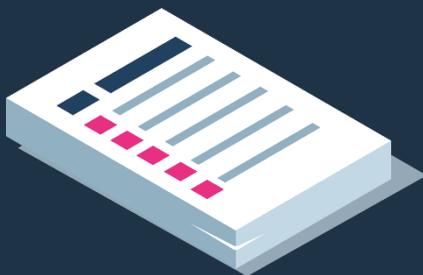# question mark

Four steps to trusted workplace assessments

Creating valid and reliable workplace assessments for onboarding, compliance, recruitment, training and development

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Introduction: trustable assessments

Corporations, government departments and other employers rightly rely on workplace tests and exams to inform their decision making. These include critical choices about people in compliance, development, training, business operations, onboarding and recruitment. This paper explains why it is vital organizations can trust the results of such tests and exams and how it's possible to do so.

Using an analogy to medical blood tests, the paper introduces the key concepts of validity and reliability and explains why they are important. It then provides four key steps to achieving validity and reliability, as well as additional resources for further reading.

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Accuracy and precision in blood tests

When a patient goes to the doctor with an illness, the doctor will often order a blood test to identify if a particular condition is present.

It takes time and resources to do a blood test, but the test result can provide invaluable information. While they have occasional false positives and negatives, in general blood tests are trusted to rule out or rule in a particular diagnosis. A great deal of effort goes into making sure that blood tests are accurate and precise to facilitate good decisions.

The trustworthiness of tests is made up of two key elements. Blood test accuracy (or "trueness") is based on it measuring what it is supposed to measure, e.g., the amount of a substance within a sample. Blood test precision (or "repeatability") means that the sample would get the same result if retested.

To ensure a high level of both trueness and repeatability, health systems have evolved stringent procedures and regulation. One example is the use of labeling, as shown in the picture, to reduce the risk of samples being misidentified.[1]

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[1] Picture by Graham Colm, https://commons.wikimedia.org/wiki/File:Blood_test.jpg

# Trustable assessment results: why they matter

Blood test results matter because people's health and sometimes lives depend on them. While the majority of business decisions may not be a matter of life and death, having the right data to inform the decision-making process is vital. As such, more organizations are relying on workplace tests, quizzes and exams to help make important decisions about people.

Tests are used to help decide many things. Should a hirer recruit a particular candidate? Should a leader promote an employee? Is a new team member safe to go onto the job? Does an existing employee know products and systems well enough? Has someone understood training? Is a staff member safe?

If a company uses tests that are not trustable, they increase the likelihood of:

- Hiring the wrong people
- Promoting the wrong people
- Lacking evidence that employees are competent to perform tasks safely and in compliance with regulations
- Increasing the occurrence of errors in health and safety, manufacturing, customer service and regulatory compliance, leading to reputation loss and/or compliance fines
- Wasting time training people what they already know
- Failing to train people in what they need to know
- Devaluing any partner or certification programs that use assessments
- Running a legal risk from making employment decisions that are not defensible
- Wasting the time spent in creating assessments and delivering them

The well-known principle of "garbage in means garbage out" applies. It is only worth relying on assessment results if they are trustable.
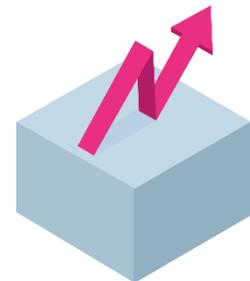
Validity and reliability

What are the key criteria for trustworthiness? As with blood tests, for a workplace assessment to be trustworthy it needs to be valid and reliable.

Reliability

An assessment is reliable if it measures the same thing consistently and reproducibly. A reliable assessment, taken by the same participant on two occasions, should produce the same conclusions on their knowledge or skills. A test with poor reliability might result in very different scores across the two instances.

It is useful visually to think of a dartboard. In Figure 1, darts have landed all over the board—they are not reliably in any one place.

Assessment reliability is like repeatability in a blood test.

Figure 1 - not reliable

An unreliable assessment does not measure anything consistently and cannot be used for any trustable measure of competency. Just as an unreliable blood test would fail to help doctors diagnose the correct illness.
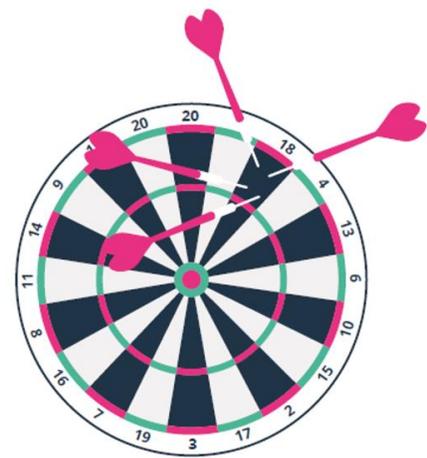
Validity

Being reliable is not good enough on its own. The darts in Figure 2 are all consistently together, but they are not in the right place – the bullseye. A test can be reliable but not measure what it is meant to measure. For example, a business could have a reliable assessment that tested for skill in word processing, but this would not be valid if used to test machine operators, where writing is not a key job task.

An assessment is valid if it measures what it is supposed to measure. So, if a business is measuring competence in a job role, a valid assessment must align with the knowledge, skills and abilities required to perform the tasks expected of a job role. Validity is like accuracy of a blood test.

Figure 2 – reliable but not valid

Assessments must be reliable AND valid

Trustable assessments must be reliable AND valid. The darts in Figure 3 are in both the same place and the right place. When constructing an assessment for competence, organizations are looking for it to consistently measure the competence required for the job.

Alongside fairness, the concepts of reliability and validity are cornerstones of the assessment world and are well enshrined in International Organization for Standardization (ISO) standards. For example, ISO 17024 states: "Certification of a person should be based on objective evidence obtained by the certification body through a fair, valid and reliable assessment."2[2] In addition, ISO 10667:2020 requires organizations using assessment in the workplace to "choose assessment methods which meet the principles of validity, reliability and fairness."[3]
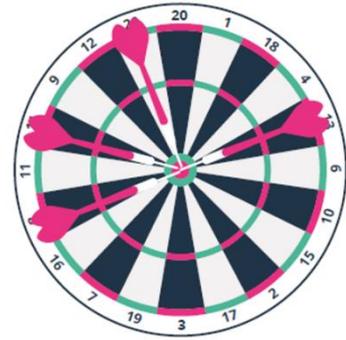
Figure 3 - reliable and valid

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[2] ISO/IEC 17024:2012. Conformity assessment — General requirements for bodies operating certification of persons
[3] ISO 10667-1: 2020. Assessment service delivery — Procedures and methods to assess people in work and organizational settings

Steps for valid and reliable tests

When businesses use a test developed by someone else, they should ask to see evidence of the assessment's validity and reliability. A good answer will include detail on how the test was developed and how it was piloted or delivered.

Employers developing their own tests, however, will need processes to make tests more valid and reliable.

The purpose of the tests (and how their results will be used) will influence the sort of steps, but there are four guiding principles for making valid and reliable assessments in the workplace.

1. **Plan thoroughly** – when building any assessment, it is important to be clear of everything that needs to happen before the development of the assessment begins. It can be helpful to think of a six-stage process: planning assessment, authoring items, assembling the assessment, pilot and review, delivery and analyzing results. For each one there needs to be defined processes and steps in each one that contribute to validity and reliability, which can only be developed through proper planning.

2. **Use job task analysis and business need to inform question development and setting the pass scores** - to measure job competence validly, test setters need to analyze what tasks the job involves and how important they are. One way of doing this is a job task analysis, which surveys subject matter experts or people in the job role to identify the importance of different tasks. This then informs question

development, or authoring. Having a repeatable, defensible authoring process is key to validity and reliability. It is also important to consider how to set the pass score for a test. Use a methodology that matches the business need for the test.

3. **Deploy the right technology** – assessment management system technology is very helpful. Although employers can deliver assessments with an e-learning system or learning management system (LMS), they will find the capabilities of an assessment management system like Questionmark contribute strongly to validity and reliability. For example, a hierarchical item bank (question database) and the ability to analyze item statistics for questions are crucial.

4. **Demand evidence of analytical thinking, not fact recall** – Unless job skills are focused on recalling information, seek to ask questions that ask for more than just knowledge. Ask test takers to use understanding or analytical skills not just regurgitating a fact.

Considering validity and reliability makes sense not just for high-stakes tests, but for all quizzes, tests and exams in the workplace.

There are lots of useful resources to learn more including on the Questionmark (www.questionmark.com) website. Here are three particular ones we recommend:

- **"Assessment Results You Can Trust"**, a 26-page Questionmark white paper going into more detail on how to achieve validity and reliability in tests: https://www.questionmark.com/download-assessment-results-you-can-trust/
- A recorded webinar from Questionmark: **"Beyond Recall: Taking Competency Assessments to the Next Level"**, available at https://www.questionmark.com/download-taking-competency-assessments-to-the-next-level/.
- An excellent book by Shrock and Coscaralli called **"Criterion Referenced Test Development"** (3rd edition), available from bookstores.

Conclusion

While they may not have the same impact on a person's wellbeing, comparing workplace assessments with that of blood testing provides a useful analogy for the need for accuracy and precision. In particular, the role and importance of validity and reliability in assessments.

Employers that cannot trust the data informing critical decision-making run the risk of their choices hurting business performance. As with many things, the first step is often the hardest. Most professional organizations who work with tests and exams are already familiar with the concept of validity and reliability, but if an organization does not yet put these at the center of its testing activity, it is important to do so.

Even simply getting teams thinking about the concepts of validity and reliability in testing programs can help improve how the resulting data is used. This is a significant step in making tests and assessments useful to organizations and, ultimately, improving the quality of their people decisions.

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About Questionmark:

We help employers and their people unlock their potential to deliver better performance.

Questionmark provides a secure enterprise-grade assessment platform and professional services to leading organizations around the world, delivered with care and unequalled expertise. Its full-service online assessment tool and professional services help customers to improve their performance and meet their compliance requirements. Questionmark enables organizations to unlock their potential by delivering assessments which are valid, reliable and fair, which can be defended.

Questionmark offers secure powerful integration with learning management systems (LMS), learning record stores (LRS) and proctoring services making it easy to bring everything together in one place. Questionmark's cloud-based assessment management platform offers rapid deployment, scalability for high-volume test delivery, 24/7 support, and the peace-of-mind of secure, audited U.S., Australian and European-based data centers.

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