



Cognitive Ability Testing

By David W. Arnold, Ph.D., J.D.

While it is **sometimes** thought that cognitive ability tests are simply a measure of education, **in reality** they measure very general mental capabilities.

What do Cognitive Ability Tests Measure?

Cognitive ability tests are designed to measure such things as how well an individual reasons, solves problems, plans, organizes, thinks abstractly, learns quickly, and grasps the nature of complex problems. As some researchers have stated, cognitive ability tests help evaluate a person's capability to figure out their surroundings and determine the appropriate actions—informally it's called "catching on," "making sense of things," or "figuring things out." Cognitive ability tests have various labels and are also called intelligence tests, IQ tests, ability tests, aptitude tests, assessments of problem solving, and assessments of general mental ability. **While it is sometimes thought that cognitive ability tests are simply a measure of education, in reality they measure very general mental capabilities.**

Today, employers throughout the world commonly utilize cognitive ability tests to assist in the hiring process. This stems from the fact that well-developed tests of cognitive ability have been shown to be the best predictors of job performance available. As discussed later in this paper, there is an extensive body of research and published studies that support the use of such tests. This is typified by a Letter to the Editor entitled "Mainstream Science on Intelligence" that appeared in the Wall Street Journal in 1994. This letter was signed by over 50 of the world's leading research psychologists and stated that "Intelligence, so defined, can be measured and intelligence tests measure it well. They

are among the most accurate (in technical terms, reliable, and valid) of all psychological tests and assessments."

Validity Evidence for Cognitive Ability Tests

As with any hiring tool (e.g., interviews, background checks, assessments), historically there has been some discussion regarding the effectiveness of cognitive ability tests in predicting job performance. However, more so than any other hiring tool, cognitive ability tests have strong evidence indicating that they are effective for use in personnel selection. Such conclusions are fully described in professional journal articles, major textbooks, and literature reviews.

For instance, a 1998 Psychological Bulletin article entitled "The Validity and Utility of Selection Methods in Personnel Psychology: Practical and Theoretical Implications of 85 Years of Research Findings" evaluated the existing research on 19 different employee selection techniques. Specifically, the review looked at commonly utilized tools such as reference checks, experience, cognitive ability tests, integrity tests, interviews, education, and work samples, as well as some less frequently used techniques (e.g., graphology). This review concluded that assessments like the Wonderlic Classic Cognitive Ability Test (WPT) have the "highest validity and lowest application cost" of any selection method.

Additionally, such measures have the most extensive basis of support available—

Pinpoint potential.

Wonderlic.

www.wonderlic.com | 800.323.3742



Cognitive Ability Testing

“Literally thousands of studies have been conducted [on cognitive ability tests] over the last nine decades.” In determining what combinations of selection measures work best, the authors indicated that the three combinations with the greatest validity and utility for job performance involved combining a cognitive ability test with either a work sample test, integrity test, or structured interview.

While it is not readily apparent that much of the research reviewed by the authors of the article described above included the Wonderlic Cognitive Ability Test, other professional articles have specifically addressed use of this assessment.

For example, in a 2004 *Journal of Personality and Social Psychology* article entitled “General Mental Ability in the World of Work: Occupational Attainment and Job Performance,” the authors state that “Although there are a variety of such instruments [cognitive ability tests], probably the most representative of these—and certainly the most widely used today—is the Wonderlic Classic Cognitive Ability Test.” The authors go on to indicate that “The Wonderlic test has numerous psychometrically parallel forms available, and it is supplied with extensive norm data. On the basis of instruments of this sort, thousands of validity studies have accumulated...”

Additionally, in an article published in the 1997 edition of the professional journal *Intelligence* (“Why [Intelligence] Matters: The Complexity of Everyday Life”) the author acknowledges that the Wonderlic Personnel Test has favorable validity and reliability for screening job applicants. The article also goes on to state

that: “The manual for the Wonderlic Classic Cognitive Ability Test provides the most comprehensive, up-to-date, and publicly available data on the [intelligence] demands of a wide variety of civilian jobs.”

In conclusion, as indicated by the earlier referenced *Wall Street Journal* article, it is widely accepted that tests measuring cognitive skills do a good job of predicting job performance. In fact, research shows that these tests work much better and have more utility than any other type of selection tool.

Legal Issues

Disparate Impact

Disparate impact is defined as unintentional discrimination. It occurs when a facially neutral employment tool (e.g., test, interview, criminal background check, educational background) has a substantially negative impact for members of a protected subgroup (e.g., a subgroup defined on the basis of race, sex, or age). Disparate impact exists when a subgroup passes the test at a substantially lower rate than the relevant comparison group. From an employer’s perspective, a variety of hiring tools have historically raised the issue of disparate impact with respect to race—certain racial subgroups tend to, on average, perform less well than their white counterparts. Tools that have raised this issue include, but are not limited to, cognitive ability tests, criminal background checks, experience requirements, educational requirements, certifications, and height/weight/strength requirements.

With respect to cognitive ability tests, this does not mean that non-white job applicants all score poorly on such tests. In fact, non-white applicants, just like their

Pinpoint potential.

Wonderlic.

www.wonderlic.com | 800.323.3742



Cognitive Ability Testing

white counterparts, score throughout the possible range on cognitive ability tests. Some score very high, some score low, and most applicants score about average. Qualified candidates can be found in all racial groups at all levels.

While many hiring tools tend to have a disparate impact on the basis of race, that does not make them unlawful or unfair. Rather, their use can be justified if they can be shown to be job-related and consistent with business necessity. This legal approach has been long recognized and was articulated in the first review of pre-employment testing by the United States Supreme Court. See *Griggs v. Duke Power Co.*, 401 U.S. 424 (1971). While the *Griggs* case is often mistakenly cited to call into question the lawfulness of cognitive ability testing, in reality the ruling on this case recognizes that these tests, as well as educational requirements and other hiring tools (e.g., criminal background checks, credit checks, experience requirements, physical requirements), are appropriate for assessing job applicants as long as certain criteria are met.

Specifically in the *Griggs* case, Duke Power Company had historically engaged in overt discrimination practices. The Duke Power plant in Draper, North Carolina, had five categories of jobs and African Americans were only allowed jobs within one category. Furthermore, the highest level of pay within this category (i.e., Laborer) was less than the lowest pay-level in any of the other categories. After enactment of Title VII of the Civil Rights Act of 1964 (CRA), Duke Power discontinued this practice and required all external job applicants for non-Laborer positions to have a high school diploma and achieve a passing score on

two tests with high cognitive loadings—the Wonderlic Classic Cognitive Ability Test and the Bennett Mechanical Comprehension Test. Internal applicants seeking non-Laborer positions were required to either have a high school diploma or pass these two tests. As a result of this practice, Duke Power was sued for unlawful discrimination.

While the statutory language of the CRA did not formally recognize the disparate impact doctrine of discrimination, the Supreme Court in this case judicially created such an approach. The court stated that discrimination does not need to be intentional and that certain practices (e.g., the use of cognitive ability tests and high school diplomas to establish minimum qualifications), which have a disparate impact with respect to protected status subgroups (e.g., race) are permissible only if they can be shown to be job related and consistent with business necessity. In this particular instance, Duke Power was unable to show that cognitive skills (the diploma and the tests which served as a proxy for a high school diploma) were a valid requirement for entry into any of the other four job categories. This has been the law of the land since the *Griggs* case was decided in 1971. As an aside, the Civil Rights Act of 1991 statutorily codified the doctrine of disparate impact.

Note, while the existing justifications (i.e., a procedure or tool is job related and consistent with business necessity) apply to CRA cases alleging disparate impact, the corresponding justification standard for age discrimination cases under the Age Discrimination in Employment Act is substantially lower. In such cases, an employer merely needs to show that the

Pinpoint potential.

Wonderlic.

www.wonderlic.com | 800.323.3742



Cognitive Ability Testing

employment decision was reasonably related to a factor other than age. See *Smith v. City of Jackson*, No. 03-1160 (2005). Parenthetically, cognitive ability tests historically have not exhibited disparate impact on the basis of age.

In the time following the Supreme Court's holding in *Griggs*, employers have used cognitive ability tests extensively for positions that require employees to learn, solve problems, and make good decisions. As discussed previously, there is an extensive body of Wonderlic research, as well as professional literature that documents the validity of such tests in predicting performance for positions of this nature. However, the prudent employer will avoid the use of such tests for assessing applicants for very low level positions, which require little or no demand for thought-based skills.

Privacy Issues

While clinical-based personality tests that contain invasive inquiries can certainly be the basis of invasion of privacy complaints, cognitive ability tests do not raise this issue. Instruments like the Wonderlic Cognitive Ability Test ask no questions that could legitimately be perceived as invasive. Wonderlic Cognitive Ability Test items require job applicants to solve problems; these items do not ask applicants to provide any personal or semipersonal information whatsoever. As a result, assessments like the Wonderlic Cognitive Ability Test have not been the focus of invasion of privacy suits.

An illustration of the neutrality of the Wonderlic Classic Cognitive Ability Test with respect to privacy issues can be found in a recent court case. The defendant in

Rent-A-Center v. Karraker, No. 02-CV-2026 (2004) was using a battery of nine tests for hiring store managers, and this battery included the Wonderlic Cognitive Ability Test. While the plaintiffs in this case alleged that certain of these tests (e.g., MMPI) constituted an unlawful invasion of privacy, this claim was not made with respect to the Wonderlic Cognitive Ability Test.

Testing Individuals with Disabilities

With regard to cognitive ability testing and the Americans with Disabilities Act (ADA), the most frequent question that arises is whether cognitive ability tests are medical in nature, which would mandate that they only be administered after a conditional offer of employment is tendered. While there is case law supporting the conclusion that the Wonderlic Cognitive Ability Test is not a medical assessment¹, it is certainly prudent to review each employer's use individually. To assist in this process, the Equal Employment Opportunity Commission (EEOC) has provided the following eight criteria to help employers determine whether a practice constitutes a medical examination. According to the EEOC, when a test meets three or four of these criteria it is probably medical in nature.

- Test Administered by a Health Care Professional or Trainee
- Test Interpreted by a Health Care Professional or Trainee
- Test Designed to Reveal an Impairment or State of Physical/Psychological Health
- Test Given for the Purpose of Revealing Impairment or State of Physical/Psychological Health
- Test is Invasive (e.g., Drawing of Urine,

Pinpoint potential.

Wonderlic.

www.wonderlic.com | 800.323.3742



Cognitive Ability Testing

- Blood, Breath)
- Test Measures Physiological/ Psychological Responses
- Test Normally Conducted in Medical Setting
- Test Utilizes Medical Equipment/ Devices

While cognitive ability tests could certainly be used by a healthcare professional to help diagnose some form of disability, such an approach is generally exclusive to medical rather than employment settings. In employment settings, assessments like the Wonderlic Cognitive Ability Test are used to compare job applicants and predict future job behavior related to problem solving, decision making, trainability, etc. As a result, according to the above EEOC criteria, use of the Wonderlic Cognitive Ability Test is not medical in nature.

In short, it is uncommon for cognitive ability tests to be used as medical assessments within the employment domain. As a result, the appropriate timing for administration of such instruments is typically prior to a conditional offer of employment.

Conclusions

Cognitive ability tests are widely used throughout the world for employee selection because they do an excellent job of predicting performance in a large variety of positions. While disparate impact with respect to race has been found for cognitive ability tests and other tools (credit checks, educational requirements, criminal background checks, physical requirements, experience requirements), the effectiveness and utility of cognitive ability tests justify their use. As

acknowledged by the authors of “The Validity and Utility of Selection Methods in Personnel Psychology: Practical and Theoretical Implications of 85 Years of Research Findings,” the use of highly valid employee selection measures can result in gains of millions of dollars to organizations. Conversely, “By using selection methods with low validity, an organization can lose millions of dollars in reduced production,” which would create a significant competitive disadvantage.

¹In the appeal of certain issues in the above cited Rent-A-Center case (*Rent-A-Center v. Karraker*, 411 F.3d 831 (7th Cir. 2005)), the court held that the MMPI (but not the Wonderlic Classic Cognitive Ability Test), was a medical examination.

Pinpoint potential.

Wonderlic.

www.wonderlic.com | 800.323.3742