

### *Universal Nonverbal Intelligence Test*

The Universal Nonverbal Intelligence Test (Bracken & McCallum, 1998) is a set of individually administered tasks designed to measure the cognitive abilities of children and adolescents (ages 5–17) who may be at a disadvantage in responding to traditional verbal or language-loaded tests. The test was designed to measure two primary kinds of intelligence: memory and reasoning. The authors define intelligence as the ability to solve problems using memory and reasoning. These two intellectual abilities are assessed through two underlying types of processes that facilitate nonverbal problem solving: symbolic and nonsymbolic. Symbolic processes include stimuli that symbolize people, analogies, or concepts, whereas the nonsymbolic processes resemble the nonverbal or performance portions of tests like the Wechsler scales and the Stanford–Binet. The UNIT comprises six subtests, each designed to be a measure of complex short-term memory or a measure of reasoning and to assess aspects of symbolic and nonsymbolic processing. The six subtests are called Symbolic Memory, Spatial Memory, Object Memory, Cube Design, Analogic Reasoning, and Mazes. The first three make up the Memory scale; the second three make up the Reasoning scale.

The descriptions of the UNIT scales are very general. For example, Reasoning is described as "the cornerstone of intelligence: As the core thinking ability it includes the ability to use information to solve problems" (Bracken & McCallum, 1998, p. 16).

Subtests require the student to engage in the following activities:

*Symbolic Memory.* Students are shown sequences of symbols for five seconds; the symbols are then removed, and the student must reproduce the symbols using response cards.

*Spatial Memory.* Students are shown patterns of green and black dots for five seconds; these are then removed, and the student must reproduce the patterns using green and black chips.

*Object Memory.* Students are shown a random pictorial array for five seconds; the stimulus array is then removed, and students indicate from a response bank the ones that were included in the stimulus.

*Cube Design.* Examinees are shown two-color abstract geometric designs and must reconstruct the designs using one-inch cubes. The stimulus remains present during performance.

*Analogic Reasoning.* Students are shown incomplete conceptual or geometric analogies in matrix format and must select from four response options the one that completes the analogy.

*Mazes.* The student uses paper and pencil to create a path from the middle of a maze to a correct exit.

Users of the UNIT may decide to use the Standard Battery (Symbolic Memory, Cube Design, Spatial Memory, and Analogic Reasoning subtests), an Abbreviated Battery (Spatial Memory and Cube Design), or an Extended Battery (all six subtests).

*Scores*

Raw scores on subtests of the UNIT may be transformed to scaled scores with a mean of 10 and a standard deviation of 3. In addition, users may obtain age equivalents, standard scores for sums of scaled scores (mean = 100; standard deviation = 15), and confidence intervals for raw scores. Separate intellectual quotients are obtained for Memory, Reasoning, Symbolic, and Nonsymbolic scales.

### *Norms*

The UNIT was standardized on a sample of 2,100 children that matched the demographic characteristics of the U.S. population as reported in the 1995 census. The sample was stratified on the basis of gender, race, geographic region, community setting (urban/suburban, rural), classroom placement (full-time regular, full-time self-contained, or some combination thereof), special education classification, and parental educational attainment. Tables in the manual show cross-tabulations on age, geographic region, and gender and race with other variables. The extensive tables in the manual enable users to understand quite clearly the nature of the group to which students are being compared. A major strength of this test is the fact that students with disabilities were included in the norm group in the proportions of their presence in the U.S. student population.

### *Reliability*

The UNIT manual includes data on internal-consistency and test–retest reliability. Internal-consistency coefficients across ages for the subtests of the UNIT range from .50

to .95. The reliabilities of Mazes are quite low (.50 to .76). Reliabilities for the Analogic Reasoning, Object Memory, and Mazes subtests are too low for use in individual decision making. The reliabilities of scales (Memory, Reasoning, Symbolic, and Nonsymbolic), on the other hand, exceed .87 and are sufficient for use in individual decision making.

Test-retest reliability of the UNIT is based on only one study, which included 197 participants (15 at each age level). More than two-thirds of the coefficients are below the .90 coefficient necessary for making decisions about individuals.

### *Validity*

The authors of the UNIT provide evidence of correlation with other measures of intelligence and with measures of academic achievement. They show that, overall, the correlations are high. However, they also provide evidence that at least in some instances, measures of Nonsymbolic Reasoning (defined as primarily nonverbal in nature) correlate more highly with verbal than with performance scales of other measures.

### *Summary*

The UNIT is an individually administered intelligence test that requires no verbal directions and no verbal response on the part of the student. The test is designed to provide information about student use of symbolic and nonsymbolic information-processing skills to solve memory and reasoning tasks. The test is appropriately standardized, and there is good evidence for internal-consistency reliability. Evidence for

test–retest reliability is limited, and validity evidence is sufficient for use of IQ scores obtained for the full battery only. Reliance on subtest scores or subscale scores for diagnostic purposes is precarious.