



Talent Q Aspects

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OVERVIEW OF TECHNICAL MANUALS FOR THE NEW KORN FERRY ASSESSMENT SOLUTION

The Korn Ferry Assessment Solution (KFAS) offers a new and innovative process for assessing talent. Deployed on a technology platform that enables client self-service, the KFAS shifts the focus away from specific assessment *products* to *solutions* suitable for applications across the talent life cycle. Whether a need pertains to talent acquisition or talent management, the participant will experience a single, seamless assessment process. This process has three elements: a success profile, an assessment experience, and results reporting tailored to a variety of talent acquisition and talent management uses.

The success profile provides a research-based definition of “what good looks like” in a given role. Specifically, the success profile outlines the unique combination of capabilities, including competencies, traits, drivers, and cognitive abilities, that are associated with success in the role. These components are used to inform both the assessment experience and results reporting, which differ according to the solution, for both talent acquisition and talent management.

Whereas the KFAS is new, the assessment components are carried over from legacy Korn Ferry assessment products. The science, research, and psychometric-based information that are the foundation of these robust assessments remain relevant. Therefore, while we work to consolidate and refine technical manuals for the KFAS, we can use the existing technical manuals for KF4D Enterprise, Dimensions-KFLA, Aspects, and Elements as a bridge.

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This technical manual provides background research and psychometric-based information regarding *some* of the assessments used in the KFAS. The following table summarizes the solutions available for talent acquisition offerings and where to find the relevant psychometric-based information in the technical manual. We would like to remind you that, in the talent acquisition context and absent a client-specific validation study, the assessment should always be used with other information (e.g., from interviews and résumés) to guide talent decisions.

The Korn Ferry Assessment Solution: Talent Acquisition

	SOLUTION/NEED				
	ENTRY LEVEL	GRADUATE I (for entry professionals)	GRADUATE II (for entry first-line leadership)	PROFESSIONAL	MANAGERIAL/ LEADERSHIP
Types of roles in solution offering	Frontline Apprenticeships Operational Customer service Hospitality Retail Non-managerial	Graduate/campus Apprenticeships Across all industries Across all geographies	Graduate/campus Apprenticeships Across all industries Across all geographies	Sales Engineering Accounting Technical IT Finance Marketing Design	Any level of leadership Across all industries Across all geographies
Assessment objects available	Competencies Cognitive ability: • Numerical • Verbal • Checking	Competencies Cognitive ability: • Numerical • Verbal • Logical	Competencies Cognitive ability: • Numerical • Verbal • Logical Drivers Traits	Competencies Cognitive ability: • Numerical • Verbal • Logical Drivers Traits	Competencies Cognitive ability: • Numerical • Verbal • Logical Drivers Traits
Technical manuals to reference	Dimensions-KFLA for competencies Aspects for cognitive ability	Dimensions-KFLA for competencies Elements for cognitive ability	KF4D Enterprise for competencies, traits, drivers Elements for cognitive ability	KF4D Enterprise for competencies, traits, drivers Elements for cognitive ability	KF4D Enterprise for competencies, traits, drivers Elements for cognitive ability

The KFAS may also be used for a variety of talent management applications such as high potential identification, leadership development/succession, leadership selection, and professional development. The self-assessment components within these solutions include competencies, traits, and drivers, which may be used for diverse reporting needs, including learning agility and risk factors results. Technical information for these components is covered in the KF4D Enterprise technical manual. Multi-rater assessments may also be a part of talent management solutions.



FOREWORD

This Psychometric Review provides information relating to the development and use of Talent Q Aspects.

The information included focuses on the initial and ongoing development of Aspects, the background and rationale for its development, and its psychometric properties (for example, reliability, validity and group differences).

This document is intended to illustrate how Aspects was developed and how it is unique to Korn Ferry.





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SECTION 1

BACKGROUND TO ASPECTS

Since the conception of psychometrics, the levels of interest regarding how such methods can be applied to real-world challenges have grown increasingly.

Back in the 1910s, with work on IQ at Stanford University and the subsequent development of the American Army Alpha, the primary focus was on assessing abilities. As these methods developed and in particular with the application of factor analysis in the 1930s, there was an increased interest in measuring a broader range of outcomes.

This resulted in the widespread use of psychological testing and assessment centres in the Second World War. Following this expansion of psychometrics, the 1950s featured the emergence of highly influential models of personality, such as those from Eysenck, Cattell, and Myers and Briggs, and with them, related questionnaire measures.

Whilst the 1960s were characterised by a growth in humanistic approaches, in the 1970s assessment began to develop as a significant private sector industry with the emergence of organisations such as DDI, PDI and SHL, alongside David McClelland and the competency movement, and Belbin's work on teams. Subsequently the use of both psychometrics and competencies expanded rapidly across organisations, with computer-based assessment emerging during the 1990s to replace traditional paper-based methods.

The advent of the internet and its revolutionary impact on communication and business has led to much wider use of unproctored psychometric assessment. Whilst initially many existing pen-and-paper assessments were simply moved on to the web, new techniques which are only possible using technology are becoming more widely used. This includes randomised and adaptive ability testing, and more efficient and complex use of data in the personality arena.

As online recruitment became more commonplace for all role levels, it became clear that a portfolio of psychometric assessments aimed specifically at the more junior roles was required, particularly where high volumes of applicants created the need for an objective yet simple way of making quality decisions about a candidate's likely suitability. Recruiters had traditionally been wary of using objective assessment methods due to the time required for completion putting applicants off, plus the cost of them had often been a barrier to use.

The development of Aspects is a culmination of many of the above factors. Within the industry, test development and application principles have been agreed, and we have complied with these in the development of our assessments. In addition to this, we have made the most of the technological, theoretical and analytical advances over the last century. Further, we recognised the need for a robust portfolio of assessments which can be used with lower level roles that do not involve time-consuming and costly approaches. This has enabled us to offer a portfolio of assessments that are not only technically and psychometrically robust but are also ground-breaking in their use of technology and psychometrics.

The Aspects portfolio was developed by a team of experienced psychometricians and test developers. Having learnt from the developments over the last century, the Aspects portfolio offers assessments that are reliable, valid and fair as well as being innovative, user-friendly and technologically advanced. They offer a flexible and efficient way of assessing large volumes of candidates but retain the rigour associated with credible psychometric assessments.

Within the portfolio, a variety of assessments are available including Aspects Styles and Aspects Ability. Below is an overview of each.





ASPECTS STYLES

At its core, Aspects Styles is a competency-based questionnaire. However, we have taken advantage of technology and psychometrics to create an assessment that can be easily customised to suit the needs of a project, whilst at the same time offering a robust and efficient way to make objective and fair decisions about large volumes of applicants.

Rather than migrating old assessments to new technological platforms, Aspects has been designed with the technological opportunities in mind. As well as exclusively using the internet as the medium for assessment, the data collection and scoring protocols enable Aspects to be customised such that each project can be created to include only those competencies that are most relevant to the requirements of the role being assessed for. So whilst the entire assessment is based on a well-researched model of general competencies, you can select the five or six competencies most relevant to the role you are recruiting for. This ensures that the candidate experience is as efficient as it can be, without impacting upon the rigour of the assessment. The value of Aspects Styles extends much further as dynamically-generated interview guides help managers conduct better quality, more effective interviews.

ASPECTS ABILITY

Aspects Ability is an innovative range of online adaptive ability tests measuring verbal reasoning, numerical reasoning and clerical checking skills.

Aspects Ability adapts to the candidate's performance in real time affording a concise but rigorous assessment experience. Our approach to ability testing is firmly grounded in psychometric theory, and Aspects Ability has been designed to provide standardised, reliable, valid and fair measurement of ability. Guilford's work in the 1960s has shaped ability testing generally and underpins our approach. His model proposed a non-hierarchical approach with specific abilities in particular areas such as verbal, numerical or mechanical reasoning. The model of specific abilities has been further expanded by Sternberg's triarchic model of intelligence (1977) and Gardner (1983) in his model of multiple intelligences. Subsequent meta-analytical validation of ability tests has demonstrated their efficacy in predicting job performance from frontline through to senior management role levels (Schmidt and Hunter, 2004).

Aspects Ability assesses how well a candidate can perform when they are trying their hardest (rather than measuring typical performance). The assessments operate in a similar way to other cognitive ability tests in that they are norm-referenced, so results gain practical meaning and utility once they have been compared with an appropriate norm group.

However, Aspects Ability is significantly different from most other ability tests in that all three tests are adaptive. Many ability tests were originally designed to be paper-based, with everyone being presented with the same set of questions which progressively increase in difficulty. Candidates would be given a set amount of time to complete the tests. The number of questions the candidate gets right within the overall time limit then determines their raw score.

With the advent of the internet, it is now possible to take a more intelligent, efficient approach to test development known as adaptive testing. Aspects Ability takes advantage of this approach. Within an adaptive test, like Aspects Ability, there is a large bank of questions of varying levels of difficulty. The candidate starts the test with a question of medium difficulty. If they get this question correct, they are presented with one of a selection of harder questions. Alternatively, if they get a question wrong, the candidate is presented with a slightly easier question. This continues until they have completed a set number of questions and the combination of the right and wrong answers, along with the respective difficulty levels of the questions, determines their final score.





The adaptive testing approach provides a number of significant advantages over traditional testing:

- **Secure:** The adaptive nature of the test means that individuals get questions which are unique to their level of ability, reducing the chances that questions and correct answers can be published. In addition, as the questions are also randomised this reduces the chance that any two candidates will receive the same test. All of these features greatly improve the security of the test and the confidence you can have in the results.
- **Fast:** Because candidates are quickly taken to questions appropriate to their level of ability, the testing process can be completed much more quickly (e.g. half the time) compared to traditional tests, with no compromise on scientific rigour.
- **One test system:** A much greater spread of questions can be included in one testing system, removing the requirement for different tests for different roles. This also means that the tests are fair, with no assumptions being made regarding an individual's education or work experience.

All three tests within Aspects Ability (Verbal, Numerical and Checking) are adaptive. They generally take between 6 and 10 minutes per test to complete, almost a third of the time of equivalent traditional tests. A candidate's score is then compared with an appropriate norm group to assess how well a candidate has done on the assessment.

Aspects Ability test	Ability measured	Average completion time (approx.)
Aspects Ability Verbal	Measures the ability to read and understand information and ideas presented in writing as well as making inferences from that information. The questions range from simply locating relevant text in a passage through to comprehending and inferring information from that presented in the passage.	8 minutes
Aspects Ability Numerical	Measures the ability to comprehend numerical data and apply the right mathematical methods to solve a problem. The questions range from locating and comprehending information from graphs and tables through to basic arithmetic and more detailed computational skills.	10 minutes
Aspects Ability Checking	Measures the ability to accurately check whether detailed numbers and codes are identical or different. The questions range from very simplistic questions through to those incorporating more complex codes and numbers.	6 minutes

Verbal and numerical reasoning and clerical checking (often referred to as 'perceptual speed') have been consistently shown to be strong predictors of job performance across a wide range of validity studies as reviewed by Schmidt and Hunter (2004) and Whetzel et al (2011). As Aspects Ability is designed for use with more junior, non-managerial jobs, the content and question levels have been designed accordingly.



SECTION 2

RATIONALE FOR DEVELOPMENT

Aspects is an online screening solution which, when used in the early stages of recruitment, quickly identifies unsuitable applicants, allowing only those who more closely match the requirements of the role to proceed.

Aspects is particularly effective for high volume recruitment scenarios, where applicants can be screened out quickly, cost-effectively and objectively, leading to improved hiring decisions and reduced cost-per-hire.

Aspects measures a variety of constructs including verbal and numerical reasoning skills, checking skills and a comprehensive set of workplace competencies. It offers a large degree of flexibility as you can choose to select from the pre-defined Talent Q competencies, or you can opt to use your own competency model, which we can then map onto the appropriate assessments and even individual questions.

Aspects was developed with a number of practical objectives in mind:

- To offer greater quality of hire, delivering bottom line benefits.
- To provide flexible and customisable assessment to closely match the requirements of the role in question.
- To support the interview process with these candidates.
- To enhance candidate engagement and reinforce employer brand whilst retaining psychometric rigour.

All of the above objectives are set within the context of taking a psychometric approach to assessment, namely that assessments need to be standardised, reliable, valid and free from bias in line with best practice. Details of how these objectives were achieved are outlined below.

GREATER QUALITY OF HIRE, DELIVERING BOTTOM LINE BENEFITS

Research has shown that the difference in contribution between high and average performers for non-skilled roles is in the order of 18% of salary, and for skilled roles around 32% of salary. Within Western economies, this suggests a net business benefit of approximately £2,000 to £3,000 per year each time a high performer is accurately selected in non-skilled roles, and as much as £8,000 for skilled roles. We recognise that achieving a high quality of hire in volume recruitment is critically dependent on accurate assessment techniques which are valid enough to pick out the high performers.

Traditionally, many recruiting organisations have been put off using credible psychometric assessments due to the cost implications and instead have opted for less robust and supposedly 'cheaper' alternatives, such as application forms or interviews. Our own research (MacKinnon, 2011) highlights that objective assessment plays a larger part for recruiting graduates, managers and executives than it does for 'volume hires'. However, it is also clear that even with unskilled (high volume) roles, the implications of making the wrong decision are costly. Aspects has been designed to overcome this problem. We have applied the same stringent approach to its development as we apply to all our other assessments. This has led to a solution that delivers affordable yet accurate results. You can choose the assessments that best suit your current recruiting needs and be assured that they all offer solid psychometric properties. Knowing this, and having a sensible approach to pricing, ensures that decisions are not only fair and objective but they are also affordable, even when processing very large volumes of applicants.

By using an objective and accurate approach to making decisions, the results will speak for themselves. As the right candidates are offered roles that they are best suited to, the business benefits will be clear as jobholders are more motivated, able and productive.



FLEXIBLE AND CUSTOMISABLE ASSESSMENT

The flexibility and customisation options for Aspects are many and varied. Like all of our assessments, they can be easily customised to incorporate your own branding and terminology, but Aspects goes further than that. We recognise that every role is unique, and that when recruiting in high volume scenarios it is vital that candidate testing time is kept to a minimum.

The first choice you can make is which test to use. When creating a project, you can easily pick and choose from the available assessments to ensure you only use those that reflect the demands of the job. This may mean you opt to assess candidates using one or more of the ability tests first and then ask successful candidates to complete Aspects Styles at the next stage in the process. Or you may prefer to ask candidates to complete all assessments as part of the first stage. Aspects offers complete flexibility in how the process is managed.

Further, Aspects Styles offers another layer of customisation by giving you the opportunity to select only those competencies that are relevant to the role. We have developed a global competency model containing 16 of the most widely used competencies in customer-facing, non-supervisory roles. As each role is unique and as candidates expect a fast and seamless recruitment experience, we have given you the flexibility to pick the five or six most relevant competencies (known as 'target' competencies) and also to hand pick two or three 'filler' competencies that reduce the capacity for 'faking good' on the competency questionnaire.

All of the above ensures that the assessment experience reflects the language and identity of your organisation and leads to greater buy-in and use of assessments by key stakeholders.

SUPPORTING THE INTERVIEW PROCESS

Unlike many other assessments, Aspects supports you in the interview stage of the assessment process too. It has long been recognised that a structured approach to interviews offers a far more effective way of making a decision about a candidate's suitability for a role than general, unstructured interviews (Weisner and Cronshaw, 1988). With this in mind we provide an online, dynamic competency-based interview guide. This leads to a higher quality and more relevant interview, as the questions are adapted to suit the scores of the candidates on each of the competencies.

You can use the guide to ensure that the questions asked are objective, fair and relevant and can also make use of the extra 'probing' questions that are provided. Armed with the scores from the initial online assessments plus the evidence gathered at interview, you can assign appropriate overall competency scores for each candidate interviewed.

ENHANCING CANDIDATE ENGAGEMENT, WHILST RETAINING PSYCHOMETRIC RIGOUR

The Aspects portfolio offers a one-stop-shop for the entire recruitment process. You can select assessments, create projects and candidates all on Korn Ferry Assessment Systems (KFAS). Aspects can also be easily integrated with an existing applicant tracking system (ATS) to avoid having multiple systems and logins. Candidates do not even need to know that the assessments are being provided from a different platform to the one they register with initially. The ease with which we can add your own branding to our system means that candidates are experiencing a seamless process from start to finish.

The Aspects assessments have also been designed to engage candidates in a way that other online assessments do not. At the heart of the design process was a desire to create content for the assessments that not only looks modern and up-to-date but also incorporates subject matter that is directly relevant to today's work environment. A tremendous amount of effort has been focused on the design of the imagery that candidates experience to ensure it truly reflects the type of media that candidates encounter on a day-to-day basis. This approach gives candidates an experience which is interesting despite often being seen as challenging.

An equally important consideration is that candidates want to experience assessments that do not require a lot of their time. But of course, that needs to be balanced with having an assessment that is robust enough to support valid decision-making both in terms of the psychometric properties and in reducing opportunities for candidates to cheat or 'fake good'. A number of useful methods were therefore used to ensure this was the case for both Aspects Styles and Aspects Ability.



ASPECTS STYLES

As already explained, Aspects Styles is a short competency sifting questionnaire, which ensures that candidates remain engaged as they complete it. The amount of time candidates are required to complete Aspects Styles has been kept to a minimum in a number of ways:

1. **Harnessing existing data** – by tapping into the Dimensions (our personality questionnaire) database, it was possible to select the best performing questions that relate to the competencies within the Aspects Styles competency framework. Having access to thousands of candidates data gave the design team the opportunity to select those questions with the strongest psychometric properties, thus ensuring that each competency can be measured using just six questions yet retain reliability.
2. **Measuring only relevant competencies** – whilst the standard Aspects Styles framework contains 16 competencies, we have given you the opportunity to assess candidates using just eight of them. Within those eight competencies, five or six are selected as ‘target’ competencies (those that the system actually scores and that are used to make decisions), whereas the remaining two or three are known as ‘filler’ competencies – they are not scored but are included to create ‘noise’.

Whilst it was important that candidate testing time was kept to a minimum, it was also vital to ensure that we developed a questionnaire that reduces the opportunity for candidates to try and cheat or ‘fake good’. Competency sifting questionnaires typically use one of two formats:

1. **Normative** – where the candidate is asked to use one invariable scale to rate each statement or question. Often this is a ‘Likert’ scale, usually with five points using a scale that is along the lines of ‘Very true’, ‘Fairly true’, ‘Neither true nor untrue’, ‘Fairly untrue’ and ‘Very untrue’.

The disadvantage of a purely normative question type is that subjects can too easily ‘fake good’, or rate themselves as having every competency in abundance. In many cultures, such a questionnaire is regarded as ludicrously easy to manipulate in a recruitment context.

2. **Ipsative** – where the candidate has to put a number of statements in rank order of applicability to them.

The disadvantage of a purely ipsative format is that it is sometimes quite difficult for the participant to complete. Often someone genuinely feels they are quite strong on all the behaviours, but has implicitly at least to ‘pass’ on some of them.

Aspects Styles employs a ‘modified ipsative’ response format. The subject is given four statements to rate. If each statement in a group is given a different rating, the ranking is taken as complete, however, if two or more statements are given the same rating, the subject is asked to ‘tie-break’ them. To demonstrate:

INITIAL RATING:

How true is each statement about you in relation to your behaviour at work?

How true is each statement about you in relation to your behaviour at work?	Completely untrue	Fairly untrue	Neither true nor false	Fairly true	Very true
I like having to respond to new challenges.	☐	☒	☐	☐	☐
People say that I have a lot of common-sense.	☐	☒	☐	☐	☐
Sometimes I react too aggressively to people.	☐	☐	☒	☐	☐
I find it easy to cope with pressure.	☐	☐	☐	☒	☐



RANKING A TIE-BREAK:

You have given the same rating (Fairly untrue) to 2 statements

The modified nipsative approach is an effective way of gathering information and, crucially, ensuring that it is robust enough for supporting employment decisions and minimising the issues of candidates 'faking good'. It also makes the experience of completing the questionnaire less cumbersome than a fully ipsative questionnaire. It is therefore virtually impossible for a candidate to score high on all competencies due to the nature of the response style.

Additionally, there are 'filler' competencies included that are designed to appear as desirable as the 'target' competencies. If a candidate wanted to try and fake good they would find it difficult as they would not know which competencies are being scored and which are fillers. Fillers should not be too obviously incompatible with the targets as they would stand out too much as distractors rather than looking like the real thing. If Aspects only presented scored (target) competencies, candidates would be forced to score lower on a number of key competencies but as all target competencies are important for the role, fillers are a necessary inclusion. By having fillers we can see which of the competencies candidates rate lower, if there were only target competencies there would be nothing to compare to.

ASPECTS ABILITY

Aspects Ability is different to many tests as we have used item response theory (IRT) as the statistical method to calibrate the items, as opposed to the more traditional classical test theory (CTT) which is often used. In essence, IRT relates a person's probability of responding to a test item correctly to their ability level and the characteristics of the items (e.g. difficulty, discrimination). IRT is a set of mathematical models that describe this relationship.

In IRT, each item is characterised by one or more parameters. Two commonly investigated parameters are item discrimination and item difficulty:

- The **item discrimination parameter** a describes an item's ability to differentiate among people at different ability levels. The a parameter describes how an item may be related to the ability or trait being measured. The higher the discrimination, the more the variability in item responses is attributable to differences in the latent ability.
- The **item difficulty (or threshold) parameter** b is the point along the latent ability continuum where a person has a 50% chance of getting an item correct. Items with high thresholds are less often endorsed.

The models used to describe item response vary greatly in terms of their assumptions and the parameters used. To a large extent the choice of IRT model depends on the item response format. For example, 'dichotomous' or 'polytomous' response formats, 'ordered' or 'unordered' response formats. The calibration of Aspects Ability items followed the Two-Parameter Logistic Model (2PL). The Two-Parameter Logistic Model has been widely used for dichotomous item response formats. The model estimates a discrimination parameter and a difficulty parameter. It assumes that items vary in their difficulty and discrimination level. Effectively, items are differentially weighted with regard to the underlying ability or trait being measured.

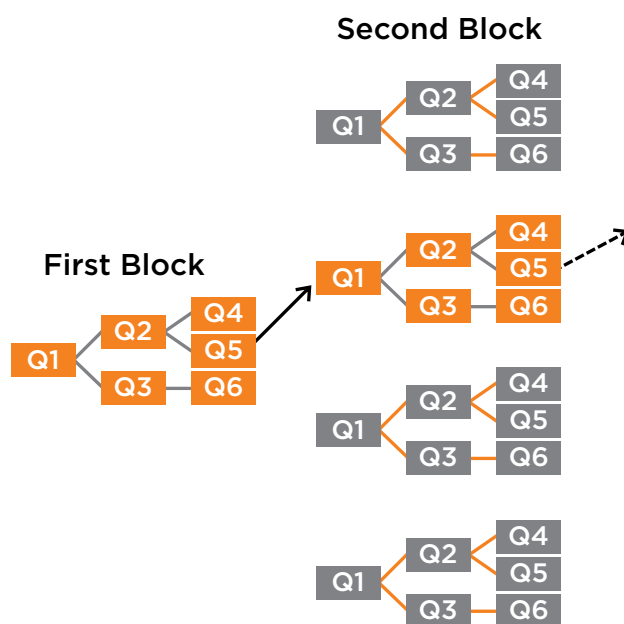
Another key concept in IRT is **item and scale information**. In CTT, the precision of a test is often indexed by a simple overall measure of reliability and the focus is on the test as a whole. In IRT, the concept of reliability is replaced by item and scale information. The key notion here is that the precision or reliability of a test varies across the ability or trait continuum. Different items, with different sets of item parameters, provide differing amounts of 'information' across the continuum. The information an item



provides is determined by its discrimination parameter, and where that information is concentrated along the latent ability is determined by the difficulty parameter. The sum of all item information forms scale information, which shows the precision of a scale across all levels of the latent trait. This information is very useful for test construction.

In terms of test design, adaptive tests such as Aspects Ability are significantly different from conventional approaches to testing. In conventional tests, all candidates are presented with the same questions, normally in an ascending order of difficulty. In adaptive tests, the questions presented to a candidate depend on how the candidate scored on previous questions. Each time a candidate gets a question right within the time available, they are moved on to a more difficult one. If they get a question wrong, or fail to answer, they move to an easier question. The diagram below illustrates how a candidate moves through an assessment based on the previous answers given.

Step 1: Moving through one block of questions to another

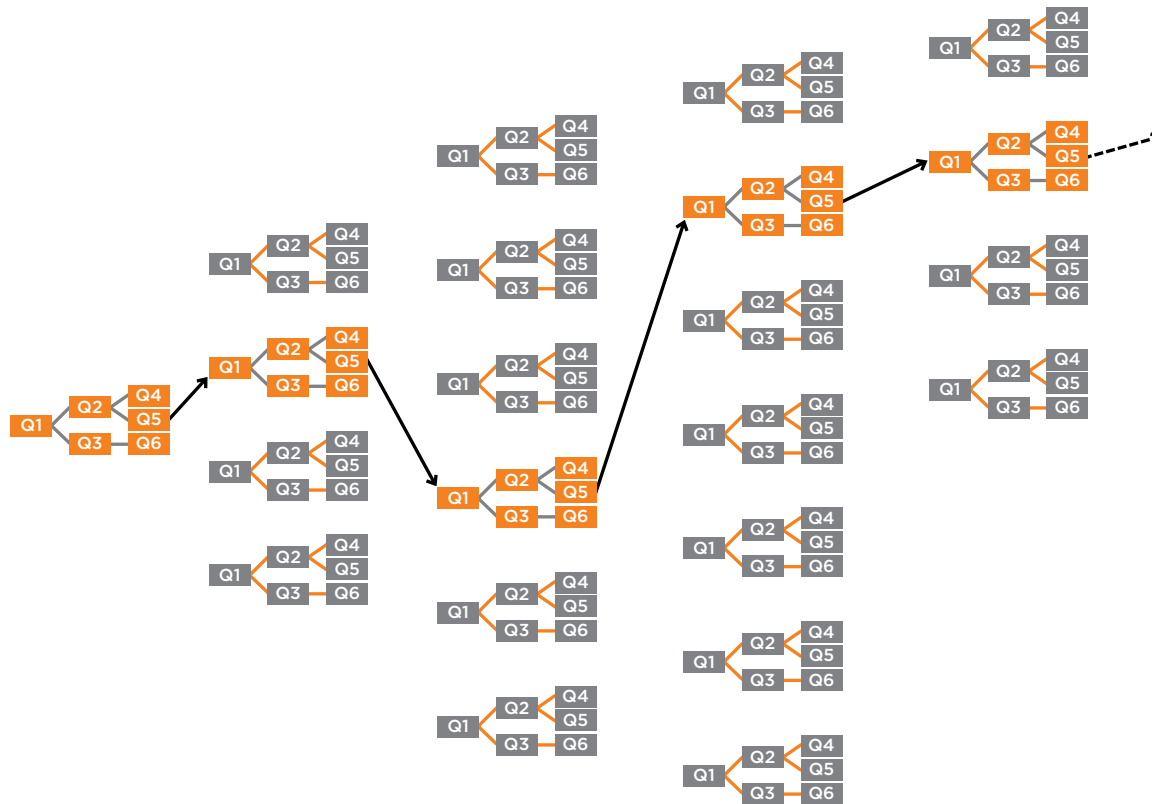


Aspects Ability also involves some practical differences from other adaptive tests. One approach to adaptive testing is to give a candidate a completely new question with new supporting information each time. However, this is in fact very time-consuming as each time a candidate is presented with a new question, they would also need to read a new passage of text or review a new table of data. Conventional tests typically get round this challenge by having three or four questions for each 'block' of information (e.g. a passage or a table of numerical information) to save time.

In order to shorten the time required, Aspects Ability also works in small blocks of questions. For instance, at the beginning of the test, the first question presented will relate to a particular table of information, such as a table of business-relevant numerical data. On completing the first question, if answered correctly, the candidate moves on to a harder question which still relates to the same table of information. They then get two further questions depending on whether their answer is right or wrong. Conversely, a similar logic applies if they get question one wrong and proceed to an easier question. Performance across a block of questions then determines the next question block which is presented to the candidate. The diagram on the next page illustrates how a candidate might navigate a range of possible blocks of questions.



Step 2: Moving through a complete test

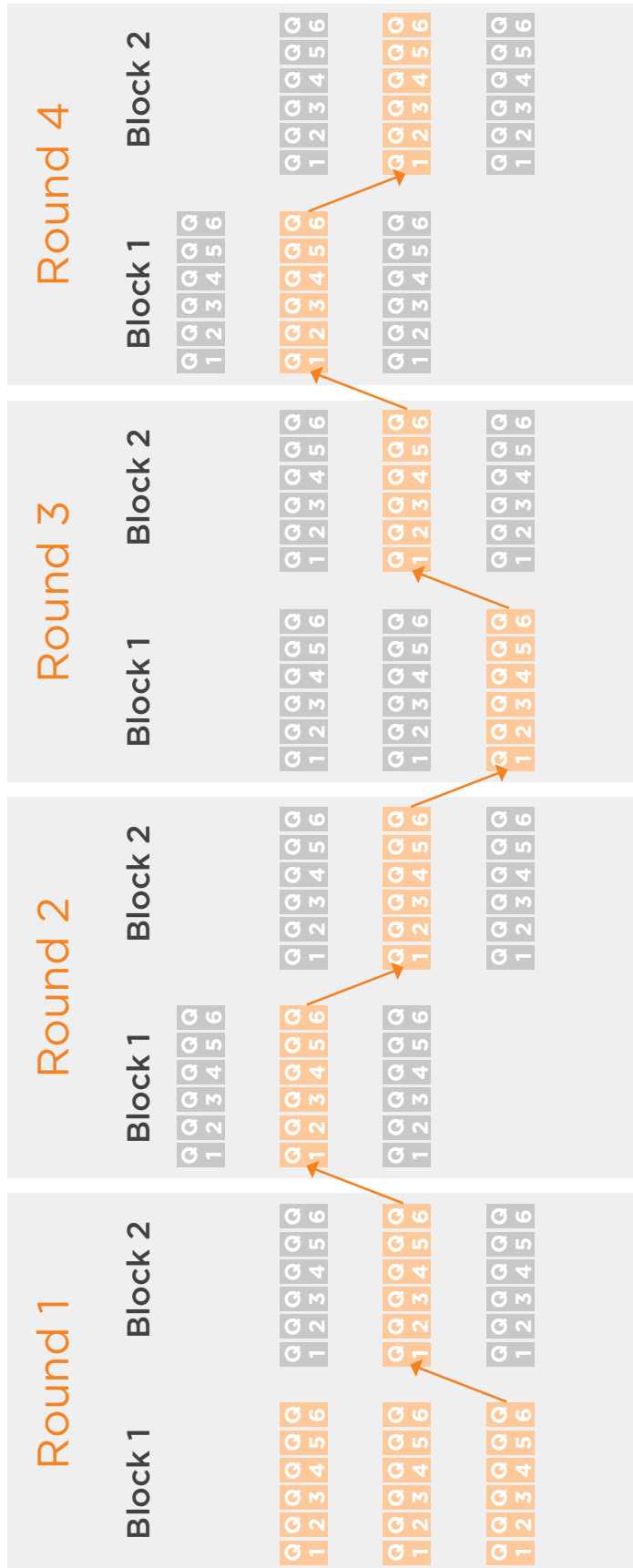


Within each block (where a candidate will complete three of the six available questions), the questions have assigned 'difficulty levels' which are used to determine the score attained so far in the test.

Aspects Ability Checking works slightly differently due to the nature of the test. As it is a checking test, it requires that multiple questions are presented on screen together so that the test taker has to work with lots of information at once. With this in mind, the questions are grouped into blocks of five or six and the test adapts the block that the test taker sees next dependent upon how many they get right and wrong in each block. The diagram on the following page shows how a candidate might navigate through the blocks of questions.



How a candidate might navigate through the blocks of questions





SCORING ASPECTS ABILITY

A candidate's score on any passage or table is the sum of the difficulty levels of all questions that they got right, or zero if they got none right. In terms of how the tests work, getting a question wrong includes being timed out.

'Difficulty level' here follows IRT conversion and is the location of the item on the latent ability continuum. Typically ranging from -3 to 3, the greater the value of b , the more difficult an item is. The aggregate score so far (based on difficulty levels of questions answered correctly) then determines the choice of the next block of questions from those within the Aspects Ability question database. This process continues to the end of the test.

A candidate's final score is the sum of the difficulty levels of all questions correctly answered. The more questions a candidate answers correctly, the higher the difficulty level of further questions, and thus the greater opportunity they have to achieve a very high total score.

All the questions are based on a passage of text (Aspects Ability Verbal) or on a table/chart of numerical information (Aspects Ability Numerical). Each passage or table/chart has six associated questions, but any candidate is only presented with three of the six questions. Aspects Ability Checking works slightly differently as the questions are presented in blocks of five or six on a screen. Each group has a calculated difficulty level and the candidate's score on that group of questions determines which block of questions they see next.

Candidates move adaptively (according to whether they answer the question correctly, as explained above) from question to question within a passage or table, until they have been presented with three questions from that passage or table. Then they are moved to another table or passage, according to their cumulative score at the time. Based on our statistics, we can use the final score to determine a candidate's percentile score in comparison with any given norm group.

SPEED OF TESTING

Aspects Ability provides some key advantages in terms of ease of completion and test duration. Because the Numerical and Verbal tests operate in blocks of three questions, it is not necessary for individuals to familiarise themselves with new background information for every question, enabling them to progress more quickly. Additionally, due to the use of adaptive testing, it is possible to complete the tests in approximately 6-10 minutes, almost a third of the time of traditional tests.

RANDOMISATION

As well as the adaptive nature of Aspects Ability, the tests are randomised with a wide selection of questions available for the system to choose from at each level of difficulty. For instance, there are a number of different starter blocks for each test as well as a wide range of subsequent options available. This has significant benefits in terms of reducing the opportunity for cheating because there are so many different questions. It would be futile for candidates to share screenshots of their tests as every candidate is presented with a different selection of questions.

APPLICABILITY ACROSS DIFFERENT ROLE LEVELS

A final key benefit of the system is that due to the wide range of questions within each test there is no need to decide which level of test to administer in advance as is the case with classical tests. Rather, a candidate can simply start to complete Aspects Ability Numerical, for example, and the system will home in on the candidate's ability level. This means the system can be used across a wide variety of role levels (we advise that for supervisory level and above candidates are tested using Talent Q Elements ability tests).



SECTION 3

DEVELOPING ASPECTS

Aspects was developed using a number of guiding principles and methods. An overview of the principles and the development process are outlined below.

ASPECTS STYLES

By learning from previous research and existing competency models it was possible to ensure Aspects Styles offers cutting edge innovation, relevance in the workplace and quality decision-making.

Designing the competency framework.

The development of the Aspects Styles competency framework came as the result of a number of inputs:

- A review of existing off-the-shelf generic and client competency models.
- Harnessing the data associated with, and experiences of developing, the Talent Q Dimensions personality questionnaire.
- Focusing on the validity data associated with lower level roles and the key competencies defined as important for success.

The approach used ensured that the model was far reaching and at the same time, focused on real world scenarios.

THE RESULTING COMPETENCY FRAMEWORK

This phase of work resulted in a competency model that included 16 competencies as outlined below:

Competency title	Definition
Teamwork	Comfortable working with others, open in their dealings with colleagues. Contributes to team cohesion and calls on others for help when needed.
Influencing and Selling	Influences effectively and enjoys situations involving selling. Strong in negotiations with others, assertive in their approach and wins others over to their perspective.
Interpersonal Skills	Socially skilled and confident, knows how to behave in social situations and comfortable meeting new people.
Customer Orientation	Focused on providing service to customers and meeting their needs. Enjoys listening and engaging with other people; demonstrates interest in helping them achieve their goals.
Working with Data	Rational problem solver, good at analysing data to reach appropriate conclusions. Confident working with statistics and numerical data.
Commercial Orientation	Identifies commercial opportunities; knowledgeable about markets and competitors. Appreciates revenue and profit implications of different options.
Complex Thinking	Understands different perspectives on complex issues. Able to appreciate relevant theoretical models and diagnose situations with many different components.
Creativity	Generates innovative solutions to problems. Demonstrates curiosity and willingness to adopt new ideas and put them into practice, rather than relying on established approaches.
Planning and Organising	Plans and organises their work and projects effectively; structuring and scheduling tasks appropriately. Takes a methodical approach to their work.



Competency title	Definition
Efficiency and Reliability	Diligent in their approach to work, following through on tasks until they are completed and seeking to always deliver on their promises. Demonstrates strong attention to detail, observing rules and processes affecting their work.
Stress Tolerance	Copes with high levels of stress; remaining composed in emotionally charged situations. Accepts critical feedback and remains calm in a crisis.
Resilience	Gets over setbacks quickly, seeing the positive aspects of a situation. Resilient in the face of challenges and doesn't let small issues affect their outlook.
Resourcefulness	Quickly gathers the technical information or resources needed for a task. Enjoys new challenges even if they mean a change from the status quo, approaches problems proactively and confidently to find a solution.
Adaptability	Adapts comfortably to rapidly changing circumstances, enjoying variety in their work. Changes their perspective as needed when circumstances change, adjusts to ambiguity comfortably rather than needing a clear routine.
Decisiveness	Works at a fast pace, taking decisions quickly when required. Comfortable taking risks in their work and avoids procrastination.
Drive and Motivation	Motivated by challenging, quantifiable targets. Ambitious and focused on delivering clearly defined objectives, drawing satisfaction from achieving their goals.

Selecting appropriate questions

Following the development of the framework, relevant questions were selected from the Talent Q Dimensions questionnaire database (see the Talent Q website for more information on Dimensions – www.talentqgroup.com). Such questions were selected because they were relevant to the competency, provided high content validity and were appropriate for the target population. It was also important to keep convergent validity to a minimum thus ensuring little overlap between competencies. Using this approach ensured the selected questions already had well established psychometric properties in a wide variety of languages. Items for one competency (*Commercial Orientation*) were selected from the MultiView question set and therefore a separate data set was used in the analysis. The *Dimensions Psychometric Review* outlines the checks that questions had been subject to as part of the original Dimensions development process, in general terms they were reviewed against a number of criteria, for example, work relevance, face relevance, how up to date they were and reading level.

By harnessing data from the existing databases the psychometric properties of Aspects could be calculated. This incorporated a statistical review of:

- **Reliability:** Cronbach's alpha coefficients were calculated for each competency, ensuring they were reliable.
- **Divergent validity:** Checking the inter-competency correlations to ensure they were not too high, therefore indicating the competencies do not overlap excessively.
- **Norms:** Having tested reliability and ensured minimal overlap between scales, norms were created for the new competencies using the databases to calculate the statistics described.

ASPECTS ABILITY

In developing Aspects Ability, the intention was to create a testing system that would minimise opportunities for cheating and remove the need for a library of tests, instead enabling test users to have a one-size-fits-all solution for all their volume recruitment needs. The final assessment also had to be cutting edge, innovative and relevant in the workplace.

Specifying requirements

The development of the Aspects Ability question banks came as the result of a number of inputs:

- A review of the existing validation literature to confirm which abilities to focus on.
- A review of materials used across a variety of different relevant workplaces to ensure that the final design was relevant and appropriate for the likely candidate groups.
- A consideration of advances in technology and psychometrics that could be harnessed, adapted and applied in the test system.



This phase of work resulted in a specification for the test system including the adaptive nature of the tests, the required psychometrics, and exactly how many questions at varying levels of difficulty and content type would be needed for each category of test. It also included an overview of the required number of answer options for each type of item.

Designing the question banks

After the inception of the initial design, question writing was shared amongst the development team. Questions were then peer reviewed with a number of criteria in mind, namely:

- Appropriate level of difficulty.
- Work relevance.
- Face relevance.
- How up to date they were.
- Reading level (using accessible vocabulary).
- Free from ambiguity in passages/tables/items/answer options.
- Checking the scoring key.

Key international stakeholders were asked to review the questions for ease of translation, ensuring that there were no terms that would be difficult to translate and that the scenarios and content used could be applied across (or at least adapted to suit) a variety of cultures. This led to a number of rewrites prior to the start of the first trial. The checks were adapted to suit the nature of the ability that the test was assessing. A wider review was then carried out of the entire bank of questions to ensure that there was a clear spread of difficulty and content.

Trialling the question banks

The trial versions of the tests were fixed (i.e. non-adaptive) versions and each one contained a set of 'linking' questions, i.e. questions that were common to all trial forms which allowed comparisons across trial forms. For the Verbal and Numerical trials, each trial form contained 18 questions (with the linking questions totalling 30% of the full trial form). For the Checking test it was 64 questions per trial form with 20% of them being linking questions.

This design was optimal for the purposes of constructing the question banks. Trials were conducted on a combination of students plus candidates and employees from sponsoring organisations across a variety of sectors and industries, ultimately totalling in the region of almost 10,000 people. This meant that for each Verbal and Numerical question, data was available from approximately 300 people and for the Checking test this figure was close to 600 people per question.

Constructing the question banks

Once trial data was obtained, the questions were screened for acceptance into the item banks using the following criteria:

- Item discrimination parameters were reviewed with questions exhibiting a low discrimination parameter being rejected.
- Item difficulty parameters were reviewed with questions exhibiting extreme values being rejected.
- Item distractors were also reviewed with distractors exhibiting irregularities being rejected.

Questions that did not meet the criteria set were excluded from the item bank. The final item bank incorporated a wide spread of difficulties from -3 to 2.5 with the majority always falling into the -1.5 to 1.5 range. The resulting banks of items were subjected to a final peer review for content and context coverage. The final banks of items were then configured to create the adaptive randomised tests.

Norms

One norm group is provided for Aspects Styles and for each Aspects Ability test. For Aspects Styles this is based on a sample of 3,000 completions made up of people in relevant roles.

For Aspects Ability the norm groups for each test contain the following:

- Verbal – 1,477 people.
- Numerical – 1,029 people.
- Checking – 21,764 people.



SECTION 4

ASPECTS REPORTS AND SCORES

There are a number of reports and score types available within the Aspects portfolio.

SCORES

Each candidate is given a percentage fit (or suitability) score. This represents how suited they are to the role in question in percentage terms, whereby 100% is a perfect fit and 0% is unsuitable. There are three suitability scores available:

- Total (takes account of competency and ability scores).
- Styles (uses competency scores only).
- Ability (uses ability scores only).

There are also a number of scores available for the individual assessments within the portfolio.

Aspects Styles scores include a score for each competency, presented on a 1-5 scale.

Aspects Ability scores are provided in percentiles (a percentile is the value of a variable below which a certain percentage of other people's scores fall). For example, the 20th percentile is the value (or score) below which 20% of the observations may be found.

REPORTS

Across the Aspects portfolio there are a number of reports available in a variety of formats – see the table of report options on the next page.

Report	Description
On-screen reporting – overview	Provides an on-screen, sortable view of all suitability scores grouped by project. This provides an at-a-glance view of all candidates that enables you to see which candidates have and haven't scored above the cut-off mark.
On-screen reporting – candidates	By clicking on a candidate's name on the overview screen it is possible to view their individual assessment scores.
Excel export	All on-screen views can be exported to Excel to enable further manipulation of the candidate data.
Aspects Ability Test Report	A PDF report that displays candidate percentile scores on each competency and details of how long the candidate took to complete each of the tests.
Aspects Styles Competency Profile	A PDF report that provides a definition of each competency and plots the candidate's competency scores on a 1-5 scale.
Aspects Styles Interview Guide	A PDF report that takes the candidate's scores on each competency and draws together a set of competency-based interview questions that can be used as part of the recruitment process
Aspects Candidate Report	A simple PDF report designed to be shared directly with candidates.



SECTION 5

RELIABILITY

There are a number of ways to measure the reliability of an assessment or a scale within an assessment. We regularly conduct analyses to ensure that our assessments meet the industry standards for excellence in relation to reliability.

INTERNAL CONSISTENCY

Understanding reliability in terms of internal consistency looks inside the test to assess whether the questions within it are all measuring the same construct.

The internal consistency can be measured in a number of ways, the simplest being the split-half reliability (Spearman-Brown split-half method). This adds up the score on the items for half of the test or scale (e.g. all the 'even' numbered items) and correlates this with the score on the items for the other half of the test or scale (e.g. all the 'odd' numbered items). However, a more sophisticated approach is generally preferred by psychometricians and is usually measured by using Cronbach's alpha coefficient.

To measure the internal consistency of a test or scale, statisticians have developed complex equations which in practice identify the average level of correlation for all the possible split-half combinations that could be made. As with other reliability coefficients, the alpha should typically be 0.7 or higher for any given assessment or scale within an assessment.

Each scale being measured has a margin of error associated with it. The likely error band around this score can be measured using the Standard Error of Measurement (SEm). It is a useful statistic as it tells us how much confidence we can place on a score when making decisions. A highly reliable test or scale would have a lower SEm than an unreliable test or scale. The formula for this is as follows:

$$SEm = SD \sqrt{1-r}$$

SD = standard deviation

r = reliability of the test or scale





Aspects Styles

The alpha coefficients and Standard Error of Measurement (SEm) for each Aspects Styles competency are provided below (n=3,000).

Competency	Alpha	SEm
Teamwork	0.74	0.14
Influencing and Selling	0.79	0.12
Interpersonal Skills	0.86	0.07
Customer Orientation	0.58	0.23
Working with Data	0.72	0.13
Commercial Orientation	0.70	0.11
Complex Thinking	0.67	0.18
Creativity	0.66	0.19
Planning and Organising	0.67	0.18
Efficiency and Reliability	0.74	0.12
Stress Tolerance	0.76	0.10
Resilience	0.66	0.16
Resourcefulness	0.61	0.20
Adaptability	0.58	0.23
Decisiveness	0.70	0.17
Drive and Motivation	0.80	0.10

Psychometric assessments used in selection situations typically have alpha coefficients of 0.7 or higher (with an agreed industry minimum of 0.65) for any given assessment (or scale within an assessment in the case of personality questionnaires). Within Aspects Styles (like other sifting tools), we are cognisant of the fact that each competency is measured by only six items. Typical selection tools have approximately 50% more items than that and obviously take a lot longer to complete. A high reliability is very much dependent upon the quality of the questions but also the number of questions included in the scale. When designing sifting tools (as opposed to selection), one of the key criteria is often to keep the completion time to a minimum as they are used in volume recruitment and therefore are used to sift out the candidates at the bottom of the group, as opposed to making decisions about exactly who to employ.

Aspects Styles has been designed to balance the need for quick completion with the need for strong reliabilities. A number of competencies are slightly below the usual 0.65 threshold but this is a virtue of the reduced number of items and reduced completion time for candidates.

ASPECTS ABILITY

The reliability of adaptive tests can be measured using a different measure of internal consistency known as 'marginal reliability'. This is based on item response theory (IRT) and offers a better measure of precision (Green, Bock, Humphreys, Linn and Reckase, 1984).

In IRT, the reliability of a test varies along the range of the ability continuum. Marginal reliability is effectively the average reliability over the ability continuum. The values for marginal reliability range from 0 to 1 and their interpretation is analogous to Cronbach's alpha. Marginal reliability provides a single value that summarises a scale's overall precision (Thissen and Wainer, 2001).

The marginal reliability of each Aspects Ability test was estimated using IRT calibration (n=1,000). The results are presented below. The results show that Aspects Ability tests are highly reliable.

Marginal reliability	
Aspects Verbal	0.74
Aspects Numerical	0.77
Aspects Checking	0.89



SECTION 6

VALIDITY

Validity can be measured in a number of ways, namely face validity, construct validity and criterion validity.

FACE VALIDITY

Face validity refers to whether people looking at the test, using their own judgement and experiences, think it does what it is supposed to do. The entire Aspects portfolio was developed by experts in the field of psychometrics with the intention that the questions would be as face valid as possible to the person completing the assessments. All content has been designed to be relevant to today's working environments, such that candidates will 'buy in' to the assessments rather than being put off by out-dated or irrelevant content.

Further, in the design of Aspects Ability, particular attention was paid to the graphics and content of the passages and numerical tables and graphs used to ensure they were as relevant to modern online technology as possible.

CONSTRUCT VALIDITY

Construct validity is a more theoretical but nevertheless important aspect of validity. A 'construct' in psychology is a term meaning a particular psychological characteristic, for instance numerical reasoning ability or an aspect of personality (e.g. extraversion), values, motivation or performance. Construct validity is concerned with whether a test is measuring the construct it claims to measure.

Aspects Styles

Most competency questionnaires, like Aspects Styles, are multi-dimensional so we need to consider the construct validity of each competency (scale) whereas with Aspects Ability we focus on each individual test.

Inter-competency correlations

Aspects Styles measures 16 competencies in total and whilst it would be unrealistic to expect zero correlation between them there are some competencies that we might expect to correlate much higher than others. Using data collected through a wide variety of 'live' recruitment projects it was possible to examine the inter-correlations between the 16 competencies. As Aspects Styles offers flexibility around which competencies are actually used within the final assessment, there is a lack of consistency in terms of the amount of data available across the 16 competencies. A number of them consisted of less than 50 people; these were taken out as little credibility could be given to a group this small. However, other competencies had data for thousands of people's responses. The details of all group sizes are provided in Appendix A.

Amongst the groups containing more than 50 people, the most notable correlations were between:

- *Working with Data and Planning and Organising (0.27).*
- *Efficiency and Reliability and Planning and Organising (0.21).*
- *Resourcefulness and Complex Thinking (0.19).*



The highest negative correlations (where sample sizes were above 50) were between:

- *Creativity and Customer Orientation (-0.42).*
- *Efficiency and Reliability and Teamwork (-0.36).*
- *Decisiveness and Efficiency and Reliability (-0.32).*

See Appendix A for the full correlation matrix of those competencies where data was available for more than 50 people.

Whilst there will naturally be some degree of overlap between the competencies, it should also be noted that if the correlations were too high there would be a large amount of redundancy within the framework. This could result in selecting two competencies that are so closely correlated that they are actually measuring almost the same constructs. Overall, Aspects Styles displays a low level of overlap between competencies suggesting that each competency is adequately separated from the others (referred to as 'scale interdependence').

Correlations between competencies ranged between -0.42 to 0.27, with a large majority of them falling into the range -0.2 to 0.2. Looking at the inter-correlations (where the group size was greater than 50 people), the average (ignoring the direction of correlation) is just 0.09, thus suggesting very little redundancy across the framework.

Aspects Ability

Correlations between ability tests

As many psychologists believe there is a concept known as general intelligence (or 'g'), it is safe to assume that an ability test with good construct validity is likely to correlate with other tests (to some degree) due to this underlying factor of 'g'.

The correlations observed between the Aspects Ability tests are presented in the table below (all are significant at $p < 0.001$ and the size of the group included in the analysis is presented in brackets):

	Verbal	Numerical	Checking
Verbal			
Numerical	0.36 (140)		
Checking	0.25 (283)	0.41 (160)	

The correlation between Aspects Ability Verbal and Aspects Ability Checking is 0.25 and the correlation between Aspects Ability Numerical and Aspects Ability Checking is 0.41. Finally, the correlation between Aspects Ability Numerical and Aspects Ability Verbal is 0.36.

Overall, this shows that there is a similar degree of overlap between the three ability assessments, but that verbal reasoning, numerical reasoning and checking skills are nevertheless separate attributes, worthy of being assessed separately.

Correlations between abilities and competencies

Further evidence of construct validity can be sought by looking at the correlation between ability tests and related competencies as measured by Aspects Styles. The full correlation matrix is presented in Appendix B for all groups containing more than 50 people. There was a lot of variation in terms of the group sizes – for example, some correlations are based on data for more than 6,000 people whereas others contain only 50. With this in mind it would be unwise to simply regard statistically significant correlations as the most notable, since in theory with such a large sample, a correlation of just 0.03 could be regarded as significant.



Some of the most noteworthy correlations include:

- Aspects Ability Verbal correlates highest positively with *Customer Orientation* and highest negatively with *Adaptability*.
- Aspects Ability Numerical correlates highest positively with *Customer Orientation* and *Planning and Organising* and highest negatively with *Stress Tolerance* and *Adaptability*.
- Aspects Ability Checking correlates highest positively with *Resilience* and *Efficiency and Reliability* (albeit just below 0.1) and highest negatively with *Teamwork*.

The results from this section are somewhat inconclusive currently due to gaps in the data, but it is an area that we will continue to monitor and update as more data becomes available. Suffice to say that none of the results found at this stage contradict what we might expect to see but we will be more confident once more data is available.

CRITERION VALIDITY – ASPECTS STYLES AND ASPECTS ABILITY

Criterion validity looks at the relationship between the assessments being used and performance on the job. Essentially, criterion validity tells us whether the results of an assessment predict something which is practically useful such as subsequent performance. It is therefore often considered to be the most important area of validity required in a test.

To measure criterion validity it is necessary to correlate test performance with a measure of performance on the job. We therefore endeavour to conduct validation studies with client organisations to measure the criterion validity of Aspects on a frequent basis and with varying types of organisations and roles.

Validation studies

A number of validation studies have been completed to look at the empirical validity of Aspects. In the main, the research has been conducted in partnership with our clients to help them better understand what the optimal competencies are for a specific position they are recruiting for. (When deployed in this context this is referred to as the ‘data driven’ approach to selecting competencies as outlined in the ‘Customising Aspects’ section that follows later in this document.) For more information, or if you are interested in working with us to conduct a validation study, please contact your account manager.

STUDY 1:

Telecommunications organisation

The sample consisted of 65 consultants working in a customer handling call centre role for a large telecommunications company. A variety of performance criteria were available including:

- Customer satisfaction ratings (derived through customer surveys).
- Team leader ratings.
- Sales figures.
- Annual performance review data.
- Days absent (over a one year period).

All of the above were regarded as equally important by the organisation and therefore all were considered in the analysis.

All employees completed the full Aspects Styles questionnaire incorporating all 16 competencies in our model. They also completed Aspects Ability Verbal and Numerical tests.



Aspects Styles

As would be expected, there was a lot of variation in terms of the competencies that predicted the performance criteria above. The table below summarises the observed correlations and gives an indication of their strength.

Aspects Styles	Customer satisfaction ratings	Team leader ratings	Sales	Annual performance review	Days absent
Teamwork		M		S	S
Influencing and Selling		M	S	S	
Interpersonal Skills	S				
Customer Orientation	S				
Efficiency and Reliability		M			M
Working with Data			S		
Creativity			S		
Resilience	S		M		VS
Resourcefulness	M		M		
Adaptability			M		
Drive and Motivation				VS	
Stress Tolerance					VS

Key to size of correlations: M = moderate (approaching significance), S = strong ($r = >0.2$, $p < 0.05$ / $p < 0.01$), VS = very strong ($r = >0.3$, $p < 0.001$)

With this in mind, the key competencies that were deemed most predictive of performance generally were:

- Teamwork.
- Influencing and Selling.
- Resourcefulness.
- Resilience.
- Stress Tolerance.
- Drive and Motivation.

These competencies were selected based on both the number of performance measures they were predictive of, along with the strength of the correlation. By creating a simple composite of these competencies it was possible to correlate the finalised model, with the performance criteria. The table below highlights the findings.



Performance criterion	Correlation
Customer satisfaction ratings	0.25**
Team leader ratings	0.34**
Sales	0.34**
Annual review	0.22*
Days absent	-0.37**

Key: * = approaching significance, ** = significant

A suitability score was also created using the six competencies outlined above; this score reflects the proportion to which the participants satisfied the profile, whereby a high score on all competencies gives a high suitability score. It was possible to examine the business impact of the assessments by comparing the higher performers with the wider group. Those with a suitability score of 60% or above were shown to score on average:

- 35% higher customer satisfaction ratings.
- 3% higher team leader ratings.
- 23% higher sales.
- 15% higher annual performance review.
- 50% less number of days absent.

Aspects Ability

The participating employees' scores on Aspects Ability Verbal and Numerical were also correlated with the performance measures. The Numerical scores correlated highest with 'team leader ratings' ($r=0.29$, $p<0.05$) and 'sales' ($r=0.25$, $p<0.05$) and the Verbal scores also correlated with 'team leader ratings' ($r=0.27$, $p<0.05$).

An integrated approach.

Taking account of the above, it was recommended that the client should use an integrated model which incorporated both ability and competency scores as part of their sifting process. The final model therefore included:

- Teamwork.
- Influencing and Selling.
- Resourcefulness.
- Resilience.
- Stress Tolerance.
- Drive and Motivation.
- Verbal Reasoning.
- Numerical Reasoning.

By including the ability test results it was very apparent that the predictive power of the model was increased:

Performance measure (average)	Strength of relationship: competencies only	Strength of relationship: competencies and ability
Customer satisfaction ratings	Moderate	Strong
Team leader ratings	Moderate	Very strong
Sales	Moderate	Very strong
Annual review	Strong	Strong
Days absent	Very strong	Very strong



Summary:

- In terms of business impact, those scoring highest on the six selected Aspects Styles competencies were clearly more successful across all of the key performance measures, highlighting that using appropriate sifting measures can dramatically improve the likelihood of employees becoming successful.
- An integrated model was recommended to the client which brings together the key competencies and abilities for predicting success.

STUDY 2:

Postal organisation

The sample consisted of 85 frontline delivery employees working for a large postal organisation. In this study an online survey was used to capture the performance ratings of the employees. Line managers were asked to rate their team members on 20 questions, tapping into a variety of performance measures.

All employees also completed the Aspects Styles questionnaire comprising of eight competencies, namely:

- Teamwork.
- Customer Orientation.
- Efficiency and Reliability.
- Stress Tolerance.
- Resilience.
- Adaptability.
- Interpersonal Skills.
- Planning and Organising.

The latter two had been included as 'filler' competencies because they were not seen as being critical to the role. This organisation had previously determined which competencies they wanted to use by conducting a job analysis, and they now wanted to see the impact the competency model was having. All participants also completed Aspects Ability Verbal, Numerical and Checking tests.





Aspects Styles

The table below demonstrates which performance ratings the suitability score for the six target competencies correlated with. It can also be seen that the suitability score correlated highly with 'overall performance'.

Performance	Strength of relationship with suitability score
Overall performance rating	Strong
Works well with others	Strong
Asks for help when needed	Strong
Demonstrates strong attention to detail	Very strong
Always seeks to deliver on promises	Very strong
Sees the positive aspects of a situation	Very strong
Is able to cope with problems that arise	Very strong
Adapts comfortably to rapidly changing circumstances	Very strong
Changes their behaviour as needed when circumstances change	Very strong
Can hide their feelings in emotionally charged situations	Very strong
Remains calm and relaxed in a crisis	Very strong
Focuses on providing service to customers and meeting their needs	Very strong
Listens and engages with other people	Strong
Plans and organises their work and projects effectively	Very strong
Takes a methodical approach to their work	Very strong
Confident when communicating with others	Strong
Knows how to behave in social situations	Moderate

Key to size of correlations: moderate = 0.20 to 0.29, strong = 0.30 to 0.39, very strong = 0.40 to 0.49



The table below shows the key correlations that were observed between the competencies and the performance measures.

Aspects competency	Correlations with performance measure	Strength of relationship
Customer Orientation	Sees the positive aspects of a situation	Moderate
	Remains calm and relaxed in a crisis	Strong
	Confident when communicating with others	Slight
Efficiency and Reliability	Sees the positive aspects of a situation	Moderate
	Can hide their feelings in emotionally charged situations	Strong
	Remains calm and relaxed in a crisis	Moderate
	Takes a methodical approach to their work	Slight
	Number of days absent	Moderate
Stress Tolerance	Plans and organises their work and projects effectively	Slight
	Takes a methodical approach to their work	Slight
Resilience	Works well with others	Moderate
	Asks for help when needed	Slight
	Listens and engages with other people	Slight
	Plans and organises their work and projects effectively	Strong
	Takes a methodical approach to their work	Very strong
	Confident when communicating with others	Moderate
	Knows how to behave in social situations	Moderate
	Number of times late	Very strong
Adaptability	Works well with others	Slight

Key to size of correlations: slight = approaching statistical significance level, moderate = 0.20 to 0.29, strong = 0.30 to 0.39, very strong = 0.40 to 0.49.

This study provides evidence for this organisation that all but one of the competencies they have opted to use are indeed relevant and predictive of the performance criteria that they use to measure success for employees in the role.

Aspects Ability

The participating employees' scores on Aspects Ability Verbal, Numerical and Checking were also correlated with the overall performance rating. All three tests correlated with the overall performance measure to some extent:

	Verbal	Numerical	Checking
Overall performance rating	Strong	Very strong	Moderate

Key to size of correlations: moderate = 0.20 to 0.29, strong = 0.30 to 0.39, very strong = 0.40 to 0.49.

The highest correlation was evident with Aspects Ability Numerical, followed by Verbal and finally Checking.

Summary:

- In terms of business impact, the assessment results show that, in a six-month period, frontline employees achieving high scores:
 - were 50% more likely to achieve top performance ratings ('outstanding').
 - had 8% less unscheduled absence days.
 - had 5% less late attendance.



- This study has shown the recruiting organisation that the competencies they have selected and the ability tests they are using are providing a strong return on investment by helping them to predict high performing candidates.
- This client can continue to use Aspects Styles and Ability with the confidence that they offer the right approach for them.

STUDY 3:

Fashion and homeware retailer.

The sample consisted of 55 managers working for a large retail company. The employees included in the study were employed in the following roles:

- Department managers.
- Unit heads.
- Operations managers.

In this study annual appraisal data was used for performance data.

All participants also completed the full Aspects Styles questionnaire incorporating all 16 competencies in our model.

The competencies that were found to best predict performance were:

- Drive and Motivation.
- Customer Orientation.
- Teamwork.
- Adaptability.
- Planning and Organising.
- Working with Data.

By creating a simple composite of these competencies it was possible to correlate the finalised model with the performance criteria. The overall composite score correlated 0.23 with the performance measure.

Summary:

- In terms of business impact, those scoring highest on the selected Aspects Styles competencies were clearly more successful across all of the key performance measures, highlighting that using appropriate sifting measures can dramatically improve the likelihood of employees becoming successful.

STUDY 4:

Mobile phone store retail assistants.

The sample consisted of 145 retail assistants working for a global mobile phone company based across a wide variety of stores in the UK. A number of different performance criteria were collected for each person including their total sales and insurance sales (sales made on mobile phone insurance policies). All participants also completed the Aspects Styles questionnaire but in this instance the organisation had pre-selected eight core competencies for inclusion in the study. Whilst this is not the ideal approach for an Aspects Styles validation (it is preferable to use all 16 competencies) it does still offer useful data.





The selected competencies were:

- Teamwork.
- Influencing and Selling.
- Interpersonal Skills.
- Customer Orientation.
- Efficiency and Reliability.
- Stress Tolerance.
- Resilience.
- Drive and Motivation.

It must be remembered that each Aspects Styles project contains five or six 'target' competencies and two or three 'filler' competencies. In this study, data was available on all eight competencies as the study was being used to help make a decision about which to use as target competencies for recruitment decisions.

In this particular study, data on tenure was also available which meant that we were able to control for how long someone had been in the role and adjust the correlations accordingly. Further, as the performance measures correlated significantly ($r=0.84$) it was possible to combine them and create one overall sales success measure.

The competencies that best predicted success on the performance measures were Influencing and Selling, Resilience and Adaptability. All three predicted sales success significantly. By creating a simple composite of these three competencies it was possible to correlate the finalised model with sales success. The calculated composite score correlated 0.29 with sales success, thus showing that by using the appropriate competency scores, it is possible to account for almost 10% of the variance using the sales success performance measure.

Summary:

- By splitting the group into two – the highest 50% and lowest 50% of scorers on the composite competency score – it was clear that those who achieved higher scores on the key competencies actually attained an overall sales success figure that was 42% higher than the lower scorers.
- This study highlights why upfront data collection on all 16 competencies offers a superior approach to pre-selecting eight competencies for a study. Whilst the recruiting organisation may have an idea of what is likely to predict success and can make useful hypotheses (for example, Influencing and Selling, Resilience and Adaptability), it can often be the case that other competencies can prove to be more useful. The organisation may be missing valuable data on other competencies that are predictive.

STUDY 5:

Mobile phone call centre customer service agents.

The sample consisted of 59 call centre agents working in a customer service role for a global mobile phone company. The performance criterion collected for each person was call-handling time with a lower call time being preferable. All participants also completed the full Aspects Styles questionnaire, thereby providing data on all 16 competencies. In this particular study, data on tenure was also available which meant that we were able to control for how long someone had been in the role and adjust the correlations accordingly.

The competencies that best predicted success were Decisiveness, Influencing and Selling, Drive and Motivation, Creativity, Commercial Orientation and Resilience. We were therefore able to create a simple composite of these six competencies for each participant and to correlate them with the call-handling times.

The calculated composite score correlated -0.42 with call-handling time thus showing that by using the appropriate competency scores, it is possible to account for 18% of the variance using the call-handling time as the performance measure.



Summary:

- By comparing the top third of the group with the bottom third (based on their scores on the composite competency score), it was clear that the higher scorers had an average call-handling time that was over 40 seconds faster than the lower scorers. This is equal to them achieving a 14% better average call-handling time with obvious implications for cost savings for the business overall when considered on a wider scale.

STUDY 6:

Prison Custody Officers

The sample consisted of 108 custody officers working for a large UK organisation in various locations. In this study, annual appraisal data was used for performance data.

All employees had previously completed the Aspects Styles questionnaire as part of their recruitment process. This comprised of the below six key competencies:

- Teamwork
- Influencing and Selling
- Efficiency and Reliability
- Resilience
- Adaptability

The competencies that best predicted success on the performance measures were Planning and Organising and Resilience. The higher the score on these competencies, the better the performance rating.

Summary:

In terms of business impact, those scoring highest on the selected Aspects Styles competencies were clearly more successful across key performance measures, highlighting that using appropriate sifting measures can dramatically improve the likelihood of employees becoming successful.

STUDY 7:

Textile manufacturing company

The sample consisted of 157 employees working for a large manufacturing company. All participants completed Aspects Styles and Ability.

In this study, appraisal data was used for performance data, which included information against KPI's, reviews from Line Managers and an overall performance rating.

The competencies that were found to best predict performance were:

- Interpersonal Skills
- Creativity
- Resourcefulness
- Planning and Organising
- Adaptability
- Drive and Motivation

A suitability score was created using the six competencies outlined above; this score reflects the proportion to which the participants satisfied the profile, whereby a high score on all competencies gives a high suitability score. It was possible to examine the business impact of the assessments by comparing the higher performers with the wider group. Those with a suitability score of 50% or above were shown to score on average 21% higher on their overall performance rating.





The participating employees' scores on Aspects Ability were also correlated with the performance measures.

	Strength of relationship with Aspects Verbal
KPI's	Strong
Line Manager review	Very strong
Overall performance rating	Moderate

Key to size of correlations: moderate = 0.20 to 0.29, strong = 0.30 to 0.39, very strong = 0.40 to 0.49

Summary:

- In terms of business impact, those scoring highest on the six selected Aspects Styles competencies as well as Aspects Verbal were clearly more successful across the performance measures, highlighting that using appropriate sifting measures can dramatically improve the likelihood of employees becoming successful.
- An integrated model using both Aspects Styles and Ability was recommended to the client, bringing together the key competencies and abilities for predicting success.





SECTION 7

RELATIONSHIPS BETWEEN ASPECTS AND BIOGRAPHICAL DATA

This section of the Psychometric Review is based on data from a sample of people who have completed Aspects as part of live recruitment projects or as part of the trialling and development of Aspects and for whom at least some biodata was available.

As not everyone provided all the relevant biographical data and as not all competencies were used within all projects, the figures vary throughout this section. It should always be remembered that the results presented in this part of the review relate to this particular sample and may not be generalizable to other samples.

The respondents' Aspects scores have been analysed in relation to their age, gender, and ethnic origin. Some biographical data variables lend themselves to correlations, others to differences between means, which is why the approach varies in the sections below.

It was also possible to examine whether any adverse impact is evident when using the overall suitability score for sifting applicants. This uses the widely accepted method for evaluating whether a selection method is fair – known as the 4/5ths rule. This has been operationally defined in Uniform Guidelines on Employee Selection Procedures (1978) in the USA. The guidelines state that if the passing rate for the low scoring group is 0.80 or greater than the passing rate of the highest scoring group, the test is considered to be fair. If the test does not satisfy the 4/5ths rule it is incumbent on the employer to demonstrate that the procedure was professionally developed and valid. In this section we have examined each score band between 10 and 40 (as scores above this would not really be suitable for sifting purposes) and compared the proportion of people achieving that score based on the different groups described above. As long as the proportion of people from the lower scoring group is 0.80 or greater than the proportion of people achieving the same score from the higher scoring group, we can be satisfied that the Aspects suitability score does not discriminate unfairly.

Statistical note

When large sample sizes (for example, 4,000 or more) are used, any correlation above 0.03 is in theory regarded as statistically significant; therefore it is more practical to consider correlations above 0.10 as the minimum for psychological significance. As regards significant differences between means, this would strictly depend on the sizes of the sub-samples involved; but we have taken 0.25 SD (standard deviation) as the critical value. Differences between 0.25 and 0.4 SD will be called significant – anything above 0.4 highly significant.

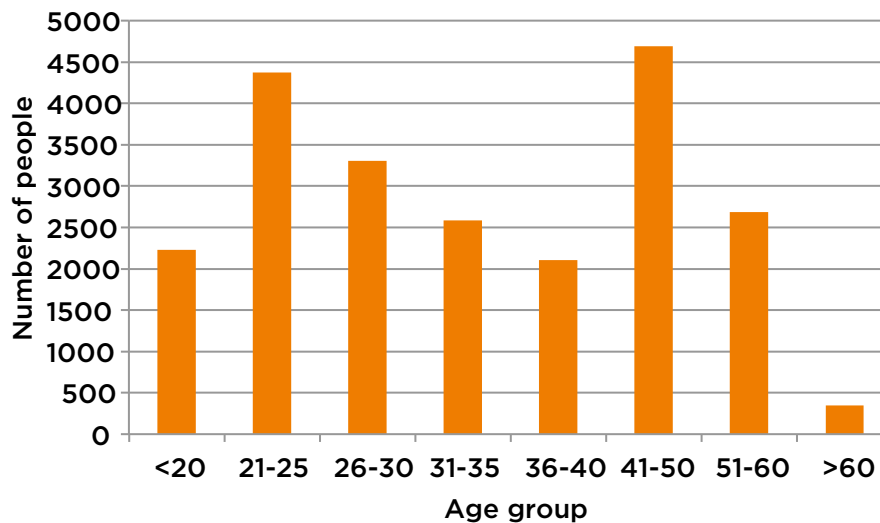
BIOGRAPHICAL DATA AND ASPECTS STYLES

Age

When monitoring age data, we ask people to indicate which age band they are in, rather than asking for exact age in years or date of birth. The table below presents the overall numbers falling into each age category on the full dataset; as can be seen there is a wide range of ages.



Age group distribution



When examining the correlations between age and competency scores there was some variation due to the fact that each project contained within this dataset contained different 'target' competencies. The group sizes ranged from 64 people (Working with Data) through to over 22,000 (Efficiency and Reliability). The majority contained over 4,000 people.

The competencies which demonstrated a positive correlation with age were:

- Influencing and Selling (0.20).
- Planning and Organising (0.17).
- Working with Data (0.16).
- Efficiency and Reliability (0.10).

Those which correlated negatively with age were:

- Drive and Motivation (-0.25).
- Interpersonal Skills (-0.18).
- Stress Tolerance (-0.18).
- Decisiveness (-0.15).
- Creativity (-0.10).

The above findings demonstrate that:

- Older people report themselves as having stronger influencing skills, being better at planning and structuring their work; they see themselves as more confident working with data and statistics and also appear to demonstrate a more diligent and detailed approach to tasks.
- Younger people described themselves as being more ambitious, more socially skilled and confident, better at coping with stress and critical feedback, more decisive and risk-taking and also more creative.

Whilst some interesting patterns are evident from the above data, it is reassuring to note that all of the correlation coefficients are relatively small and would not create any negative impact on either group when used as part of a sifting project. It is worth noting though, that if one were to select all five of the competencies that correlated negatively with age, it could lead to a more detrimental impact upon older applicants and vice versa with the competencies that correlated positively with age. This kind of analysis can therefore prove very useful when selecting 'target' competencies for any role.



Gender

In total, gender data was available for 22,596 people with 81% (18,262) of the group being male and 19% female (4,334). However, there were of course variations across competencies and three competencies have been excluded from the analysis due to the small sample sizes (Working with Data, Creativity and Decisiveness) but the majority contained more than 4,000 people.

Significant findings are presented below – anything in bold is highly significant (above 0.4 SD), the remaining are significant (between 0.25 and 0.4 SD).

Males tend to score higher on:	Females tend to score higher on:
Influencing and Selling	Customer Orientation
Planning and Organising	

It is not surprising to see some differences between males and females in research of this nature. That said, apart from Influencing and Selling, the differences are around 0.5 SD or less and the pattern of differences is fairly consistent with other research, suggesting that some true gender differences do exist. It should also be remembered that this is an opportunity sample, with the male group being over four times bigger than the female group in many instances.

Ethnic origin

In this research we had data on ethnic origin for 28,145 people in total but with a wide variation across competencies. The Chinese sub group was too small to include in this analysis for any competency but there was sufficient data for the Indian sub-continent group and the African and Afro Caribbean group generally. However, where there are less than 50 people in any sub group, the analysis for that competency has been excluded (namely Influencing and Selling, Working with data, Complex thinking, Creativity and Decisiveness)

Significant findings are presented below anything in bold is highly significant (above 0.4 SD), the remaining are significant (between 0.25 and 0.4 SD).

Ethnic group	Tend to score higher on:	Tend to score lower on:
White group	Customer Orientation Efficiency and Reliability	Teamwork Interpersonal Skills
Indian sub-continent group	Teamwork Interpersonal Skills Commercial Orientation Resourcefulness	Customer Orientation Efficiency and Reliability Stress Tolerance
African and Afro-Caribbean group	Teamwork Interpersonal Skills Commercial Orientation	Customer Orientation Efficiency and Reliability

Almost all of the differences reported in the table above are in the region of 0.25 to 0.5 SD; only one exceeds 0.5 SD and the remaining are non-significant. It is likely that the differences observed reflect some actual differences between the various groups, but with more data, a more detailed breakdown within each of the ethnic groups may produce a more comprehensive picture. As the differences are so few and so small they are unlikely to have any impact on the selection rates for the various groups analysed. However, we should be aware of such differences when selecting target competencies as a project containing four competencies where one particular sub-group generally scores lower on them could exaggerate the group differences on the overall suitability score.

BIOGRAPHICAL DATA AND ASPECTS ABILITY

Age

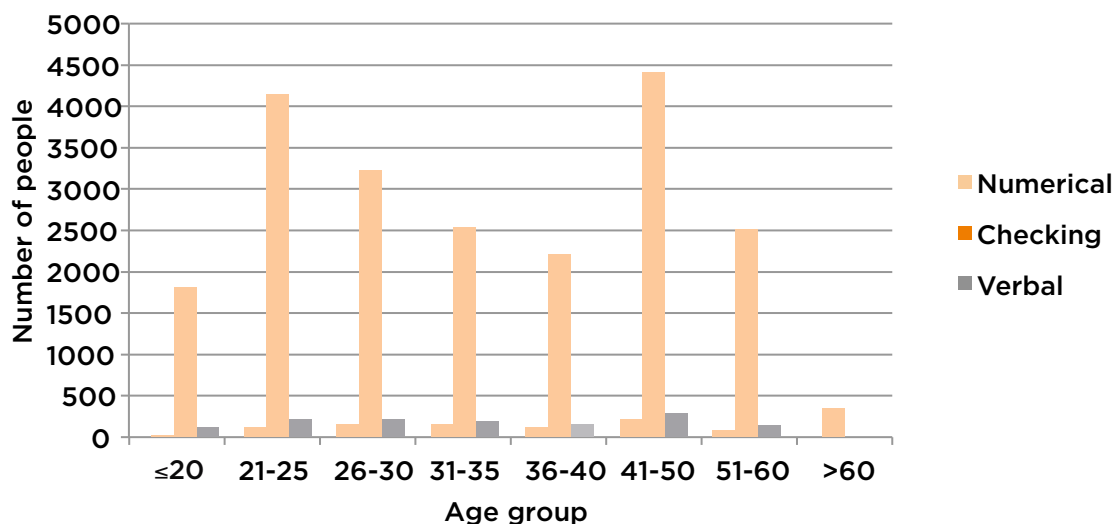
It is generally expected that reasoning ability (when measured by test with time limits) will fall off gradually with increased age. This is less likely to be the case with tests such as Aspects Ability Verbal, Numerical and Checking because they are based on contemporary business-related subject matter. The sample sizes varied across the tests:



Test	Group size
Verbal	1,433
Numerical	998
Checking	21,325

The graph below presents the numbers falling into each age category; as can be seen there is a wide range of ages.

Age group distribution



The test correlating highest with age was Aspects Ability Checking (-0.14), followed by Aspects Ability Verbal (-0.13) and lastly Aspects Ability Numerical (-0.06). Whilst all were regarded as significant at $p < 0.01$ (Numerical at $p < 0.05$), the actual strength of the relationships would be classed as small. Since all these correlations are negative, these findings are consistent with industry expectations suggesting that reasoning ability decreases with age. Whilst the relationship is strongest for Checking, the size of the correlations indicates that whilst people appear to do less well as they get older, this relationship is not strong.

Gender

In many ability tests, women score slightly better than men at verbal tasks and men better than women at numerical tasks. The table below shows the breakdown of the groups used for the analysis but overall it must be noted that as this is an opportunity sample taken from live recruitment data, we are observing four times more males than females generally.

Test	Male		Female	
Verbal	1,182	(80%)	295	(20%)
Numerical	851	(82.7%)	178	(17.3%)
Checking	18,162	(83.4%)	3,602	(16.6%)

Our data so far shows no significant differences between males and females on Aspects Ability Verbal or Numerical (differences in SD terms were less than 0.05 for both). On Aspects Ability Checking, females scored slightly higher but this was just 0.1 SD difference and therefore not significant.

The results are extremely encouraging and whilst we will continue to review the gender differences on an ongoing basis, this analysis provides a strong starting point suggesting that there are no real gender differences on the Aspects Ability tests.



Ethnic origin

In this research we had data on ethnic origin for 134 people on Aspects Ability Verbal, 115 on Aspects Ability Numerical and 1,579 for Aspects Ability Checking. In the case of Verbal and Numerical, all of the groups except for the White group contained less than 50 people so it was not possible to compare the individual groups. However, for the Aspects Ability Checking test all sub groups were larger than 50 therefore full analyses and comparison was possible.

The table below shows the group sizes for the Checking test data. Clearly, one would like to see a larger sample of African and Afro-Caribbean test takers, therefore this data should be treated as an indication only. The Chinese group was too small for inclusion in the analysis.

Ethnic group	Group size
White group	936
Indian sub-continent group	347
African and Afro-Caribbean group	144

The White group scored highest on Aspects Ability Checking, followed by the Indian sub-continent group and lastly the African and Afro-Caribbean group. The White group were significantly higher at 0.33 SD, the Indian sub-continent group's score was not significantly lower than the rest of the group, and finally the African and Afro-Caribbean group were 0.4 SD below the rest of the group which is a significant finding. This is in line with other research on a wide variety of selection tests that focused on clerical checking, whereby the 'Black' group was observed scoring consistently lower than the White group (up to almost 0.7 SD) (Bradburn and Villa, 1992). These results will continue to be monitored as more data is collected.

ASPECTS OVERALL SUITABILITY SCORES

Age

The group sizes for each age category are outlined below:

Age category	Total group size
25 or below	23,073
26 – 35	23,072
36 – 50	27,499
51 or over	12,644

The results demonstrated that the percentage of people achieving each score band (e.g. overall suitability was greater than 10, 20, 30 and 40) was equivalent across age groups and no age groups were discriminated against at any score point. This suggests that the overall suitability score does not impact negatively against any particular age group.

Gender

In this analysis there were a total of 75,567 males and 13,635 females, so whilst the group was somewhat unbalanced it was still possible to compare the percentage of males and females achieving each score band relative to the total number. None of the differences between males and females demonstrated unfairness in line with the 4/5ths rule described at any score point.



Ethnic origin

The analysis for ethnic origin focused on comparing the African and Afro-Caribbean group and the Indian sub-continent group with the White group (the other minority ethnic groups were too small for meaningful comparison). The group sizes were as follows:

Ethnic group	Group size
White group	72,127
Indian sub-continent group	7,185
African and Afro-Caribbean group	4,148

The overall suitability score was equivalent across all score points up to the suitability score of 30, after which point there was a slight difference (with the White group scoring higher). Further investigation was conducted on the ability test scores and there was no adverse impact against either ethnic minority group up to the 40th percentile.

Suitability scores are calculated based on a combination of whichever ability tests and competencies a client has selected; in this instance the slight differences are likely to be attributable to the fact that the vast majority of cases included in the analysis came from one particular organisation. They had opted to use both Customer Orientation and Efficiency and Reliability as part of their sifting project. As the two minority groups described do tend to score slightly lower on these competencies, this is likely to have exaggerated the slight difference that was observed at the highest score band. These findings present clear evidence that when using Aspects it is vital to consider:

- Is there documented evidence that the correct competencies are being used?
- Have the competencies selected been reviewed against the group difference data presented above to ensure they are balanced?
- Is the cut-off set at a reasonable level?

ADDRESSING GROUP DIFFERENCES

Whilst the group differences outlined within this review are generally small and therefore unlikely to have a substantial impact on selection rates for the various groups, it is still important that users monitor results to ensure fairness.

With large volumes of use this can be carried out by looking at the actual scores of different groups. However, with smaller volumes this will involve making sure that the tests used continue to relate to the role and reviewing other validation studies where you are unable to conduct your own.

Also worth reiterating is that Aspects is a sifting tool which has been designed for use in high volume recruitment situations, enabling you to select those most likely to be suited to the role. With this in mind, it is important that cut-off scores are not set too high as this could not only reject those people who are actually capable of performing well in the role, but the higher a cut-off is set, the more likely you are to experience adverse impact.



SECTION 8

COMPLETION TIMES

The assessments within the Aspects portfolio are typically completed without supervision, and candidates can take breaks between each assessment. Candidates are strongly advised to complete each assessment in one sitting.

Korn Ferry Assessment Systems monitors the time taken on all assessments.

ASPECTS STYLES

For Aspects Styles, we monitor the time taken on each of the 12 blocks of questions (of four questions each). Our best estimate of the average time taken to complete Aspects Styles is 8 minutes. We therefore recommend you allow 10 minutes to complete.

ASPECTS ABILITY

The adaptive nature of Aspects Ability necessitates that there is a time limit for each question rather than for the test as a whole.

The maximum times available (full time limit for each question) and the average completion times as recorded by Korn Ferry Assessment Systems are provided below:

Test	Number of questions	Maximum completion time	Average completion time	Recommended time allowed for completion
Aspects Ability Verbal	12	13 minutes	8 minutes	16 minutes
Aspects Ability Numerical	12	15 minutes	10 minutes	18 minutes
Aspects Ability Checking	46	8 minutes	6 minutes	11 minutes

The average time taken for all three tests is in the region of 24 minutes, with a suggested 45 minutes to be suggested overall to allow for someone taking the maximum time on each test.





SECTION 9

CUSTOMISING ASPECTS

Aspects can be customised to suit the needs of a project or organisation in a number of ways – some of which concentrate on improving the candidate experience and candidate ‘buy in’ by using client branding and language, others improve the overall validity of the assessment.

Below is a summary of the customisation options. If you have any questions, or require further information on customising Aspects, please contact your account manager.

Your brand

The entire candidate experience and report can be customised to include your own branding and imagery to create a seamless experience for the candidate.

Selecting competencies

We can support you to ensure that the project includes the most relevant competencies for the role. This can be achieved in two ways:

- **Expert opinion** – our experts can work with key stakeholders and subject matter experts to select the most appropriate competencies from the full 16 competencies. We can support you to ensure that the competencies selected match the demands of the job. The benefits of this approach are that as soon as the competencies have been agreed, the tailored Aspects Styles questionnaire can very easily be made available for use.
- **Data driven** – the full range of Aspects Styles questions are trialled with 70-100 existing employees. Additionally, performance data is collected so that the best predicting competencies are identified for use in the final model. More rigorous than the previous option, this approach results in a more ‘fine-tuned’ version of Aspects Styles, however, there is clearly more of an upfront investment and the entire process will take longer. We will work with you to help project manage and support you through the entire process.

This process draws on our understanding of Aspects Styles and what it measures, and seeks to identify questions (positive or negative) that would predict the behaviours specific to your competencies. It enables us to:

- Achieve high content validity for each competency area by selecting the most appropriate questions from Aspects Styles.
- Ensure divergent validity through minimising overlap between scales (e.g. no question maps to more than one or two competencies).
- Identify whether there are any competencies which cannot reasonably be predicted by Aspects Styles.





SECTION 10

LANGUAGE AVAILABILITY AND CULTURAL DIFFERENCES

A common question about psychometric assessments is whether they really translate to other languages and cultures.

These are two separate but linked questions. They are difficult to answer because if, for example, Italians appeared to be less efficient and reliable than Germans, we could not really tell whether this was because of national traits, inaccurate translation or perceptions of the same concepts in different languages.

Research on particular personality measures such as OPQ, 16PF, MBTI, NEO and CPI has appeared to show that traits and even questions are broadly equivalent across languages and cultures. But we lack evidence to tell us whether, for example, Japanese accountants need to have the same competencies as Swedish accountants to be effective. What is absolutely certain is that the introduction of testing (and the feedback of results) has to be conducted in different manners: the frankness of discussion which is welcomed in the Western world would not be appropriate in some Asian cultures.

Modern tests of verbal and numerical reasoning tend to be very up-to-date and job-relevant, being based on real or near-real situations. These will sometimes fail to translate literally; therefore we have adopted the following process:

- All assessments are originally developed with the intention that they will need to be translated and adapted to different languages and cultures.
- Translation is carried out by people with the target language as mother tongue, who are also fluent in English.
- The translation team includes occupational psychologists with up-to-date business experience in the target culture.
- Data continues to be collected until we have enough to create a local norm.
- Local norms are at first 'modelled' using a combination of local data and wider, international groups. When sufficient data is available, this data becomes the local norm basis.
- We carry out extensive cross-language and cross-cultural validation studies.
- We study cultural differences within same-language populations.

A wide programme of translation is currently under way. A list of available languages can be seen on the Talent Q website: www.talentqgroup.com





SECTION 11

SUMMARY

Talent Q has been founded on the basis of knowledge and insight gained from specialist occupational psychologists and practitioners.

This section provides some general conclusions surrounding Aspects Styles and Aspects Ability.

In designing the Aspects portfolio the intention has always been to create a portfolio of assessments that not only demonstrate psychometric rigour but that are easy and efficient to use and ultimately fit for purpose.

The findings of this review illustrate the psychometric rigour of Aspects and demonstrate its capability to assess candidates in a way which is fair and objective. In doing so, you can be reassured that by using Aspects (and our other assessments), you are providing a reliable, fair and objective measure of competencies and ability which can be applied in high volume recruitment situations for non-managerial roles.

We are committed to ongoing development and analysis. This review will be updated periodically to reflect international expansion in the use of Aspects. We are always keen to talk to clients who would like to get involved in this process with us. Please contact your account manager for more information.

Specifically, this review has demonstrated the following:

The rationale for and development of Aspects

This section of the review focuses on the practical objectives that were the drivers for developing Aspects. The intention being to create a portfolio of assessments that deliver greater quality of hire and associated bottom line benefits, to support the interview process, to provide flexible and customisable assessments and finally to enhance candidate engagement whilst retaining psychometric rigour. It also looks at the details of how Aspects was developed from initial conception of the framework through to finalising the psychometric properties.

Aspects reports and scores

An overview of the available reporting options is provided, including the various score types. The reports available include a number of on-screen (exportable) views of group data plus a competency profile report, a dynamic interview guide and a candidate report. You are given access to all reports via KFAS.

Reliability and validity

The reliability of each assessment within the Aspects portfolio is described to demonstrate their robustness. In addition, the validity is also indicated through a review of the question content, an investigation into links with other assessments, and finally a series of criterion validity studies with a range of different performance measures.

Aspects and biographical data

Within this section we have reviewed all Aspects completions thus far and looked at them in relation to biographical data provided by candidates. In doing so it has been established that group differences are minimal when using Aspects Styles and Aspects Ability. However, we will continue to review data of this nature as completions increase. We also advocate that client data should be reviewed regularly and cut-offs set accordingly to avoid any unnecessary adverse impact.

Customising Aspects

This section provides an overview of the options that are available if you wish to customise the Aspects experience for candidates. You are provided with an explanation of the two approaches to selecting the appropriate competencies for your current recruiting needs and an overview of how we can help support this.





SECTION 12

GLOSSARY

Correlation

A statistical way of assessing the strength of relationship between two variables (e.g. analytical reasoning scores on a test and job performance).

Reliability

Refers to how accurate a test is. There are a number of different types of reliability, as described below.

Test-retest reliability

This form of reliability assesses the extent to which an individual's score is likely to be similar if the test is taken at different points in time, e.g. a few weeks or months later.

Internal consistency reliability

Understanding reliability in terms of internal consistency looks inside the test to assess whether the questions, or 'items', which make up the test are all measuring the same thing.

Split-half reliability: The simplest way of assessing internal consistency is known as split-half reliability. This adds up the score on the items for half of the test (e.g. all the 'even' numbered items) and correlates this with the score on the items for the other half of the test (e.g. all the 'odd' numbered items).

Cronbach's alpha: This still leaves the issue of how well related the different halves actually are, compared with other combinations. As a result, statisticians have developed more complex equations for assessing internal consistency, which in practice identify the average level or correlation for all possible 'split-half' combinations that could be made. One of the best known of these is Cronbach's alpha.

Validity

Refers to the extent to which a test can be deemed to be effective in determining what we want to be able to predict, for instance future performance in a job. There are a number of types of validity, as described below.

Construct validity

Concerned with whether a test is measuring the 'construct' it claims to measure.

There are two ways of assessing construct validity:

Convergent validity: If the test can be shown to correlate significantly with other tests designed to measure the same or similar constructs, it may be claimed to have convergent validity.

Discriminant validity: If the test can be shown to not correlate significantly with other tests which are intended to measure different constructs, discriminant or 'divergent' validity can be claimed.

Face validity

Related to whether people looking at the test, using their own judgement and experiences, think it does what it is supposed to do.





Criterion validity

Tells us whether the results of a test predict something which is practically useful, such as subsequent performance in a role.

Content validity

Looks at the validity of a test's content, such as the questions and scenarios used. This requires that the questions in a test can be seen to directly relate to the behaviour or aspect of performance they are intended to measure.

Computer adaptive testing (CAT).

CAT refers to a form of computer-based testing in which the difficulty level adapts depending on the candidate's ability level.

Item response theory (IRT).

IRT is a method employed in the design, analysis and scoring of assessments which draws on the application of mathematical models to testing data. IRT focuses on the item (or 'question') rather than the test level focus of classical test theory, by modelling the response of a candidate of a given ability to each item in the test.

Classical test theory (CTT).

CTT is a method employed in the design, analysis and scoring of assessments. The essential idea behind CTT is that an observed assessment score is the sum of a 'true' score plus measurement error. The most important formula that lies at the core of classical test theory is defined as follows:

$X = T + E$, where.

X = the total score/observed score obtained.

T = the true score and.

E = the error component.

Standard deviation

Refers to the amount of variation or 'dispersion' there is from the average (mean).





SECTION 13

APPENDIX A: COMPETENCY INTER-CORRELATIONS

		Teamwork	Influencing and Selling	Interpersonal Skills	Customer Orientation	Working with Data	Commercial Orientation	Complex Thinking	Creativity	Planning and Organising	Efficiency and Reliability	Stress Tolerance	Resilience	Resourcefulness	Adaptability	Decisiveness	Drive and Motivation
Influencing and Selling	r	-0.10															
	n	410															
Interpersonal Skills	r	0.04	0.14														
	n	17,876	436														
Customer Orientation	r	-0.11	-0.28	-0.02													
	n	18,105	433	18,809													
Working with data	r																
	n																
Commercial Orientation	r	-0.08		-0.09	-0.22												
	n	3,240		1,065	1,053												
Complex Thinking	r	-0.16			-0.06												
	n	371			350												
Creativity	r	-0.01		-0.09	-0.42		0.07										
	n	58		61	64		53										
Planning and Organising	r	-0.12	-0.01	-0.09	-0.11	0.27	-0.11										
	n	17,604	198	18,597	18,510	52	1,007										
Efficiency and Reliability	r	-0.36	-0.02	-0.16	-0.12		-0.07	0.04	0.01	0.21							
	n	21,325	223	18,669	18,913		4,200	379	79	18,596							
Stress Tolerance	r	-0.22	-0.11	0.03	-0.12		-0.10	0.04		-0.17	-0.08						
	n	21,180	231	18,535	18,866		4,142	359		18,477	22,174						
Resilience	r	-0.30	-0.28	0.01	-0.22		-0.01			0.01	0.04	0.08					
	n	20,859	228	17,548	17,548		3,173			17,359	20,688	20,686					
Resourcefulness	r	-0.18	-0.08	-0.01	-0.22		0.15	0.19		-0.05	-0.13	0.02	-0.05				
	n	3,937	213	319	545		3,161	347		147	3,780	3,685	3,561				
Adaptability	r	0.02	-0.07	-0.01	-0.17		-0.17		0.04	0.00	-0.22	-0.16	-0.26	-0.23			
	n	20,939	205	18,593	18,523		4,184		53	18,347	21,747	21,596	20,781	3,610			
Decisiveness	r	-0.15			-0.21			-0.09			-0.32	-0.01		-0.12			
	n	334			357			319			327	350		342			
Drive and Motivation	r	-0.12	0.17	0.06	-0.20	-0.14	0.114**	0.12	-0.02	-0.08	-0.14	0.02	-0.17	-0.10	-0.10	-0.16	
	n	4,137	443	1,513	1,821	50	4,221	391	82	1,252	4,951	4,886	3,589	3,897	4,573	357	

r = size of correlation coefficient

n = number in group

As can be seen, many of the correlations are based on groups containing thousands of people. With such a large sample, any correlation above 0.03 is theoretically regarded as significantly significant. With this in mind, and because the group sizes vary so much, we have not reported the significance level of the correlation coefficients. It is more practical to consider the size of the correlation, with correlations above 0.10 being regarded as the minimum for psychological significance.



SECTION 14

APPENDIX B: ASPECTS STYLES AND ASPECTS ABILITY INTER-CORRELATIONS

Aspects Styles	Aspects Ability Verbal	Aspects Ability Numerical	Aspects Ability Checking
Teamwork	-0.06 (346)	-0.02 (157)	-0.11 (5,815)
Influencing and Selling			
Interpersonal Skills	0.01 (273)	0.06 (139)	0.05 (5,388)
Customer Orientation	0.19 (271)	<i>0.18 (139)</i>	<i>0.03 (5,399)</i>
Working with Data			
Commercial Orientation	0.00 (110)		-0.05 (1,183)
Complex Thinking			
Creativity			
Planning and Organising	-0.07 (273)	0.16 (139)	0.01 (5,386)
Efficiency and Reliability	0.06 (367)	-0.00 (170)	0.08 (6,222)
Stress Tolerance	0.09 (365)	-0.13 (169)	0.04 (6,212)
Resilience	0.03 (344)	0.10 (155)	0.09 (5,785)
Resourcefulness	0.08 (96)		<i>0.03 (846)</i>
Adaptability	-0.12 (366)	-0.13 (168)	-0.03 (6,181)
Decisiveness			
Drive and Motivation	0.10 (115)		-0.04 (1,247)

Bold – correlation significant at the 0.001 level

Bold italic – correlation significant at the 0.01 level

Italic – correlation significant at the 0.05 level



SECTION 15

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