

One

INTRODUCTION AND OVERVIEW

INTRODUCTION

The use of standardized psychological testing instruments to measure ability using nonverbal tests provides an organized way to collect a great deal of information regarding an examinee's cognitive ability in an efficient manner. An appropriate assessment using a well-developed instrument administered by a well-trained examiner can reveal much about an examinee's abilities. These results, when integrated with other information, can be instructive and can be used for identification and treatment purposes. Naglieri and Chambers (in press) argue, however, that examiners must use well-developed tests standardized on representative samples and for which test authors provide adequate technical and interpretive manuals. Although this applies to all testing areas, it is most important in the assessment of intelligence testing, which is marred by problems for the Deaf*, those whose native language is other than English, or those who may not be able to speak clearly, if at all. For examples of this, see *IQ: A Smart History of a Failed Idea* by Murdoch (2007) and *Unspeakable: The Story of Junius Wilson* by Burch and Joyner (2007). Measures of intelligence must be created with attention to detail for special populations and circumstances as well as evidence of reliability and validity, expert reviews, standardization, and the collection of a representative normative sample.

The *Wechsler Nonverbal Scale of Ability* (WNV) builds upon a rich history, goes beyond decades of use of Wechsler's performance tasks, and adds an explicit commitment to fairness and accurate assessment of a wide variety of individuals. The purpose behind the development of WNV at each stage was fairness for

* Following culturally appropriate practices we have attempted to use the capitalized "Deaf" to refer to cultural practices and members of the Deaf population and the lower case "deaf" to refer to the condition of deafness or the larger group of individuals who do not identify themselves with members of this culture.

2 ESSENTIALS OF WNV ASSESSMENT

various populations: to be able to administer the test nonverbally or in a manner that uses minimal language. By minimizing the language demands of the administration of the subtests and providing unique pictorial directions for the administration, the WNV has established a new, patent-pending method of administration as a means to ensure the comprehension of the required tasks by the examinee and a new standard for multilingual administration directions.

HISTORY OF ABILITY AND ABILITY TESTING

There has been mention of people who were noteworthy in society (e.g., Aristotle, Euclid, Leonardo daVinci, Albert Einstein) ever since written records have been kept. With discussions from thousands of years ago about ability and intellect, it seems that there should be a universal definition. However, there are many diverse definitions of intelligence, including the definitions in the dictionaries. Dictionary.com defines *intelligence* first as the “capacity for learning, reasoning, understanding, and similar forms of mental activity; aptitude in grasping truths, relationships, facts, meanings, etc.”; whereas Merriam-Webster defines intelligence first as “the ability to learn or understand or to deal with new or trying situations.” Regardless of how intelligence is defined, there is considerable support for the utility of measuring intelligence.

Alfred Binet compiled the first test battery based on tasks that teachers identified as relevant; quickly identifying those students who needed additional help or different educational interventions (see Rapid Reference 1.1 for the chronology of Binet’s testing instruments). Other educators, such as Itard and Montessori, used a variety of tasks to assist them in formulating educational programming for their

Rapid Reference 1.1

Over a Century of Stanford-Binet Scales

1905	Binet-Simon
1908	Binet-Simon–Revised
1916	Stanford Revision and Extension of the Binet-Simon scales
1937	Stanford-Binet
1960	Stanford-Binet–Second Edition
1972	Stanford-Binet L–M
1986	Stanford-Binet–Fourth Edition
2004	Stanford-Binet–Fifth Edition

Rapid Reference 1.2

Nearly 70 Years of Wechsler Scales

1939	Wechsler-Bellevue, Form I
1946	Wechsler-Bellevue, Form II
1949	Wechsler Intelligence Scale for Children (WISC)
1955	Wechsler Adult Intelligence Scale (WAIS)
1967	Wechsler Preschool and Primary Scale of Intelligence (WPPSI)
1974	WISC—Revised
1981	WAIS—Revised
1989	WPPSI—Revised
1991	WISC—III
1997	WAIS—III
2003	WISC—IV
2004	WISC—IV Integrated
2005	WISC—IV Spanish
2006	Wechsler Nonverbal Scale of Ability (WNV)
2008	WAIS—IV

students. Whether or not Boring's 1923 statement that intelligence is what the tests test was accurate, it does follow that the measurement of ability or intelligence is more easily quantified by using tests than by any other method.

The concept and definition of *general intelligence* gained visibility and momentum with Charles Spearman's (1904) article entitled "*General Intelligence: Objectively Determined and Measured*." Spearman proposed the theory that all mental tests can be described as having a factor specific to each test and a general factor, designated as *g*. David Wechsler created the Wechsler scales, called the *Wechsler-Bellevue Scales* (Wechsler, 1939), to reflect this dichotomy—subtest-specific scores and an overall composite score. All of Wechsler's scales and revisions published since, including the WNV, reflect this (see Rapid Reference 1.2 for the chronology of Wechsler's scales).

The purpose of the WNV (Wechsler & Naglieri, 2006a) is to provide a nonverbal measure of general ability for assessing the general cognitive ability of examinees ages 4 through 21 using questions that do not contain verbal content and to do so using subtests that vary in their format and requirements. This is in contrast to previous versions of the Wechsler Scales that have measured general ability using verbal, arithmetic, and nonverbal tests. The WNV

4 ESSENTIALS OF WNV ASSESSMENT

provides a measure of general ability using only nonverbal tasks, which provides a way to measure general ability while minimizing language and math skills. This is also in contrast to tests like the *Naglieri Nonverbal Ability Test—Individual Administration* (NNAT—I); (Naglieri, 2003a) that only use one item type to assess general ability nonverbally.

DON'T FORGET

The Wechsler Nonverbal Scale of Ability is a measure of general ability that requires the examinee to solve problems that do not require verbal expression or knowledge of words.

BENEFITS OF NONVERBAL TESTING

The essential benefit of a nonverbal test is that it measures an examinee's general ability influenced minimally by knowledge. For example, a verbal test of general ability might ask the examinee to explain how a bee and a cow are the same. To answer that question demands knowledge of these two words, what each of the objects these words represent are, and what they share. In contrast, solving nonverbal test items involves minimal knowledge beyond recognizing a letter or number or being able to see the difference between a circle and a square. Essentially, nonverbal tests provide a means of measuring general ability without the confounding influence of verbal and quantitative knowledge and related skills such as reading, math, and verbal expression.

This makes a nonverbal test like the WNV particularly appropriate for assessment of examinees who have limited knowledge of English, weak academic histories, communication challenges, and neurological impairments. Using a nonverbal test can circumvent those variables that may interfere with the accurate measurement of general ability.

DEVELOPMENT OF THE WNV

The Wechsler Nonverbal Scale of Ability was created with many goals, all the while adhering to the highest standards set forth by previous Wechsler and Naglieri products. These goals included the following.

- Create an ability test that can be used across cultures and languages.
- Create an ability test that can be used for all people (e.g., various

DON'T FORGET

Historically, Wechsler tests have grouped subtests into nonverbal and verbal composites or categories. These composite or category names indicated the types of skills required to complete items and did not indicate a type of ability.

A nonverbal test of ability is one that does not require the examinee to speak or understand the language that the test was published in or the primary language of the examiner.

ability levels, motor skills, speaking and hearing levels)

- Create an ability test that is of reasonable length.
- Create a test that will be interesting and engaging for examinees.

The development of the WNV included many innovations, arguably the most important of which was the creation of the pictorial directions (patent pending). The pictorial directions are visual representations not only of what the examinee will see and do during the administration of each subtest, but also sometimes of what the examinee might be thinking to answer correctly. For example, in the pictorial directions for Matrices, in Figure 1.1, the examiner points to the stimulus part of the item, and the examinee looks at (and thinks about) the stimulus. In the second frame, the examiner sweeps his or her hand across the answer options, and the examinee looks at (and thinks about) the answer options. In the final frame, the examinee thinks about and then points to the correct answer.

These pictorial directions are combined with standardized directions, which include simple sentences. Once the examiner completes the standardized portion of the directions he or she can continue to provide help to aid the examinee in understanding the demands of the tasks. This approach, both with the pictorial directions and the flexible supplement to the directions, makes the WNV an excellent ability measure for examinees from diverse cultures who may speak languages that the examiner cannot. Additionally, during development the subtests, pictorial directions, and standardized directions were all subjected to scrutiny by professionals who work with those from multicultural backgrounds and/or who work with individuals who are deaf or hard-of-hearing. Changes were made to the pictorial directions and to the directions for the examiner based on feedback from these reviewers.

The next goal that was met during development of the WNV was creating an ability test that could be used with all kinds of people. The items of the WNV can be administered to examinees with all types of color blindness except

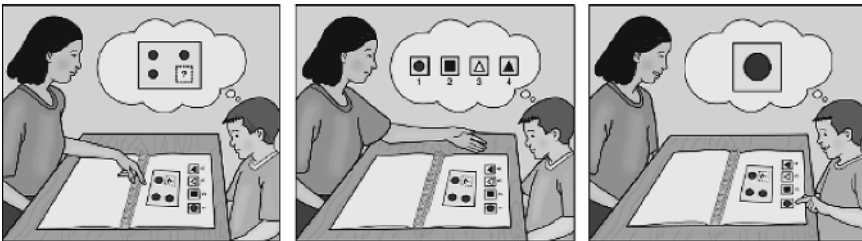


Figure 1.1. Matrices Pictorial Directions

6 ESSENTIALS OF WNV ASSESSMENT

tritanopia (blue-yellow color blindness) or achromatopsia (an inability to perceive color), each of which have a prevalence of less than .01% of the population. Examinees with all other types of color blindness should not perceive any of the items in a different way than examinees with color vision.

The WNV can be administered to examinees who have trouble with motor skills by administering the 2-subtest battery or by not administering Coding and prorating the 4-subtest battery. The choice for which subtests to administer would be determined by the examiner based on the examinee's unique skill set. The WNV can be administered to examinees suspected of having low or high ability levels.

The WNV can be administered to hard-of-hearing or deaf examinees regardless of how they communicate. In fact, great care was taken during the development of the WNV to create an instrument that can be used with deaf or hard-of-hearing individuals in the same way it is used with hearing individuals. As previously noted, the subtests, pictorial directions, and standardized directions were all subjected to scrutiny by professionals who work with multicultural examinees and/or who work with deaf or hard-of-hearing examinees. Changes were made to the pictorial directions and to the directions for the examiner based on feedback from these reviewers (e.g., pictures were altered to conform to non-verbal facial markers of signed language). Additionally, the WNV was administered to deaf individuals who use different communication systems and languages during the pilot, tryout, and standardization phases.

A translation and blind back-translation was done with all of the verbal directions for standardization. The final translation was then filmed of a deaf model using a native sign language. This translation was used in the collection of the normative data and the clinical validity studies in the standardization phase of development. The collection of data for the validity studies for using the WNV with deaf and hard-of-hearing individuals was unique for more than that reason. The WNV was the first test to collect data on deaf and hard-of-hearing individuals in coordination with Gallaudet University's annual demographic survey of tens of thousands of deaf and hard-of-hearing students. The WNV became the first published test to report the demographic variables that are unique to these populations. Furthermore, it is also the first and only ability test to report separate validity studies for hard-of-hearing and deaf individuals. Great care went into the development of the instrument at every stage and the data from the validity studies reflect that, as displayed in the *Technical and Interpretive Manual* (Wechsler & Naglieri, 2006c).

Besides meeting the goals described previously, the WNV is also a reasonable length, interesting, and engaging to administer.

DESCRIPTION OF THE WNV

The WNV was standardized simultaneously in the United States and in Canada. The standardization samples included reliability and validity studies, which were collected in the United States. For details about the WNV, including the standardization sample information for both countries, see Table 1.1.

Table 1.1. General Information

Authors	David Wechsler (d. 1981) Jack A. Naglieri
Publication Date	2006
Age Range	4:0–21:11
Administration Time for Examinees in the Normative Sample Ages 4:0–7:11 (50%/90%)	4-Subtest Battery: 37/55 mins 2-Subtest Battery: 10/17 mins
Administration Time for Examinees in the Normative Sample Ages 8:0–21:11 (50%/90%)	4-Subtest Battery: 34/51 mins 2-Subtest Battery: 14/29 mins
Qualification of Examiners	Graduate- or professional-level training in psychological assessment
Publisher	Pearson (formerly Harcourt Assessment, and The Psychological Corporation) 19500 Bulverde Road San Antonio, Texas 78259 Ordering Phone No. 800-211-8378 http://HarcourtAssessment.com
	<i>Score Information</i>
Composite Score for General Ability	Full Scale Score: 4-Subtest Battery and Full Scale Score: 2-Subtest Battery
Available Scores	Raw Scores for Items and Subtests T Scores for Subtests Full Scale Score: 4-Subtest Battery (with CIs) Full Scale Score: 2-Subtest Battery (with CIs) Percentile Ranks Age Equivalent
Range of Full Scale Scores	30 to 170 (ages 4:0–21:11)

(continued)

8 ESSENTIALS OF WNV ASSESSMENT

Table 1.1. (continued)

	<i>Norming Information</i>
U.S. Standardization Sample Size	1,350
Canadian Standardization Sample Size	875
Sample Collection Dates (both U.S. and Canadian samples)	July 2005 to May 2006
Sample Size per Age Interval for U.S. Sample	100
Range of Sample Sizes per Age Interval for Canadian Sample	50–100
Age Blocks in Norm Table (both for U.S. and Canadian norms)	3 month (4:0–5:11) 4 month (6:0–16:11) 3 year (17:0–19:11) 2 year (20:0–21:11)
U.S. Demographic Variables	Age Gender (Male, Female) Geographic Region (West, North Central, South, and Northeast) Race/ethnicity (White, African American, Hispanic, Asian, Other) Parent Education (five levels)
Canadian Demographic Variables	Age Gender (Male, Female) Geographic Region (West, Central, and East) Race/ethnicity (Caucasian, Asian, First Nations, Other) Parent Education (four levels)
Validity Test Studies	WPPSI—III WISC—IV WISC—IV Spanish WAIS—III NNAT—I UNIT WIAT—II
Special Group Studies	Gifted Mild Mental Retardation Moderate Mental Retardation

Reading and Written Expression Learning
Disorders
Language Disorders
English-Language Learners
Deaf
Hard-of-Hearing

STRUCTURE OF THE WNV

The WNV has both a 4- and 2-subtest battery, as described in Chapter 2. Both versions have good reliability, so the decision about which version to administer should be based on the reasons for testing, the testing constraints (e.g., time), or characteristics of the examinee (e.g., problems with motor skills). In other words, the 4-subtest battery should be the battery of choice because it offers greater diversity with the additional subtests. However, if time is short, if the examinee has a motor skills deficit, or if there are other exceptional circumstances, the 2-subtest battery is the better choice. Table 1.2 provides subtest descriptions of the WNV.

Table 1.2. WNV Subtest Descriptions

Subtest (Abbreviation)	Origin	Description
Matrices (MA)	Adapted from NNAT—I	The examinee looks at an incomplete figural matrix and selects the missing portion from four or five response options.
Coding (CD)	Adapted from WISC—IV	The examinee copies symbols that are paired with simple geometric shapes or numbers. Using a key, the examinee writes each symbol in its corresponding box within a specified time limit.
Object Assembly (OA)	Adapted from WPPSI—III, WISC—III, and one new item	The examinee is presented with prearranged puzzle pieces and fits the pieces together to form a meaningful whole within a specified time limit.

(continued)

Table 1.2. (continued)

Subtest (Abbreviation)	Origin	Description
Recognition (RG)	New Subtest	The examinee looks at a geometric design for 3 seconds and identifies which of four or five response options matches the viewed stimulus.
Spatial Span (SSp)	Adapted from WMS—III	The examinee taps a series of blocks as demonstrated by the examiner. For Spatial Span Forward, the examinee repeats a sequence of tapped blocks in the same order as demonstrated by the examiner. For Spatial Span Backward, the examinee repeats a sequence of tapped blocks in the reverse order of that demonstrated by the examiner.
Picture Arrangement (PA)	Adapted from WAIS—III and a research version of the WISC—IV Integrated	The examinee reorders a prearranged set of picture cards to tell a logical story within a specified time limit.

CONCLUSION

The WNV was developed, constructed, and tested with great attention paid to details around special populations. The WNV is an excellent assessment that demonstrates the highest level of fairness and accuracy for diverse groups of examiners and examinees. It is an instrument that can be used to overcome language barriers that may exist between an examiner and examinee and provide needed information regarding an examinee's cognitive ability. The WNV builds on David Wechsler's historic dedication to clinical assessments and Jack Naglieri's strong commitment to such assessments being done in a culturally fair fashion.

 **Test Yourself** **1. Which of the following statements is true about the Recognition subtest?**

- (a) The Recognition subtest requires examinees to put together puzzles.
- (b) The Recognition subtest requires examinees to point to a geometric pattern that they were previously shown.
- (c) The Recognition subtest requires examinees to point to raised boxes that the examiner tapped.
- (d) The Recognition subtest requires examinees to complete a geometric pattern.

2. In what year was the first Wechsler scale published?

- (a) 1950
- (b) 1939
- (c) 1979
- (d) 1899

3. Which of the following statements is true about the Spatial Span subtest?

- (a) The Spatial Span subtest requires examinees to put together puzzles.
- (b) The Spatial Span subtest requires examinees to point to a geometric pattern that they were previously shown.
- (c) The Spatial Span subtest requires examinees to point to raised boxes that the examiner tapped in a specified order.
- (d) The Spatial Span subtest requires examinees to complete a geometric pattern.

4. Which special studies were included with the standardization of the WNV?

- (a) Gifted and Talented, Mild Mental Retardation, Moderate Mental Retardation, Deaf, and Hard-of-Hearing
- (b) Language Disorders and English-Language Learners
- (c) Reading and Written Expression Learning Disorders
- (d) All of the above

5. What test was the Recognition subtest adapted from?

- (a) The WAIS—III
- (b) The Recognition subtest is new and was not adapted from another test.
- (c) The NNAT—I
- (d) The WIAT—II

6. Who wrote the (1904) article entitled “General Intelligence”: Objectively Determined and Measured?

- (a) Charles Spearman
- (b) Lev Vygotsky
- (c) Alfred Binet
- (d) Theodore Simon

12 ESSENTIALS OF WNV ASSESSMENT

7. What test was the Coding subtest adapted from?

- (a) The WAIS—III
- (b) The Coding subtest is new and was not adapted from another test.
- (c) The WISC—IV
- (d) The WIAT—II

8. Which is the correct way to describe the WNV?

- (a) A nonverbally administered test of ability
- (b) A test of nonverbal ability
- (c) An ability test
- (d) a and c

9. In which countries was the WNV simultaneously standardized?

- (a) The United States and Canada
- (b) The United States and China
- (c) The United States and Great Britain
- (d) The United States and South Africa

10. Which demographic variables were used when collecting the U.S. standardization sample?

- (a) Age, Race/ethnicity, Parent Education, Geographic Region, and Gender
- (b) Age, Grade, Race/ethnicity, Parent Education, and Gender
- (c) Grade, Race/ethnicity, Geographic Region, and Gender
- (d) Grade, Race/ethnicity, Socioeconomic Status, Geographic Region, and Gender

Answers: 1. b; 2. b; 3. c; 4. d; 5. b; 6. a; 7. c; 8. d; 9. a; 10. a