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When is Psychometric Assessment a Reliable Tool for Candidate Selection?

Abstract

[Excerpt] This paper will explore the effectiveness of psychometric tests (based on academic research), present some best practices, and discuss legal risks associated with the use of such assessments.

Keywords

Human Resources, psychometric assessment, assessments, selection, attracting talent, talent, talent management, HR, artificial intelligence, AI, metrics

Comments

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“When is a psychometric assessment a reliable tool for candidate selection?”

Introduction to Psychometric Assessments

Psychometric assessments, used for pre-employment testing, evaluate the candidates’ knowledge, skills, abilities, and other characteristics and help measure their suitability for a job role. Broadly, two kinds of psychometric tests are used by organizations – *personality assessments* and *aptitude (or cognitive ability)* tests. The use and popularity of these tests have skyrocketed in the past few years. For instance, psychometric testing is used to assess 60% - 70% of prospective workers in the U.S., up from 30% - 40% about five years ago.¹⁴ Such tests are also used for current employees, particularly those under consideration for management (56%) and executive (45%) positions.⁹ Workplace testing has become a \$500 million-a-year business, and is growing at an annual rate of 10% - 15%.¹⁴

This paper will explore the effectiveness of psychometric tests (based on academic research), present some best practices, and discuss legal risks associated with the use of such assessments.

Factors Influencing Effectiveness of Psychometric Assessments

The effectiveness of psychometric assessments is dependent on four factors:

- ***Test properties (specifically, Reliability and Validity)***
 - *Reliability* refers to the consistency with which a test measures or predicts a certain outcome. Test manuals and independent reviews of tests provide reliability coefficients (r). These values range from 0 to 1. The higher the value, the more reliable the test.
 - *Validity* is a measure of how well a test predicts a certain outcome. Similar to reliability coefficients, validity coefficients range from 0 to 1, and indicate the strength of the relationship between the test and job performance. Higher the score, the greater one’s confidence in the predictive ability of the test.

There are various types of reliability and validity, and different ranges for the coefficient scores. See Appendix B.

- ***Adverse Impact***

Adverse impact is the unintentional discrimination against underrepresented groups and minorities due to the use of a test. Organizations should comply with the *80 percent rule* – the proportion of protected class members hired should not be less than 80% of the proportion of majority group members hired. Research suggests that cognitive ability tests have higher levels of adverse impact than personality assessments.
- ***Cost***

In selecting psychometric tests, organizations should consider the cost of developing, administering, and maintaining the assessment. The *buy-versus-build* decision is a critical one as

well – some companies prefer custom assessments (uniquely designed for a specific role, and reflective of the organization’s culture and values), while others choose to purchase commercially available assessments (that are hosted, updated, and maintained by external assessment providers).

- ***Candidate Reactions***

As organizations move towards candidate-centric hiring, psychometric assessments that attract positive responses from applicants are favored. Usually, candidates react favorably when the assessments:

- Measure job-relevant capabilities
- Are consistent and fair
- Include feedback procedures
- Provide an insight into the nature of the job and organization

Research suggests that cognitive tests are viewed more favorably than personality assessments.

Appendix A compares the different pre-employment tests used for recruitment on the four aforementioned criteria. Organizations should consider all parameters before choosing the right mix of assessments for prospective candidates.

Best Practices

In order to use psychometric assessments effectively as pre-employment recruiting tools, organizations should practice the following:

- Review test manuals and independent test reviews to assess reliability and validity metrics of psychometric assessments
- Ensure that psychometric tests, and their use, do not create violations of Equal Employment Opportunity (EEO) laws
- Thoroughly assess the transportability of tests when considering off-the-shelf options (i.e. job similarity, validity evidence, fairness evidence, other variables like reference groups used)
- Adopt a candidate-centric approach when designing and deploying assessments
- Use a combination of multiple assessments to select candidates

Legal Risk

As organizations explore customized or commercially available psychometric assessments for recruitment, they must exercise awareness of the potential legal risks associated with the use of these tests. Tests should not intentionally or unintentionally discriminate against protected class members, in accordance with Title VII of the Civil Rights Act (1964), Age Discrimination in Employment Act (1967), Americans with Disabilities Act (1990), and other EEO laws. Even assessments with high validity and reliability scores and low costs should be avoided if they lead to adverse impact. This is more critical for novel and increasingly popular forms of testing like Artificial Intelligence (AI) and gamification, whose legal defensibility is less established.

Appendix A

Evaluation of Assessment Methods on Four Key Criteria				
Assessment Method	Validity	Adverse Impact	Costs to Develop/ Administer/ Maintain	Candidate Reactions
Cognitive ability	High	High (minorities)	Low-high/low/high	Somewhat favorable
Personality	Low-moderate	Low	Low-high/low/low	More favorable if job-relevant
Integrity	Moderate-high	Low	Low/low/low	Less favorable
Physical fitness	Moderate to high	High (females and over age 40)	High/high/low	More favorable
Biographical data	Moderate	Low-high for different types	High/low/moderate	More favorable if job-relevant
Job knowledge	High	High (minorities)	Low-high/low/high	More favorable
Writing	High	High (minorities)	High/low	Somewhat favorable
Situational judgment	Moderate	Moderate (minorities)	High/low/moderate	More favorable
Behavioral interviews	High	Low	High/high/low	More favorable
Work simulations	High	Low-high, depends on what is measured	High/high/high	More favorable
Assessment centers	Moderate to high	Low-high, depends on what is measured	High/high/high	More favorable
Physical ability	Moderate to high	High (females and those over age 40)	High/high/low	More favorable

Figure 1. Effectiveness of different assessment methods (*Source: Choosing Effective Talent Assessments to Strengthen Your Organization, SHRM*)

Appendix B

Reliability coefficient value	Interpretation
.90 and up	excellent
.80 - .89	good
.70 - .79	adequate
below .70	may have limited applicability

Figure 2. Range of reliability coefficients (*Source: Testing and Assessment: An Employer's Guide to Good Practices, U.S. Department of Labor*)

Validity coefficient value	Interpretation
above .35	very beneficial
.21 - .35	likely to be useful
.11 - .20	depends on circumstances
below .11	unlikely to be useful

Figure 3. Range of validity coefficients (Source: *Testing and Assessment: An Employer's Guide to Good Practices*, U.S. Department of Labor)

Types of reliability	
Test-retest	Consistency of test scores over time
Alternate or parallel form	Consistency of test scores across two or more forms of a test
Inter-rater	Consistency of test scores across two or more raters
Internal consistency	Correlation between items on a test
Types of validity	
Criterion related	Correlation between test performance and job performance
Content	Association between content of a test and job-related behaviors
Construct	Assessment of whether the test measure what it purports to measure

Table 1. Types of reliability and validity (Source: *Testing and Assessment: An Employer's Guide to Good Practices*, U.S. Department of Labor)

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