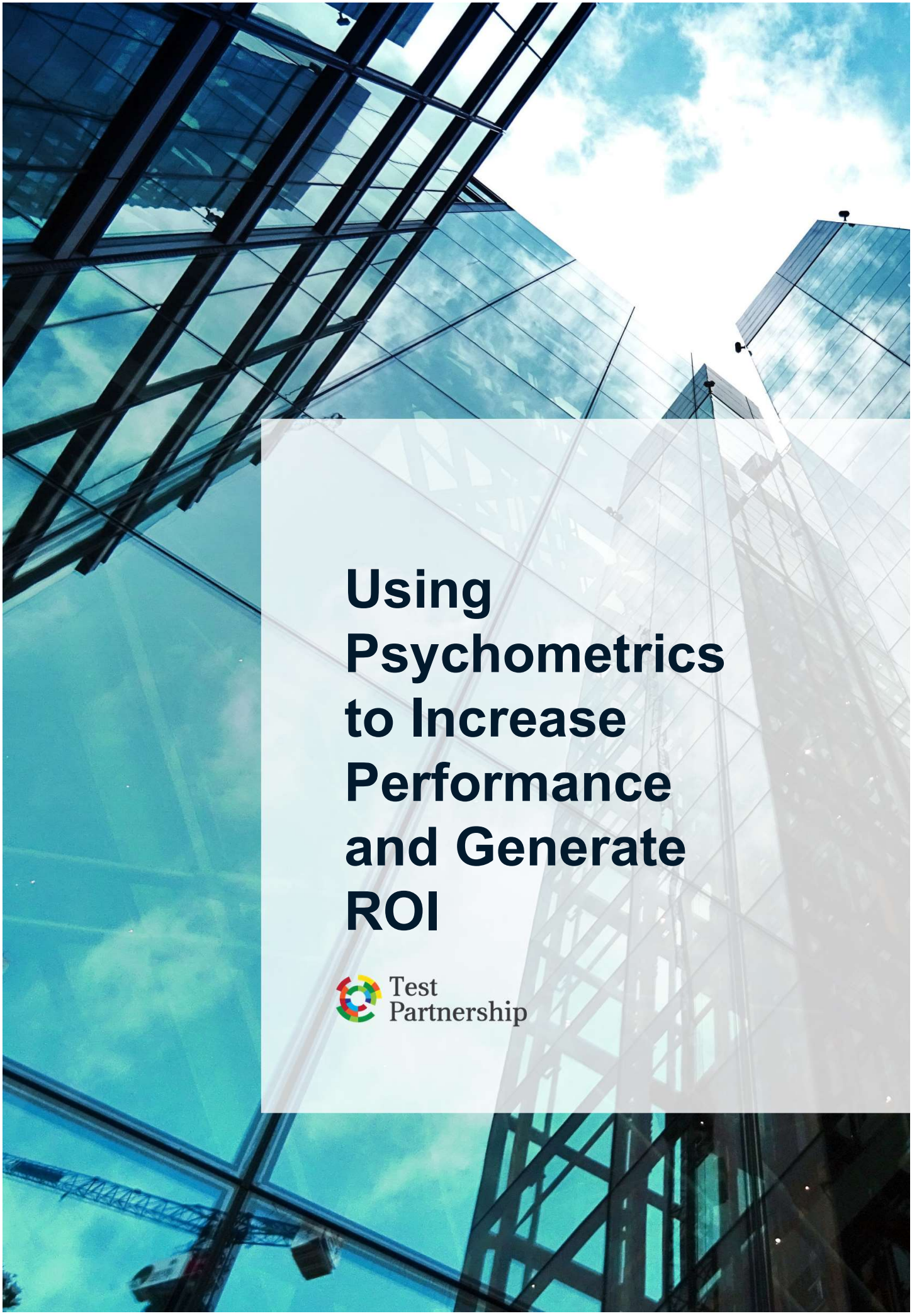

# Using Psychometrics to Increase Performance and Generate ROI

Test Partnership

## INTRODUCTION

Psychometric assessments comprise some of the most powerful predictive tools available to human resources professionals.

The addition of psychometric assessments into any employee selection process can vastly increase the ability of that process to identify the highest potential candidates, ensuring they progress through the process.

Compared to employment interviews, psychometrics can generate a significantly larger ROI, both through improving performance and reducing costs.

However, not all psychometric assessments are equally predictive of future job performance, nor do they all measure equally important psychological constructs.

This how-to guide will help disseminate the information surrounding psychometric assessments as predictive tools, and how to best utilise different types of assessment to maximise a return on investment (ROI).

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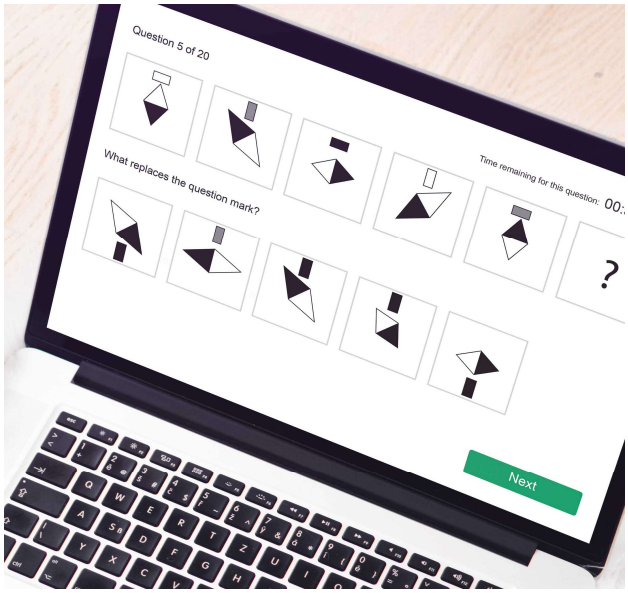



## ABOUT TEST PARTNERSHIP

Test Partnership is a London-based psychometric test publisher, specialising in online assessments for recruitment and selection.

Unlike other psychometric test publishers who focus solely on enterprise clients, we welcome small-medium sized enterprises and mid-market companies with open arms.

By removing the unnecessary barriers which discourage smaller organisations from adopting psychometrics, we make psychometric testing accessible to everyone, no matter what size.

As a result, our client list comprises organisations of all kinds, ranging from large-cap multinational corporations to micro-employers with fewer than 10 employees.

## SELECTION PROCESS ROI

### WHY DO PSYCHOMETRIC TESTS PREDICT FUTURE JOB PERFORMANCE?

The primary reason why psychometric tests predict future job performance is due to the importance of the psychological constructs they measure.

This makes intuitive sense. Our abilities, characteristics, aptitudes and skills are all psychological constructs which play an enormous role in how we perform at work.

Measuring these constructs provides an accurate picture of a candidate's likely future performance, making them essential employee selection tools.

For example, research clearly shows the most powerful predictor of future job performance in moderately to highly complex roles is general cognitive ability.

Candidates with higher levels of cognitive ability are better able to plan, solve problems, identify solutions, comprehend complex ideas, learn quickly and apply learned knowledge, essential abilities in the 21st century workforce.

The relationship between cognitive ability and job performance significantly exceeds that of even the most well designed interview, making cognitive ability the most important variable in employee selection.

Work relevant personality traits, of which there are a large number, are also essential to high performance in the modern workplace, with predictive strength varying depending on the role.

Situational judgement, a candidate's ability to make sound decisions and accurate judgements in a business relevant context, also shows clear applicability to the workplace and thus employee selection.

The relationship between cognitive ability and job performance significantly exceeds that of even the most well designed interview, making cognitive ability the most important variable in employee selection.

Now, considering the importance of these psychological traits, measuring and applying them to employee selection must be an essential ingredient of any talent management process.

Research shows that the top 1% of performers are on average 12 times more productive than the bottom 1% (Hunter, Schmidt and Judiesch, 1990).

Psychometric assessments do exactly that, they measure a candidate's standing on these work relevant psychological constructs, and expresses that level numerically, typically using standardised scores.

Most importantly however, most of these work relevant psychological constructs tend to be quite unrelated to one another, meaning that multiple assessments must be used to more accurately predict a candidate's likely level of future performance.

For example, we all know individuals that are highly intelligence, but not hard working, or vice versa.

Measuring both personality and cognitive ability ensures that you can search for candidates that meet both the cognitive and behavioural requirements of the role, maximising the predictive validity of the employee selection process.

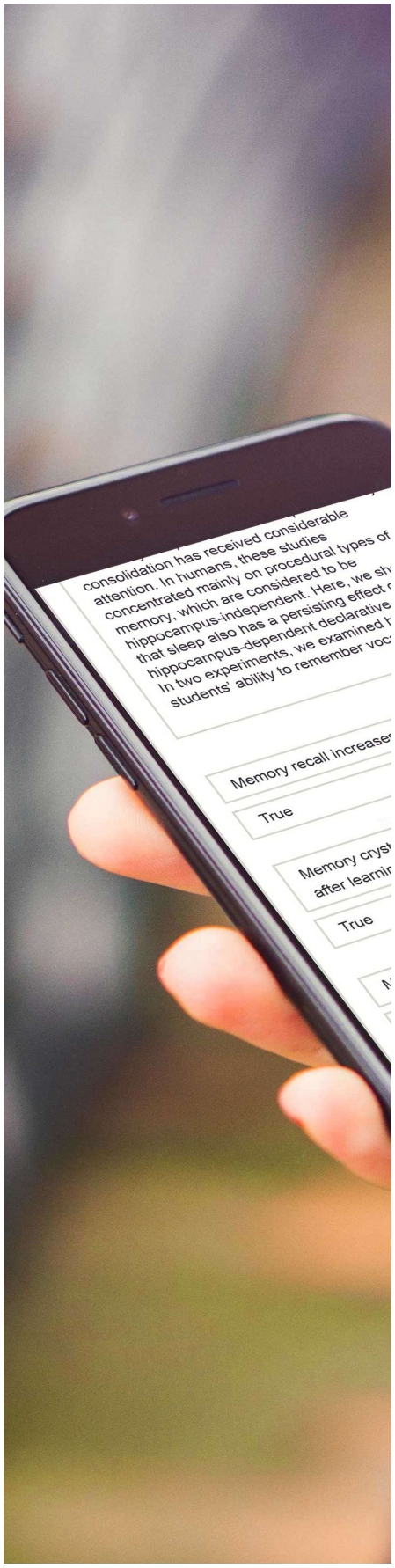
## HOW PSYCHOMETRIC TESTS GENERATE A RETURN FOR EMPLOYERS

Reliable and valid psychometric tests generate a tangible financial return when used in employee selection and assessment.

Research shows that the top 1% of performers are on average 12 times more productive than the bottom 1% (Hunter, Schmidt and Judiesch, 1990).

This means that high performance provides a significant premium for employing organisations, with the very highest performers creating tremendous amounts of value over the course of their employee lifecycle.

Therefore, any selection tool which helps to identify these top performers generates a real and significant financial return.




Using the following premises, it becomes quite easy to see why psychometric tests generate this return:

1) **Psychometric tests allow employers to identify high performers with greater accuracy.**

2) **High performers create more value for their employers than average performers.**

3) **Low performers create a sizable loss for their employers.**

To put this in context, imagine the following example:

> Psychometric tests allow employers to identify high performers with greater accuracy.

- **You have 10 vacancies to fill**
- **Your applicant pool comprises 100 candidates**
- **10 of these candidates are high performers**
- **10 of these candidates are low performers**
- **80 of these candidates are average performers**

Naturally, you want to identify the 10 high performers and avoid the 10 low performers.

If you were to select candidates at random, on average only one high performer would eventually be hired.

Moreover, the probability of hiring a low performer is just as high, and on average you would end up hiring one low performer.

Although few employers hire using random selection, when using poorly designed assessments or badly designed interviews, the result isn't all that different.

When using valid and reliable psychometric tests however, you increase the probability of hiring high performers and reduce the probability of hiring low performers.

Based on the research, you could easily increase the probability of hiring a high performer from 10% to 30-50% and reduce the probability of hiring a low performer from 10% to 1-2%.

Now, imagine that high performers create £10,000 more value than average employees. Also, imagine that low performers create £10,000 less value than average employees.

Based on these numbers and the probabilities mentioned earlier, adopting psychometrics could easily improve your selection process return by £20,000-£60,000+.

By hiring more high performers and fewer low performers, you dramatically increase the overall return generated by your selection process.

Obviously, no selection tool could increase the probability of hiring a high performer to 100%, but any improvement will increase the overall return generated by the selection process.

Similarly, any reduction in the probability of hiring a poor performer helps to avoid the costs associated with hiring low performers.

By making the most of your employee selection process, you maximise the chances of hiring the right people, which makes psychometric tests among the most lucrative investments an employer can make.

Obviously, no selection tool could increase the probability of hiring a high performer to 100%, but any improvement will increase the overall return generate by the selection process.

## THE ROI GENERATED FROM PSYCHOMETRIC ASSESSMENTS

Return on investment (ROI) can be described as the total gain or loss generated from an investment relative to the initial amount invested. Although psychometric assessments have costs, the associated performance improvements from new hires generates a very significant and quantifiable financial return to employing organisations.

Selection Process ROI =

(Correlation) x (£) x (Z score)

If this financial return exceeds the associated costs of assessments, the employee selection process generates a positive ROI, justifying the expense.

The formula for identifying the likely return on an employee selection process includes the following variables:

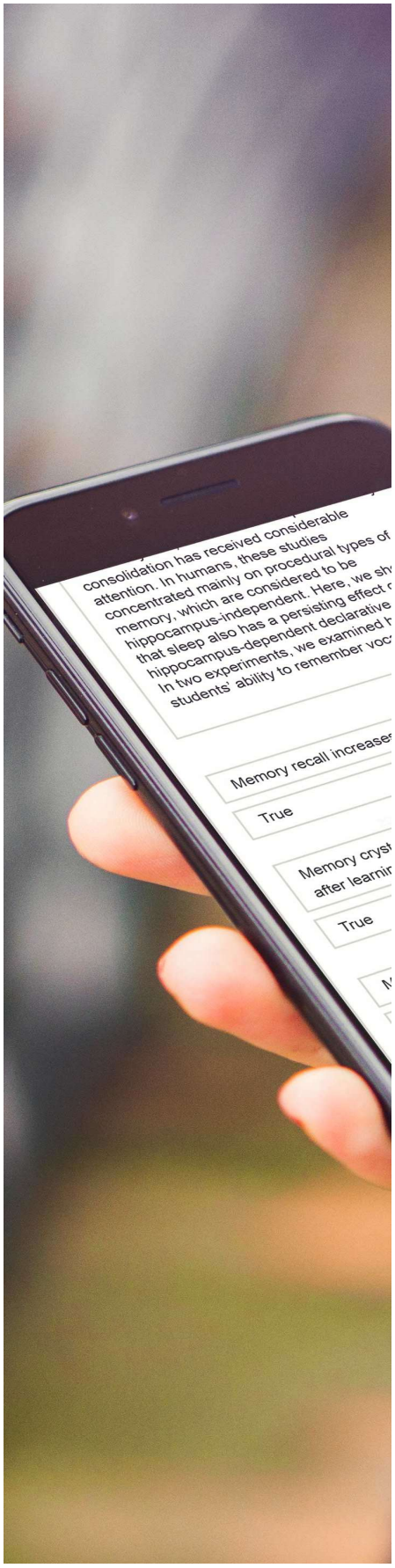
**Selection tool validity:** This refers to the correlation coefficient between the employee selection tools used and actual job performance. A strong positive correlation between the employee selection tool and job performance indicates significant validity, whereas a low correlation indicates low validity.

**Employee output variability:** This refers to the additional financial output created by the highest performer. Because salaries tend to be market efficient, output tends to become a function of salary. Research shows that employees performing at the 84th percentile (one SD) of employees generate around 40% more value than average employees in complex work. Thus, in a £30,000 role, high performers generate £12,000 more value than an average performer.

**Average Z-score:** This relates to the selection ratio and the average performance of the selected candidates. For example, if you select the top 30% of performers, the average Z-score of your new employees on your selection tools will likely be around 1 (Z-scores typically range from -3 to +3).

Thus, the formula for calculating selection process ROI is as follows:

Selection tool validity = (**Correlation**) x Employee output variability (**£**) x Avg Z-score (**Z**).




**Example 1:** ROI generated by an unstructured interview:

**Selection tool validity**: Unstructured interviews, which constitute most employment interviews, typically have a moderate correlation with job performance, usually around 0.3.

**Employee output variability:** A £20,000 per year role, with £8,000 employee output variability.

**Average Z-score:** The top 30% of candidates are ultimately selected and employed, resulting in an average Z-score of 1.

**Selection tool costs:** To arrange, prepare for, conduct, assess, record and provide feedback on employment interviews, as well as account for the opportunity cost of a mid-senior HR professional's time, the estimated cost per interview is £150 per candidate.

> Most employment interviews, typically have a moderate correlation with job performance

**Return per candidate =**

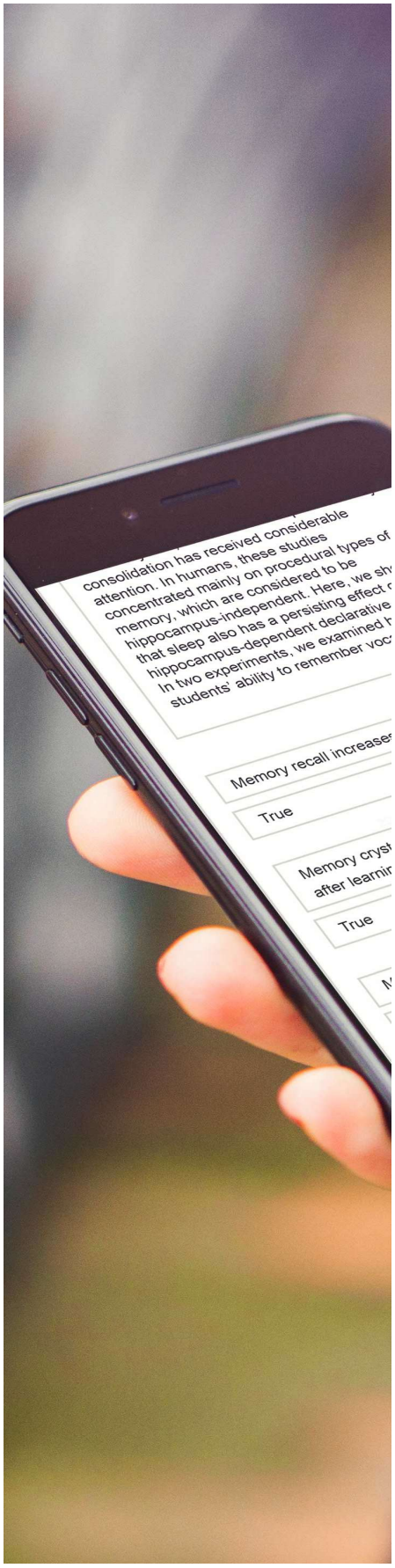
0.3 x £8,000 x 1 =

£2,400

**ROI per candidate =**

(£2,400 – £150) / £150 =

1,500% ROI




**Example 2:** ROI generated by ability tests and a personality questionnaire

**Selection tool validity:** Combining ability tests with a personality questionnaire typically shows strong correlations with job performance, usually around 0.61.

**Employee output variability:** A £20,000 per year role, with £8,000 employee output variability.

**Average Z-score:** The top 30% of candidates are ultimately selected and employed, resulting in an average Z-score of 1.

**Selection tool costs:** Using all three ability tests in the Insights suite and the TPAQ-27 personality questionnaire costs £40 per candidate. At high volumes, the price drops considerably, but let's use £40 for now.

Combining ability tests with a personality questionnaire typically shows strong correlations with job performance

**Return per candidate =**

0.61 x £8,000 x 1

= £4,880

**ROI per candidate =**

£4,880 – £40) / 40

= 12,100% ROI

Based on the two examples above, using three ability tests and a personality questionnaire generates more than twice the overall return, and almost ten times the ROI compared to an unstructured employment interview.

In practice however, employers are likely to use a combination of interviews and psychometric tests, which further maximises the ROI of any employee selection process.

## USING ABILITY TESTS TO INCREASE PERFORMANCE AND MAXIMISE ROI

Due to their predictive validity, ability tests should be considered the primary selection tool.

When using ability tests, the following steps will help to maximise performance prediction and generate the maximum ROI possible:

**1) Use Three Ability Tests:** Using individual ability tests is an inherently risky strategy. There are fundamentally two reasons why an individual would score highly on a specific ability test:

-They are smart in general, and thus are likely to perform well overall.

OR

- They are only skilled in this specific area, and may or may not perform well overall.

Candidates which score highly in all three ability tests however, are far more likely be belong the former, rather than the latter.

Candidates which show overall cognitive ability inevitably become the highest performers, and the only way of identifying whether this is the case is to test multiple abilities, with three being optimal.

Due to their predictive validity, ability tests should be considered the primary selection tool.

**2) Use Ability Tests Early:** As the most predictive selection tool, the earlier you use ability tests, the greater the ROI and the larger the influence on employee performance. Ideally, ability tests should form the first stage of the selection process, ensuring that all successful candidates have the cognitive ability required for top performance.

As the most predictive selection tool, the earlier you use ability tests, the greater the ROI and the larger the influence on employee performance.

That being said, using ability tests later in the selection process still adds significant value, especially if you are using more powerful ability tests (such as critical thinking). This is especially true when recruiting within a smaller organisation or for a high-stakes role.

**3) Be Strict on Selection Decisions:** Setting strict and highly selective cut-off scores or selection ratios ensures that only the highest potential candidates make it through your selection process.

When looking back at the ROI equation, the more selective you are with candidates, the larger the Z-score, and thus the greater the ROI. Resist the temptation to progress candidates that have performed badly on their ability tests, even if they perform well elsewhere.

This is especially true if they perform well at interview, as the relationship between ability test performance is not closely related to interview performance. Ability test scores outperform unstructured interviews considerably, and so should be weighted far higher in the selection process.

**4) Choose Reliable and Valid Ability Tests:** Not all ability tests are created equal, and some poorly designed ability tests may yield no useful information. Far too often, when employing organisations are deciding whether to use an ability test in selection, the first thing the ask is "Can I try out the test", and not "Can you provide me with evidence of reliability and validity?".

With little-no formal training in psychometric testing, how could employers possibly make accurate purchasing decisions based only on trying the test out themselves? Choosing high quality, statistically reliable and valid ability tests is integral to maximising ROI, as it ensures that ability tests make-good on their claims and deliver on their promises.

**5) Use Verification Testing**: To ensure the validity of the original assessment, many test publishers (Test Partnership included) provide verification assessments, shorter supervised ability tests designed to confirm the candidate's original, unsupervised score.

Verification testing enhances test security, protects against cheating and ensures that only quality candidates make it to hire.

Just the threat of potential verification testing is often enough to discourage a meaningful number of candidates from cheating, even if the employing organisation doesn't go through with it.

Naturally, organisations should take every precaution to ensure the validity of the results, and to protect the integrity of the selection process. Verification testing helps to achieve this.

## USING PERSONALITY QUESTIONNAIRES TO INCREASE PERFORMANCE AND MAXIMISE ROI

Personality questionnaires (PQs) are the second most useful psychometric assessment for employee selection after ability tests.

To maximise performance prediction and the overall ROI, the following can be used:

**1) Identify the Most Relevant Traits:** Well-designed PQs should measure a wide range of different personality traits, allowing employing organisations to select candidates using the traits relevant to them. Unlike with ability tests, which are universal predictors of job performance, personality traits are very contextual.

A thorough job analysis will be required to identify which traits are likely to be predictive of performance in each particular role. However, a more scientific approach would to incorporate a talent analytics investigation into the organisation and the role, allowing researchers to identify exactly which traits predict performance, and to what degree.

Unlike with ability tests, which are universal predictors of job performance, personality traits are very contextual.

**2) Combine Personality with Ability:** Personality questionnaires and ability tests are the ultimate combination of assessments. Together, they allow employing organisations to measure both the cognitive and the behavioural determiners of performance, which could collectively represent 50% of performance in the workplace.

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Moreover, there are certain dangers associated with only using ability, or only using personality.

For example, intelligent but lazy staff may prove unproductive in the long term, never reaching their full potential.

Similarly, hardworking but less bright staff may cause more damage than there are worth through poor decisions and incorrect actions. Measuring both avoids these issues.

**3) Set a Higher Standard on Important Traits:** Not all personality traits will be relevant to future performance in every role, in fact only a small subset of traits can be expected to predict future performance. But more importantly, different traits can be expected to predict future performance to different degrees. For the most important traits, those that are most likely to predict performance in the role, one should set a higher standard than on less important traits.

This ensures that successful candidates are most likely to exhibit these desires traits, improving the quality of the candidate pool overall. For less important traits, consider setting a much lower threshold, ensuring that less weight is assigned to those scores.

**4) Choose trait based personality questionnaires:** Broadly speaking, personality questionnaires fall into one of two categories:

**- Type based:** These PQs place candidates into one of two personality types i.e. Introvert or extravert etc. Examples include MBTI and other Jungian models of personality

**- Trait based:** These PQs provide scores, indicating the degree in which a candidate is say, extraverted or introverted based on a continuous scale.

Personality type-based PQs have faced significant criticism from the academic community due to their low validity and reliability. Evidence suggests that most individuals tend to score in the middle range for personality traits, rather than fit neatly in between one of two extremes. As a result, type-based PQs such as the MBTI are not suitable for employee selection.

**5) Use the PQ Report to Inform the Interview**: Personality questionnaires are uniquely positioned to help structure interviews.

Research shows that highly structured interviews significantly outperform unstructured interviews, generating a greater ROI.

One of the biggest obstacles to structured interviewing however, is the uncertainty regarding what questions to ask and what to base the interview around.

PQ reports can identify potential areas for development, which could be discussed in more depth at interview.

Similarly, PQ reports can identify areas of strength, which can be cross-referenced at interview to ensure their validity.

## USING SITUATIONAL JUDGEMENT TESTS TO INCREASE PERFORMANCE AND MAXIMISE ROI

Situational judgement tests (SJTs) are the third most useful employee selection tools, but hold several advantages over PQs and ability tests. To maximise the utility of SJTs in an employee selection setting, the following should be applied:

**1) Use SJTs as a Mid Stage Selection Tool:** When sifting candidates, ability tests should form the early selection stage, but SJTs are ideal for a second stage recruitment tool. Once you know the candidate's level of cognitive ability and relevant personality traits, the benefit of SJTs becomes additive. However, SJTs typically take 30-45 minutes to complete, and so can be difficult to combine with a PQ and ability tests.

Type-based PQs such as the MBTI are not suitable for employee selection.

SJTs are particularly effective in roles which have significant autonomy and decision making. In these roles, SJTs provide insight into behavioural traits which reside outside of the behavioural and cognitive domains assessed by PQs and ability tests.

Naturally, bespoke SJTs are only cost effective for large organisations which undertake significant ongoing recruitment projects.

**2) Choose SJTs with sufficient reliability:** SJTs often show low levels of reliability relative to other psychometric assessments. Test Partnership's series of SJTs all meet or exceed the required level of reliability for high stakes decision making, ensuring that accurate assessments can be made and quality selection decisions can be relied upon.

**3) Consider Bespoke SJTs:** SJTs are unique in that they can be very easily designed to reflect a specific role, organisation or job level.

Creation of bespoke SJTs will ensure that the assessment matches the role, improving candidate experience and maximising candidate engagement. The more the candidates engage with the assessment, the more accurate the results.

Naturally, bespoke SJTs are only cost-effective for large organisations which undertake significant ongoing recruitment projects. In particular, graduate and apprentice schemes are good candidates for bespoke SJTs.

However, for smaller organisations looking to assess smaller numbers of candidates, off-the-shelf SJTs however would present a more cost-effective option.

We recommend that ability tests, personality questionnaires and possibly situational judgement tests in combination to augment the selection process

**SUMMARY**

Psychometric assessments are essential to predicting future performance and ensuring a healthy ROI on selection processes.

Without psychometric tests, no employee selection process can reach optional predictive validity, due to the inherent limitations of employee selection interviews.

Instead, we recommend that ability tests, personality questionnaires and possibly situational judgement tests are used in combination to augment selection processes.