Profile:Match2™

Technical Manual

by Psychological Consultancy Ltd

8 Mount Ephraim, Tunbridge Wells, TN4 8AS
Telephone: 01892 559 540

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What Profile:Match™ Does

For any individual, personality has an impact on job success. Profile:Match™ matches personality profiles with competency requirements, assessing the underlying temperament that accounts for the behavioural consistencies on which work effectiveness is based. Thus Profile:Match™ indicates to what extent an applicant's natural temperament is aligned with the requirements of the job, and to what extent they would have to adapt, modify or develop their natural temperament in order to succeed. By tapping into these fundamental individual differences in temperament, Profile:Match™ helps decision makers to objectively evaluate how well any applicant will meet the interpersonal and emotional demands of any role in an organisation.

Uniquely, Profile:Match™ creates a bespoke psychometric questionnaire around whichever combination of competencies the user defines as desirable for the position in question. Expert reports that describe how well a candidate meets the specified criteria are generated within minutes, identifying 'possible concerns' and providing objective, finely incremented 'match' ratings for each competency.

Evolutionary Psychometrics

Profile:Match™ makes the objective power of psychometrics accessible because it uses the everyday language of workplace competencies, enabling decision makers to be in control of the science. The power and precision come from advanced psychometric personality assessment technology, but the assessments are interpreted by the unique Profile:Match™ expert system and expressed in terms of the defined competencies required for any specified job.

The system was initially developed over a period of four years, during which time the Profile:Match™ concept has developed from a bespoke service offering hand-crafted reports, to a fully interactive web enabled expert system. The common theme throughout has been the provision of personality assessment feedback within the framework of the client's own competency framework.

The Technology

Profile:Match™ is an expert system based on psychometric and algorithmic technology. The psychometric underpinnings of the Profile:Match™ competency ratings are provided by an item bank of personality test items structured around the taxonomy of the Five Factor Model (FFM). The algorithms use sophisticated mathematical models to interpret scores on the personality scales. These interpretations draw from both the research relating performance and personality, and the expert judgement of highly experienced personality psychologists. The research to develop this instrument involved more than 15 companies including several multi-nationals and ranging across engineering, education, logistics, banking, insurance, market research and recruitment in the private sector and, in the public sector, local authorities and major government bodies.

CHAPTER 2: WHAT MAKES PROFILE:MATCH™ DIFFERENT?

Beyond Psychometrics

With the emergence of the Five Factor Model (FFM) of personality in the late 1980s and early 1990s, on the back of meta-analyses involving unprecedented volumes of data processing, personality assessment achieved a new coherence and consensus that has been further consolidated by the ensuing global research. The internet was on a parallel course. Following its commercialisation and the introduction of privately run Service Providers in the 1980s, it exploded into popular use in the 1990s, to deliver its dramatic and pervasive impact on culture and commerce – and, of course, on psychometric testing.

In 1999 PCL became the first UK test publisher to put substantive personality questionnaires online, pioneering many of the features that are now industry standards. PCL has played an influential role within the field of online psychometric testing ever since. We had the experience of psychometrics and internet systems necessary to bring these two technologies together in Profile:Match™, providing the trigger for an evolution of a new generation in online assessments.

Profile:Match™ reflects the integration of state-of-the-art psychometric personality assessment with the power, flexibility and reach offered by the internet. The internet had transformed almost every aspect of psychometric assessment but, by 2006, the basic structure of the assessment process remained unchanged - personality questionnaires had simply been relocated from paper pages to web pages. Clearly, integration of these two powerful and rapidly evolving technologies was capable of delivering more than this. Profile:Match™ was the result of some radical 'blue sky' thinking – a willingness to take everything back to basics and to rebuild from scratch. Many professional, service and technical issues were involved, but several intertwined themes emerged that were of particular importance. These are each briefly introduced below under the headings Literal vs Inferential Interpretation, Combination vs Fragmentation, Competency Metrics, Tailored Assessment and User Interface. This is followed by an introduction to the components of Profile:Match™.

Literal vs Inferential Interpretation

There appears to be an important distinction amongst currently available occupational personality questionnaires between the extent to which their approach is predominantly either literal or inferential. This distinction is related to their rationale and whether any theory or model of personality is involved, with the former sometimes being described as 'rationally derived' (Baron,1996, Barrett & Hutton, 2000).

Questionnaires in the literal camp tend to be made up of large numbers of work-place related scales (e.g. Data Rational or Detail Conscious) rather than scales related to any particular model or theory of personality. These scales often seem nearer to competency statements than to personality per se; they use direct, transparent self-rating questions (e.g. "I enjoy numerical problem solving"), and report their results in the same way, closely reflecting the statements endorsed ("Sarah Sample likes working with numbers"). In this approach, little inference or interpretation is called for, and there is little or no emphasis on scale interactions.

The inferential approach questionnaires are typically based on a theory or model of personality, often associated with the broader context of personality research (e.g. trait theories, humanistic, psychodynamic or Jungian theory

or, more recently, the Five Factor Model - FFM). The scales of these questionnaires (e.g. neuroticism or self-esteem) reflect a view about the structure of personality. They will often include questions that may seem only obliquely related, or even unrelated, to any scale (e.g. 'I know why stars twinkle'), but which have been shown empirically to 'work' and to contribute to assessment of that characteristic. The use of this style of personality questionnaire relies, to a considerable degree, on skills of interpretation. Firstly, inferences may be drawn that reflect the wider understanding of the construct measured, but about which no specific questions may have been asked (e.g. that low scorers on a scale of Emotional Stability will be moody and sensitivity to criticism). Secondly, inferences are required to link the personality characteristics measured to the world of work and their implications for different work roles (e.g. what might be the implications for a sales role of a low Extraversion score combined with a high Conscientiousness score?).

Our impression is that literal style personality questionnaires are positioned closer to the work situation and have a survey like quality, while inferential style questionnaires are positioned closer to the roots of personality theory and academic research.

Combination vs Fragmentation

Another aspect of styles of personality assessment that particularly interested us was an apparent trade-off between numbers of items underpinning literal questionnaire scales (where the approach requires that the total domain should be fragmented into ever larger number of scales), compared to the number of items contributing to inferences drawn from inferential questionnaires (where more questions underpinned each scale, and where the expectation was that inferences may be drawn from the combination of two or more scales).

Our long association with the Hogan Personality Inventory (HPI) had added a decade of practitioner FFM experience. In research projects designed to capture the distinctions in personality between the best and the rest using the FFM based Hogan Personality Inventory (HPI), we had the opportunity to explore fragmentation using criterion keying of small sub- theme item clusters (referred to as HICs) on the basis of empirical studies with relatively small occupational samples. Our experience was that these relationships were often quite unstable, requiring frequent periodic review and adjustment as data accumulated. The alternative solution of making predictions on the basis of primary scale combinations (interactions) generally proved more robust, and benefited both from the numbers of items involved, the established stable properties of those scales and the accumulated knowledge and experience associated with the widely recognised personality variables involved. Our preference for combining scales over fragmentation of the personality domain, combined with our concerns about literal tests based on vague or arbitrary taxonomies, and measuring constructs remote from personality research led to the development of Competency Metrics (CM).

Competency Metrics (CM)

The Competency Metrics (CM) approach was a consequence of addressing client requirements for personality assessments to be mapped onto their own competency frameworks. This is an increasingly popular demand that has the benefit of feeding personality assessment results seamlessly into competency-based interviews, appraisals and assessment centres. A fuller discussion of Competency Metrics (CM) has been published (Trickey, 2007) and we restrict ourselves here to the main principles.

CM is an objective, mathematical technique for generating inferences about competency by combining an individual's scores on two or more personality scales. We have popularised reference to the FFM factors as 'the primary colours of personality' (Trickey & Hogan, 1998, Bartram & Brown, 2005, Trickey, 2007). This analogy with primary colours reflects the fact that, in the visual world, it is possible to digitally create more tones and hues than can be discerned by the human eye from just three primary colours. Similarly, we propose that the complexity of experienced personality is best replicated by combining scales, rather than by fragmenting the personality domain. In other words, by viewing the FFM factors as primary colours to be mixed, it is possible to build metrics for any aspect of personality – and in so doing to underpin that metric with reassuring amounts of self-report data. An example might be that, rather than writing a new set of items for a measure of Charisma, one combines responses to items for Extraversion and Agreeableness.

CM generates competency ratings from self-report personality questionnaire responses. The underpinning mathematical algorithms are designed to generate ratings that indicate the extent to which a person's personality would be expected to impede or facilitate performance. Which personality scales are involved is determined initially by content analysis of competency definitions. The relationship (whether positive or negative, whether linear or curvilinear, and with what weighting) is then guided by a) existing research findings from FFM performance related studies, b) our own client based research over the past 20 years using FFM measures to predict performance, and c) criterion related research using Profile:Match™. Because their final application needs to be generalised and to have broad relevance, algorithm design for Competency Metrics necessarily combines research findings with expert judgement. However, because Competency Metrics are explicitly and numerically articulated, they become accountable in ways that are usually associated only with tests and questionnaires rather than with profile interpretation. In particular, the algorithmic approach to Competency Metrics means that profile interpretation is precise, objective, and consistent and can be subjected to ongoing reliability and validation research.

The algorithmic approach of Profile:Match™ also allows complex curvilinear relationships between personality and behaviour to be taken into account. The cases where a personality characteristic has a simple linear relationship with a behavioural or performance variable are rare. We have found that, in our organisational research, non-significant correlations may say more about the limitations of the statistical approach than about any lack of influence of the personality variables. For example, one might expect the personality variable of Sociability to correlate with performance in sales but, because in many cases, too much Sociability contributes to under-performance, a relationship that is actually strong but curvilinear yields a low, and possibly even negative, correlation.

Research at PCL investigating very low correlations between the Sociability scale of a Five Factor test and sales performance among recruitment consultants found a strong curvilinear relationship between these two variables. When the data was presented in an expectancy table it was very evident that the low negative correlation arose

because both very high and low Sociability were associated with low sales performance, whilst the high performers scored in the average and above average range on Sociability (see Table 2.1).

TABLE 2.1: Expectancy table showing variable impact of Sociability scores on sales performance

ANNUAL REVENUE GENERATED						
Sociability scores	£0-50K	£51-100K	£101-200K	£201-300K	£300K +	Average Revenue
Very High	5	12	17	4		116,854
High	7	7	20	3	4	136,105
Average	2	2	6	4		146,978
Low		3	5	2		130.671
AVERAGE ANNUAL REVENUE IN TOTAL SAMPLE = £133,185						N = 129

Correlation between Sociability & Annual Revenue r=.17

In general, extreme high scores or extreme low scores on almost any personality scale are a warning signal and both have the potential to lead to a decrement in performance. These relationships, lost when the emphasis is totally on correlation based techniques such as regression and factor analysis, can readily be reflected through CM algorithms.

In summary, the benefits of the CM approach are that:

- It converts self-report personality data to work-place performance predictions
- It eliminates inconsistency (and inequality) from profile interpretation
- It makes interpretation accountable to validation procedures
- It makes inferences about competency based on not less than 40 items
- It carries the psychometric properties of the questionnaire through to profile interpretation
- It accommodates complex curvilinear relationships between personality and behaviour
- It generates finely incremented competency ratings (T scores)

Tailored Assessment

By 'tailored assessment' we mean the selective use of only those parts of a personality questionnaire that address the specific competencies considered essential in the target role.

Personality assessment within an occupational context often involves using the same questionnaire for a number of different roles. Typically, the questionnaire will address the whole personality domain and will capture the characteristics of candidates as defined by whichever model or theory of personality that particular questionnaire reflects. But, of course, the personality requirements of different jobs will not all be the same and the first requirement of profile interpretation is to distinguish the scales that are most relevant to the role from those that are unimportant. In other words, in this traditional approach, relevant and irrelevant findings are all mixed together and it is the job of the expert to sort out which is which. To the trained practitioner there may be advantages in this but at the cost of complicating the process of interpretation and the accessibility of results that ultimately have to be conveyed to decision makers. One-off expert interpretations of profiles also face difficulties of consistency. However experienced the assessor, it will be impossible to guarantee a consistent focus and emphasis in the detailed interpretation of profiles across a group of shortlisted candidates. Any practitioner compiling reports individually must encounter these difficulties. In fact it was our experience in grappling with issues of consistency of interpretation that ultimately led to the development of Profile:Match™, Competency Metrics and Tailored Assessment.

Summarising the advantages of Tailored Assessments:
- Questionnaires presented only have as many items as they need to have
- Profile:Match™ users focus on the 'what are we looking for?' question from the outset
- Decision makers cannot be side tracked by irrelevant, but appealing, information
- All the results will be relevant to appointment decisions or development plans
- Information dovetails cleanly with competency based interviews, ACs, DCs, reviews

User Interface

In the past, when there was little consensus about personality assessment, many different instruments were in use, based on different models, rationales and theories of personality. Within an occupational context, profile interpretation seems to have relied heavily on the skills of the individual HR or psychologist practitioner involved and interpretation was viewed more as art than science. Usage and attitudes varied considerably between the US, the UK and Europe and, in contrast to the current high levels of usage, there was widespread scepticism. The re-discovery of the Five Factor Model (FFM) at the end of the 1980s introduced an impressive new level of consensus about personality testing. Building on the established adoption of Thurstonian style aptitude testing that had consolidated and quietly established itself amongst assessment practitioners after the second world war, now both personality and ability psychometrics have achieved a new mantle of consensus.

The issue of consensus is important. As technology becomes reliable and consensual it always becomes more widely understood, more accessible and easier to use. It goes through a 'commoditisation' process that takes it from the realms of complexity, specialisation and relative obscurity to the realms of everyday convenience and ease of use. The camera is a typical example. Originally an elaborate and unreliable process requiring considerable technical skill, it has now become a casual add-on to every mobile phone. All successful technology follows this route. Commoditisation puts the technology into the hands of those who want to use it, but who don't necessarily need to understand it. Computers followed a similar route from near incomprehensibility to child friendliness via the development of the mouse and graphical user interface, launched first by Apple in 1984 and subsequently by Microsoft with Windows 1.0 in 1985.

There is a potential parallel with psychometrics, although it is still at the early stages of commoditisation. Interpretation still requires high levels of skill, but access has been widened by the internet and by the use of product-specific training that obviates the need to understand the technology at the level required to develop psychometric instruments. We distinguish psychometricians and psychologists from other trained test users but many, and possibly most, of those who could benefit from the use of tests – those running small to medium size businesses who need to recruit staff, or families that need to employ cleaners, gardeners and child care and to bring them into their own homes – are still denied access, largely due to costs of training or of employing the specialist expertise required. It is inevitable though that, like the MS DOS operating system in early computers, the camera or the internet, psychometric systems will also be developed as user friendly utilities for use at work or at home.

Today's psychometric products already have more popular appeal than their predecessors and are less technical in their presentation and usage. However, there is room for far greater attention to user interface issues. In the original design of Profile:Match™, and in subsequent revisions of the website, every effort has been made to enhance access and ease of use. The decision to provide both a user interface and a reporting system entirely within the vernacular of competencies contributes to the accessibility and utility of Profile:Match™.

Components of Profile:Match™

1) Personality Profile

Profile:Match™ personality profile assesses a person's underlying temperament; whether, for example, they are outgoing or shy, risk-taking or cautious, passionate or unemotional. Such characteristics explain the consistencies in a person's behaviour and, ultimately, determine their suitability for particular kinds of employment or to make individuals aware of their areas that could be developed. There are ten personality constructs within Profile:Match™ overall, all of which are based on the Five Factor Model of Personality. The personality profile illustrates the scores obtained by individuals, and describes the implications of those scores for their behaviour.

2) Competency Profile

The Profile:Match™ competency profile goes a step further than the personality assessment alone. The competency profile indicates to what extent an applicant's natural temperament matches the requirements of the job, and to what extent they might need to moderate, control or develop their natural temperament in order to succeed. It is at this point that the assessment combines aspects of the personality profile mentioned above to predict how that individual is likely to perform at work.

3) Personal Development

There is a tendency for us all to presume that the person we believe ourselves to be is somehow set and unchangeable. Throughout childhood and early adulthood we change and develop, and the rationale of this report is that we can get these development processes kick started again. We all have to manage and control our behaviour to make ourselves effective in various ways, and most people can improve this personal performance. The Profile:Match™ Personal Development Report offers an authoritative alternative viewpoint against which the examinee can review their established self-perceptions, and can revise them to set new goals.

4) The Job Analysis Survey (JAS)

In Profile:Match™ the most important task faced by the end user is to identify which of the competencies in the Profile:Match™ competency library are critical for high performance or otherwise non-negotiable. Because these are the only decisions required to set up a Profile:Match™ assessment, the system includes a Job Analysis Survey to assist the user. It is recommended that subject matter experts (i.e. those who are knowledgeable about the job role) complete the JAS in order to derive the most suitable competencies.

5) Profile:Match360™

Profile:Match360™ delivers multi-perspective feedback tailored to the competencies underpinning high performance. It aims to dramatically increase the utility of employee evaluations by ensuring contributions based on a variety of working relationships. In this way employees can increase their self-awareness of both their strengths and limitations and work on developing themselves through the full employee life cycle.

6) MATCH:UP™

MATCH:UP™ is a personal development planning tool designed to complement both the Profile:Match™ Personal Development and 360° Feedback reports. Effective personal development starts with a deeper awareness of which attributes are at the unchangeable core of our being and which are adopted or acquired along the way. An understanding of this is key, because these elements can always be managed to better effect.

The programme offers the opportunity to improve competencies and interpersonal performance, building on the sound foundation of informed self-awareness. MATCH:UP™ aims to identify priority areas for development and to set out a route map that will get the end user to where they need to be.

There are four parts to the MATCH:UP™ programme:

Part 1: Goal Setting
Part 2: Strategy
Part 3: Clearing the Decks
Part 4: Implementation

By working through each section, MATCH:UP™ will enable the end user to build their own step-by-step Personal Development Plan by setting specific goals that allow them to identify and harness the positive aspects of their temperament, and to manage less favourable aspects in accordance with desired development goals. The ultimate aim should be nothing less than Self Actualisation.

CHAPTER 3: DEVELOPMENT OF THE PERSONALITY SCALES

Over 10,000 Profile:Match™ reports have been generated over the past 9 years, some 3000 of these in automated form over the internet in the past year. This experience has provided the data needed to verify the measurement characteristics of the system, the coherence and reliability of the resulting competency ratings and the relationship of these ratings to performance, assessment centre data, and other personality measures.

Description Of The Profile:Match™ Item Bank Scales

Underlying the measurement for the Profile:Match™ system are the items contained in the Profile:Match™ item bank. The core of this item bank contains personality test items structured around the taxonomy of the Five Factor Model (FFM). In the Profile:Match™ item bank, each of the FFM scales has been divided into two on rational grounds in order to meet the requirements of the algorithmic processes that generate competency ratings. This is a pragmatic strategy intended to add to the scale interaction possibilities required to pursue the combination (vs fragmentation) strategy for scale interpretation. It is our contention that granulation in personality descriptions should be possible by recombining FFM elements, and that this is a better alternative than to proliferate scales or facets. Better, because it reflects the inferential nature of self-report personality assessment, and it means that inferences are based on far more data than is the case when new scales, based on homogenous item groups, are devised. The latter approach tends towards more literal and transparent personality assessment.

The resulting structure of the scales is as follows:

Profile:Match™ item bank scale	FFM related dimension
1. Self-Esteem	Emotional Stability
2. Composure	Emotional Stability
3. Sociability	Extraversion
4. Assertiveness	Extraversion
5. Sensitivity	Agreeableness
6. Accommodation	Agreeableness
7. Compliance	Conscientiousness
8. Perfectionism	Conscientiousness
9. Imagination	Openness/Culture
10. Studiousness	Openness/Culture

Self-esteem

This scale is concerned with an individual's self-esteem and the extent to which they are self-confident, upbeat and optimistic or, conversely, are self-conscious, vulnerable and apprehensive.

Because they probably assume that other people will respond positively to them, high scorers are likely to be at ease with themselves, relaxed and self-assured. They should have few doubts about the value of their own views or their ability to communicate their ideas. They will probably assume that others will be interested in what they have to say and they will not be afraid to voice their opinion or to make a contribution to a discussion.

Extreme high scores may indicate that the individual is so at ease and self-confident that they may come across as smug, opinionated or arrogant.

Low scorers on this scale are likely to be self-critical, mistrustful of others, generally worried, anxious and unsure of themselves. Because such people probably assume that others are not interested in what they have to say, they may dread being the centre of attention, and would probably worry about giving presentations or addressing a group.

Very low scorers may at times be socially incapacitated by a fear of being embarrassed or making a fool of themselves.

Composure

This scale is concerned with the extent to which individuals are even-tempered, unemotional and remain calm and steady in the face of change or the unexpected or, conversely, display their emotions and react passionately to events.

High scorers will be even-tempered and will generally take life's ups and downs in their stride. They will seem comparatively calm in situations that unsettle most other people and their colleagues will appreciate their consistency of mood and their predictability. They will seem sensible and practical in their response and are unlikely to over-react to situations.

Very high scorers may be so unreactive and placid that they may appear unconcerned or unaware of other people's sensitivities – especially in dealing with the problems of others who are more emotional and who may be looking for empathy rather than for reasoned action plans.

Low scorers on this scale are likely to feel strongly about things, to be intense in their desires and to be passionate and enthusiastic about any issues that engage them – whether in a positive or a negative way. Such people don't cope well with disappointment, have difficulty in hiding the way that they feel and it is likely to be obvious to others when they disapprove, are apprehensive, or are irritated by or surprised about anything.

Extremely low scorers will be rather intense and easily disturbed by events. They are likely to be more variable and unpredictable in their moods and may at times be touchy, irritable and difficult to deal with.

Sociability

This scale is concerned with the extent to which individuals are outgoing, gregarious, and attracted towards opportunities for social interaction or, conversely, are self-sufficient, happy with their own company and relieved to get away from the social scene.

High scorers will have a need for company, for social interaction and for attention. They will especially enjoy working in a team situation and may be limited in the extent to which they can work in isolation. Such people are typically seen as friendly, talkative and engaging and they may also be socially competent. They enjoy being the centre of attention and like to think of themselves as socially skilled and entertaining.

Very high scorers are likely to have a very strong desire for the company of others and to be capable of relentless socialising. Such people are extravert and may seem overbearing and verbose in some situations, perhaps demanding too much attention from others.

Although some low scorers on this scale may be socially skilled and able to work effectively with others, especially if the realisation of their ambitions requires it, in general low scorers will relish opportunities to be on their own. They will probably be quite reserved and self-contained, even though they may contribute well in a team situation. Such people tend to prefer a more restrained social life involving a small stable group of people and can feel uncomfortable if required to operate in more socially demanding situations. Their reticence means that they are unlikely to engage in behaviours that draw attention to themselves and would probably prefer to maintain a low social profile.

Very low scores may indicate that the individual prefers their own company. They may be quite solitary by nature and reluctant to be drawn into settings where they need to interact with others on any regular basis.

Assertiveness

This scale is concerned with the extent to which individuals are determined to make their mark, are achievement oriented, competitive, assertive and energetic or, alternatively, are relaxed, easy going and difficult to energise, other than in current areas of interest.

High scorers have the desire to improve their position – whether or not they are confident in their abilities (as assessed by the Self-esteem scale), are very active and are uncomfortable when they are not occupied. They are opportunistic and persistent in pursuit of their goals and enjoy competitive situations and the opportunity to put their talents to the test. Their energy and ambition is likely to be reflected in their determination to raise their game and to address or compensate for any weaknesses that they are aware of in order to do what is necessary to succeed.

Extreme high scorers may be so focused on getting ahead in life that their commitment may be towards their individual career goals rather than to their organisation. Such people will be planning the next steps in their rise to the top.

Low scorers are leisurely and laid-back, or may be focused more on the content of their job than on advancing their status. They are likely to be relaxed and not particularly assertive or competitive. Some low scorers may well be concerned about advancing their knowledge and their expertise but others will be content to drift along or may be simply content with their job status and have no desire for further advancement.

Very low scores suggest that the individual will be uncompetitive and may be reluctant to exert themselves. Unless they are getting something fulfilling from their role, they may be lethargic and difficult to enthuse. Their careers are likely to drift according to opportunities that present themselves, rather than to follow a considered plan.

Sensitivity

This scale is concerned with the extent to which individuals are warm, friendly, approachable, sympathetic, forgiving, tolerant and concerned about others or, conversely, are more remote, cold, aloof, intolerant of others' shortcomings and more task than people focused.

High scorers are considered to be people persons and will be warm, and friendly. Their demeanour will be open and receptive. They will smile easily and readily demonstrate their interest in others during conversations. Their approachability and concern for others will be evident in a sympathetic countenance and their forgiving and tolerant nature. Such indviduals like people, are good listeners and enjoy putting their people skills into practice. They are generally liked by their colleagues who may be inclined to share worries and concerns with them. Depending on their social skills, they may seem empathic and quite engaging.

Extreme high scorers place great importance on showing concern for others and expressing sympathy for others will be very important. Such people may sometimes let their concern for others interfere with accomplishing what needs to be done from an organisational perspective.

Low scorers will not immediately appear friendly. They may even appear cold and distant at times. Their focus tends to be much more on their work or the specific tasks rather than on the needs and concerns of others. They do not appear to have a very positive disposition towards other people in general and may seem rather indifferent to the needs or sensibilities of others, perhaps believing that individuals should resolve their own problems without turning to others for help. Such people often seem unsympathetic, unforgiving and may be intolerant of or irritated by others' shortcomings. They are reluctant to work closely with others and may not be very effective working in teams. They are not very interested in listening to others, unless they already know them well or have a specific reason to communicate with them.

Very low scorers may seem aloof and difficult to get to know. They may have a generally low opinion of people or simply not be very interested in or attracted to others. Such people have little time for anything but the most purposeful and functional communications, do not engage in small talk and probably do not suffer fools gladly.

Accommodation

This scale is concerned with the extent to which individuals have a strong desire to be popular, are concerned about having harmonious relationships with others and are disinclined to criticise others or disagree with them or, conversely, are outspoken, unconcerned about disagreeing with people, more able to live with conflict and openly express their personal point of view.

High scorers are people for whom popularity and consensus will be very important. Such people dread being unpopular and may avoid contentious points of view or any form of conflict. Depending on their level of achievement-orientation, their need to be liked may make it difficult for such people to manage others or to address performance or disciplinary issues.

Very high scorers may have difficulty deciding what their own views are and in making decisions. They may use

extended processes of consultation to avoid the personal responsibility of making a final decision.

Mid-range scorers should come across as socially appropriate, neither abrasive nor sycophantic. Able to present unpopular or controversial views, or deal with sensitivity issues, but without seeming confronting.

Low scorers are their own person and will not easily compromise their point of view. They are likely to be forthright in their views and be unconcerned about unsettling people by expressing views that may be in conflict with them. They may well be respected for this degree of independence and, in some cases, for the ability to stand their ground.

Extreme low scores suggest someone who is very independent in their views and not easily influenced by peer or group pressures or by fashionable opinions.

Compliance

This scale is concerned with the extent to which individuals are conforming, obedient, anxious to comply with rules, expectations and procedures or, conversely, are individualistic, autonomous, unconventional, risk taking and non-conforming.

High scorers make very good corporate citizens. They may be fairly restrained and cautious and will want to align themselves with the values of the organisation. They are therefore very accepting of the established procedures and readily conform to codes of conduct. Such people are reluctant to confront their managers and will usually take the establishment view.

Extreme high scorers would be uncomfortable challenging corporate values and may be resistant to any sweeping changes. They would always be on the side of evolution rather than revolution.

Low scorers are more impulsive and spontaneous. These are people who are individualistic in their outlook and who are irritated or dismissive about petty rules and regulations. They are more than happy to embrace change and enjoy alterations and diversions from routine. Such people expect the right to challenge established procedures and will readily confront the powers that be when they feel things are ineffective or unjust.

Very low scorers may be quite difficult to supervise within any structured organisation. The sanctity of their individualism will always be more important to them than the organisation's rules and procedures. They will work best as entrepreneurs, sole traders or within a creative environment where individualism is a rite of passage.

Perfectionism

This scale is concerned with the extent to which individuals are thorough, planful, organised, attentive to detail and concerned about the quality of the detail of their work or, conversely, are careless and disorganised or concerned that provisions should be sufficient rather than optimal.

High scorers are very thorough and concerned to do everything to a high standard. They take pride in their work, pay careful attention to detail and are organised people with a high respect for craftsmanship. They will be offended by work that they consider to be careless or casual with the result that, at times, their products (whether services or physical entities) are often over-engineered and costly. Such people will have difficulty in working approximately even when, as at the beginning of a project, rough outlines may be desirable. They may seem rather inflexible and fussy about their work and how it should be done.

Extreme high scorers reflect high personal standards that may make such people critical of subordinates and difficult to please. Because they feel that few can be trusted to ensure the high quality that they demand of themselves, they have difficulty in delegating and tend to micro-manage subordinates. They may also seem very rigid and set in their ways.

Low scorers may well be concerned that tasks should be done as well as is appropriate, but are unlikely to be interested in the detailed finish. They are likely to place more emphasis on the big picture objectives of a task and whether they have been adequately met rather than worrying about whether the detail is correct. While they have a more flexible and adaptable approach to their work they are also likely to be less disciplined about how their work is organised.

Very low scores may indicate a casual regard for quality and a reluctance or lack of vigilance about meeting required standards but also a high degree of openness to different and new ways of doing things.

Imagination

This scale is concerned with the extent to which individuals are curious, questioning, imagination and full of ideas but easily bored or, conversely, are accepting, have narrow interests and can cope with repetitive routines.

High scorers will be seen as bright, interesting and as making an important contribution to workplace problem resolution and innovation. They will be curious about the way things work (processes and procedures as well as appliances and mechanisms), and will always be prepared to question whether they are optimal for the purpose in hand. Such people are continually running ‘what if’ scenarios through their minds and considering alternative solutions. They have wide interests, enjoy discussing and debating issues and may become jaded if tasks are narrow and repetitive.

Extreme high scorers will continually be seeing new perspectives on issues and may have so many ideas and interests that they have difficulty making decisions.

Low scorers have a more practical outlook, being more inclined to focus on an immediate workable solution to a problem rather than enjoying weighing up the pros and cons of various alternative solutions. They tend to be unquestioning and accepting of the processes and procedures that define their work role. They are likely to have narrow interests and to be unadventurous in trying new things. Such people cope well with repetitive routines and may have little expectation that work will be stimulating or challenging.

Very low scorers may follow work procedures well but will not want to rely on their own initiative in defining their contribution. They will probably be predictable and content to work at repetitive tasks.

Studiousness

This scale is concerned with the extent to which individuals are prepared to subject themselves to the discipline of learning from others, whether they want to know a subject, to research issues and decisions and enjoy learning for its own sake or, conversely, whether they are the sort of person who wants to find things out for themselves, are unreceptive to teaching or to advice, value learning only as a means to an end, may know a little about everything, and develop opinions and make decisions without thoroughly researching the issues.

High scorers are likely to be life long learners, to have some current area of interest where they either read in depth or have a formal educational commitment. They are knowledge oriented and intuitively get into research mode in relation to work and life decisions. They probably use the internet, or more traditional reference resources, on a frequent basis to learn what they can about a topic of interest – especially before making decisions. They may embrace restaurant, book or theatre reviews, consumer information or travel guides. Generally, they are the kind of people who will want to stay up-to-date with developments in their field and who will make decisions on a solid basis of knowledge. High scorers will want to be informed and in a work context this is likely to mean that they will spend time preparing for meetings or researching topics of relevance to their work.

Extreme high scorers probably have multiple qualifications and have wide interests but may be too concerned to always do things 'by the book' and may also be intolerant of others' lack of knowledge or understanding.

Low scorers may not be immediately attracted to learning. They may well be bright, intelligent people who nevertheless have difficulty in submitting themselves to the disciplines of formal learning – except as a means to an end. Their disposition will be to acquire sufficient knowledge rather than to possess complete mastery of a subject. Such people may find it difficult to accept instruction from others except under ideal conditions or with inspirational teachers. They probably prefer to learn on the job or by experience. They will not naturally be vigilant about keeping abreast of developments in their field and may be prepared to rely on general rather than specific knowledge to impress others.

Very low scorers may be quite resistant to formal learning and be proud of any achievements gained 'doing it their way'. They are likely to have a strong preference for 'street smarts' over formal qualification and may have some aversion to being advised by others.

Item Construction & Item Analysis

Development of the original items for the Profile:Match™ item bank took place between 2004 and 2005. Between 2010 and 2013 we undertook a further revision of a facet of the Assertiveness scale. This revision involved replacing six Assertiveness items with six new items that were more relevant for the scale. This process is detailed in Phase 5 below.

Phase 1

The first tranche of 125 items was trialed with 198 graduate applicants between June and November 2004. At this point there were 20 Self-esteem & Composure items, 17 Assertiveness, 14 Sociability, 15 Sensitivity and Accommodation, 14 Compliance and Perfectionism, 13 Imagination, 10 Studiousness, and 12 Consistency items (the Consistency scale being a check on the validity of the responses rather than a personality scale per se) plus 8 additional trial items covering the realms of Sensitivity and Accommodation and Studiousness. After calculating alpha coefficients for each scale and item scale correlations, 17 items were substituted across the scales. This revised set of 125 items was used in Phase 2.

Phase 2

From December 2004 to May 2005 Phase 2 of the Profile:Match™ item bank was trialed with 975 graduate applicants. The 125 items contained items being scored against the main scales plus some additional items that were being trialed to see if they had superior item characteristics. Again alpha coefficients and item scale correlations were calculated for each scale and every item. After this analysis we removed 3 items from the

Self-esteem and Composure scale, we removed one item from the Sensitivity and Accommodation scale and replaced it with one of the additional trial items, the Studiousness scale also had one item replaced, and the Consistency scale had two items removed. These items formed the basis of the questionnaire used in Phase 3 with additional trial items being replaced over time so that they covered all the 10 scales of the questionnaire.

Phase 3

Between May and September 2005 additional items were trialed for all 10 scales plus the Consistency scale in a rolling programme that cycled through Imagination, then Studiousness, then Compliance & Perfectionism and Sensitivity & Accommodation, then Self-esteem & Composure and Assertiveness, then Studiousness again, and finally Sociability and the Consistency scale. The total number of test administrations carried out in this period was 1135. At the end of this phase we had a test with 7 major scales, 3 of which were composite scales and which had the following internal consistency reliabilities:

1. Self-Esteem & Composure composite, 20 items, alpha .75 (sample n=255)
2. Assertiveness, 22 items, alpha .70 (sample n=255)
3. Sociability, 14 items, alpha .74 (sample n=675)
4. Sensitivity & Accommodation composite, 15 items, alpha .67 (sample n=152)
5. Compliance & Perfectionism composite, 14 items, alpha .70 (sample n=152)
6. Imagination, 13 items, alpha .72 (sample n=289)
7. Studiousness, 14 items, alpha .72 (sample n=60)
8. Consistency, 10 items, alpha .63 (sample n=71)

Phase 4

At this point we decided to split the remaining composite scales – Self-esteem & Composure, Sensitivity & Accommodation, and Compliance & Perfectionism – and to write additional items for these scales. The result was a 206 item questionnaire that was initially trialed with 127 working adults. At the end of Phase 4 we had a 206 item test with the properties shown in Table 3.2.

Phase 5

Between 2010 and 2013 we trialed items for two new subthemes on the Assertiveness scale. It had become clear that there was an overlap between the Social Confidence subtheme of our Assertiveness Scale and the Sociability scale. After much research and extensive literature reviews we decided to add two new subthemes – Activity and Achievement Orientation – to replace Social Confidence and to be added to the existing Assertiveness facets of Competitive and Leadership. We chose 3 items for each new subtheme that had satisfactory psychometric properties. There are now a total of 22 Assertiveness items with an alpha of .70 (sample n = 616).

In order to be confident that scores for Assertiveness would not dramatically change when the Social Confidence items were replaced with six new items, we conducted an equivalence test to compare scores on each scale. This analysis revealed that both Means and SDs for the original and revised Assertiveness scale were very similar. There was also a high correlation between the two scales giving us confidence that the scale is essentially measuring the same thing, but using improved items. The results of this analysis are presented in Table 3.1.

TABLE 3.1: Mean comparisons and correlation between original and revised Assertiveness scale

	Mean	SD	Correlation
Assertiveness original	12.63	3.16	R = .98***
Assertiveness new	12.69	3.16	

N = 298 ***P<.000

Measurement Quality Of The Profile:Match™ Item Bank Scale Statistics

The statistical properties of the scales in the Profile:Match™ item bank are shown below in the various tables. A key for the tables is also outlined below where the personality scales have been abbreviated.

Self-esteem - SE
Composure - CO
Sociability - SO
Assertiveness - AS
Sensitivity - SEN
Accommodation - AC
Compliance - COM
Perfectionism - PE
Imagination - IM
Studiousness - ST

Profile:Match™ Scale Statistics

Table 3.2 lists the number of items per scale, the mean score for each scale and its standard deviation. All 10 personality scales are listed here plus the Consistency scale which checks for inconsistent or careless responding.

TABLE 3.2: Profile:Match™ item bank scale means and standard deviations

SCALES	NO. ITEMS	MEAN	SD
Self-esteem	22	15.89	4.72
Composure	20	12.72	4.54
Sociability	20	10.55	4.28
Assertiveness	22	13.01	4.19
Sensitivity	20	16.31	3.20
Accommodation	19	7.69	3.47
Compliance	17	9.69	3.32
Perfectionism	20	14.52	4.03
Imagination	18	8.89	3.15
Studiousness	18	12.63	3.25
Consistency	10	9.52	0.66

N = 2191 for Assertiveness means and SDs
N= 10735 - 12349

TABLE 3.3: Intercorrelations between Profile:Match™ item bank scales at the scale level

SCALES	SE	CO	SO	AS	SEN	AC	COM	PE	IM	ST
Self-esteem	xx	.76**	.22*	.45**	.24**	-.41**	.08	.15**	-.11	.26**
Composure			.10**	.31**	.31**	-.25**	.25**	.29**	-.30**	.29**
Sociability				.49**	.07	-.29**	-.18**	.01	.21**	.18**
Assertiveness					-.11**	-.60**	-.10**	.15**	.05	.32**
Sensitivity						.20**	.27**	.15**	-.03	.12**
Accommodation							.25**	-.03	-.33**	-.18**
Compliance								.40**	-.33**	.11**
Perfectionism									-.25**	.30**
Imagination										.16**
Studiousness										xx

* p <.05 ** p < .01
N = 2191 for Assertiveness means and SDs
N= 10735 - 12349 for all other scales

Table 3.3 shows the intercorrelations between the 10 personality scales of the Profile:Match™ item bank. The intercorrelations between the Profile:Match™ item bank scales are mostly in the expected direction in that most of the scales find their highest correlation with the scale that relates to the same Five Factor dimension. For example, Self-esteem has its highest correlation with Composure, and Perfectionism has its highest with Compliance.

TABLE 3.4: Intercorrelations between Profile:Match™ item bank scales when re-scored as FFM composites

Scale	Factor 1 - ES	Factor 2 - E	Factor 3 - A	Factor 4 - C	Factor 5 - O
FFM-EMO	xx	.26**	-.08	.26**	.03
FFM-EXT			-.36**	.04	.16**
FFM-AGR				.23**	-.09
FFM-CON					-.07
FFM-CUL					xx

* p <.05 ** p < .01
N = 2191 for Assertiveness
N = 10735 - 12349 for all other scales

FFM-EMO=Five Factor dimension Emotional Stability measured by Self-Esteem & Composure
FFM-EXT=Five Factor dimension Extraversion measured by Sociability & Assertiveness
FFM-AGR=Five Factor dimension Agreeableness measured by Sensitivity & Accommodation
FFM-CON=Five Factor dimension Conscientiousness measured by Perfectionism & Compliance
FFM-CUL=Five Factor dimension Culture measured by Imagination & Studiousness

Intercorrelations were also calculated between the Profile:Match™ item bank scales once they were re-scored in their Five Factor pairs. Table 3.4 shows the results and while there are some significant correlations between some of the different Five Factor scales none of them are of a size to indicate that any scale is redundant.

TABLE 3.5: Factor analysis of the Profile:Match™ item bank scales

Scales	Factor 1 - ES	Factor 2 - E	Factor 3 - A	Factor 4 - C	Factor 5 - O
Self-esteem	.91**				
Composure	.93**				
Sociability		.87**			
Assertiveness		.80**			
Sensitivity			.89**		
Accommodation			.61**		
Compliance				.75**	
Perfectionism				.76**	
Imagination					.35**
Studiousness					.93**

* p <.05 ** p < .01 N=846

FACTOR LABELS: ES=Emotional Stability; E=Extraversion; A=Agreeableness; C=Conscientiousness; O=Openness

A Principal Components Analysis with a Varimax rotation, specifying 5 factors, was performed on the data from a sample of 846 working adults who had completed the questions in the Profile:Match™ item bank. The results are shown above in Table 3.5 and clearly support the expected Five Factor solution for the 10 personality scales in the core Profile:Match™ item bank.

TABLE 3.6: Factor analysis of the Profile:Match™ item bank scales (Woods, 2009)

Scales	Factor 1 - ES	Factor 2 - E	Factor 3 - A	Factor 4 - C	Factor 5 - O
Self-esteem	.90				
Composure	.94				
Sociability		.90			
Assertiveness		.79	-.35		
Sensitivity			.85		
Accommodation	-.33	-.46	.63		
Compliance			.42	.66	
Perfectionism				.89	
Imagination				-.53	.64
Studiousness					.89

* p <.05 ** p < .01 N=252

FACTOR LABELS: ES=Emotional Stability; E=Extraversion; A=Agreeableness; C=Conscientiousness; O=Openness

Subsequently, an independent factor analysis has been carried out by Woods (2009) as part of his study comparing a number of work-related personality inventories. Although an initial Principal Components Analysis indicated a four factor solution that when rotated displayed cross-loadings that deviated from our proposed five factor structure, when five factors were specified in the Principal Components Analysis a very similar result was

obtained to the one carried out by us. The results of this second factor analysis are shown in Table 3.6.

Profile:Match™ Group Differences

The information below outlines differences in scores across gender and age for each of the Profile:Match™ scales. Effect sizes were calculated and scores are reported for those which are of significance. Means, standard deviations and sample sizes for each scale are also presented in the tables below highlighting any differences across scales. The current sample is taken from individuals who have completed the Profile:Match™ questionnaire since 2005 and who are part of the UK sample.

Differences Across Groups

Differences between males and females, and those aged under 40 and those 40 and above were calculated. In order to appreciate the strength of the differences across Profile:Match™ scales between these groups effect sizes will be referred to. According to Cohen (1988) an effect size is defined as small when r=.10, medium when=.30 and large when r=.50. Effect sizes greater than or equal to r=.10 will be reported below.

Gender Differences

Females scored lower than males on both Self-esteem and Composure. There were small to medium effect sizes for both Composure (.22) and Self-esteem (.21). Both these scales relate negatively to the neuroticism scale from the Five Factor Model. The finding is consistent with previous research looking at gender differences among the FFM scores, which found that females tended to score higher than males on neuroticism (e.g. Costa, Terracciano and McCrae, 2001).

There were no real differences between genders on Sociability as only a very slight effect size (.08) was observed with males scoring slightly higher on Sociability than females. However a small to medium effect size was observed for differences in Assertiveness scores (r=.21). This finding is consistent with previous work by Costa et al. (2001), indicating males score higher than females on the Assertiveness facet of the Extroversion domain of the NEO PI-R.

Looking at the Profile:Match™ scales that relate to Agreeableness, no real gender differences were apparent in the Sensitivity scale. However, females scored higher on the Accommodation scale. A small to medium effect size was observed here (r=.20). This is consistent with the Costa et al. (2001) study, which found that females score higher on Agreeableness than males.

TABLE 3.7: Means, SEMs, standard deviations and sample sizes by gender

	Female				Male			
Scale	Mean	SEM	SD	N	Mean	SEM	SD	N
Self-esteem	14.82	.08	5.07	5528	16.87	.06	4.14	6046
Composure	11.71	.07	4.86	5931	9.69	.06	3.99	6393
Assertiveness	11.29	.06	4.27	1050	13.08	.06	3.93	1141
Sociability	11.01	.06	3.99	5578	10.11	.07	4.52	5887
Sensitivity	16.24	.06	3.42	5581	16.03	.05	1.96	6049
Accommodation	8.36	.06	3.61	5492	7.08	.05	3.22	5946
Compliance	9.71	.06	3.30	5959	9.69	.05	3.34	6389
Perfectionism	14.43	.07	4.17	5659	14.77	.06	3.88	6046
Imagination	8.91	.05	3.26	5920	8.88	.05	3.04	6307
Studiousness	12.25	.06	3.44	5114	13.06	.05	3.04	5302

Age Differences

There were few differences between age groups on the majority of scales. Those individuals under 40 scored higher on the Sociability scale than those aged 40 and over with a small effect size (r=.14). This finding is consistent with previous personality research (e.g. McCrae, et al., 2000). It was also the only difference found between age groups in a UK sample for a similar scale (Sociability) from the Hogan Personality Inventory (Hyde & Trickey, 1997). A main effect was also found for the Self-esteem scores (r=.13) where those over 40 scored higher on Self-esteem than those under forty. This is consistent with previous research, which found that self-esteem continues to increase up until the age of 60 (Orth, Trezesniewski, & Robin 2010).

TABLE 3.8: Means, SEMs, standard deviations and sample sizes by age

	Under 40				40 +			
Scale	Mean	SEM	SD	N	Mean	SEM	SD	N
Self-esteem	15.50	.08	4.84	7569	16.39	.09	4.47	2875
Composure	12.50	.08	4.61	8023	13.02	.09	4.22	3057
Assertiveness	12.06	.06	4.20	1644	12.21	.09	4.28	537
Sociability	10.90	.06	4.22	7536	9.84	.09	4.34	2837
Sensitivity	16.04	.05	3.30	7602	16.23	.06	3.10	2895
Accommodation	7.88	.05	3.47	7529	7.39	.07	3.48	2786
Compliance	9.63	.05	3.35	7999	9.76	.07	3.30	3086
Perfectionism	14.77	.06	4.02	7717	14.22	.09	4.41	2851
Imagination	9.01	.04	3.09	7927	8.62	.07	3.27	3047
Studiousness	12.83	.05	3.24	7035	12.22	.07	3.32	2631

Development Of The Profile:Match™ Short Form Questionnaire

The short form version of Profile:Match™ was introduced for two reasons. Firstly, individuals taking the Profile:Match™360 assessment are required to complete the personality component of Profile:Match™, as well as self rating their own performance via a second questionnaire. It was felt there was a need to reduce the length of the personality questionnaire to reduce the amount of time it took individuals to complete the assessment. Secondly, there were a number of users who felt that a short form version was better suited to their recruitment needs. The sections below outline the development of the short form questionnaire.

Phase 1

A methodical approach consisting of three steps was taken to reduce the number of items in each of the 10 personality scales. The first step was to examine the p-values of the scale and the Corrected Item-Total Correlations, the second was to consider the internal reliability and the final step was to look at the diversity of the scales.

P-values measure the number of people that have responded in the 'correct' manner for an item. They are commonly expressed as a percentage, with items that no one responds to in the desired manner having a score of 0% and those that everyone answers in the desired way scoring 100%. They are also expressed as a proportion of 0.0 to 1.00. The aim was to ensure that items with the most balanced p-values (i.e. had greatest diversity in the way that people responded) would be kept as short form items.

Secondly, corrected Item-Total Correlations indicate the extent to which an item relates to the total score. Good items relate strongly and have a high positive correlation. It was therefore decided that the items with higher Corrected Item-Total Correlations should be included in the short form version of the questionnaire.

Third, the scale's internal reliability was considered. As the internal reliability of a scale generally decreases as the number of items decrease, it was important to bear this in mind as items were removed. The aim was to take items out, while also ensuring that the internal reliability was as high as possible.

Another consideration at this stage was the diversity of the scales, looking at the number of subthemes in each. For example, Sociability is made up of 4 subthemes such as being exhibitionistic and being talkative. The item removal process aimed to ensure a good balance of each scale's subthemes despite having smaller item numbers.

This process resulted in the 206 personality items being reduced to 114. The final short form solution had a fairly even balance of positive to negative items. However, some scales were predominated by either positive or negative items. Compliance was composed of mostly negative items, although this pattern was also evident in the long form of the questionnaire. The final short form version of Imagination had only 1 negative to 9 positive items and Studiousness had 1 negative to 9 positive. The reasoning behind this was that the Corrected Item-Total Correlations for 4 out of the 5 original negative items for Imagination and 2 of the negative Studiousness items were not as robust as some other items for this scale.

Phase 2

Because the 'Social Confidence' subtheme of the Assertiveness scale was removed from the long form version of the questionnaire in 2013, this also had impliactions for the short form. We therefore replaced the four 'Social Confidence' items that had been on the short form version with 2 items from each of the new subthemes 'Activity' and 'Achievement Orientation'. All four items had satisfactory psychometric properties.

TABLE 3.9: Item numbers, means, standard deviations and sample sizes for the 10 revised Profile:Match™ short form questionnaire scales

Scale	No. Items	Mean	Standard Deviation	N
Self-esteem	11	8.49	2.38	11576
Composure	10	7.68	2.75	12326
Assertiveness	11	7.66	2.43	2191
Sociability	11	6.41	2.57	11495
Sensitivity	9	7.07	1.83	11631
Accommodation	10	3.88	2.04	11438
Compliance	10	6.19	2.18	2191
Perfectionism	11	8.40	2.58	12228
Imagination	10	4.97	2.27	11706
Studiousness	10	7.74	2.45	10735

The Cronbach Alpha statistics measuring Internal Reliability for scores on the revised questionnaire are presented in Table 3.10. As can be seen, some alpha coefficients fell below the criteria for adequate reliability of .70 (Nunnally and Bernstein, 1994). Internal reliability relies partly on the number of items in a scale, therefore this was to be expected when reducing items. Three out of the ten scales had reliability coefficients below .70, but none fell below .60, the unacceptable level (DeVellis, 1991). Higher values could have been achieved, but at the expense of the depth, or the diversity, of the construct, which was not desired.

TABLE 3.10: Cronbach alpha coefficients for the short form Profile:Match™ personality scales

Scale	Alpha Revised	N
Self-esteem	.75	11576
Composure	.78	12326
Assertiveness	.70	2191
Sociability	.73	11495
Sensitivity	.63	11631
Accommodation	.60	11438
Compliance	.70	2191
Perfectionism	.79	12228
Imagination	.63	11706
Studiousness	.70	10735

Correlations were also carried out to assess the similarity between the short and original versions of the questionnaire. These are presented in Table 3.11 Very strong correlations were found for all scales, suggesting that despite having fewer items, the short form questionnaire produces very similar results to the original longer version.

TABLE 3.11: Correlation coefficients between the short and long versions of the Profile:Match™ questionnaire

Scale	Long and short version correlation
Self-esteem	.89
Composure	.93
Assertiveness	.83
Sociability	.91
Sensitivty	.83
Accommodation	.83
Compliance	.88
Perfectionism	.88
Imagination	.88
Studiousness	.89

CHAPTER 4: DEVELOPMENT OF THE JOB ANALYSIS SURVEY

In order to develop a clear picture of the person ideally suited to the job, organisations need to analyse the characteristics needed to meet job requirements - job analysis. This process makes selection more precise; saving money and resources in the long run. Research suggests that job analysis may often be overlooked in the rush to advertise a job as soon as a vacancy is created (Smith 1994). This, it is suggested, accounts for many of the mistakes made in employee selection. Evidently, you dramatically increase the chances of finding something when you know what you are looking for.

Job analyses have typically focused on Knowledge, Skills and Abilities. Research indicates that personality characteristics are rarely emphasised in any well-established job analysis method (Hogan & Rybicki, 1998). The traditional view emphasised actions required to perform services or production processes (e.g. Revised Handbook for Analyzing Jobs, 1991). This "work behaviours" approach assessed the ability to carry out observable tasks (e.g. time and motion studies). As a result, there was little concern about personality constructs whose effects can only be observed indirectly. This perspective neglected the utility of well-constructed personality measures when carrying out job analyses.

However, since 1990, there has been renewed interest in personality assessment in selection and assessment. This was fuelled by large quantitative (Barrick & Mount, 1991; Hough, Eaton, Dunnette, Kamp & McCloy, 1990; Ones, Viswesvaran & Schmidt, 1993) and qualitative (Goldberg, 1992; Hogan, 1991; Schmidt, Ones & Hunter, 1992) reviews concluding that personality scales organised around the Big Five factors of personality were consistently related to job performance. Profile:Match™ is designed to reflect the dimensions of these Big-Five factors.

In 2006, Psychological Consultancy Ltd. developed a job analysis procedure that evaluates Big Five personality-based job requirements while also providing a link to Profile:Match™ personality scales and competencies. The outcome was a successful integration of job analysis, performance appraisal and personality assessment. The Job Analysis Survey (JAS) expands on traditional job analysis techniques by employing a taxonomy of personality based performance characteristics – i.e. competencies. The survey quickly compiles information from people who know the job well - current jobholders, supervisors, managers and HR professionals, referred to collectively as Subject Matter Experts (SMEs). The process identifies which of the competencies in the Profile:Match™ competency library are critical for high performance in the targeted role.

In 2012, we compiled the results from hundreds of Job Analysis Surveys. From this pool of Job Analysis Surveys, we have been able to (a) construct job specific templates by analysing which competencies are consistently chosen for specific job roles, and (b) to ascertain which competencies are selected more or less frequently than others. The pool of JAS results consisted of a total of 10,282 competency selections. Table 4.1 contains the job specific Profile:Match™ templates we have constructed on the basis of this research and lists the competencies chosen as relevant for each role, e.g. Business Development, Sales, Nursing, Finance. This information gives the user the option to choose from a range of validated templates when tailoring their Profile:Match™ assessments or to construct their own competency template for the job.

However, it is still important that organisations recognise that no two job roles are exactly the same. For example, differences will invariably exist between the role of project manager at an engineering company and the same role at an IT company. It is important to bear in mind that these templates are regarded as

general and broad templates to model users' own selected competencies against rather than accepting them as perfect representations of their selection requirements.

TABLE 4.1: Profile:Match™ templates derived from a compilation of JAS results

RECRUITMENT CONSULTANTS	PROJECT MANAGEMENT
Communication Skills Planning and Organising Self confident Problem solving Customer Focus Persuasive Communication	Project Management Planning and Organising Persuasive Communication Decision Making Delegating
LEARNING AND DEVELOPMENT	**EVENTS MANAGER**
Developing Others Communication skills Resilience Information Management Planning and Organising	Communication Skills Delegating Project Management Resilience Team Orientation
BUSINESS CONSULTANCY	**NURSING**
Communication Skills Interpersonal Skills Flexibility Problem Solving Strategic Awareness	Interpersonal Skills Resilience Flexibility Motivation Team Orientation
CALL CENTRE	**BUSINESS DEVELOPMENT**
Customer Focus Interpersonal Skills Resilience Team Orientation Problem Solving	Persuasive Communication Results Orientation Analytic Strategic Awareness Communication Skills
CUSTOMER SERVICE	**SALES**
Customer Focus Communication Skills Problem Solving Interpersonal Skills Flexibility	Results Orientation Customer Focus Communication Skills Motivation Persuasive Communication Resilience
MARKETING	**HUMAN RESOURCES**
Creative Analytic Planning and Organising Persuasive Communication Results Orientation	Persuasive Communication Planning and Organising Decision Making Interpersonal Skills Resilience

ADMINISTRATION	ACCOUNTING
Interpersonal Skills Planning and Organising Attention to Detail Customer Focus Flexibility	Attention to Detail Results Orientation Problem Solving Information Management Decision Making
TEAM LEADERSHIP	**MANAGEMENT ROLES**
People Management Decision Making Results Orientation Planning and Organising Communication Skills	Results Orientation Decision Making People Management Planning and Organising Resilience Communication Skills

In our analysis, we also looked at how frequently competencies have been selected from past job analyses. Table 4.2 lists competencies in order of how often they are selected as relevant for a job. These findings are interesting as it lets us distinguish between those competencies that are more broadly applicable to various job roles (e.g. Results Orientation) and those that are more specific to certain job roles (e.g. Leadership Potential). The results also revealed that the competencies that were chosen most often were all about getting things done, achieving goals, and arriving at solutions.

No matter what the job role almost any employer would look for competencies such as Problem Solving, Results Orientation and Motivation in an employee. On the other hand those competencies selected less often are more about personal attributes such as Self-Confidence and Commitment and more specialist competencies such as Information Management.

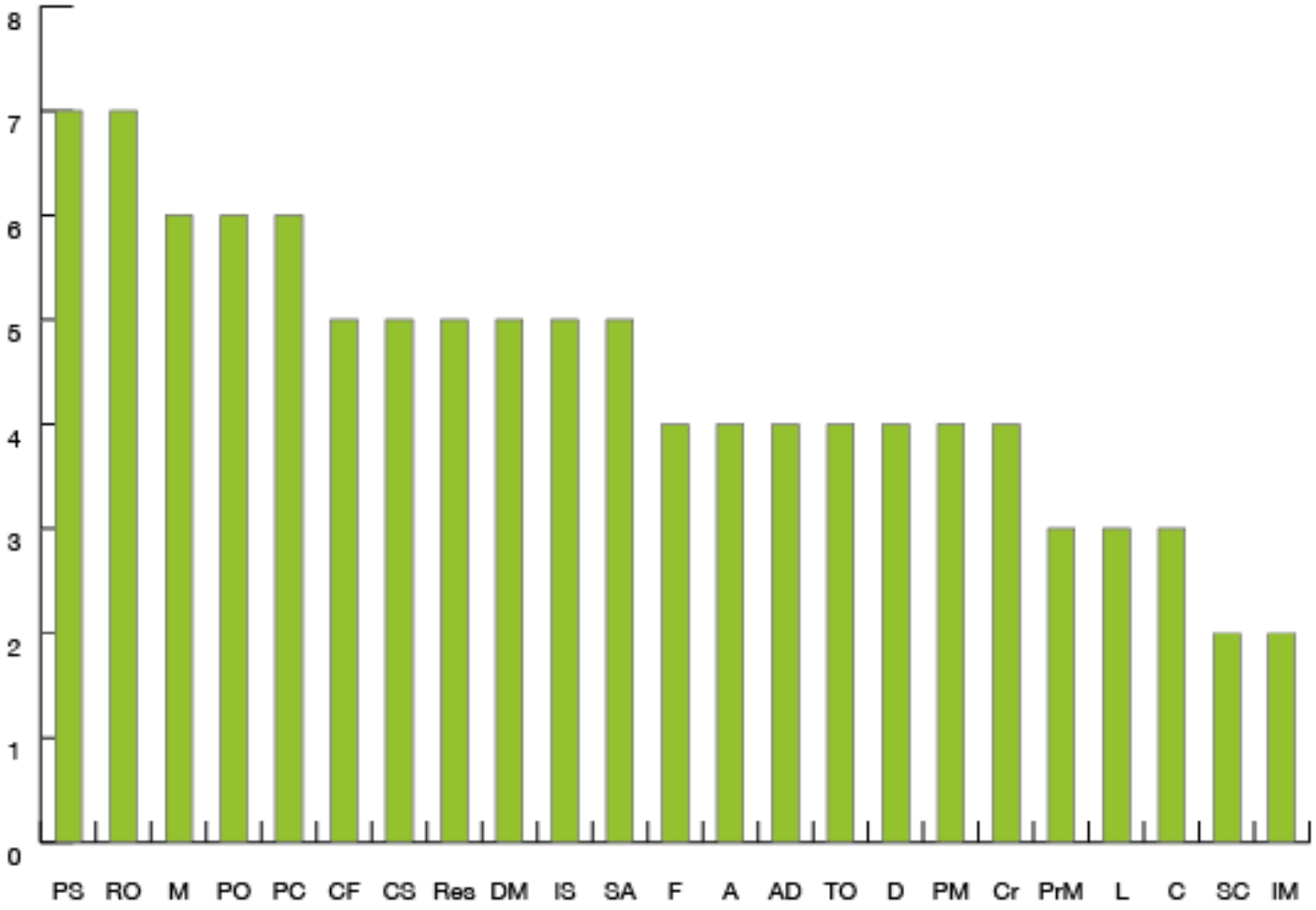
Figure 4.1 illustrates how commonly selected each competency is in relation to all other competencies as a percentage (i.e. Results Orientation makes up 7% of all competencies derived from Job Analysis Surveys).

TABLE 4.2: Competencies ranked in order of frequency of selection across all job roles

RANK	COMPETENCIES RANKED IN ORDER OF PREVALENCE	NUMBER OF TIMES COMPETENCY SELECTED FOR A JOB
1	Problem Solving (PS)	600
2	Results Orientation (RO)	595
3	Motivation (M)	586
4	Planning & Organising (PO)	586
5	Persuasive Communication (PC)	583
6	Customer Focus (CF)	560
7	Communication Skills (CS)	557
8	Resilience (Res)	551
9	Decision Making (DM)	533
10	Interpersonal Skills (IS)	525
11	Strategic Awareness (SA)	450
12	Flexibility (F)	443
13	Analytic (A)	397
14	Attention to detail (AD)	397
15	Team Orientation (TO)	379
16	Delegating (D)	377
17	People Management (PM)	371
18	Creative (Cr)	362
19	Project Management (PrM)	326
20	Leadership Potential (L)	287
21	Commitment (C)	274
22	Self Confidence (SC)	252
23	Information Management (IM)	209

Total Competencies = 10,282

FIGURE 4.1: Profile:Match™ Job Analysis Survey competency selections expressed as a percentage of total JAS Competencies Selected



CHAPTER 5: DEVELOPMENT OF THE VALUES SCALES

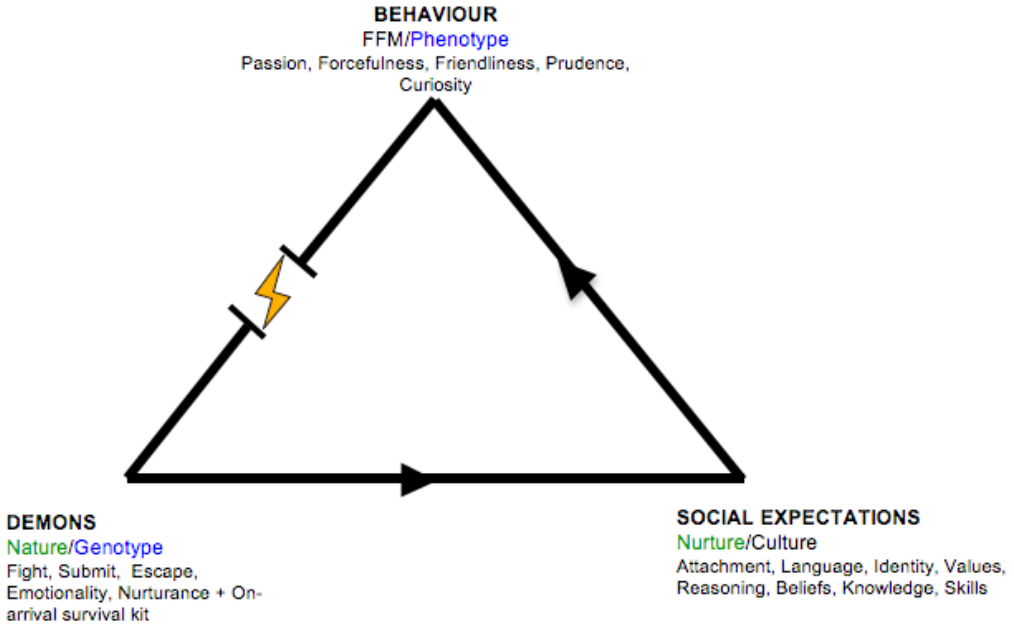
Rationale And Conceptual Development

The term 'personality' has many connotations in everyday use and, within academic psychology, it has been associated with many different models and theories about individual differences. Personality questionnaires have made very different assumptions about the features that characterise individuals and make each person quite distinctive. The result of these rivalries and inconsistencies in the intended meaning of the word 'personality', and the lack of conceptual clarity, contributed to a confused picture at both academic and professional levels. Writing on this topic in 1990, Hofstee commented on personality inventory items as being: "a hodgepodge of descriptions of overt and covert reactions, trait attributions, wishes and interests, biographical facts, attitudes and belief, descriptions of others' reactions to the subject and more or less bizarre opinions".

This confused picture was significantly influenced by the re-emergence of the Five Factor Model (FFM) in the late 1980s and its rapid global acceptance. Being non-theoretical and agnostic, in the sense that it was not based on any particular theory of personality, it brought a degree of order amongst the competing schools of thought that had fuelled the factional tensions of previous decades. The unequivocal positioning of the FFM as a measure of phenotype provided a clear reference point for other assessment measures.

A further step towards conceptual clarity is achieved through the distinction between temperament and values. The term temperament emphasises the deeply rooted core of personality and the contribution of Nature. Values, which are cultural and acquired, reflect the contribution of Nurture. Both contribute to the FFM.

The 'triarchic model' illustrates these relationships.



Human nature, as reflected in the FFM, is accessible through the ways in which humanity expresses its experience of others. This is conveyed through the totality of the vocabulary that has been utilised for that purpose. Our vocabulary about others operates as a sounding board that amplifies those attributes of others that are most consequential to us. The FFM is described as 'lexical' (Goldberg, 1981, 1982) for this reason. The source of these notable human attributes is partly genetic and these influences play themselves out throughout the long process of maturation. The full maturity of the brain marks the end of adolescence and the start of adulthood. From that point on, and until the more rapid decline of later years, personality remains relatively constant. Another formative factor appears to be in the processes of attachment (Bowlby, 1973), the quality of nurturing and the ways in which acculturation is absorbed as a feature of personal survival. If the term 'temperament' captures one feature at the core of personality, then the impact of cultural values is a likely candidate for a second. Certainly, through the specificities and subtleties of language and the unspoken assumptions that give coherence to the social behaviours that define the climate of nurture, a process of acculturation gets under way, almost from the point of conception.

There is no universally recognised taxonomy of values. We have not yet embraced all the possible forms of culture of which our species is capable. What we do know from the past is that the diversity of cultures has been extreme, although common threads have also been described in the 'human universals' of Donald Brown (1991). Theorists in this area typically embrace values, preferences and motives, but the terminology used is not distinctively conceptualised and also embraces needs, goals, interests, attitudes and commitments. In the manual for the motives, values, preferences inventory Bob and Joyce Hogan (1998) provide a lucid discussion of this territory and describe their taxonomy of ten Motive, Value and Interest constructs and their roots in the work of major contributors to this field. This was a major contribution to the differentiation between temperament and values. Their approach to personnel assessment, offering FFM based personality assessment together with assessment of Motives, Values and Interests (the MVPI) to provide two complimentary perspectives has evident utility. The purpose of the latter and its elucidation of the aspects of individuality that it helps to conceptualise – such as our sense of identity, affinity for others, personal relationships, occupational preferences and the importance of cultural assumptions and beliefs – are valuable extensions or clarifications of the insights available through FFM framed assessments.

In seeking to incorporate the contribution of values into the FFM structure of Profile:Match™, we were concerned to minimise the overlap that had been identified between FFM and values scales, for example, between MVPI Affiliation and Power with FFM Extraversion. On the other hand, in our Business Psychology practice at PCL, we had certainly found additional utility in the MVPI measures of Commerce, Altruism, Science and Aesthetic values, each of which link intuitively with particular areas of employment and which we would expect to have clear implications for job success in one or more work domains. For example, one would expect Altruism to be important for care-giving; Aesthetics for design and creativity; and Science for research roles. These experiences led us to explore other taxonomies for other values most likely to have an impact on work success.

John Holland's extensive research on the relationship between personality and career success divided job seekers into six broad personality type categories: Realistic, Investigative, Artistic, Social, Enterprising and Conventional, a model referred to as RIASEC. Although John Holland refers to these as 'personality types' the content of the items and the rationale for the scale is clearly focused on personal preferences rather than on temperament. It is closer to the Myers Briggs Type Indicator and other Jungian type measures than to the Hogan's Motives, Values, Preferences Inventory (MVPI). The RIASEC model appealed as a 'bottom up' framework for values and as an alternative to the theory driven taxonomies that, more than anything else, illustrate the lack of coherence and consensus in this field.

This pragmatic approach led to the development of six new values scales that more directly reflect PCL's 20 years of professional practice.

The six values that broadly reflect the RIASEC model were developed to supplement the FFM personality scales of Profile:Match™ – Rational, Business Orientation, Altruism, Artisan, Convention, and Discernment. Definitions and description of each are given below.

To date we have fully developed two values scales – Rational and Business Orientation – and they are available within the Profile:Match™ system. We are currently working on Altruism, Artisan, Convention and Discernment, and anticipate that these will be added to the Profile:Match™ system in the near future. The development and description for the Rational Scale are given below and a basic description for the remaining scales are also given and we anticipate the development behind each will follow when the final scales are in place.

Profile:Match™ Values Scales

1. Rational

Some studies have found that values also predict job performance (Barge & Hough, 1988; Strong, 1943). However like the five factor model the influence of various values scales will depend on the aspect of job performance being measured. We have identified that the rationality value in particular is a useful concept to consider in determining whether an individual is likely to succeed in roles requiring specific competencies such as analytic, strategic awareness and decision making.

Other research has also shown that the use of logic, detailed planning and taking an objective approach to arguments has been associated with achieving desirable organisational outcomes (Shilit and Locke, 1982; Kipnis & Schmidt; 1988, and Yukl & Falbe; 1990). Buttner & McEnally (1996) further suggest that, an applicant using a rational tactic may be perceived as best suited to positions that require a logical, analytical, methodical and attentive to detail approach.

This scale is concerned with the extent to which one approaches situations in a detached, rational and logical way. High scorers will prefer evidence over opinion and prefer research to intuition. They frequently probe the proposals of others to find weaknesses in their arguments. Rational individuals are likely to enjoy this process of critical review and debating ideas with others. Low scorers will be open to many sources of influence, ranging from the arts to superstition and the mystical.

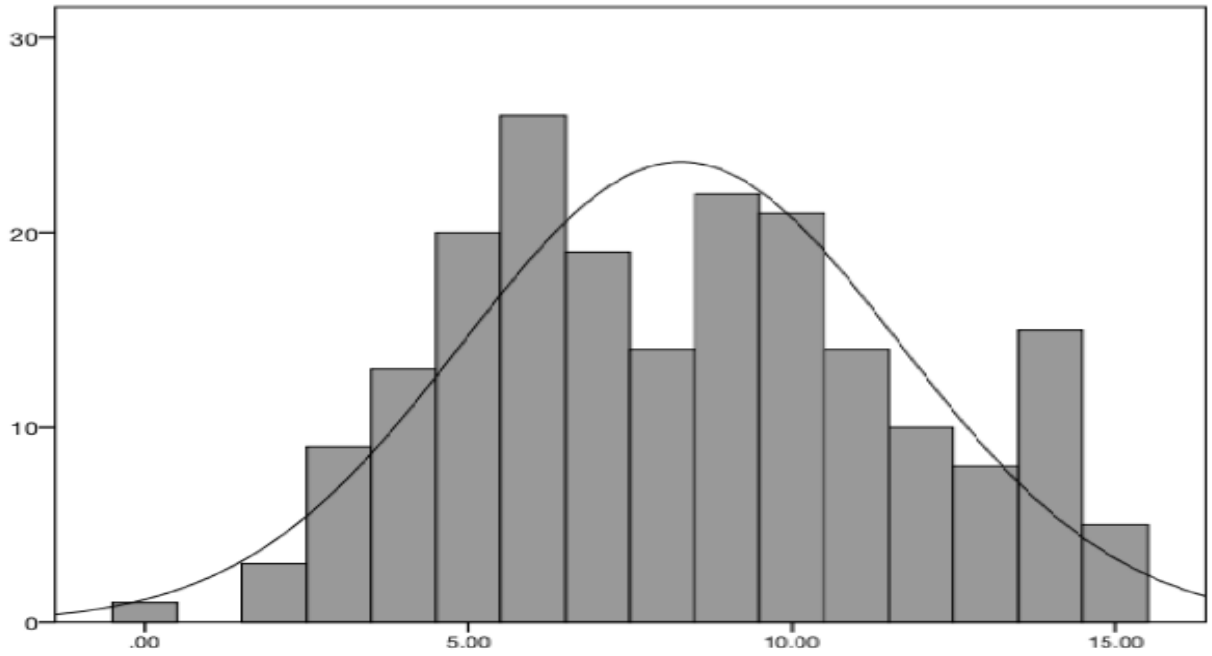
The reasoning behind the inclusion of the Rational scale and indeed to add further values scales in the future was to add greater depth to some of our Competency Metrics. For example, the inclusion of the Rational scale in the Decision Making and Analytic competencies allows us to assess the degree to which individual's decisions are based on logic and evidence. Likewise a key aspect of the Strategic Awareness competency is the capacity to rationally appraise events in line with the organisation's strategic objectives and the Rational Scale evidently assesses this.

Data was collected from 5932 individuals that had completed the Profile:Match™ questionnaire with the inclusion of the 15 Rational scale items. The Rational scale mean, its standard deviation and its internal consistency (alpha coefficient) are displayed in Table 5.1. Figure 5.1 also shows a histogram highlighting that the data we have obtained for Rational tends to be normally distributed (as shown by the frequency curve).

TABLE 5.1: Rational scale mean, standard deviation and alpha coefficient (r)

Items	N	Mean	SD	R
15	5932	10.21	3.09	.72

FIGURE 5.1: Histogram highlighting the distribution of the Rational scale (n= 5932)



2. Business Orientation

The Business Orientation scale is concerned with the importance that an individual places on being entrepreneurial and financially successful. It defines how interested people are in financial affairs, staying up to date with business issues, their desire to be in the company of successful business people and, the extent to which they seek business opportunities.

A number of items were trialed for the new Business Oreintation scale and data was collected from 421 individuals who had taken the items. After an item analysis it was possible to reduce the items to a total of 15, all of which had satisfactory psychometric properties. The Business Orientation scale mean, its standard deviation and its internal consistency (alpha coefficient) are displayed in Table 5.2.

TABLE 5.2: Business Orientation scale mean, standard deviation and alpha coefficient (r)

Items	N	Mean	SD	R
15	421	10.02	2.58	.70

3. Altruism

The Altruism value is characterised by the extent to which individuals experience a desire to help or care for other people. Altruistic behaviours involve behaving compassionately towards others and expressing a genuine concern for their welfare. Such individuals are also likely to feel moved by or to become very sentimental about the life events of others - especially those that have had a negative impact. This internal desire to help or to identify with the needs of others is likely to play a part in how motivated people are to exhibit altruistic behaviours, such as becoming involved with charitable causes, working towards improving the lives of others or entering a career in a caring profession.

4. Artisan

Artisan values are concerned with mechanical or technical precision, whether literally, as in engineering or craftsmanship or analogously in terms of problem solving processes and precise conceptualisation of a theory, method or procedure. High scorers are interested in elegant high utility solutions. They enjoy quality of craftmanship and elegance of function and may feel disparaging towards clumsy or inexpert efforts. They take pleasure in engaging with artefacts, constructing detailed or working models, renovating objects or considering how things might be improved or repaired. They are attracted to skilled trades, crafts, engineering, architecture and product design in the field of manufacturing but also professional knowledge based roles emphasising problem solving, strategic thinking or making the link between theory and practical utility.

5. Convention

The Convention scale is concerned with the extent to which people hold strong principles and value traditions, predictability and stability. Individuals who have high scores are likely to strongly value their moral reputation, live by traditional values and place importance on order and routine at work. They will prefer to be seen as reliable and consistent and will be most comfortable in situations where they know what to expect. Self-discipline is high on their agenda and they will be accepting of rules and regulations as well as willing to adapt their behaviour to fit into work requirements.

6. Discernment

The Discernment value looks at the extent to which an individual places importance on the look and feel of their surroundings and belongings. They may have a unique or distinctive style and an eye for coordination and design. Working in environments that are aesthetically pleasing will be important to these individuals and being in such surroundings is likely to add to their enjoyment of things. High scorers are also likely to appreciate people who are discerning and who have a talent for design or making things look attractive.

CHAPTER 6: RELIABILITY & VALIDITY OF PROFILE:MATCH™ PERSONALITY SCALES

Reliability

Internal Consistency Reliability

The Profile:Match™ item bank is structured around ten themes rooted in the taxonomy of the FFM. This ensures a balanced coverage of underlying temperament and creates the narrower elements required for the algorithmic transformations. Alpha coefficients for these ten themes range from 0.70 to 0.84, with an average alpha of 0.76.

TABLE 6.1: Internal consistency reliability of the Profile:Match™ item bank scales

Profile:Match™ item bank scale	r	N	Profile:Match item bank scale	r	N
Self-esteem	.84	4366	Accommodation	.79	3861
Composure	.84	4436	Compliance	.76	4624
Sociability	.81	3608	Perfectionism	.75	4413
Assertiveness	.70	616	Imagination	.70	4430
Sensitivity	.72	4001	Studiousness	.70	3609

Test-Retest Reliability

A group of 60-70 people answered the questions in the Profile:Match™ item bank twice. The interval between test administrations was at least 4 weeks. The results are given for each scale in the table below. The average test-retest reliability was very high at 0.82.

TABLE 6.2: Test-retest reliability of the Profile:Match™ item bank scales

Profile:Match™ item bank scale	r	N	Profile:Match item bank scale	r	N
Self-esteem	.84	70	Accommodation	.72	66
Composure	.79	70	Compliance	.82	70
Sociability	.87	60	Perfectionism	.84	70
Assertiveness	.85	70	Imagination	.82	70
Sensitivity	.80	60	Studiousness	.86	70

Validity

The Profile:Match™ item bank was built up over several years, primarily to provide a solution for clients where personality data from applicants for specific roles in specific sectors showed little variation, even on well validated personality questionnaires (an example would be graduate applicants for a direct selling role in the recruitment sector, where almost 50% scored above the 90th percentile on a well respected Ambition scale). Items were written and trialled with the initial objective of achieving greater discrimination at the extremes of the distribution within these relatively homogeneous populations. Item characteristics were evaluated on the basis of a minimum of 200 and up to more than 3000 administrations. However good the scale properties are for any test in terms of their item characteristics, their reliability and so on, they still have to demonstrate their utility and ability to predict non-test behaviours.

The validity studies presented here attest to both the construct and the criterion-related validity of the Profile:Match™ scales.

Criterion-Related Validity

Study 1: Criterion Validity Of Profile:Match™ And Four Other Work- Related Personality Inventories

A study by Woods (2009) compared the criterion-related validity of a number of work-related personality questionnaires, including the Profile:Match™ item bank scales. The criterion measure was a questionnaire that recorded self-reported behavioural acts across 5 scales; these scales were (a) Friendliness (e.g. started a conversation with others), (b) Drug Use (e.g. drank alcohol to make myself feel better), (c) Undependability (e.g. arrived at an event more than an hour late), (d) Creativity (e.g. played piano or other musical instrument), and (e) Good Work Habits (e.g. spent time to improve your job-related skills), as well as an additional criterion measure for stress (e.g. how confident have you felt about your ability to handle personal problems?).These self-reported behavioural acts are all measures that one would expect to correlate with various facets of the FFM. For example, it would be expected that agreeability would be related to friendliness and that emotional stability would be negatively related to stress. The other tests included in the study were the HPI, OPQ, 16PF5 and PAPI. The results are shown in Table 6.3 below.

TABLE 6.3: Profile:Match™ criterion-related validity compared to HPI, OPQ, 16PF5 and PAPI (from Woods, 2009)

Correlation	HPI	OPQ	16PF5	PAPI	Profile:Match™
E & Friendliness	.38**	.46**	.43**	.56**	.39**
E & Drug Use	.44**	.25*	.46**	.30**	.42**
A & Friendliness	.43**	.34**	.23**	.08	.35**
C & Undependability	.21**	.43**	.40**	.39**	.38**
C & Drug Use	.21**	.25*	.40**	.32**	.33**
C & Good Work Habits	.07	.31**	.08	.38**	.16
ES & Stress	.57**	.59**	.60**	.19*	.54**
O & Creativity	.31**	.33**	.27**	.29**	.32**
Mean	.33	.37	.36	.31	.36

* p <.05 ** p < .01 N= between 211 and 235 depending on which questionnaire
FACTOR LABELS: E=Extraversion; A=Agreeableness; C=Conscientiousness; ES=Emotional Stability; O=Openness.

The correlations between the Profile:Match™ scales and the criterion measures are of a very similar magnitude to those for the other tests in the table and are all as expected. The lower correlation between the Conscientiousness scales of the Profile:Match™ (Compliance and Perfectionism) with Good Work Habits compared to the OPQ can be attributed to the Achievement scale of the OPQ which measures aspects of Conscientiousness not included in either Profile:Match™ or the HPI or the 16PF5 – specifically an Achievement aspect of Conscientiousness. Overall the results provide strong support for the validity of Profile:Match™ as a predictor of behaviour related to the Five Factor Model of personality. The mean criterion validity coefficient for Profile:Match™ was .36, and only 1 test had a marginally higher coefficient, the OPQ at .37.

Construct Validity

Three studies exploring the relationship between Profile:Match™ item bank themes and other measures of the Five Factor Model of personality are presented next.

Study 1: The Relationship Between Profile:Match™ And The HPI

The sample in Table 6.4 was a mixed group of volunteers from the working population who had taken both the Profile:Match™ and the HPI. All the relationships are as expected with each Profile:Match™ scale having its highest correlation with its HPI equivalent. The largest overlap is between the Profile:Match™ scale of Sensitivity and HPI Agreeability (.85) while the lowest is between the Profile:Match™ scale of Accommodation and HPI Agreeability (.26).

TABLE 6.4: Correlations between Profile:Match™ scales and the HPI scales

SCALES	HPI-1	HPI-2	HPI-3	HPI-4	HPI-5	HPI-6	HPI-7
Self-esteem	.56**						
Composure	.65**						
Sociability		.76**					
Assertiveness			.75**				
Sensitivity				.85**			
Accommodation				.26			
Compliance					.70**		
Perfectionism					.47**		
Imagination						.46**	
Studiousness							.55**

* p >.05 ** p > .01
N=50

HPI Scales: 1 = Adjustment, 2 = Ambition, 3 = Sociability, 4 = Agreeability, 5 = Prudence, 6 = Intellectance, 7 = Scholarship.

TABLE 6.5: Viewing the relationships against FFM factor space

Profile:Match™ item bank composite scales	HPI-1	HPI-2&3	HPI-4	HPI-5	HPI-6&7
Self-esteem & Composure	.65**				
Sociability & Assertiveness		.86**			
Sensitivity & Accommodation			.63**		
Compliance & Perfectionism				.70**	
Imagination & Studiousness					.51**

* p >.05 ** p > .01

N=50

HPI Scales: 1 = Adjustment, 2 = Ambition, 3 = Sociability, 4 = Interpersonal Sensitivity, 5 = Prudence, 6 = Inquisitive, 7 = Learning Approach.

Using the same sample as before we collapsed the Profile:Match™ item bank scales into 5 composite scales aligned with the FFM and also collapsed those HPI scales that divide up the FFM dimensions of Extraversion and Openness/Culture, and then re-ran the intercorrelations. Again, all the relationships are as expected with each Profile:Match™ item bank composite scale having its highest correlation with its HPI-FFM equivalent. The largest overlap is between the Profile:Match™ composite scale of Sociability and Assertiveness which correlates with Extraversion as measured by the composite of HPI Ambition and Sociability at .86. The smallest relationship is between the composites that load on to the Openness/Culture factor of the FFM (i.e. Profile:Match™ item bank composite Imagination and Studiousness correlates at .51 with the HPI composite of Inquisitive and Learning Approach).

Study 2: The Relationship Between Profile:Match™ And The Big-Five Factor Markers

A sample of 872 people answered all the core personality items in the Profile:Match™ scales as well as 50 items from the Big-Five Factor Markers questionnaire (Goldberg, 1999) available via IPIP (International Personality Item Project). The Big-Five Factor Markers are defined as follows:

Factor 1 is Extraversion
Factor 2 is Agreeableness
Factor 3 is Conscientiousness
Factor 4 is Emotional Stability
Factor 5 is Openness/Culture

TABLE 6.6: Correlations between Profile:Match™ scales and the Big-Five Factor Markers

SCALES	Factor 4 Emotional Stability	Factor 1 Extraversion	Factor 2 Agreeableness	Factor 3 Conscientiousness	Factor 5 Openness/Culture
Self-esteem	.79**	.43**	.13**	.27**	.20**
Composure	.77**	.26**	.09**	.35**	.17**
Sociability	.08*	.68**	.14**	-.04	.16**
Assertiveness	.26**	.59**	.04	.22**	.28**
Sensitivity	.37**	.19**	.47**	.12**	.08*
Accommodation	-.18**	(-.39**)	.03	-.07*	-.35**
Compliance	.10**	-.09**	.14**	.39**	-.10**
Perfectionism	.23**	.05	.09**	.79**	.02
Imagination	-.26**	.09*	.05	-.26**	.46**
Studiousness	.27**	.24**	.16**	.34**	.46**

* p <.05 **p < .01
N=872

Scores on the 10 Profile:Match™ scales were then correlated with scores on the Five Factor Markers and the results are presented in Table 6.6 above. Our predictions were that Assertiveness and Sociability should have their highest correlation with Factor 1, that Sensitivity and Accommodation should have their strongest relationship with Factor 2, that Perfectionism and Compliance should be most strongly correlated with Factor 3, that the scales Self-esteem and Composure should have their highest correlation with Factor 4, and that Imagination and Studiousness should relate most strongly to Factor 5. In fact this was the case for 9 out of 10 possible correlations, providing strong evidence for the construct validity of the Profile:Match™ item bank.

The one clear exception was that the Accommodation scale did not have its largest correlation with Factor 2, nor did it have a significantly positive correlation with Factor 2. In fact the largest correlation between Accommodation and the Five Factor markers was a negative correlation of -.39** with Factor 1, extraversion (or Surgency). Clearly the introduction of the Accommodation element of Agreeableness is a new departure in the Five Factor framework but it is an important differentiator of human behaviour. Looking at the relationship between Accommodation and other scales in the Profile:Match™ item bank we can see that the biggest overlap is a negative correlation of -.51** with Assertiveness. This, together with the relationship with Factor 1, supports the hypothesis that the Accommodation scale assesses people who are more likely to acquiesce, to comply with others' wishes and to please others. Having this distinction between the Accommodation aspect of Agreeableness and the caring, interested in people, sensitivity side assessed by Sensitivity, enables us to describe people as being both assertive and interpersonally sensitive, a combination that certainly does happen in practice. Without the dependent or accommodating aspect of personality it can be impossible to say whether an individual would be both sensitive and assertive or sensitive and acquiescent – we would argue that this additional facet of Agreeableness introduced by the Profile:Match™ items enables us to make a more insightful and more accurate assessment of an individual's personality.

Study 3: Convergent Validities Between Profile:Match™ and Four Work-Related Personality Inventories

Profile:Match™ has been the subject of a study by Woods (2009) in which it and four other work-related personality inventories were related to each other along Five Factor dimensions. This process evaluated the convergent validities of these instruments and, overall, the results provided strong support for the measurement characteristics of these questionnaires in relation to the Five Factor Model (i.e. the convergent validities, or overlap, between the scales of the

various tests when aligned along Five Factor dimensions were mostly in the expected direction and of a significant magnitude). For example, the Profile:Match™ Assertiveness scale has a mean correlation of .41 with the other 19 scales included in this study that all relate to the Extraversion factor of the FFM. Indeed, Woods concludes that "The results indicate acceptable levels of convergence between the work-related scales from this study that purport to measure similar traits" (Woods, 2009). The other tests in the study were the HPI, the OPQ, the 16PF5 and the PAPI. The correlations between Profile:Match™ and each of these tests are shown in Table 6.7 through to Table 6.10.

It is worth bearing in mind, though, that of the instruments used in this study, only Profile:Match™ and the HPI were specifically created using the FFM as their underlying taxonomy. Woods (2009) has mapped the scales of the OPQ, PAPI and 16PF5 onto the Five Factor Model using the frameworks suggested in the OPQ Big Five Technical Supplement (Bartram & Brown, 2005), the PAPI manual (Anderson & Lewis, 1998), and in the case of the 16PF5, in a book chapter on measuring the Big Five using the 16PF5 (Hofer & Eber, 2002). Clearly, there is a less than perfect fit between the scales of these three tests and the FFM; one example of this, noted by Woods (2009) is the inclusion of an achievement theme in the scales of the OPQ and PAPI that are purported to be related to the Big Five construct of Conscientiousness. This theme does not appear at all in those scales measuring Conscientiousness in Profile:Match™, the HPI, or the 16PF5. Hence there are a number of very low correlations between the Compliance and Perfectionism scales of Profile:Match™ and those scales of the OPQ and PAPI associated with the achievement theme, e.g. OPQ Vigorous and Achieving and PAPI Need to Achieve.

a) Profile:Match™ and OPQ

The relationships between the OPQ scales that map onto the Big Five and the scales of Profile:Match™ are shown in Table 6.7 below. Overall there are a number of strong and significant relationships in the expected direction. For example, people who score high on the OPQ scale Worrying are very likely to have lower scores for both the Self-esteem and Composure scales of Profile:Match™, while those who have high scores on OPQ Relaxed are also very likely to score highly on the Self-esteem and Composure scales of Profile:Match™.

In the Extraversion theme, the Assertiveness scale of Profile:Match™ has a correlation of .75 with OPQ Controlling, while Profile:Match™ Sociability correlates .68 with OPQ Outgoing. The differential pattern of relationships between the two Profile:Match™ scales relating to Extraversion and the way that they relate to the OPQ scales of Extraversion provide support for the way in which Profile:Match™ splits these two scales.

Additionally, in the Agreeableness factor, the Profile:Match™ scale Accommodation has a very strong relationship (-.62) with OPQ Independent Minded, providing more support for the inclusion of this second theme in the Profile:Match™ assessment of Agreeableness.

The relationships between both the Profile:Match™ scales for Conscientiousness - Compliance and Perfectionism - and the relevant OPQ scales clearly show that those OPQ scales associated with the achievement theme (Vigorous, Forward Thinking and Achieving) have little or no relationship with Conscientiousness as measured by Profile:Match™, while the more traditional scales of Conscientiousness and Detail Conscious have strong correlations with the Profile:Match™ scales.

In the Openness factor, we can see strong relationships as expected between Profile:Match™ Imagination and OPQ Innovative, Conventional (negatively), Conceptual and Variety Seeking. OPQ Conceptual also has a fairly strong relationship with Profile:Match™ Studiousness. The only places where an OPQ scale does not achieve a correlation of .30 or greater with either of the relevant Profile:Match™ scales for each of the Five Factors are the

three scales previously mentioned in the Conscientiousness factor, plus OPQ Behavioural with Profile:Match™

Studiousness and Imagination. The OPQ Behavioural scale assesses whether people enjoy analysing the motives and behaviour of others or, at the other extreme, tend not to question people's behaviour. While there is an analytical theme to this scale which one might hypothesise should be related to the Openness factor of the FFM, there is not an obviously strong overlap between the two. Within the Behavioural scale there are, perhaps, elements of trust or suspicion or even feelings towards other people rather than a clear focus on the analytical, problem solving behaviour which is more commonly associated with Openness, perhaps accounting for the low correlations with Profile:Match™ Studiousness and Imagination.

TABLE 6.7: Correlations between Profile:Match™ and OPQ scales aligned with the Five Factor Model

EMOTIONAL STABILITY	OPQ Worry	OPQ Relax	OPQ TghMi	OPQSoCon	OPQ Opt	
PM Self-esteem	-.50**	.66**	.55**	.51**	.60**	
PM Composure	-.48**	.61**	.60**	.34**	.47**	
EXTRAVERSION	**OPQ Pers**	**OPQSoCon**	**OPQ Out**	**OPQEmCon**	**OPQ Cont**	**OPQ Affil**
PM Assertiveness	.45**	.50**	.54**	-.23**	.75**	.25**
PM Sociability	.31**	.45**	.68**	-.42**	.33**	.58**
AGREEABLENESS	**OPQ Caring**	**OPQ Demo**	**OPQ IndMin**	**OPQ Trust**	**OPQ Comp**	
PM Accommodation	.23**	.27**	-.62**	.05	-.26**	
PM Sensitivity	.55**	.41**	-.34**	.41**	-.25**	
CONSCIENTIOUSNESS	**OPQ Conscie**	**OPQ DetCo**	**OPQ Vig**	**OPQ FoThi**	**OPQ Ach**	
PM Compliance	.22**	.38**	.08	.27**	-.03	
PM Perfectionism	.61**	.72**	.17*	.22**	.07	
OPENNESS	**OPQ Innov**	**OPQ Conven**	**OPQ Conce**	**OPQ VarSe**	**OPQ Behav**	
PM Studiousness	.27**	-.18**	.33**	.21**	.14*	
PM Imagination	.45**	-.43**	.56**	.36**	.28**	

* p <.05 **p < .01 N=216

OPQ SCALE LABELS: Worry=Worrying; Relax=Relaxed; TghMi=Tough Minded; SoCon=Socially Confident; Opt=Optimism; Pers=Persuasive; Out=Outgoing; EmCon=Emotionally Controlled; Cont=Controlling; Affil=Affiliative; Demo=Democratic; IndMind=Independent Minded; Trust=Trusting: Comp=Competitive; Conscie=Conscientious; DetCo=Detail Conscious; Vig=Vigorous; FoThi=Forward Thinking; Ach=Achieving; Innov=Innovative; Conven= Conventional; Conce=Conceptual; VarSe=Variety Seeking; Behav=Behavioural

b) Profile:Match™ AND 16PF5

Noteworthy relationships in the expected direction between the 16PF5 and Profile:Match™ include negative 16PF5 Apprehension and positive 16PF5 Emotional Stability with both Profile:Match™ scales that relate to Emotional Stability, 16PF5 Social Boldness correlating positively with both Profile:Match™ Assertiveness and Sociability, 16PF5 Liveliness with Profile:Match™ Sociability, 16PF5 Dominance correlating negatively with Profile:Match™ Accommodation, 16PF5 Rule consciousness with Profile:Match™ Compliance, 16PF5 Perfectionism with Profile:Match™ Perfectionism, and 16PF5 Openness to Change with Profile:Match™ Imagination and Studiousness. There were no strong correlations between the 16PF5 scales associated with the Agreeableness factor of the FFM and the Profile:Match™ Sensitivity scale; we would suggest that the 16PF5 scale of Warmth would be more likely to be associated with this aspect of personality than with the Extraversion factor chosen by Hofer and Eber (2002). In fact we re-analysed the data provided by Woods and found that 16PF5 Warmth correlated .41** with the Profile:Match™ scale Sensitivity, a strongly significant and much higher correlation than that achieved with any of the Profile:Match™ scales measuring the Extraversion factor. Another surprising alignment is the 16PF5 scale Openness to Change with the Agreeableness factor of the FFM and our doubts about this alignment are clearly borne out by the small relationships between this scale and the Profile:Match™ scales Accommodation and Sensitivity. Finally, we would expect the 16PF5 scale Vigilance to be located closer to the Agreeableness factor than the Emotional Stability factor where it achieves only small insignificant correlations with Profile:Match™ Self-esteem and Composure. Again we re-analysed the data set supplied by Woods and found a correlation of -.26** between Vigilance and the Profile:Match™ scale Sensitivity. While this is not one of the most notable correlations it is clear that the Vigilance scale of the 16PF5 is more closely associated with the Agreeableness factor than with the Emotional Stability factor of the FFM.

TABLE 6.8: Correlations between Profile:Match™ and 16PF5 scales aligned with the Five Factor Model

EMOTIONAL STABILITY	16PF5 L Vig	16PF5 O App	16PF5 Q4 Tension	16PF5 C EmoStability	
PM Self-esteem	-.14*	-.66**	-.36**	.68**	
PM Composure	-.10	-.61**	-.56**	.63**	
EXTRAVERSION	**16PF5 A Warmth**	**16PF5 H SocBold**	**16PF5 F Liveliness**	**16PF5 N Private**	**16PF5 Q2 Self-rel**
PM Assertiveness	.21**	.65**	.25**	-.23**	.11
PM Sociability	.34**	.65**	.67**	-.45**	-.40**
AGREEABLENESS	**16PF5 E Dominance**	**16PF5 Q1 OpenChange**			
PM Accommodation	-.65**	-.38**			
PM Sensitivity	-.15*	.06			
CONSCIENTIOUSNESS	**16PF5 G RuleCon**	**16PF5 Q3 Perfec**	**16PF5 M Abstract**		
PM Compliance	.52**	.43**	-.46**		
PM Perfectionism	.43**	.83**	-.46**		
OPENNESS	**16PF5 I Sensitivity**	**16PF5 Q1 OpenChange**			
PM Studiousness	.14*	.38**			
PM Imagination	.23**	.54**			

* p <.05 ** p < .01 N=218

16PF5 SCALE LABELS: Vig=Vigilance; App=Apprehension; EmoStability=Emotional Stability; SocBold=Social Boldness; Self-rel=Self-reliance;OpenChange=Openness to change; RuleCon=Rule Consciousness; Perfec=Perfectionism; Abstract=Abstractedness

c) Profile:Match™ and HPI

The correlations between Profile:Match™ and the HPI in this sample are very similar to those found in our study (see p.44) on a smaller sample of just 50 people who had taken both tests. The size of the correlations reported here is larger than in our study for all factors except Conscientiousness and Agreeableness, although the correlations with the scales related to Conscientiousness are almost exactly the same. For Agreeableness the correlation between HPI Agreeability and Profile:Match™ Sensitivity is .77** here but was .85** in the earlier study, and the correlation with Profile:Match™ Accommodation is only .17* here but was .26 in our smaller study. All the relationships above are as expected and map on to the appropriate partner scale; the only lack of relationship being that between Profile:Match™ Accommodation and HPI Agreeability and the reasons for this are given in the result of our Profile:Match™ and HPI study reported on page 51 of this manual.

TABLE 6.9: Correlations between Profile:Match™ and HPI scales aligned with the Five Factor Model

EMOTIONAL STABILITY	HPI Adjustment	
PM Self-esteem	.73**	
PM Composure	.75**	
EXTRAVERSION	**HPI Ambition**	**HPI Sociability**
PM Assertiveness	.77**	.52**
PM Sociability	.45**	.83**
AGREEABLENESS	**HPI Interpersonal Sensitvity**	
PM Accommodation	.17*	
PM Sensitivity	.77**	
CONSCIENTIOUSNESS	**HPI Prudence**	
PM Compliance	.71**	
PM Perfectionism	.46**	
OPENNESS	**HPI Inquisitive**	**HPI Learning Approach**
PM Studiousness	.38**	.62**
PM Imagination	.50**	.26**

* p <.05 ** p < .01 N=223

d) Profile:Match™ and PAPI

Noteworthy and expected relationships here are those between PAPI Emotional Restraint and Profile:Match™ Composure (.55), PAPI Need to Control Others, Leadership Role, Need to be Noticed and Profile:Match™ Assertiveness (.68, .65, .74), PAPI Need to be Noticed and Social Harmonizer with Profile:Match™ Sociability (.69, .45), PAPI Need to be Forceful and Profile:Match™ Accommodation (-.71), PAPI Need for Rules & Supervision and Need to be Supportive and Profile:Match™ Complianct (.50, .43), PAPI Organised Type, Integrative Planner and Attention to Detail with Profile:Match™ Perfectionism (.67, .56, .56), and PAPI Conceptual Thinker with both Profile:Match™ Studiousness (.32) and Imagination (.61) and finally, PAPI Need for Change and Profile:Match™ Imagination (.30). We would question the location of the PAPI scale Need to Belong to Groups and Need to Relate Closely to Individuals on the Extraversion factor as they might sit more happily on the Agreeableness factor. In fact, on re-analysing the data provided by Woods we found higher correlations of .37 and .41 with the Profile:Match™ scale Sensitivity.

TABLE 6.10: Correlations between Profile:Match™ and PAPI scales aligned with the Five Factor Model

EMOTIONAL STABILITY	PAPI E EmoRest						
PM Self-esteem	.32**						
PM Composure	.55**						
EXTRAVERSION	**PAPI P Control**	**PAPI L Leadership**	**PAPI X Noticed**	**PAPI S SocHar**	**PAPI B Groups**	**PAPI O Relate**	
PM Assertiveness	.68**	.65**	.74**	.19**	.10*	-.05	
PM Sociability	.32**	.26**	.69**	.45**	.30**	.29**	
AGREEABLENESS	**PAPI K Forceful**						
PM Accommodation	-.71**						
PM Sensitivity	-.28**						
CONSCIENTIOUSNESS	**PAPI C Organised**	**PAPI H Integrative**	**PAPI D Detail**	**PAPI W Rules**	**PAPI G HardWork**	**PAPI F Supportive**	**PAPI A Achieve**
PM Compliance	.23**	.36**	.27**	.50**	.28**	.43**	-.01
PM Perfectionism	.67**	.56**	.56**	.44**	.42**	.21**	.05
OPENNESS	**PAPI N Finish**	**PAPI Z Change**	**PAPI R Conceptual**				
PM Studiousness	.07	.16*	.32**				
PM Imagination	-.14*	.30**	.61**				

*p >.05 ** p > .01
N=221
PAPI Scales: EmoRest = Emotional restraint; Control = Need to control others; Leadership = Leadership role; Noticed = Need to be noticed; SocHar = Social harmonizer; Groups = Need to belong to groups; Relate = Need to relate closely to individuals; Forceful = Need to be forceful; Organised = Organised type; Integrative = Integrative planner; Detail = Attention to detail; Rules = Need for rules & supervision; Hardwork = Role of the hard worker; Supportive = Need to be supportive; Achieve = Need to achieve; Finish = Need to finish a task; Change = Need for change; Conceptual = Conceptual thinker

Similarly the PAPI scale Need to Achieve might be more closely related to Profile:Match™ Assertiveness within FFM Extraversion than with the FFM Conscientiousness scales where it is currently located; again re-analysis of the data supported this hypothesis with a correlation of .43 with Profile:Match™ Assertiveness compared to virtually zero correlations with both scales associated with Conscientiousness. Finally, the PAPI scale Need to Finish a Task is curiously located on the Openness factor when it might be more suited to the Conscientiousness domain of the FFM. Data analysis supported this hypothesis with a correlation of .63 with Profile:Match™ Perfectionism and .30 with Compliance compared to .07 and -.14 with Studiousness and Imagination.

CHAPTER 7: COMPETENCY DESCRIPTIONS

This chapter discusses the rationale behind the construction of each competency metric assessed by Profile:Match™. Each competency has been constructed from various personality scales chosen on the basis of expert judgment with reference to relevant research. For each competency in Profile:Match™ the individual personality scales chosen are given below along with a discussion of any pertinent research linking that aspect of personality with the competency.

For a discussion on the algorithmic process we used to blend and score the scales within each competency, please see Chapter 2. Additionally a reminder of the Profile:Match™ personality scales and the Five Factor Model facets they are based on is given below.

Profile:Match™ item bank scale	FFM related dimension
1. Self-Esteem	Emotional Stability
2. Composure	Emotional Stability
3. Sociability	Extraversion
4. Assertiveness	Extraversion
5. Sensitivity	Agreeableness
6. Accommodation	Agreeableness
7. Compliant	Conscientiousness
8. Perfectionism	Conscientiousness
9. Imagination	Openness/Culture
10. Studiousness	Openness/Culture

Analytic

Contributing personality scales: Imagination, Studiousness and the values scale Rational

In terms of personality and values, there are three contributing characteristics to the Analytic competency. Firstly, a desire to challenge ideas critically; secondly, a respect for learning, knowledge and information; and thirdly, a logical and rational approach that values evidence and research over opinion and intuition.

Research has found that being analytic requires a rational, objective and logical approach to organisational issues (Furnham, 1992). Such people will be wary of superficial conclusions and will want to base decisions on a

thorough examination of all relevant information. They will be able to critically evaluate information from various sources and question the efficacy of different proposals or solutions. Additionally findings show that openness to experience is related to being analytic (Robertson et al., 1999). Taken together these studies emphasise the importance of taking a critical approach, having a sound knowledge base and being big picture orientated in order to meet the requirements of this competency.

Attention to detail

Contributing personality scales: Compliance, Perfectionism, Imagination

In terms of personality, there are three contributing characteristics. Firstly, a desire to comply with the procedures and policies of the organisation; secondly, a perfectionistic approach and thirdly, a capacity to sustain focus on the task in hand.

Such individuals should be concerned with being attentive to detail in the planning and execution of tasks. Research indicates that conscientious individuals are more likely to assess task requirements precisely and are quick to spot inconsistencies as a result of their tendency to be structured and methodical (McCrae & Costa, 1987). In addition, associations have also been found between perfectionism and devoting greater attention to tasks (Rice et al., 1998; Stoeber & Eysenck, 2008). Their high standards are rooted in a desire for order, perfection, and a deep concern to avoid error. Finally, individuals with lower scorers on openness to experience have also been found to be more competent in this area as these individuals are likely to take a practical approach to work, and can focus more easily on work quality (Robertson et al., 1999).

Communication skills

Contributing personality scales: Accommodation, Self-esteem, Sensitivity and Sociability

In terms of personality, there are four contributing characteristics. Firstly, a desire to engage socially with others; secondly, a combination of conviviality and empathy; thirdly, being concerned about the impression one makes and fourthly, being confident and optimistic.

Previous research has found that characteristics associated with extraversion relate to communicating effectively, and highlights that competent individuals should have the confidence to initiate relationships with others, show an eagerness to engage with them and network effectively (Beatty, McCrokey, & Heisel, 1998; Forret & Dougherty, 2001; Tourbon & Dougherty, 1994). The Agreeableness facet of the Five Factor Model (assessed by Profile:Match™ Accommodation and Sensitivity) is also associated with communication skills as it measures how well an individual can build and maintain relationships (Graziano, et al., 2004), as well as contributing to the degree to which they take the needs of others into consideration (Riggio, & Taylor, 2000).

Commitment

Contributing personality scales: Assertiveness, Compliance, Perfectionism

The Commitment competency is concerned with the readiness to identify with the objectives and values of an organisation, to be an energetic and ambitious employee who works to high standards and does things ‘by the book’.

In terms of the contributing personality scales, research has found that components of extraversion and conscientiousness are related to organisational commitment (Panaccio & Vanderberghe, 2012). Additionally Kumar & Bakhshi, (2010) found that extraversion was related to three different aspects of commitment (affective,

continuance and normative); and conscientiousness was related to two (affective and continuance commitment). The fact that both these facets predict commitment suggests that combining the associated Profile:Match™ scales is a better predictor of commitment than either of them alone.

Creative

Contributing personality scales: Assertiveness, Compliance, Imagination

In terms of personality, there are three contributing characteristics. Firstly, being curious, questioning and imaginative; secondly, being aspirational and keen to make one's mark; and thirdly, being disposed to challenge the status quo.

Research has found that individuals higher on extraversion and lower on conscientiousness are more likely to be creative (Robertson, et al., 1999). This is probably due to the fact that they need to be willing to challenge tradition and the established ways of doing things, as well as driven and enthusiastic to ensure they stay focused and achieve results. An extensive amount of research has also found a strong relationship between creativity and openness to experience (e.g. Costa & McCrae, 1992; Feist, 1998, 2006; King et al., 1996; McCrae, 1997; Robertson et al., 1999; Saville, et al.,1996; Silvia, 2008; Weisberg, 2006), which is unsurprising as creative individuals are undoubtedly open to new ways of doings things and eager to welcome new perspectives and material.

Customer focus

Contributing personality scales: Compliance, Composure, Sensitivity, Sociability

In terms of personality, there are four characteristics contributing to this competency. Firstly, being warm, and approachable; secondly, being keen to engage socially with others; thirdly, being happy to comply with procedures; and fourthly, being calm and even-tempered.

Hogan, Hogan, & Busch (1984) support these assertions and found that being cooperative, self-controlled, dependable and well adjusted are important characteristics when providing a service to customers. These are all concepts related to conscientiousness, agreeableness and emotional stability, which additional research has found to be important for this competency (Carraher, Cuthbert & Carraher, 2008; Frei & McDaniel, 1998; Brown, et al, 2002; Mount, Barrick & Stewart, 1998). Finally, extraversion is also related to customer focus, and while individuals should be sociable enough to engage effectively with customers, they should not be so gregarious that they lose sight of their objectives. This theory is supported by Stewart & Carson, (1995) who found that individuals with just above average extraversion scores performed better than those who had extremely high scores in customer service related jobs.

Decision making

Contributing personality scales and values : Imagination, Self-esteem, Rational, Studiousness, Compliance

In terms of personality and values, there are five contributing characteristics. Firstly, being questioning and having a 'big picture' orientation; secondly, having a respect for the value of knowledge and information; thirdly, having self-belief; fourthly, being loyal to the organisation's mission and culture and finally, preferring to take a logical and objective approach to decision making.

Evidence shows that effective decision makers tend to be emotionally stable (Chartrand, et al, 2001). Individuals

who score highly on this personality construct are likely to be confident in their own abilities and remain calm in the face of uncertainty and unresolved questions. Individuals who make effective decisions have also been found to have a preference for thinking about things rationally (Chartrand, et al., 2001; Kornov & Thissen, 2000). Their rational way of thinking should allow these individuals to ensure they are adequately informed before taking unnecessary risks for the sake of a quick decision.

In the case of strategic decisions, they also need the vision and big picture perspective to see the issues in context, and existing research has found that related FFM constructs (openness to experience and some facets of conscientiousness) play a large part in whether someone is competent to make decisions effectively (LePine, Colquitt & Erez, 2000).

Delegating

Contributing personality scales : Compliance, Composure, Perfectionism

In terms of personality, there are three contributing characteristics to the Delegation competency. Firstly, being accepting of other people's capacity to contribute; secondly, generally being calm, composed and even-tempered and thirdly, identifying closely with the aspirations of the organisation.

The FFM constructs related to this competency include conscientiousness and emotional stability; and research has found that both relate to effective delegation (Jamshidi, et al., 2012). It is also important to note that individuals who are extremely perfectionistic are not inclined to delegate (Burke, Matthisen, & Pallesen, 2006; Peters & King, 2012), which suggests that less perfectionistic people may be more competent when it comes to delegating others.

Developing others

Contributing personality scales: Self-esteem, Sensitivity, Studiousness

In terms of personality, there are three contributing characteristics that make up the Developing Others competency. Firstly, having the self-respect and confidence to promote growth in others; secondly, having an appreciation of the value of knowledge and careful preparation; and thirdly, having empathy with others, being approachable and receptive.

This idea is supported by previous literature, which found that related FFM constructs, agreeableness, emotional stability, and openness to experience were associated with the ability to develop others through mentoring (Bozionelos (2004). Characteristics associated with agreeableness such as empathy, altruism and a motivation to help others have been found to be important for developing others (Allen, 2003; Aryee, Chay, & Chew, 1996). Additionally, Ragins and Cotton (1993) found that individuals who had characteristics associated with emotional stability, such as self-confidence, high locus of control and self-efficacy, are more likely to be effective when developing others. Finally, valuing formal education has been found to determine whether an individual is likely be interested in mentoring and developing others (Campion & Goldfinch, 1983).

Flexibility

Contributing personality scales: Compliance, Composure, Imagination

In terms of personality, there are three contributing characteristics. Firstly, being open to change and new experiences; secondly, being quite spontaneous and independently minded; and thirdly, being calm and not easily unsettled by the unexpected or the need to embrace change.

Research has found that openness to experience and aspects of emotional stability, such as the ability to remain calm under pressure and being stress tolerant, have been found to relate to how well people adapt to change and manage multiple projects. (Judge, et al., 1999; McCrae, 1987; Pulakos et al., 2000; Pulakos et al., 2009). Finally, it has been found that people who are lower on certain elements of conscientiousness, such as dutifulness and being orderly, are more flexible in certain situations (Le Pine, Colquitt & Erez, 2000).

Independence

Contributing personality scales: Accommodation, Sensitivity

In terms of personality, there are two contributing characteristics to this competency. Firstly being forthright, independent and not distracted easily from one's course; and secondly, striking a balance between being sufficiently people orientated and aware of sensitivities of others on the one hand, and being task focused on the other.

Evidently, individuals who are very cooperative and eager to avoid conflict are less likely to take action independently (King, McKee-Walker, & Broyles, 1996). To further support this concept, Jones & Melcher (1982) found that wanting to maintain good relations with others affects how willing an individual is to deal with confrontation. It has also been found that individuals who are extremely dependent are unlikely to initiate projects, prefer others to make decisions and agree with others to avoid conflict (Disney, 2013). This supports the notion that people who have a lower degree of dependence will be more competent in this area.

Information Management

Contributing personality scales: Assertiveness, Perfectionism, Studiousness

In terms of personality, there are three contributing characteristics. Firstly, a love of learning and an appreciation of the utility of information for the achievement of work and recreational goals; secondly, being achievement oriented, hard working and determined to make one's mark; and thirdly, being organised and systematic.

Openness to experience is related to the extent to which an individual desires to learn new information, and research widely, while conscientiousness is related to managing information and learning, through organisation, planning and scheduling time; while extraversion is related to the desire to achieve and get ahead (Bustato et al., 1999; Zhang, 2003, Duff et al., 2004; Furnham et al., 2007). These findings undoubtedly offer support for the choice of Profile:Match™ personality scales that contribute to the Information Management competency.

Interpersonal skills

Contributing personality scales: Assertiveness, Accommodation, Sensitivity, Sociability

In terms of personality, there are four contributing characteristics. Firstly, being warm, approachable and sympathetic; secondly, having the desire to engage with and interact with others; thirdly, being motivated and assertive; and fourthly, being concerned about consensus and social harmony.

Research suggests that extraversion and agreeableness are related to effective interpersonal skills (Hough, 1992; Mount, Barrick & Stewart, 1998; Robertson et al., 1999). Additionally Filsinger (1981) found that people who fail to demonstrate interpersonal sensitivity are more likely to be introverted, avoid spending time with others, and have an inability to understand other people. These links to broader Five Factor Model research are supportive of the choice of Profile:Match™ personality scales contributing to effective interpersonal skills.

Leadership

Contributing personality scales: Accommodation, Composure, Sensitivity, Sociability, Imagination, Self-esteem, Assertiveness

Many different characteristics have been associated with iconic and illustrious leaders and the debate about which of these are essential for leadership success continues. In this assessment we have focused on core qualities about which there is general agreement and that support leadership behaviour at any level within an organisation; these are effectiveness under pressure, determination to succeed, creating a vision, inspiring others and offering leadership in an effective and motivating way.

A large amount of research shows that characteristics associated with extraversion such as being energetic and sociability, have been found to be predictive of leadership performance (e.g. Costa & McCrae 1988, 1992; Judge, et al., 2002). In particular, aspects of assertiveness such as being persuasive, forthright, ambitious, driven and proactive in decision-making are all important characteristics for good leadership (Ames, 2009; Kirkpatrick & Locke, 1991). Being imaginative, original and creative have also been associated with leadership (Badarracco & Ellsworth, 1992), so it is unsurprising that openness to experience has been positively linked to leadership performance (Robertson et al, 1999).

Additionally, the importance of emotional stability in predicting leadership performance has been continually stressed, with neurotic individuals being less likely to be perceived as effective leaders (e.g. Hogan, et al., 1994; Judge et al., 2002). Characteristics associated with emotional stability such as self-confidence, self-esteem, stress tolerance and emotional maturity have all been associated with leadership emergence and effectiveness (Hill & Ritchie, 1977; House & Aitya, 1997; Kirkpatrick & Locke, 1991; Yukl, 1998). Li et al. 2011, have even recommended using self-esteem as a criterion for leadership selection.

Finally, several studies provide support for the role that agreeability plays in leadership (Gottfried et al., 2011; Hogan et al., 1994; Judge et al., 2002), with interpersonal sensitivity and cooperation being particularly important characteristics for effective leadership (Bass, 1990; Zaccaro et al, 1991). However, it is arguable that due to other inconsistent findings surrounding agreeability and leadership, the relationship may actually be curvilinear, i.e. being either too sympathetic or too distant can have a negative impact on leadership effectiveness.

Managing change

Contributing personality scales: Accommodation, Composure, Sensitivity, Perfectionism, Compliance.

In terms of personality, there are five contributing characteristics. Firstly, being achievement orientated, secondly being organised and attentive to detail, thirdly, having the ability to work under pressure, fourthly, combining interest in others with being task focused, and fifthly, ensuring that aims and processes are compatible with company values.

To manage change effectively individuals have to be able to deal well with change themselves and findings also show that conscientiousness, agreeability and emotional stability are all related to competence in this area (Jamshidi et al., 2012; Vakola, Tsaousis, & Nikololaou, 2004). Additionally Judge, Pucik, & Welbourne, (1999) found that managerial responses to change were influenced by a tolerance for ambiguity and flexibility, which are characteristics associated with aspects of lower conscientiousness.

Market focus

Contributing personality and values scales: Assertiveness, Business Orientation

In terms of personality and values, there are two contributing characteristics. Firstly; being achievement orientated, keen to advance on the market, and enjoying competitive situations; and secondly taking an interest in being in business, staying up to date with financial affairs and placing a great deal of importance on being financially successful.

Kickul & Gundry (2002) suggest that people who are proactive, take the initiative and persevere are likely to take an interest in new marketing and sales methods, new and improved products, and seeking new market opportunities. With regards to Five Factor Model research, extraversion and particularly the concept of 'achieving' was related to commercial awareness, which is a similar concept to Market Focus (Robertson & Kinder, 1993; Robertson et al., 1999).

People who are business orientated or entrepreneurial have also been described as being focused on innovations that meet current market needs (Gardner, 1994). They should also have the ability to perceive opportunities for creating new business (Christensen, Masden, & Peterson, 1989) and exploit opportunities that others may miss (Kirzner, 1973).

Motivation

Contributing personality scales: Accommodation, Assertiveness, Compliance, Self-esteem

In terms of personality there are four contributing characteristics. Firstly, having a positive, optimistic attitude. Secondly, being achievement-oriented and goal-focused. Thirdly, being disposed to adopt the values and goals of the organisation rather than working to one's own agenda. Finally, not attempting to please all the people all the time, but not being too strident, overbearing or independent either.

These contributing characteristics are supported by FFM research which found that both conscientiousness and emotional stability are related to motivation (Judge & Illies, 2002; Parks & Guay, 2009). It has also been linked to extraversion, particularly with being assertive and taking the initiative (De Feyter et al., 2012; Heaven, 1989).

Finally, individuals scoring slightly lower on agreeableness have been found to be more likely to be action orientated and personally motivated (Robertson et al., 1999), possibly because they do not let their concern for others get in the way of their aspirations.

People Management

Contributing personality scales: Composure, Compliance, Sensitivity, Assertiveness

In terms of personality, there are four contributing characteristics. Firstly, being aspirational, leader-like and keen to take charge; secondly, having a desire to comply with the procedures and policies of the organisation; thirdly, being calm and composed under pressure and fourthly, being approachable and considerate.

Cockerill, Hunt & Schroder (1995) found that being achievement-orientated, and aware of the needs of others were important for managing people. Extraversion is also an important aspect of personality for managing people and relates to how well individuals can persuade others and generate confidence and enthusiasm in those that they manage (Bono & Judge, 2004).

Persuasive communication

Contributing personality scales: Sensitivity, Sociability, Imagination, Assertiveness

This competency is concerned with the ability to express oneself effectively, to influence others and to negotiate effectively. Such people will need to communicate well at all levels of the organisation and with internal and external clients. They should be very articulate and have the ability to express ideas with clarity as well as having the insight to appreciate the likely impact of different styles of presentation on others.

The relevance of these characteristics is supported by findings that agreeability, extraversion and openness are related to the ability to persuade others effectively (Robertson et al., 1999). To effectively persuade others in order to make a sale it is important for individuals to interact and liaise with customers in a way that is open and creative, as well as questioning and gathering information (Boorom, Goolsby, & Romsey, 1998; Schuster & Danes, 1986). Finally, individuals should be able to listen to the concerns of others and recognise their needs (Ingram, Schwepker & Hutson, 1992), while also enjoying networking, planning ahead and setting goals (Boorlom, et al., 1998).

Planning and organising

Contributing personality scales: Compliance, Perfectionism, Studiousness

In terms of personality, there are three contributing characteristics. Firstly, being organised, thorough and concerned about standards; secondly, being respectful of the organisation's values and aspirations and thirdly, a love of learning and researching decisions.

Research that supports the Profile:Match™ scales contributing to this competency found that planning and organising was positively correlated with conscientiousness (Robertson et al., 1999). Additionally, individuals who enjoy learning and training are more likely to plan and organise their objectives and find strategies that work. They also tend to have a preference to be clear and concise, and as a result of their need for facts and concrete information, they organise and structure their work accordingly (Ross & Vincent, 2001).

Problem Solving

Contributing personality scales: Imagination, Self-esteem, Assertiveness

In terms of personality, there are three contributing characteristics. Firstly, being confident and optimistic; secondly, being imaginative and innovative and thirdly, being purposeful and achievement oriented. The choice of contributing personality scales is supported by previous Five Factor Model research which found that openness to experience (Robertson et al., 1999; Costa & McCrae, 1992; McCrae,1987), extraversion (Robertson et al., 1999) and emotional stability are all linked to problem solving (Chartrand, et al., 2001).

Project management

Contributing personality scales: Composure, Sensitivity, Assertiveness, Perfectionism

In terms of personality, there are four contributing characteristics. Firstly, being energetic and having a desire for success; secondly, being organised and having high standards; thirdly, having a capacity to work under pressure; and fourthly, combining interest in others with being task focused. Previous research has found that being driven and taking the initiative to achieve results are important for project management (Turner, 1999). Further research also shows that careful scheduling, planning and monitoring are all important aspects of project success as well as the ability to manage stressful situations and overcome unexpected problems (Hartman & Ashrafi, 2002). For a project manager to work well with their team it is important that they have the ability to form relationships with others and offer support and encouragement, but at the same time not lose focus on what needs to be achieved (Makilouko, 2004).

Resilience

Contributing personality scales: Composure, Self-esteem

In terms of personality, there are two contributing characteristics. Firstly, being composed, stress-tolerant and imperturbable; and secondly, being confident, upbeat and optimistic.

A vast amount of research has been conducted which shows that individuals who are emotionally stable are more likely to have higher levels of resilience (e.g. Campbell-Sills, Cohan, & Stein, 2006; Furnham, Crump & Whelan, 1997). Resilience is about being calm, optimistic, self-accepting, responding positively to unpredictable or challenging situations and displaying self-confidence (Bonanno, 2004; MacDonald, et al., 2012), and our choice of contributing Profile:Match™ scales - Composure and Self-esteem - measure these qualities.

Results orientation

Contributing personality scales: Sensitivity, Self-esteem, Assertiveness, Accommodation

In terms of personality, there are four contributing characteristics. Firstly, being assertiveness and competitive; secondly, being independently minded: thirdly, being confident and optimistic; and fourth, being task oriented and able to take tough decisions.

The competency metrics contributing to this competency are supported by various research studies. For example, Judge and Cable (1997) found that individuals who are extraverted are likely to seek out opportunities and enjoy aggressive and competitive environments; they also found that individuals who were higher on agreeability were less likely to be attracted to working in environments that are results orientated, independent and demanding. Additionally, in order to be results orientated, individuals need to be eager to strive towards a desired outcome or goal, and optimism and self-confidence are important determinants of such behaviour (Schier & Carver, 1985).

Risk-taking

Contributing personality scales: Compliance, Composure, Perfectionism, Self-esteem

In terms of personality, there are four contributing characteristics. Firstly, being self-confident; secondly, having the ability to work under pressure; thirdly being excitement seeking and willing to challenge convention, and finally, being flexible and able to adapt quickly.

Both emotional stability and lower conscientiousness have been linked to risk taking, impulsivity and spontaneity (Whiteside & Lynam, 2001; Marco & Levin, 2001), which offers support for the Profile:Match™ scales contributing to this competency.

Self-confidence

Contributing personality scales: Composure, Self-esteem, Assertiveness

In terms of personality, there are three contributing characteristics. Firstly, being confident and optimistic; secondly, being achievement oriented, competitive and energetic; and thirdly, being composed, calm and consistent.

There is much literature that supports the competency metrics that make up the self-confidence competency. For example, Kirpkpatrick and Locke (1991) found that individuals who are high on emotional stability remain self-confident even during stressful events. There is also an undeniable relationship between self-esteem and self-confidence (Lorr & Wunderlick, 1986; Fleming & Courtney, 1984), which is unsurprising as essentially these two concepts are measuring very similar constructs. Evidence also supports the relationship between extraversion and self-confidence (Cheng & Furnham, 2002; Robins et al., 2001). However, interestingly Robins et al., (2001) suggest that being higher on both extraversion and emotional stability will result in higher self-confidence. This supports the idea that a combination of these personality characteristics, rather than single scale measurement, will be more predictive of self-confidence.

Strategic Awareness

Contributing personality and values Scales: Imagination, Compliance, Rational

In terms of personality and values, there are three contributing characteristics. Firstly, being curious, analytical and tuned to the big picture; secondly, being prepared to challenge convention; and thirdly, bringing a rational and logical mind set to the interpretation of events and situations.

Research has found that strategic thinking is related to openness to experience and conscientiousness (Jamshidi et al., 2012; Robertson et al., 1999). While these aspects of the Five Factor Model are important for strategic planning, evidence also suggests that taking a rational approach to strategic decision making leads to greater overall performance at work (Priem, Rasheed & Kotulic,1995).

Team orientation

Contributing personality scales: Accommodation, Composed, Sensitive, Sociable, Self-esteem

In terms of personality there are five contributing characteristics. Firstly, having a desire for affiliation; secondly, being self-assured and resilient; thirdly, having a respect for team processes and organisational values; fourthly, achieving a balance between independence and co-operation; and lastly, being tolerant and convivial.

Many studies have found an association between team performance and agreeableness, emotional stability and extraversion (e.g. Barrick & Bretz, 1996; Hough, 1992; Mount, Barrick & Stewart, 1998; Organ & Ryan, 1995). These studies support our choice of contributing Profile:Match™ scales to predict performance on the competency Team orientation. George (1990) also noted that people who scored high on neuroticism could actually negatively impact the overall performance of the team. Adding further support for using competency metrics, Mount, Barrick & Stewart, (1998) have noted that achieving a balance within aspects of personality, such as agreeability, is important for the ability to work in a team. For example, they assert that being overly cooperative and sensitive to others may actually be detrimental to team performance.

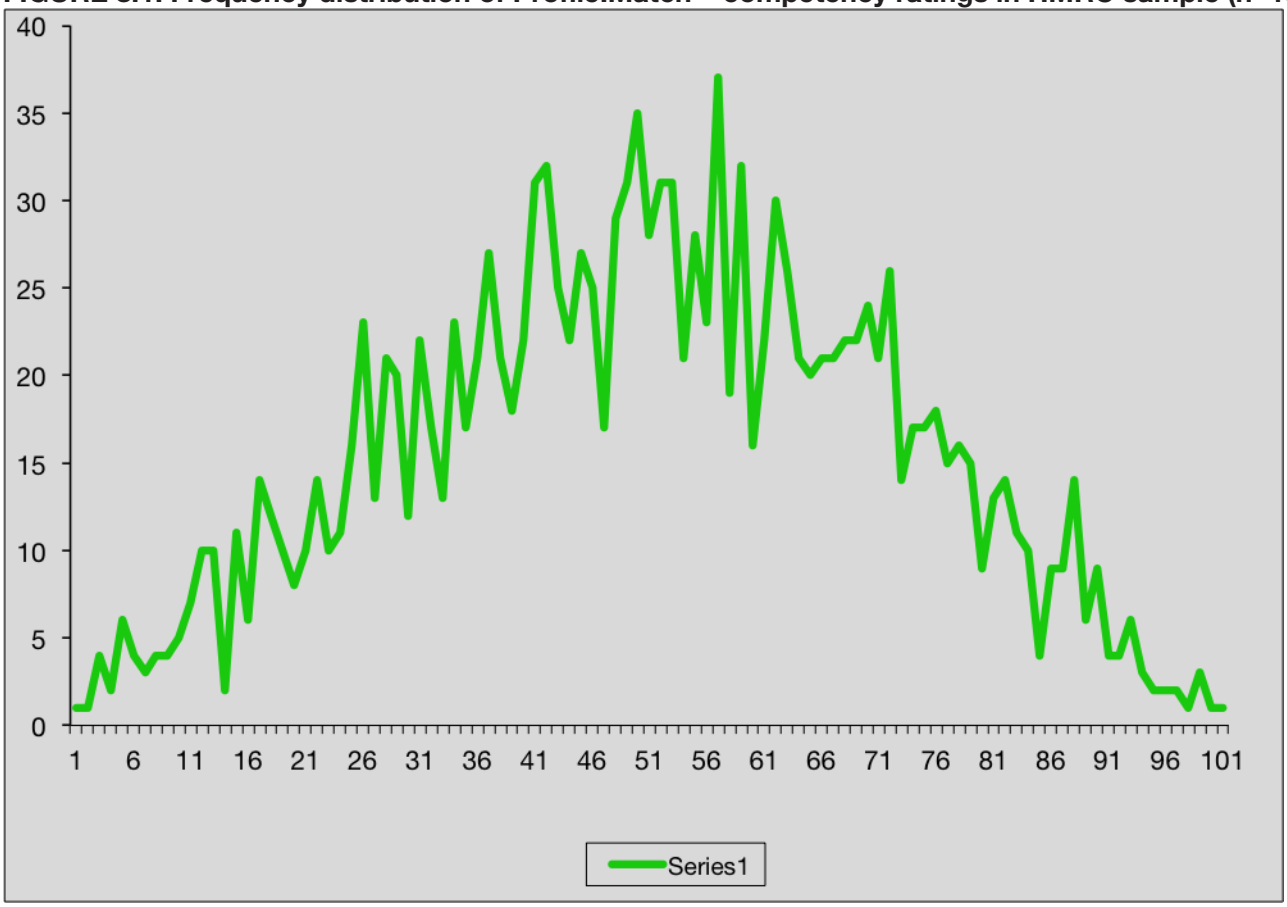
CHAPTER 8: VALIDITY OF COMPETENCY METRICS

This chapter illustrates the enhanced utility of competency metrics compared to traditional single scale interpretations of personality psychometrics. It outlines a number of studies conducted by PCL that offer validation for the use of competency metrics.

Measurement Quality Of The Competency Ratings

Profile:Match™ generates equal interval competency ratings over a 15 point scale. In effect, these are standard scores that reflect the fine incrementation of the underlying psychometrics. Using the results from a talent identification study we conducted with Her Majesty's Revenue & Customs (HMRC), the distribution characteristics of these competency ratings were investigated with particular reference to normality. In the case of all seven HMRC competencies, the distribution of ratings was close to normal. The illustration below in figure 8.1 shows the distribution of overall ratings for 1557 participants in the HMRC sample.

FIGURE 8.1: Frequency distribution of Profile:Match™ competency ratings in HMRC sample (n=1557)



Criterion Related Validity

Study 1: Establishing The Criterion Validity Of Competency Metrics

The HMRC study detailed earlier in Chapter 2 (Trickey & Hyde, 2005) provided an opportunity to validate the algorithms created using our expert judgement to translate Five Factor personality scales into competency measurement i.e. the competency metrics system that underpins Profile:Match™. In this study we were tasked with finding a way to assess seven HMRC competencies that captured their definition of talent within the organisation. Using a Five Factor personality test and collecting data from 3000 participants we were able to define algorithms (i.e. blends and differential weightings of Five Factor scales) that successfully measured performance on the 7 competencies. The final versions of the algorithms were validated against a sample of 53 participants who had been rated as either high or low performers by their managers. These personality scale algorithms achieved highly statistically significant correlations in the expected direction against the various performance ratings (i.e. the higher the competency metric score the higher the related performance rating). The correlations between algorithmic competency metrics and rated performance are shown below in Table 8.1. In addition, we found that the higher performers had both a higher score on the Signature Total Rating (a composite score of all competencies) and they had more competencies rated above average by their managers.

TABLE 8.1: Correlations between competency metrics and performance at HMRC

Competency metric	Correlation with performance	Number personality scales in the competency metric	Number personality scales > sig correlated with performance than competency metric
Intellectual Capability	.35*	4	1
Self-awareness	.40**	4	1
Change	.42**	4	1
Resilience	.34*	4	2
Relationship Management	.46***	4	1
Inspirational	.36**	3	2
Results Focus	.36**	3	2
Composite scores			
Signature total rating	.47***	n/a	0
No. competencies rated > average	.49***	n/a	0

* p <.05 ** p < .01 *** p <.001 N=53

We also used these results to compare the differential efficacy of single personality scales versus Competency Metrics in terms of predicting performance at work. The third column of Table 8.1 indicates how many personality scales contribute to each of the 7 Competency Metrics and the final column shows how many of these personality scales had a stronger correlation with job performance than the associated Competency Metric measurement. For most of the competencies only 1 scale was more predictive than the Competency Metric, and most significantly, no single personality scale was more predictive than either of the composite competency metric scores (signature

total rating and number of competencies rated above average) in predicting performance. This last point is important because the performance measure for the sample was based on supervisors' ratings of overall performance – across competencies – and so one would expect it to correlate more strongly with measurements that take all of the Competency Metrics into account rather than a single competency metric.

Although the competencies used for this study have since been updated the study provides clear evidence that blending personality scales to form competency metrics can provide incremental validity compared to single personality scale measurement.

Study 2: The Relationship Between Profile:Match™ Competency Metrics And 360° Ratings Of Competencies

It is important to establish whether the competencies as measured by the Profile:Match™ system (i.e. Competency Metrics) relate to observer descriptions of an individual's performance in the same competency. The following study aimed to establish these links by investigating the relationships between competency assessment as measured by the Profile:Match™ personality questionnaire and behavioural competency ratings of performance obtained from Profile:Match™ 360°, linking predictions from personality to a measure of observed performance.

TABLE 8.2: Correlations between personality based Competency Metrics (from Profile:Match™) and performance based competency ratings (from Profile:Match360™)

COMPETENCY METRIC	Correlation with corresponding performance competency rating from P:M360™	
	r	N
Analytic	.22***	187
Attention to Detail	.41***	126
Commitment	.06	156
Communication Skills	.23***	246
Creative	.14*	221
Customer Focus	.21***	250
Decision Making	.24***	165
Developing Others	-.04	183
Flexibility	.27***	288
Information Management	.23**	115
Interpersonal Skills	.15***	397
Leadership Potential	.22*	111
Motivation	.22***	244
People Management	.05	71
Persuasive Communication	.27**	106
Planning and Organising	.17***	307
Problem Solving	.23*	105
Project Management	.14*	286
Resilience	.12*	280
Results Orientation	.04	140
Self-Confidence	.33***	135
Strategic Awareness	.15*	250
Team Orientation	.20**	187

p <.05 ** p< .01 *** p<.001

The data was obtained from a sample of participants from various organisations, sectors and job levels. Each participant's Profile:Match™ Competency Metric assessment was correlated with their own self-rating of their performance, as well as ratings from their direct reports, managers, peers and clients. Due to the length of the 360° questionnaire, each participant was rated on only 10 out of a possible 24 competencies. However, we allotted different sets of 10 competencies to the participants and their raters in an attempt to cover all 24. The correlations between the two methods of competency assessment are presented in Table 8.2. Overall, the findings are very positive and support the validity of the Profile:Match™ instrument to measure competencies.

Additionally, the findings demonstrated that the predictive quality of the composite Competency Metrics is greater than any of the individual personality scales. The study found that for the majority of the competencies (62%) this was the case. For example, Table 8.3 highlights the results of one competency, Attention to Detail, showing the enhanced predictive quality of the composite Competency Metric (.42) over the individual personality scales (.33, .29 and -.21).

TABLE 8.3: Attention to Detail competency: Comparison of correlations between the Competency Metric measurement and the contributing personality scale measurement with the 360° performance based rating

PERSONALITY ASSESSMENT of Attention to Detail	Correlation with 360⁰ performance competency rating
COMPETENCY METRIC	
Profile:Match™ competency metric	.42***
CONTRIBUTING PERSONALITY SCALES	
Perfectionism	.33***
Compliance	.29***
Imagination	-.21*

* p <.05 ** p < .01 *** p<.001 N = 132

While the overall results are extremely positive there were three correlations in Table 8.2 (Developing Others, People Management and Results Orientation) that were not found to be significant and there are potentially a number of reasons why this is the case. Firstly, raters may find certain competencies harder to rate than others. For example, for Developing Others and People Management, the most accurate rating would come from those that have direct experience of the participant's willingness to devote time to the development of their protégées; their direct reports. Only 23% of the sample for Developing Others and 28% of the sample for People Management consisted of direct report ratings.

Another factor to consider is that many of the study participants were not in a managerial position so it is difficult for others to rate their competence on Developing Others and People Management. Secondly, some competencies, such as Commitment, suffered from problems with variability of scores (as reflected in a very small standard deviation), which is known to have a detrimental effect on the chances of finding a significant correlation. Thirdly, the sample size for Commitment and Results Orientation is comparatively small; this is a particular problem for all the competencies in this study because, although the sample seems quite large (the n in Table 8.2 varies from 115 to 626 depending on the competency), this is only true for the performance rating aspect of the study because both participants AND their raters are included in the n. The number of actual participants for whom we have personality data is as low as 21 for some competencies leading to limited variability in the personality/ Competency Metric data.

Another caveat may be that participants with certain personality characteristics may be more likely to have higher performance ratings in general, potentially skewing the results. For example, scores on the Assertiveness scale (being competitive, energetic and keen to take charge) were found to be related to higher performance ratings in just under half of the competencies assessed (46%), despite not actually being directly relevant for many of these competencies.

Finally, it is also important to take into consideration the possibility of rater bias and differential rater perspective. Performance ratings may be subject to rater bias, such as the 'Halo Effect', whereby a rater's positive perception of an individual's performance in one area may influence their perception of their performance in other areas and the 'Liking Effect', where the extent to which raters like or dislike a participant may influence their ratings.

Given that these raters might include subordinates, peers and line managers, one group of raters (say managers) might be cancelling out the ratings of another (say peers) as it is likely that there will be different assessments of competence from different groups of rater. This is likely to be particularly noticeable on those competencies such as People Management, where the impact of an individual's competence may be felt and observed very differently by the various rater groups. Because we merged the data from all raters, this study presented a particularly challenging context in which to demonstrate a relationship between raters' assessment of competence and the Profile:Match™ assessment of competence.

Future avenues for research could therefore include larger sample sizes for the participants, and if using 360° instruments again, having a larger rater sample so that the different rater groups could be analysed separately. Other possibilities include using other more objective measures of work-based performance.

We would expect to achieve stronger relationships in studies where the performance variable was more objective than here, for example, a performance measure of sales revenue could be correlated with the Persuasive Communication competency. When data is based on objectively quantifiable aspects of performance its inherent reliability is likely to contribute to higher validity coefficients than data derived from personal opinions as used in this study.

This serves to emphasise the point made above that the correlations achieved in this study are, in fact, very reassuring given the challenging context in which they have had to demonstrate their efficacy. It is also apparent that we need to seek out opportunities to collaborate with Profile:Match™ users to instigate further studies.

Study 3: The Relative Predictive Power Of Competency Metrics Vs Personality Scales Using Retail Store Performance Variables

A study with a leading retail store provided the opportunity for us to further validate the usefulness of competency metrics, but also to provide support for our argument that competency metrics are more likely to predict job performance than personality scales alone. Data was obtained for 10 Profile:Match™ competencies thought to be important for working in retail, and for 4 personality scales that contributed to those competencies. Performance data was also obtained from the retail store, which had been collected internally. These were a number of performance measures that included (1) overall store performance, (2) Area Managers' ratings of Store Manager performance, (3) Managers' rating of Sales Assistants performance, (4) sales performance and, (5) mutlisales performance, which was when additional items other than the original intended product were sold. Correlations were then carried out to examine the relationship between each of the Profile:Match™ scales and competencies, and the relevant performance variables. Table 8.4 shows the correlations using personality scales alone for sales assistants and Table 8.6 shows correlations using personality scales alone for Store Managers. While these findings were significant,

it is evident fromlooking at Table 8.5 (showing correlations between Competency Metrics and performance for Sales Assistants) and Table 8.7 (showing correlations between Competency Metrics and performance for Store Managers) that the majority of Competency Metrics are stronger predictors of job performance than personality scales alone. For example, the Competency Metric Motivation is a significantly stronger predictor of Multisales performance and Store Management performance than any of the contributing individual personality characteristics.

TABLE 8.4: Correlations between Profile:Match™ personality scales and sales assistant performance variables

Personality Scale	Performance Category	Multisales
Assertiveness	.22*	.32**
Compliance	.30**	
Accommodation		-.22*

TABLE 8.5: Correlations between Profile:Match™ competencies and sales assistant performance variables

Competency	Performance Category	Multisales	Sales Performance
Motivation	.34**	.41**	
Persuasive Communication		.23**	
Results Orientation	.31**	.35**	
Leader Potential		.25*	
People Management		.24*	
Delegate	-.22*		-.36*
Planning & Organising	.25*		
Commitment	.34**		
Self-Confidence		.32**	

TABLE 8.6: Correlations between Profile:Match™ personality scales and store manager performance variables

Personality Scale	Performance Category	Store Mgmt. Perf Ratings (ASM)
Compliance	-.30**	
Perfectionism		-.28*

TABLE 8.7: Correlations between Profile:Match™ competencies and store manager performance variables

Competency	Performance Category	Store Mgmt. Perf Ratings (ASM)
Persuasive Communication		.32*
Problem Solving		.34*
Delegating	-.31*	

Study 4: Predictive Validity: Using Profile:Match to predict performance in retail sales assistants

Following on from Study 3, we carried out a follow up study with the same organisation who had begun to use Profile:Match™ as part of their selection process for sales assistants. Candidates took Profile:Match™ and received scores on the competencies which were most significantly related to job performance in Study 3 as well as competencies that were included for common sense reasons. For example while Customer Focus was not found to be a predictor of job performance in the first study, because this was a customer facing role it made logical sense to include it as a benchmark for selection.

After six months performance data was collected for individuals who had been selected for the role. Performance measures included multisales, productivity and manager ratings. Because candidates who were selected had higher scores on the required competencies than those not selected, there was little variation among the scores overall. For this reason a correction for range restriction was applied.

A series of correlations were then carried out to investigate any relationships between job performance after six months and Profile:Match™ competencies. The results of this analysis are presented in Table 8.6. The data shows that all competencies used as a basis for Sales Assistant recruitment were highly predictive of job performance. These results offer further support for the use of Profile:Match™ as a valid tool that is predictive of job performance when competencies relevant to a specific job role are used.

TABLE 8.8: Correlations between Profile:Match™ Competencies and retail performance variables after six months

Competency	Multisales	Productivity	Manager rating 3 month reviw	Manager rating 6 month review
Motivation	.50***	.28**	.48**	.52***
Results Orientation	.26**	.42***	.36*	.32**
Self-confidence	.42***	.62***	.70***	.58***
Planning & Organising	.74***	.76***	.68***	.41***
Customer Focus	.69***	.73***	.68***	.60***
Multisales Potential	.40***	.44***	.20	.27*
N	114	114	30	66

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APPENDIX

Personality Scale Norms For Total UK Sample 2014

Raw Score	ASS %ile	COMP %ile	COM %ile	ACC %ile	IMAG %ile	PERF %ile	SELF %ile	SOC %ile	SEN %ile	STUD %ile
0	1	1	1	1	1	1	1	1	1	1
1	1	1	1	2	1	1	1	1	1	1
2	2	2	3	5	2	1	1	3	1	1
3	3	4	4	10	4	2	2	1	1	1
4	5	7	6	18	9	2	3	1	1	2
5	7	12	9	28	15	3	4	3	1	3
6	11	18	12	40	23	5	6	5	2	5
7	15	26	15	51	33	7	7	9	3	7
8	20	35	19	61	45	9	9	13	4	12
9	26	46	24	71	57	12	12	19	6	17
10	33	57	28	79	69	16	15	25	7	24
11	40	68	34	86	79	20	18	32	9	32
12	48	78	40	91	87	26	22	40	11	43
13	57	87	48	94	92	32	26	49	15	54
14	67	93	57	96	96	40	31	57	21	67
15	77	97	67	98	98	49	38	65	31	69
16	85	99	78	99	99	59	50	74	44	90
17	91	99	87	99	99	85	64	87	77	99
18	95		94	99	99	85	74	92	77	99
19	98		99	99		97	75	98	94	
20	99		99			99	86	98	99	
21	99						94	99		
22	99						99	99		
N	2191	12349	12326	11428	11706	12228	11576	11495	11631	10735
MEAN	12.78	9.69	12.72	9.69	12.72	7.69	15.89	10.55	16.31	12.63
SD	4.21	3.32	4.54	3.47	3.15	4.03	4.72	4.28	3.20	3.26
% FEMALES	49	49	48	48	49	49	48	49	48	48
% MALES	51	51	52	51	51	52	52	51	52	52
AGE RANGE	16-70	16-70	16-70	16-70	16-70	16-70	16-70	16-70	16-70	16-70
MEAN AGE	34.73	34.56	34.63	34.43	34.59	34.62	34.60	34.55	34.62	34.74
SEM	1.97	1.83	1.80	1.99	1.83	2.02	1.54	1.88	1.70	1.75

Personality Scale Norms For UK Working Sample 2014

Raw Score	ASS %ile	COMP %ile	COM %ile	ACC %ile	IMAG %ile	PERF %ile	SELF %ile	SOC %ile	SEN %ile	STUD %ile
0	1	1	1	1	1	1	1	1	1	1
1	1	1	1	2	1	1	1	1	1	1
2	1	1	2	5	1	1	1	2	1	1
3	3	4	4	9	3	1	1	5	1	1
4	5	7	6	16	7	2	2	9	1	1
5	8	13	9	25	13	4	3	13	1	1
6	11	19	13	36	20	5	5	18	1	3
7	16	28	16	47	30	8	7	25	2	6
8	21	37	20	58	41	10	9	32	2	10
9	27	48	24	68	53	13	12	40	4	16
10	34	59	30	77	65	17	15	48	5	23
11	42	70	35	84	76	22	19	55	7	32
12	50	80	42	89	85	28	23	65	10	43
13	59	88	51	92	91	35	28	72	15	55
14	68	94	60	95	95	43	34	79	22	68
15	77	97	70	97	98	52	41	86	32	80
16	86	99	80	98	99	75	58	94	67	97
17	91	99	88	99	99	75	58	94	67	97
18	95		95	99	99	87	67	98	78	99
19	98		99	99		97	77	99	94	
20	99		99			99	87	99	99	
21	99						95			
22	99						99			
N	2191	12225	11926	11313	12104	11582	11452	11371	11507	10611
MEAN	12.00	9.46	12.44	7.96	9.17	14.62	15.59	10.59	16.21	12.65
SD	4.24	3.32	4.54	3.50	3.15	4.10	4.70	4.29	3.04	3.08
% FEMALES	49	49	48	48	49	49	48	49	48	48
% MALES	51	51	52	52	51	51	52	51	52	52
AGE RANGE	16-70	16-70	16-70	16-70	16-70	16-70	16-70	16-70	16-70	16-70
MEAN AGE	34.73	34.56	34.63	34.43	34.59	34.62	34.60	34.55	34.62	34.74

Personality Scale Norms For Female Sample 2014

Raw Score	ASS %ile	COMP %ile	COM %ile	ACC %ile	IMAG %ile	PERF %ile	SELF %ile	SOC %ile	SEN %ile	STUD %ile
0	1	1	1	1	1	1	1	1	1	1
1	1	1	2	1	1	1	1	1	1	1
2	1	1	4	4	2	1	1	3	1	1
3	2	3	7	8	5	1	2	6	1	1
4	4	6	10	14	10	2	4	10	1	2
5	7	12	14	23	16	4	5	15	1	4
6	11	17	18	33	24	6	8	21	2	6
7	15	25	22	44	34	8	11	28	4	10
8	21	35	27	54	45	10	13	32	5	15
9	27	46	32	64	56	14	17	40	6	21
10	35	57	37	73	68	18	21	48	8	28
11	42	68	43	81	78	23	25	55	9	37
12	50	79	49	86	86	28	30	65	12	47
13	58	87	57	91	92	34	34	72	15	59
14	66	93	65	94	96	41	40	79	20	71
15	75	97	74	97	98	51	47	86	29	81
16	83	99	83	98	99	61	54	91	40	91
17	90	99	90	99	99	72	63	94	55	98
18	95		96	99	99	85	72	98	73	99
19	99		99	99		96	81	99	92	
20	99		99			99	89	99	99	
21	99						96			
22	99						99			
N	1050	5958	5931	5490	5920	5659	5529	5498	5581	5114
MEAN	11.20	9.70	11.70	8.35	8.90	14.42	14.84	10.21	16.24	12.25
SD	4.27	3.32	4.85	3.60	3.26	4.16	5.07	4.29	3.42	3.44
AGE RANGE	16-70	16-70	16-70	16-70	16-70	16-70	16-70	16-70	16-70	16-70
MEAN AGE	34.73	34.56	34.63	34.43	34.59	34.62	34.60	34.55	34.62	34.74

Personality Scale Norms For Male Sample 2014

Raw Score	ASS %ile	COMP %ile	COM %ile	ACC %ile	IMAG %ile	PERF %ile	SELF %ile	SOC %ile	SEN %ile	STUD %ile
0	1	1	1	1	1	1	1	1	1	1
1	1	1	1	2	1	1	1	1	1	1
2	1	2	1	6	1	1	1	2	1	1
3	1	4	2	13	4	1	1	4	1	1
4	3	7	3	22	8	2	1	7	1	1
5	4	12	5	33	14	3	2	11	1	1
6	7	18	7	46	21	4	3	16	1	2
7	10	26	9	57	33	6	4	23	2	5
8	14	35	12	68	45	8	5	29	3	8
9	18	45	16	78	58	11	7	37	4	13
10	24	57	20	85	70	14	9	46	5	19
11	31	68	25	90	81	18	11	54	8	28
12	39	79	31	95	88	24	14	62	11	38
13	49	87	39	96	93	30	18	71	16	50
14	60	93	49	98	97	38	24	79	22	63
15	71	97	61	99	98	47	30	85	33	77
16	81	99	73	99	99	57	37	90	47	89
17	88	99	84	99	99	70	46	94	64	97
18	94		93	99	99	85	57	97	82	99
19	99		99			97	69	98	96	
20	99		99			99	82	99	99	
21	99						93			
22	99									
N	1141	6146	6119	5678	6112	5847	5717	5729	5769	5302
MEAN	11.20	9.70	11.70	8.35	8.90	14.42	14.84	10.21	16.24	12.25
SD	4.27	3.32	4.85	3.60	3.26	4.16	5.07	4.29	3.42	3.44
AGE RANGE	16-70	16-70	16-70	16-70	16-70	16-70	16-70	26-70	16-70	16-70
MEAN AGE	34.73	34.56	34.63	34.43	34.59	34.62	34.60	34.55	34.62	34.74

Personality Scale Norms For University Student Sample 2014

Raw Score	ASS %ile	COMP %ile	COM %ile	ACC %ile	IMAG %ile	PERF %ile	SELF %ile	SOC %ile	SEN %ile	STUD %ile
0	1	1	2	1	1	1	1	1	1	1
1	1	1	2	1	1	1	1	4	1	1
2	4	1	4	1	1	1	3	5	1	1
3	6	3	10	4	1	1	4	7	1	1
4	8	6	12	8	2	2	5	10	1	1
5	14	14	18	8	6	4	8	15	1	1
6	16	22	24	13	12	4	15	23	1	2
7	25	30	31	24	23	6	20	29	1	6
8	37	37	38	35	35	9	27	35	1	13
9	40	50	46	47	48	15	30	42	3	22
10	48	61	53	57	56	19	36	53	4	25
11	57	72	59	68	66	27	40	60	5	35
12	69	81	67	75	73	35	45	64	9	49
13	76	90	77	83	83	42	52	70	13	59
14	82	95	83	91	92	53	59	79	25	72
15	89	97	90	96	96	62	66	87	40	84
16	92	99	94	96	99	81	73	91	51	94
17	92	99	97	98	99	87	80	94	66	98
18	94		99	99	99	93	87	99	79	99
19	97		99	99		97	93	99	93	
20	99		99			99	99	99	99	
21	99						96			
22	99						99			
N	123	123	123	123	123	123	123	123	123	123
MEAN	10.20	9.37	9.85	9.89	10.03	13.55	12.48	10.23	16.05	12.34
SD	4.35	3.23	4.43	3.41	3.10	3.75	5.04	4.52	2.66	3.03
AGE RANGE	16-60	16-60	16-60	16-60	16-60	16-60	16-60	16-60	16-60	16-60
MEAN AGE	28.70	28.70	28.70	28.70	28.70	28.70	28.70	28.70	28.70	28.70