on the requirements of the user. Sections of the report that are not relevant for a specific organisational objective can be deactivated. For example, the section “How different professions suit the profile” might be of interest for a career consultant but not for a recruiter. The **PROFESSIONAL PROFILE 2©** allows administrators to configure a personalised profile to enable comparisons with candidates’ profiles.

The standard report consists of 5 key sections. However, administrators can configure an additional 3 sections depending on requirements. Each section can be deactivated as desired:

1. *The Graph*: displays the results on the main factors
2. *The Inverted Graph*: displays the results on the opposing factors
3. *The Personalised Analysis*: provides a short overview of the most dominant traits
4. *The Detailed Table*: gives a graphical overview of main and opposing factors
5. *The Comments*: offer an interpretation of the individual’s score

1. The Graph

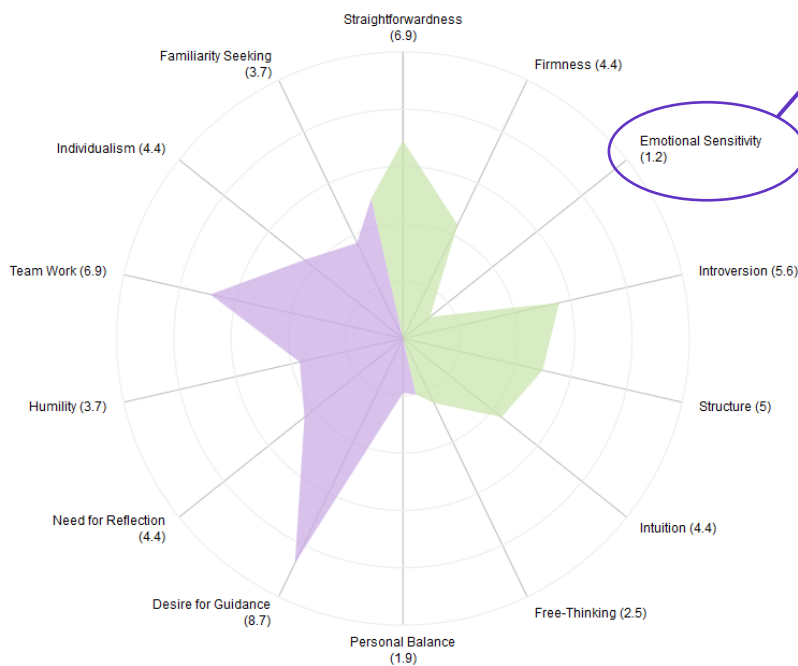
The personality traits are assessed as opposing factors. Therefore, two graphs are shown:



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Interpretation hint: If the candidate has a high score of 8.8 on Emotional Distance, the opposing factor Emotional Sensitivity has a low score of 1.2

2. The Inverted Graph



3. The Personalised Analysis

3 – PERSONALISED ANALYSIS

Personality traits that are specific to the profile

In this section you will find the traits that stand out the most in the profile of the candidate.

A few precautions in interpreting the results:

- Certain personality traits may contradict each other, this is true for human behaviour.
- We recommend to look at the "The Comments" section of this report for a more personalised description of the profile.

Strengths

Victoria Gosling is rather generous and selfless. She often spends time assisting others and seeks to help those in need.

Victoria Gosling likes to manage a team. She can delegate tasks and make decisions for her team members.

Victoria Gosling generally follows rules and regulations and feels comfortable in tasks that require strict adherence to procedures.

Victoria Gosling is quite rational and likes to base her decisions on facts and logic. She analyses situations objectively.

Weaker points, points to develop:

Victoria Gosling would benefit from concentrating more on her personal interests, encouraging people to become self-sufficient.

In difficult situations, Victoria Gosling would benefit from seeking advice from her superiors.

Victoria Gosling could benefit from being more open towards rejecting rules that hinder efficiency.

i

Interpretation hint: This section presents an overview of strengths & weaker points based on traits that stand out the most in the candidate's profile.

4. The Detailed Table

4 – THE DETAILED TABLE

A tabular representation of the results on the main and opposing factors

[Download table](#)

The following table summarises the candidate's results from the questionnaire. The column on the right describes the main factor. The column on the left describes the opposing factor. The "✓" represents where the candidate stands in relation to the dimension.

Therefore the closer the "✓" is to the right, the stronger is the tendency for the main factor. The closer the "✓" is to the left, the stronger is the tendency for the opposing factor.

Opposing factor	A	B	C	D	E	F	G	H	I	J	K	Main factor
Behaviour and Personality												
Straightforwardness Genuine, Needs objectivity, Transparent				✓								Persuasiveness Convincing, Influential, Strategic
Firmness Decisive, Resolute, Strong-willed								✓				Flexibility Adjusting, Seeks consensus, Open-minded
Introversion Reserved, Quiet, Formal						✓						Extraversion Outgoing, Social, Interactive
Emotional Sensitivity Passionate, Emotionally expressive, Reactive						✓						Emotional Distance Calm, Self-controlled, Composed
Structure Methodical, Planned, Systematic						✓						Improvisation Spontaneous, Adaptable, Comfortable with ambiguity
Intuition Instinctive, Insightful, Perceptive								✓				Focus on Facts Rational, Logical, Analytical
Free-Thinking Non-conforming, Defines one's own standards								✓				Rule-Following Adheres to standards, Respects rules
Motivations, Aspirations and Values												
Personal Balance Work-life balance, Disconnects after work					✓							Involvement at Work Dedicated, Committed, Workaholic
Desire for Guidance Seeks guidance and advice, Appreciates being directed								✓				Desire to Lead Takes charges, Authoritative, Responsible
Need for Reflection Patient, Reflective, Likes to conceptualize						✓						Need for Action Dynamic, Risk-taker, Acts immediately
Humility Satisfied, Stable, Cautious						✓						Ambition Competitive, Success-driven, Achievement-oriented
Team Work Cooperative, Affiliative, Team-oriented							✓					Autonomy Autonomous, Prefers independent work
Individualism Practical, Favours personal interests									✓			Altruism Helpful, Generous, Service-oriented
Familiarity Seeking Likes routine and established methods, Conventional					✓							Novelty Seeking Curious, Imaginative, Experimental

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Interpretation hint: The table visualises the scores of the candidate on all main and opposing factors. The interpretation of a profile begins with a review of the salient features (ticks in columns A, B, C or I, J, K).

For example, the candidate is clearly positioned on the side of the main factor "Altruism" at the expense of the opposing factor "Individualism". The candidate is also positioned on the opposing factor "Straightforwardness" at the expense of the main factor "Persuasiveness".

5. The Comments

5 – THE COMMENTS

An interpretation of the scores on each factor with personalised comments

BEHAVIOUR AND PERSONALITY

Straightforwardness << >> Persuasiveness

Straightforwardness

Score
6.2



Persuasiveness

Score
3.8

Victoria Gosling is rather frank. She tends not to persuade or influence others and is likely to present information in an objective way. Fairly straightforward, Victoria Gosling generally says things in a direct manner. However, she may use persuasive arguments on topics that she knows well and considers very important.

Environment and Roles: Organisations in which transparency and authenticity are appreciated suit her best.

Interaction with others: Generally transparent and does not seek to influence others at all costs.

Strength: Can be counted upon to give an honest opinion.

Potential weakness: May find it difficult when required to persuade others.

Definition

"Persuasiveness" is defined as the ease with which an individual is convincing and influencing others by using tact and adapting their speech for an audience, while "Straightforwardness" refers to being authentic and direct in communication, with a need to remain transparent.

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Interpretation hint: This section of the report provides an extensive interpretation of all evaluated factors of the assessments chosen from six levels according to the score of the candidate.

Flexibility << >> Firmness

Eva Rogers is very flexible and accommodating. She is open-minded in discussions and prefers avoiding confrontation. In recognising that she is not always right, Eva Rogers encourages a cooperative approach to resolve conflicts and aims for consensus. She prioritizes common agreement over solving the underlying issues.

Environment and Roles: Well suited for positions for which finding the middle ground is indispensable.

Interaction with others: Can be a stabilizing influence in teams that are embroiled in internal conflicts.

Strength: Good at taking others' perspectives and feelings into account during discussions.

Potential weakness: May sacrifice her convictions in striving for consensus.

➔ Definition

"Flexibility" is defined as a willingness to be open to make concessions when dealing with others in order to seek consensus and avoid conflict, while "Firmness" refers to a tendency to defend one's own point of view and remain determined during exchange with others.

Emotional Distance << >> Emotional Sensitivity

Eva Rogers is sensitive and passionate. Unlike her more emotionally-distant counterparts, Eva Rogers is generally in touch with her feelings. She is likely to be affected when facing unsettling or stressful situations. Her emotional reactions make her appear concerned and affected by her environment.

Environment and Roles: Well suited for areas where emotional expression is helpful to achieve goals.

Interaction with others: Facilitates the expression of feelings in a team.

Strength: Shows emotions and reacts to subtleties in the environment.

Potential weakness: May find it difficult to control emotions when faced with criticism or stressful situations.

➔ Definition

"Emotional Distance" is defined as the tendency to stay calm and composed even when faced with stressful or unsettling situations, while "Emotional Sensitivity" refers to the tendency to react to stress, take things to heart and readily express emotions.

Extraversion << >> Introversion

Eva Rogers thrives in socially interactive settings and prefers talking to listening. She enjoys large social gatherings and is energised by being around big groups of people. She seeks to have many friends and acquaintances. Unlike her more introverted colleagues, Eva Rogers actively pursues opportunities to meet and engage with others.

Environment and Roles: Thrives in positions that require much relationship building and public speaking.

Interaction with others: Friendly with colleagues, both inside and outside the workplace.

Strength: Very outgoing with a flair for networking.

Potential weakness: May not give others enough space and privacy.

Definition

"Extraversion" is defined as the tendency to be outgoing and lively, seeking to develop many friendly contacts, while "Introversion" refers to being reserved and formal, choosing to maintain only a few close relationships.

Improvisation << >> Structure

Eva Rogers is very adaptable and at ease improvising when faced with unexpected events. She enjoys handling tasks as and when they come and avoids planning in advance. People with a similar score feel restricted by fixed schedules and prefer to leave plenty of room for last minute decisions. Eva Rogers needs flexibility in order to take on unexpected events.

Environment and Roles: Best suited for projects that require frequent adjustment to constant changes in external factors.

Interaction with others: Encourages team members to be flexible with plans and adapt quickly to emerging challenges.

Strength: Finds solutions even in very ambiguous situations.

Potential weakness: A lack of planning may affect the quality of work.

Definition

"Improvisation" is defined as being spontaneous and acting without clear planification, being at ease when facing unexpected situations, while "Structure" refers to a preference for being organised, methodical and referring to procedures.

Focus on Facts << >> Intuition

Eva Rogers primarily relies on her intuition and gut feeling to make decisions and solve problems. She mostly trusts her first impressions and would usually approach a situation subjectively with little focus on factual data to arrive at a conclusion. Unlike her more rational colleagues, Eva Rogers is likely to pay more attention to her hunches instead of deliberating on details of a problem. People with a similar score tend to believe that "the first instinct is the right one".

Environment and Roles: Well suited for positions where intuitive conclusions are profitable.

Interaction with others: Likely to encourage team members to listen to and trust their instincts.

Strength: Intuitive and takes into account the human aspects of situations.

Potential weakness: May be too intuitive in situations that require a more objective and analytical mind-set.

➔ Definition

"Focus on Facts" is defined as the tendency to be objective, logical, analytical and rational in evaluating information and making decisions, while "Intuition" refers to the tendency to appraise situations and make choices based on one's personal insights, instincts, impressions and 'gut feeling'.

Rule-Following << >> Free-Thinking

Eva Rogers strictly complies with all regulations and policies of a company. People with a similar score generally believe that rules and procedures are not meant to be interpreted and should be followed without exception. Eva Rogers tends to comply with established guidelines as her own principles are usually linked to those of the organisation. She is likely to be known throughout the organisation for her dutifulness and quality assurance.

Environment and Roles: Best suited for positions that require strict adherence to rules because disregarding guidelines could be dangerous.

Interaction with others: Likely to ensure that team members are sticking to the rules.

Strength: Enforces regulations for quality, safety or legal reasons.

Potential weakness: May fail to question or change outdated or inefficient rules.

➔ Definition

"Rule-Following" is the tendency to respect and comply with established guidelines and standards set by the organisation and society, while "Free-Thinking" is the tendency to create or modify rules if existing ones are considered inefficient and impractical.

MOTIVATIONS AND VALUES

Involvement at Work << >> Personal Balance

Eva Rogers generally keeps her professional and personal lives separate. She strives to be productive during office hours and disconnects after work. Eva Rogers understands that at times she may need to sacrifice some leisure time for key projects or to meet important deadlines.

Environment and Roles: Well suited for positions that do not require a high degree of commitment beyond contractual agreements.

Interaction with others: Works best with co-workers who understand the importance of life outside of work unless pressing project deadlines are approaching.

Strength: Recognises the value of quality personal time.

Potential weakness: May refuse to take up projects that could interfere with personal priorities.

Definition

"Involvement at Work" refers to the importance given to work and one's emotional bonding with the organization, while "Personal Balance" refers to a preference to separate one's personal and professional lives and balancing the two.

Desire to Lead << >> Desire for Guidance

Eva Rogers prefers work settings where she can seek advice from more experienced individuals. She works best when given precise guidance from managers. Eva Rogers does not desire to supervise but instead prefers to be mentored. She would actively seek feedback in order to be more effective in her role.

Environment and Roles: Ready to let others take the lead and works well when clear instructions are given.

Interaction with others: Looks for mentorship from colleagues.

Strength: Performs well under task-oriented and directive leadership.

Potential weakness: May be challenged in environments where there is little supervision.

Definition

"Desire to Lead" is defined as the inclination to take charge of situations and to seek roles that require leading people, while "Desire for Guidance" refers to the preference for supervision and regular feedback, as well as for clearly defined directives.

Need for Action << >> Need for Reflection

Eva Rogers has a strong preference for short-term projects that demand immediate action. She tends to zero-in on a problem and devise practical solutions. If there is immediate gain, she is not concerned with long-term investment but is focused on the 'here-and-now'. Eva Rogers is at her best when working on projects and tasks that bring about quick and concrete results.

Environment and Roles: Likely to excel in organisations characterized by a constant fast-pace of work that require speedy decisions.

Interaction with others: Emphasises the importance of addressing imminent issues and likely to motivate team members to act.

Strength: Very dynamic and action-oriented.

Potential weakness: Might not take into consideration the long term consequences of her actions.

Definition

"Need for Action" refers to a tendency to be dynamic and to prefer short term projects that deliver quick and concrete results while "Need for Reflection" refers to a preference for complex, long term projects that yield results in the future and require more strategy, patience and reflection.

Ambition << >> Humility

Eva Rogers usually likes stability at work. She is quite cautious and prefers a fairly steady pace of working. However, she recognizes the need for some competition in the work environment. Eva Rogers is somewhat satisfied with the status quo, even though she might take up opportunities to advance her career. She is capable of meeting defined targets, but does not strive for excessively ambitious goals.

Environment and Roles: Suited for fairly stable settings where competition is moderate.

Interaction with others: Likely to be perceived as fairly steady by colleagues.

Strength: Generally satisfied with own achievements. Moves forward steadily to accomplish set goals.

Potential weakness: May avoid challenges, even if they would improve competence.

Definition

"Ambition" is defined as the competitive drive towards success and achievement, setting high and risky goals while "Humility" refers to the tendency to be satisfied with one's current status and be comfortable with professional stability.

Autonomy << >> Team Work

Eva Rogers is more team-oriented than most people and at her best when in a group. She enjoys working closely with others and seeks to be involved in projects where she is able to generate ideas through collaboration. Unlike her more autonomous colleagues, Eva Rogers thrives on group solidarity and shared progress. People with a similar score tend to follow the philosophy that 'working together makes us stronger'.

Environment and Roles: Thrives in organisations where group work is crucial.

Interaction with others: Dedicated team player and committed to joint success.

Strength: Has a strong team spirit.

Potential weakness: Likely to struggle when working independently.

➔ Definition

"Autonomy" is defined as a preference for independence and freedom while working. "Team Work" refers to the tendency to enjoy group work, be cooperative and focus on team cohesiveness.

Altruism << >> Individualism

Highly altruistic, Eva Rogers is dedicated to helping others. Generous by nature and always ready to lend a hand, she is sensitive to the needs of those around her and wants to be of value to others. For her, professional achievements need to be based on social and humanistic values. At work, Eva Rogers focuses on issues such as the well-being of others and tends to get involved in projects that are focused on developing these.

Environment and Roles: Likely to thrive in organisations that actively promote social responsibility and people development.

Interacting with others: Very friendly and perceived by peers to be trustworthy and selfless.

Strength: In tune with and responsive to the needs of people.

Potential weakness: People may interpret her helpfulness as interference.

➔ Definition

"Altruism" is defined as the inclination to be concerned about people and generous with one's time and resources, wanting to contribute to the greater good while "Individualism" refers to being practical and realistic with a focus on one's personal objectives.

Novelty Seeking << >> Familiarity Seeking

Eva Rogers seeks change and innovation. She is very inquisitive, conceiving original ideas and ways of improving established methods. Eva Rogers is likely to take risks in order to come up with creative solutions. She is constantly looking to learn new things and invent novel approaches.

Environment and Roles: Thrives in changing and diverse settings that require experimental ways of working.

Interaction with others: Likely to inspire others with cutting-edge ideas.

Strength: Committed to innovation and improving outdated practices.

Potential weakness: May disregard flaws of new methods for the sake of novelty.

Definition

"Novelty Seeking" is defined as being inquisitive with an inclination to explore and experiment with new ways of doing things, while "Familiarity Seeking" refers to being comfortable with what one is accustomed to and follow proven methods over experimental approaches.

b) Additional options

The following sections are considered as optional. Each part can be deactivated as desired.

6. *General Profile*: shows the match with 9 work-personality types. Types are based on a computation of dimensions developed to provide an overall understanding of a candidate's work-based character.
7. *Potentials*: provides a match between the candidate's profile with key competencies. This section is valuable for all the different applications of the **PROFESSIONAL PROFILE 2©**, such as recruitment and selection, career guidance and career development.
8. *How different professions suit the profile*: presents profile convergence with 138 jobs, divided in six sections: (a) Administration, finance, accounting and legal; (b) HR and business management; (c) Commercial sales, communication and marketing; (d) Logistics, IT, production and safety; (e) Science, health and environment; (f) Social, education, arts, sports and leisure. This section is especially useful for career guidance, development & coaching.

6. General Profile

6 – GENERAL PROFILE

Suitability of the profile in relation to various work-personality profile types

This section analyses the extent to which the candidate's profile matches the various work-personality types.

A perfect match corresponds to 100%.

The profiles PP2

1	Conscientious		67%	Details
2	Cooperative		65%	Details
3	Social		62%	Details
4	Reflective		57%	Details
5	Dynamic		57%	Details
6	Independent		53%	Details
7	Devoted		51%	Details
8	Determined		47%	Details
9	Intuitive		42%	Details

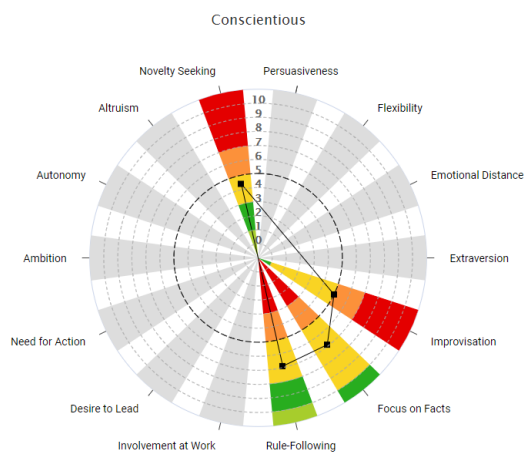
i

Interpretation hint: The table shows that this person's personality corresponds with 67% to the "Conscientious" work-personality type and to a slightly lesser extent to the "Cooperative" type. This person shows the lowest congruence with the "Intuitive" type.

1 Conscientious

67% Details

Conscientious individuals are meticulous by nature. They stick to set procedures and adhere to rules because they believe that closely following these can contribute to the quality of their work. They prefer using conventional and well established methods that they can count on to be efficient. They also have a keen eye for detail and rely on factual information to make decisions.



Match
 High match Low match
 Irrelevant dimension
 Candidate score

i

Interpretation hint: The black line corresponds to the candidate's scores on each dimension that is taken into account in the calculation of the "Conscientious" work-personality type ("Novelty Seeking", "Improvisation", "Focus on Facts", and "Rule-Following"). Irrelevant dimensions are set at 5.

The coloured indicator shows the strength of the match between the candidate's score and the ideal score for each dimension calculated for the "Conscientious" work-personality type.

Conscientious 67%

Conscientious individuals are meticulous by nature. They stick to set procedures and adhere to rules because they believe that closely following these can contribute to the quality of their work. They prefer using conventional and well established methods that they can count on to be efficient. They also have a keen eye for detail and rely on factual information to make decisions.

Cooperative 65%

Cooperative individuals are characterised by their tendency to be consensual. They feel the need to find a common ground during discussions and work towards finding solutions to disagreements by understanding the needs of the people they work with. They are altruistic and enjoy being of help to others which may sometimes lead them to disregard their own needs.

Social 62%

Social individuals are gregarious by nature and have the need to belong to a group. They enjoy networking and can easily form good professional and personal bonds with others. They enjoy working in teams and tend to spread their enthusiasm to their team-members. As a result, they integrate very easily into different teams.

Reflective 57%

Reflective individuals are characterised by patience and poise. They are usually calm and only come to a decision after having examined all of its possible consequences. As a result, they appear reserved and level headed. They can easily concentrate and focus their thoughts and attention in a particular direction.

Dynamic 57%

Dynamic individuals are characterised by an enthusiastic attitude towards work. They are energetic and work with a lot of vigour. They enjoy working towards obtaining quick results and hence seem more practical than reflective. They are often driven by success and enjoy diversity in their work which may make them seek out different ventures if they feel they are stagnating.

Independent 53%

Independent individuals are characterised by a need for autonomy and self-reliance. They prefer working without close supervision and appreciate working alone. They like working with a certain amount of freedom, without having to follow strict rules or rigorous procedures. They prefer working independently rather than in teams, which may make them appear more introverted than outgoing.

Devoted 51%

Devoted individuals are highly dedicated to their work and feel emotionally attached to their job and organisation. They are passionate and expressive with their feelings about their work, and do not require external motivators to perform. Their identity tends to be linked to their job and organisation. They may sometimes be viewed as sensitive, especially when handling stressful situations.

Determined 47%

Determined individuals are generally characterised by strong negotiation skills. They are persistent and can convince others with finesse and firmness. They carry with them a certain aura of authority which works to their advantage during discussions. They take charge of situations and make sure that their needs are met.

Intuitive 42%

Intuitive individuals tend to rely on their gut feelings and can handle uncertain situations with ease. Holding a flexible attitude, they are open to novelty and do not try to make rational sense of everything. They are creative by nature and believe in exploring things without sticking to conventions. They tend to recollect overall impressions of events instead of focusing on actual facts or details.

7. Potentials

7 – POTENTIALS

Suitability of the candidate's personality in relation to the potentials

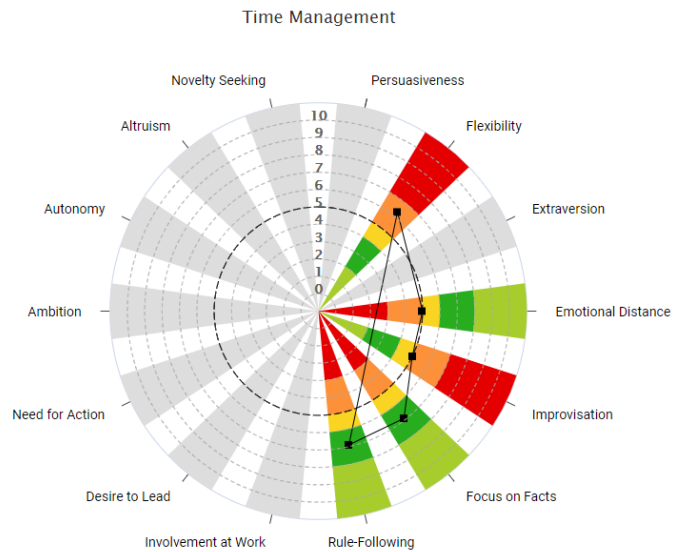
This section analyses the candidate's position with regard to key potentials related to behavioural skills and attitudes.
A perfect match corresponds to 100%.

Potentials

1	Time Management		82%	Details
2	Mentoring		75%	Details
3	Conflict Resolution		74%	Details
4	Organisational Skills		68%	Details
5	Strategic Planning		68%	Details
6	Sense of Duty		66%	Details
7	Team Cohesion		64%	Details
8	Quality Orientation		64%	Details
9	Interpersonal Skills		62%	Details
10	Taking Responsibility		62%	Details
11	Discretion		61%	Details
12	Stress Management		60%	Details
13	Adaptation to Change		60%	Details
14	Learning Agility		59%	Details
15	Team Motivation		59%	Details
16	Respecting Instructions		59%	Details
17	Initiative		59%	Details
18	Identification of Opportunities		58%	Details
19	Influencing Skills		56%	Details
20	Networking		54%	Details
21	Striving		53%	Details
22	Innovation - Creativity		52%	Details

i

Interpretation hint: The table shows that the person with this personality has a congruency of 82% with the “Time Management” potential, and to a slightly lesser extent with the “Mentoring” potential. The correspondence with the “Innovation - Creativity” potential and the personality of this person is lower.



i

Interpretation hint: The black line corresponds to the candidate's scores on each dimension that is taken into account in the calculation of the "Time Management" potential ("Flexibility", "Emotional Distance", "Improvisation", "Focus on Facts", and "Rule-Following"). Irrelevant dimensions are set at 5 and not taken into account.

The coloured indicator shows the strength of the match between the candidate's score and the ideal score for each dimension calculated for the "Time Management" potential.

Time Management 82%

Prioritising tasks pragmatically so as to meet deadlines.

Mentoring 75%

Taking responsibility for employees' development and progression by coaching them to help them improve.

Conflict Resolution 74%

Maintaining harmony within the team by mediating conflicts.

Organisational Skills 88%

Planning each action of a project by breaking it down into its parts in order to follow a systematic approach.

Strategic Planning 88%

Establishing action plans to anticipate future developments.

Sense of Duty 88%

Respecting and adhering to codes of conduct, remaining honest, and being reliable.

Team Cohesion 84%

Encouraging activities that will enable united and productive teams.

Quality Orientation 84%

To be meticulous with an eye for detail to ensure the highest level of quality and service.

Interpersonal Skills 82%

Interacting effectively with others, forming relationships with individuals and groups.

Taking Responsibility 82%

Taking ownership of projects, and accepting the consequences of their success or failure.

Discretion 81%

Respecting confidentiality and exercising restraint in the disclosure of information.

Stress Management 80%

Managing one's own emotions and remaining calm and productive in challenging situations.

Adaptation to Change 80%

Being able to adapt to change, adjusting one's behaviour or attitude to an environment and people.

Learning Agility 89%

Showing an inquisitive mind with a high interest in new things.

Learning Agility 58%

Showing an inquisitive mind with a high interest in new things.

Team Motivation 58%

Leading a group of people towards a common objective by winning their support and pushing them to surpass themselves.

Respecting Instructions 58%

Adhering to procedures by following and implementing directives.

Initiative 58%

Seizing opportunities and being a driving force to create or move things forward.

Identification of Opportunities 58%

Understanding the market perfectly in order to be able to identify and seize business opportunities.

Influencing Skills 58%

Promoting ideas and convincing others, as well as communicating in an assertive and tactical manner.

Networking 54%

Making contacts and developing a network of influential people for potential opportunities.

Striving 53%

Constantly seeking to excel and surpass one's goals.

Innovation - Creativity 52%

Thinking outside the box and looking at things from new perspectives.

8. How Different Professions Suit The Profile

8 – HOW DIFFERENT PROFESSIONS SUIT THE PROFILE

Suitability of the candidate's personality for the job profile/position

Given below is a list of jobs, representing the majority of internationally recognised careers, analysed with respect to the candidate's profile.

A perfect match corresponds to 100%.

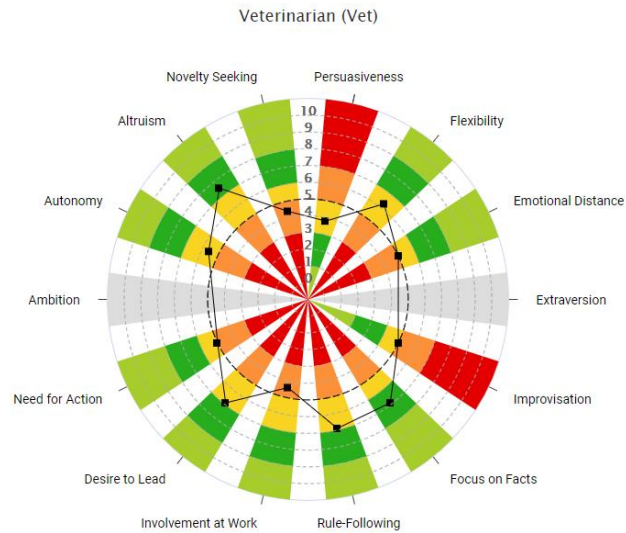
Science, health and environment

1	Veterinarian (Vet)		79%	Details
2	Pharmacist		76%	Details
3	Consultant (medicine)/Attending Physician		74%	Details
4	Dentist		73%	Details
5	General Practitioner (GP)		73%	Details
6	Prosthetist/Orthotist (audio, visual, dental, etc.)		72%	Details
7	Nutritionist/Naturopath/Homeopath		72%	Details
8	Physiotherapist/Osteopath/Acupuncturist/Chiropractor		72%	Details
9	Surgeon		71%	Details
10	Therapist (sensory re-education)		69%	Details
11	Environmental Consultant		68%	Details
12	Social Worker		68%	Details
13	Research Technician (scientific or medical)		66%	Details
14	Medical Services Coordinator		65%	Details
15	Medical Technician		64%	Details
16	Health/Social Care Facility Manager		64%	Details
17	Ambulance Driver		64%	Details
18	Nurse		64%	Details
19	Surgical Assistant		63%	Details
20	Clinical Psychologist/Psychotherapist		62%	Details
21	Scientific Researcher		61%	Details
22	Emergency Doctor		60%	Details

i

Interpretation hint: The candidate profile matches well with the first professional profiles. A correspondence of at least 70% is considered as meaningful; therefore this candidate matches well with the first 9 professional profiles, and especially well with the Veterinarian profile at 79%.

Whether dealing with domestic pets, exotic animals, or farm animals, a Vet monitors and treats animals throughout their lives, in addition to giving advice and reassurance to their owners. S/he will diagnose ill and injured animals by analysing their behaviour and performing various examinations. S/he demonstrates a great deal of skill, be it in handling animals or carrying out surgical operations.



Match

High match ■ ■ ■ Low match

Irrelevant dimension

■ Candidate score

i

Interpretation hint: On any professional profile, click “Details” to see a full profile description alongside a graph displaying the candidate’s scores, and the strength of the scores’ match with the ideal scores on the dimensions taken into account for the calculation of the professional profile.

HR and Business Management

1	Human Resources Consultant		76%	Details
2	Office Manager		75%	Details
3	Career Management Officer		73%	Details
4	Executive Assistant		73%	Details
5	Consultant		71%	Details
6	HR Assistant		69%	Details
7	Head of Human Resources		66%	Details
8	Head of Administration and Payroll		64%	Details
9	Recruitment Officer		58%	Details
10	CEO (Chief Executive Officer)		55%	Details

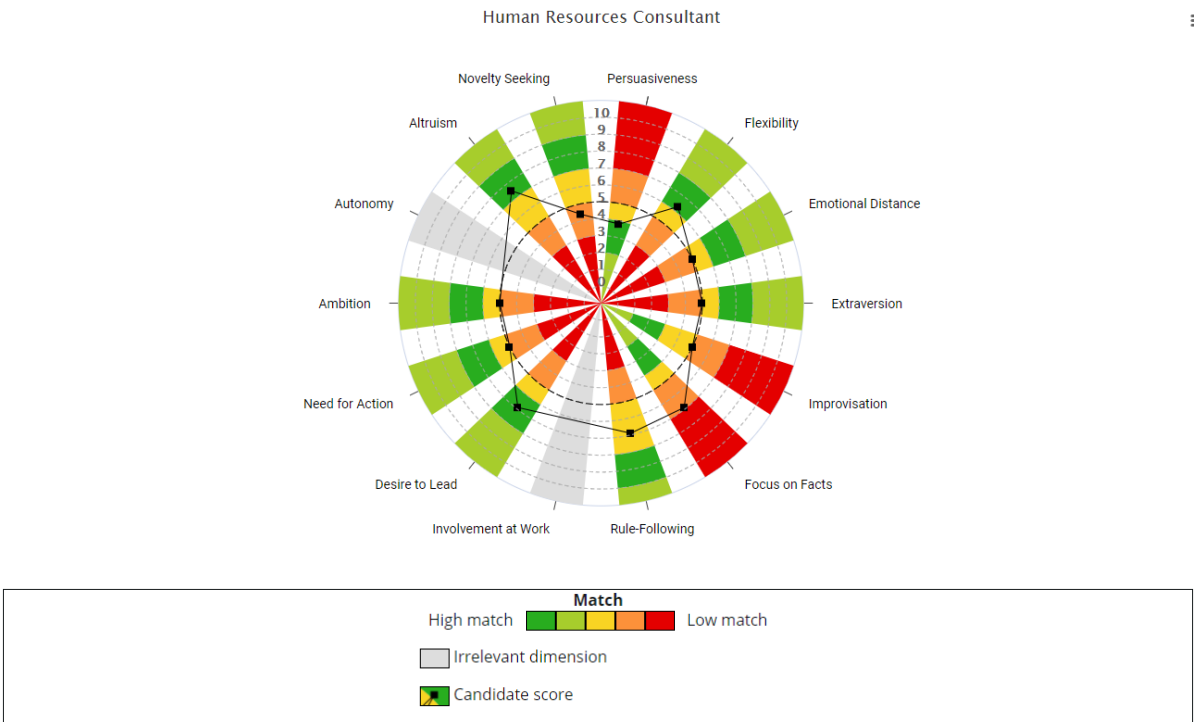
1

Human Resources Consultant

76%

[Details](#)

Whether in the public or private sector, a Human Resources Consultant provides personalised advice on the management and development of individuals. In situations of internal change or restructuring, s/he takes action to identify the needs and expectations of both management and employees, and then provides recommendations.



c) Extreme scores

This section provides comments that describe the highest scores for the main and opposing factors. Given the ipsative nature of this assessment, it is impossible to have extreme scores on each dimension (see section 8.1).

Comments for extreme scores on main factors

Persuasiveness << >> Straightforwardness

Julia Thurstone is very frank and highly values authenticity. She presents information in an objective way without distorting or altering the truth. People with a similar score live by the philosophy "honesty is the best policy". Straightforward in her communication, she says things in a very direct manner. Julia Thurstone is committed to sincerity and does not adapt her speech to please others.

Environment and Roles: Thrives in settings where transparency is essential and manipulation of clients or co-workers is frowned upon.

Interaction with others: Very genuine and expects honesty from colleagues.

Strength: Honest and straightforward.

Potential weakness: May be viewed as rude and lacking tact.

Flexibility << >> Firmness

Julia Thurstone is very firm and resolute. She does not like to compromise in negotiations and is not afraid to engage in confrontations. Julia Thurstone will openly voice her viewpoints during conflicts and is very likely to push her ideas through in team discussions and meetings. She is not easily convinced or influenced by other people's perspectives and tends to stick to her opinion.

Environment and Roles: Well suited for roles that require bargaining and tough negotiations.

Interaction with others: Team members are likely to perceive her as tough and confrontational.

Strengths: Determined and does not waver during discussions.

Potential weakness: May turn a deaf ear during debates.

Emotional Distance << >> Emotional Sensitivity

Julia Thurstone is very sensitive and passionate. Unlike her more emotionally-distant counterparts, Julia Thurstone is in touch with her feelings. When faced with unsettling or stressful situations, she may become overwhelmed. Her emotional reactions make her appear highly concerned and easily affected by her environment.

Environment and Roles: Best suited for areas where emotional expression is crucial for achieving objectives.

Interaction with others: Likely to be the first person in a team to react to subtleties in the environment.

Strength: Honest display of emotions.

Potential weakness: May show disproportionate reactions when faced with criticism and challenges.

Extraversion << >> Introversion

Julia Thurstone is very reserved by nature and prefers listening to talking. She has a strong preference for close friendships with a small group of people and may be uncomfortable in large social gatherings. Julia Thurstone does not require social stimulation and is most efficient and focused in quiet environments.

Environment and Roles: Best suited for roles that require long periods of intense focus and concentration.

Interaction with others: Likely to have meaningful one-to-one relationships with colleagues.

Strength: Stays productive and motivated even without social contact.

Potential weakness: May be seen by others as shy and distant.

Improvisation << >> Structure

Julia Thurstone is very organised and methodical by nature. She needs to arrange schedules well in advance and sticks to them without deviation. She works with detailed outlines and would be disturbed by uncertainty. People with a similar score painstakingly plan in order to avoid being caught off-guard.

Environment and Roles: Best suited for projects that have very strict deadlines and require detailed planning well in advance.

Interaction with others: Encourages team members to stick to schedules and follow project plans.

Strength: Structured and systematic, always prepared ahead of time.

Potential weakness: May have difficulty reacting to unexpected changes due to rigid planning.

Focus on Facts << >> Intuition

Julia Thurstone relies solely on her intuition and first impressions to make decisions and solve problems. She gets inspired by her insights and does not focus too much on factual data to come up with a solution. Unlike her more rational colleagues, Julia Thurstone pays more attention to gut feelings instead of mulling over details of a problem. People with a similar score tend to believe that "the first instinct is the right one" and have a history of relying on feelings to make judgements.

Environment and Roles: Best suited for positions where intuitive decisions are essential for organisational longevity.

Interaction with others: Provides a subjective perspective for the team.

Strength: Sharp instincts, does not get slowed down by too many facts while making decisions.

Potential weakness: May ignore the value of logical and factual information to understanding a problem.

Rule-Following << >> Free-Thinking

Julia Thurstone appreciates working in a position where rules are not fixed and binding but flexible and expandable. He tends to question existing procedures, especially when he feels that they strongly interfere with his output. Julia Thurstone may not respect norms with which he disagrees because they have to make sense to him.

Environment and Roles: Enjoys working for a company that appreciates when employees reflect on existing procedures in order to enhance efficiency.

Interaction with others: Likely to draw the attention of a team to outdated rules that hinder productivity.

Strength: Questions rules that are inefficient.

Potential weakness: May find it difficult to work in environments that require strict adherence to guidelines.

Involvement at Work << >> Personal Balance

Julia Thurstone feels a strong need to keep her professional and private lives separate. She strives to maintain a rich personal life. Regardless of her level of productivity while at work, she completely disconnects after office hours. Compared to her more dedicated colleagues, Julia Thurstone is unlikely to experience burn-out.

Environment and Roles: Best suited for organisations that encourage and advocate work-life balance.

Interaction with others: Works best with co-workers who consider a work-life balance as important.

Strength: Effectively "recharges batteries" during free-time.

Potential weakness: May struggle with projects that require longer hours and more commitment.

Involvement at Work << >> Personal Balance

Julia Thurstone feels a need to keep her professional and private lives separate. She tends to maintain a rich personal life. Regardless of her level of productivity while at work, she generally disconnects after office hours. Compared to her more dedicated colleagues, Julia Thurstone is less likely to experience work-related strain.

Environment and Roles: Well suited for organisations that acknowledge the importance of work-life balance.

Interaction with others: Works best with co-workers for whom having a balanced life seems important.

Strength: Promotes the value of quality personal time.

Potential weakness: May be perceived as uncommitted.

Desire to Lead << >> Desire for Guidance

Julia Thurstone prefers work settings where she can seek advice from more experienced individuals. She works best when given precise guidance from managers. Julia Thurstone does not desire to supervise but instead prefers to be mentored. She would actively seek feedback in order to be more effective in her role.

Environment and Roles: Ready to let others take the lead and works well when clear instructions are given.

Interaction with others: Looks for mentorship from colleagues.

Strength: Performs well under task-oriented and directive leadership.

Potential weakness: May be challenged in environments where there is little supervision.

Need for Action << >> Need for Reflection

Julia Thurstone shows a strong preference for long-term projects that demand reflection and have an impact on the future. She tends to strategise and reflect on anticipated implications of each decision she makes. If there is long-term gain, she is not concerned with immediate results. Julia Thurstone will emphasise the importance of a futuristic perspective.

Environment and Roles: At her best when working on projects with extended timelines and goals that require vision.

Interaction with others: Likely to motivate team members to focus on future results and actions.

Strength: Well suited for strategic tasks that are spread over long periods of time.

Potential weakness: May focus too much on long-term perspectives and neglect immediate consequences.

Ambition << >> Humility

Julia Thurstone enjoys stability at work and prefers being in harmonious environments. She seeks much less competition than others and prefers being cautious without taking shortcuts. Julia Thurstone meets defined targets but is usually not driven by the need to achieve and advance her social status. She is rather satisfied with the status quo and her existing roles.

Environment and Roles: Well-suited for stable settings where individual competition is not expected.

Interaction with others: Perceived as steady and non-threatening by team members.

Strength: Happy with own achievements and would not harm others to get ahead.

Potential weakness: May not seek or take up opportunities for advancement that may arise.

Autonomy << >> Team Work

Julia Thurstone is more team-oriented than most people and at her best when in a group. She enjoys working closely with others and seeks to be involved in projects where she is able to generate ideas through collaboration. Unlike her more autonomous colleagues, Julia Thurstone thrives on group solidarity and shared progress. People with a similar score tend to follow the philosophy that 'working together makes us stronger'.

Environment and Roles: Thrives in organisations where group work is crucial.

Interaction with others: Dedicated team player and committed to joint success.

Strength: Has a strong team spirit.

Potential weakness: Likely to struggle when working independently.

Altruism << >> Individualism

Julia Thurstone advocates the exercise of one's goals and desires more than most people do. She focuses single-handedly on personal objectives almost to the exclusion of everything else. When working on tasks, she appears to be skilled at filtering out the personal concerns of others around her. She tends to give more priority to productivity and efficiency concerns than issues such as the well-being of others.

Environment and Roles: Most likely to thrive in highly results-focused settings.

Interaction with others: Pragmatic, prioritises personal growth and wants others to be self-sufficient.

Strength: Very focused on own objectives.

Potential weakness: May appear self-centred.

Novelty Seeking << >> Familiarity Seeking

Julia Thurstone enjoys working in familiar environments. She has a strong preference for using reliable methods that have been proven to be efficient. She is conventional and does not seek new ways of doing things, preferring to move forward safely and following procedures that she is accustomed to.

Environment and Roles: Thrives in positions that require strict adherence to established ways of working.

Interaction with others: Will advocate tried and tested processes in a team.

Strength: Very good at enforcing methods that have yielded results in the past.

Potential weakness: May be perceived as set in her ways and resistant to change.

Comments for extreme scores on opposing factors

Persuasiveness << >> Straightforwardness

Marc Cronbach is very persuasive. He modifies information for a target audience in order to ensure desired outcomes. Charming, Marc Cronbach is likely to devise ways to get others to accept his ideas. Unlike his more straightforward colleagues, he enjoys to be tactful and to influence others.

Environment and Roles: Thrives in roles where convincing others is essential to success.

Interaction with others: Ensures that his speech reflects what colleagues and clients want.

Strength: Adept at making convincing and persuasive arguments.

Potential weakness: May be viewed as manipulative.

Flexibility << >> Firmness

Marc Cronbach is very flexible and accommodating. He is open-minded in discussions and prefers avoiding confrontation. In recognising that he is not always right, Marc Cronbach encourages a cooperative approach to resolve conflicts and aims for consensus. He prioritizes common agreement over solving the underlying issues.

Environment and Roles: Well suited for which finding the middle ground is indispensable.

Interaction with others: Can be a stabilizing influence in teams that are embroiled in internal conflicts.

Strength: Good at taking others' perspectives and feelings into account during discussions.

Potential weakness: May sacrifice his convictions in striving for consensus.

Emotional Distance << >> Emotional Sensitivity

Marc Cronbach is very level-headed and calm. He is unaffected by harsh criticism or demanding situations. Unlike his more sensitive counterparts, he rarely gets overwhelmed by his feelings and knows how to face very stressful situations with composure, allowing him to make clear decisions when under pressure.

Environment and Roles: Best suited for stressful settings that require a cool mind and emotional control at all times.

Interaction with others: Very likely to make decisions for the team in times of high pressure.

Strength: Remains self-controlled even under strenuous circumstances.

Potential weakness: May be perceived as indifferent or cold by others.

Extraversion << >> Introversion

Marc Cronbach thrives in socially interactive settings and prefers talking to listening. He enjoys large social gatherings and is energised by being around big groups of people. He seeks to have many friends and acquaintances. Unlike his more introverted colleagues, Marc Cronbach actively pursues opportunities to meet and engage with others.

Environment and Roles: Thrives in positions that require much relationship building and public speaking.

Interaction with others: Friendly with colleagues, both inside and outside the workplace.

Strength: Very outgoing with a flair for networking.

Potential weakness: May not give others enough space and privacy.

Improvisation << >> Structure

Marc Cronbach is very adaptable and at ease improvising when faced with unexpected events. He enjoys handling tasks as and when they come and avoids planning in advance. People with a similar score feel restricted by fixed schedules and prefer to leave plenty of room for last minute decisions. Marc Cronbach needs flexibility in order to take on unexpected events.

Environment and Roles: Best suited for projects that require frequent adjustment to constant changes in external factors.

Interaction with others: Encourages team members to be flexible with plans and adapt quickly to emerging challenges.

Strength: Finds solutions even in very ambiguous situations.

Potential weakness: A lack of planning may affect the quality of work.

Focus on Facts << >> Intuition

Marc Cronbach solely relies on logic and facts to make decisions and solve problems. He will carefully review information and analyse all details before making a judgement. Unlike his more intuitive colleagues, Marc Cronbach is likely to ignore gut feelings and would prefer to weigh and deliberate all aspects of a problem. People with a similar score tend to believe it is best to wait for all the facts to emerge before jumping to conclusions.

Environment and Roles: Best suited for positions in which a rigorous analysis of information is privileged.

Interaction with others: Likely to ensure that team members thoroughly review information before decisions are taken.

Strength: Objectively analyses situations and takes rational decisions.

Potential weakness: May ignore the value of perceptions and emotions to understanding a problem.

Rule-Following << >> Free-Thinking

Marc Cronbach strictly complies with all regulations and policies of a company. People with a similar score generally believe that rules and procedures are not meant to be interpreted and should be followed without exception. Marc Cronbach tends to comply with established guidelines as his own principles are usually linked to those of the organisation. He is likely to be known throughout the organisation for his dutifulness and quality assurance.

Environment and Roles: Best suited for positions that require strict adherence to rules because disregarding guidelines could be dangerous.

Interaction with others: Likely to ensure that team members are sticking to the rules.

Strength: Enforces regulations for quality, safety or legal reasons.

Potential weakness: May fail to question or change outdated or inefficient rules.

Involvement at Work << >> Personal Balance

Marc Cronbach is fully committed to his job. He does not separate his professional and private lives and would be willing to work on weekends or during holidays. He feels connected to his role and may think about projects during personal time. Unlike his more detached co-workers, Marc Cronbach may find it difficult to fully 'recharge batteries' during free-time.

Environment and Roles: Well suited for organisations with a culture of full dedication and commitment.

Interaction with others: May not recognise co-workers needs for a more balanced work and personal life.

Strength: Very devoted and willing to go the extra mile for the good of the company.

Potential weakness: May be susceptible to experience burnout.

Desire to Lead << >> Desire for Guidance

Marc Cronbach likes to direct teams across groups and functions. Charismatic in approach, he has the ability to make decisions and handle responsibilities for a team. Marc Cronbach is likely to take the lead on all projects that he is involved in. At ease when in charge, he knows how to delegate tasks even within large groups and multifunctional teams.

Environment and Roles: Very comfortable in positions that call for managing and directing others.

Interaction with others: Directive, actively sought for mentorship and development.

Strengths: Has a talent for leadership and is eager to take up responsibilities.

Potential weakness: May have difficulty reporting to a superior.

Need for Action << >> Need for Reflection

Marc Cronbach has a strong preference for short-term projects that demand immediate action. He tends to zero-in on a problem and devise practical solutions. If there is immediate gain, he is not concerned with long-term investment but is focused on the 'here-and-now'. Marc Cronbach is at his best when working on projects and tasks that bring about quick and concrete results.

Environment and Roles: Likely to excel in organisations characterized by a constant fast-pace of work that require speedy decisions.

Interaction with others: Emphasises the importance of addressing imminent issues and likely to motivate team members to act.

Strength: Very dynamic and action-oriented.

Potential weakness: Might not take into consideration the long term consequences of his actions.

Ambition << >> Humility

Very ambitious, success is extremely important to Marc Cronbach. He is highly competitive and equates progress with rapid professional growth. Driven to succeed, he actively seeks opportunities to advance in the organisation. Marc Cronbach is very unlikely to miss any chance that may help him to move up the career ladder.

Environment and Roles: Likely to thrive in organisations that are highly pressurised and competitive.

Interaction with others: Colleagues are likely to perceive him as driven and career-focused.

Strengths: Willing to go above and beyond to succeed.

Potential weakness: May be ruthless in order to progress.

Autonomy << >> Team Work

Very independent, Marc Cronbach likes to make decisions and work on his own without seeking external advice or opinions. He enjoys being self-reliant and seeks to work on projects where he is able to generate ideas and define how to execute tasks autonomously. Unlike his more collaborative colleagues, he may feel restricted when involved in teams.

Environment and Roles: Well-suited for projects that require self-reliance and individual focus.

Interaction with others: Colleagues are likely to perceive him as solitary.

Strengths: Very independent, does not require group support to finish projects.

Potential weakness: Likely to struggle when working in teams.

Altruism << >> Individualism

Highly altruistic, Marc Cronbach is dedicated to helping others. Generous by nature and always ready to lend a hand, he is sensitive to the needs of those around him and wants to be of value to others. For him, professional achievements need to be based on social and humanistic values. At work, Marc Cronbach focuses on issues such as the well-being of others and tends to get involved in projects that are focused on developing these.

Environment and Roles: Likely to thrive in organisations that actively promote social responsibility and people development.

Interacting with others: Very friendly and perceived by peers to be trustworthy and selfless.

Strength: In tune with and responsive to the needs of people.

Potential weakness: People may interpret his helpfulness as interference.

Novelty Seeking << >> Familiarity Seeking

Marc Cronbach seeks change and innovation. He is very inquisitive, conceiving original ideas and ways of improving established methods. Marc Cronbach is likely to take risks in order to come up with creative solutions. He is constantly looking to learn new things and invent novel approaches.

Environment and Roles: Thrives in changing and diverse settings that require experimental ways of working.

Interaction with others: Likely to inspire others with cutting-edge ideas.

Strength: Committed to innovation and improving outdated practices.

Potential weakness: May disregard flaws of new methods for the sake of novelty.

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