

scores at high levels of adaptive functioning will have poorer precision (i.e., higher *SEMs*) than those at low levels.

**SUMMARY.** The Vineland–II was designed to be an easily used, standardized measure of key domains of adaptive behavior—Communication, Daily Living Skills, and Socialization—that play a prominent role in the diagnosis of mental retardation and other developmental disabilities. The instrument clearly meets its goals of ease of use, clear procedures for the calculation of both raw and scaled scores, and clear and comprehensive information regarding its reliability and validity. The Vineland–II deserves to be considered among the best measures of adaptive behavior currently available, and the use of this instrument for making high-stakes decisions regarding individuals is recommended.

[ 151 ]

### Wechsler Adult Intelligence Scale—Fourth Edition.

**Purpose:** “Designed to assess the cognitive ability of adolescents and adults”; “provides subtest and composite scores that represent intellectual functioning in specific cognitive domains, as well as a composite score that represents general intellectual ability.”

**Population:** Ages 16-0 to 90-11.

**Publication Dates:** 1939-2008.

**Acronym:** WAIS-IV.

**Scores, 6:** Verbal Comprehension Index, Perceptual Reasoning Index, Processing Speed Index, General Ability Index, Full Scale.

**Subtests, 15:** Block Design, Similarities, Digit Span, Matrix Reasoning, Vocabulary, Arithmetic, Symbol Search, Visual Puzzles, Information, Coding, Letter-Number Sequencing, Figure Weights, Comprehension, Cancellation, Picture Completion.

**Administration:** Individual.

**Price Data, 2008:** \$1,079 per complete test kit including Symbol Search scoring key, Coding scoring key, Cancellation scoring templates, 25 record forms, 25 response booklet #1, 25 response booklet #2, administration and scoring manual (2008, 258 pages), technical manual (2008, 218 pages), 2 stimulus books, and Block Design block set.

**Time:** (59-100) minutes.

**Comments:** If there are significant differences between Index scores, the General Ability Index can be used to further inform interpretation; Letter-Number Sequencing, Figure Weights, and Cancellation are supplemental subtests for individuals 16-0 to 69-11 only.

**Author:** David Wechsler.

**Publisher:** Pearson.

**Cross References:** For reviews by Allen K. Hess and Bruce G. Rogers of the third edition, see 14:415; see also T5:2860 (1422 references) and T4:2937 (1131 references); for reviews by Alan S. Kaufman and Joseph D. Matarazzo of the revised edition, see 9:1348 (291 references); see also T3:2598 (576 references), 8:230 (351 references), and T2:529 (178 references); for reviews by Alvin G. Burstein and Howard B. Lyman of the original edition, see 7:429 (538 references); see also 6:538 (180 references); for reviews by Nancy Bayley and Wilson H. Guertin, see 5:414 (42 references).

*Review of the Wechsler Adult Intelligence Scale—Fourth Edition by GARY L. CANIVEZ, Professor of Psychology, Department of Psychology, Eastern Illinois University, Charleston, IL:*

**DESCRIPTION.** The Wechsler Adult Intelligence Scale—Fourth Edition (WAIS-IV) is the most recent version of the most frequently administered intelligence test for older adolescents and adults, which traces its roots back to the 1939 Wechsler-Bellevue Intelligence Scale (Wechsler, 1939). Consistent with Wechsler’s definition of intelligence (i.e., “global capacity”; Wechsler, 1939, p. 229) and all versions of his tests, the WAIS-IV seeks to measure general intelligence through the administration of numerous subtests, each of which is an indicator and estimate of intelligence. The WAIS-IV is a major and important revision of its predecessor and clinicians should appreciate many of the changes.

**DEVELOPMENT.** In revising the WAIS-IV, several goals were noted in the technical and interpretive manual including updating theoretical foundations, increasing developmental appropriateness, increasing user-friendliness, enhancing clinical utility, and improving psychometric features. Object Assembly and Picture Arrangement subtests were dropped, thus reducing subtests with manipulative objects to one (Block Design), as were Digit Symbol-Incidental Learning and Digit Symbol-Copy. New subtests to the WAIS-IV are Visual Puzzles, Figure Weights, and Cancellation. Verbal IQ (VIQ) and Performance IQ (PIQ) are no longer provided as with the Wechsler Intelligence Scale for Children—Fourth Edition (WISC-IV; 16:262). Administration and scoring rules were modified, easier and more difficult items were added to subtests to improve coverage and range, and discontinued rules were reduced for many subtests. Stimulus materials were enlarged as was writing space for Coding. Item bias investigations were reportedly conducted but data analyses illustrating comparisons or results were

not provided. WAIS-IV content and structure are specifically related to current intellectual conceptualizations (Carroll, 1993, 2003; Cattell & Horn, 1978; Horn, 1991) and are explicated with specific reference to the hierarchical nature of intellectual measurement.

#### TECHNICAL.

*Norms and scores.* The standardization sample ( $N = 2,200$ ) was obtained using stratified proportional sampling across variables of age, sex, race/ethnicity, education level (or parent education level for ages 16–19), and geographic region. Education level is a likely proxy for SES where accurate information about income is difficult to obtain. Examination of tables in the technical and interpretive manual revealed reasonably close matches to the October 2005 U.S. Census across stratification variables. The technical and interpretive manual notes exclusionary criteria for standardization sample participants related to language, uncorrected sensory impairments and communication limitations, and upper extremity impairments limiting motor performance, as well as current medication use and physical illnesses that might affect cognitive test performance.

Subtest scaled scores ( $M = 10$ ,  $SD = 3$ ) within each of the 13 age groups were obtained using a “method of inferential norming” (technical and interpretive manual, p. 39) where means, standard deviations, and skewness were examined from first through fourth order polynomial regressions with comparison to theoretical distributions and growth curves that produced percentiles for raw scores. Although minor irregularities were reportedly corrected through smoothing, the method of smoothing (statistical vs. hand/visual) was not noted. Due to reported range restriction and norming difficulties, certain process scores remained as raw scores, not standardized scaled scores. The Full Scale IQ (FSIQ), General Ability Index (GAI), and Index scores ( $M = 100$ ,  $SD = 15$ ) were generated by summing subtest scaled scores and normalized with composite score distributions visually smoothed to eliminate irregularities.

Like the WISC-IV, the WAIS-IV uses 10 core subtests to produce the FSIQ. The Verbal Comprehension Index (VCI) and Perceptual Reasoning Index (PRI) are each composed of 3 subtests, whereas the Working Memory Index (WMI) and Processing Speed Index (PSI) are each composed of 2 subtests. Like the WISC-IV, the General Ability Index (GAI) is calculated from the 3 verbal com-

prehension and 3 perceptual reasoning subtests and may be useful in cases where the FSIQ is unduly influenced by less *g*-oriented subtests (WMI and PSI). The WAIS-IV FSIQ ranges from 40–160 ( $\pm 4$  *SD*) and represents a  $2/3$  *SD* increase in IQ measurement range over the WAIS-III. This covers a wide enough range of intellectual assessment for most clinical applications.

*Reliability.* Three types of reliability estimates for WAIS-IV scores are reported in the technical and interpretive manual: internal consistency, test-retest stability, and interscorer agreement; and strong evidence for score reliability is provided. Internal consistency estimates produced by Spearman-Brown corrected split-half or coefficient alpha methods are presented for each of the 13 age groups. Internal consistency estimates across all 13 age groups ranged from .97–.98 for the FSIQ; from .87–.98 for the factor index scores (VCI, PRI, WMI, PSI); and from .71–.96 for the subtests. Standard errors of measurement based on the internal consistency estimates are also included in the technical and interpretive manual. These should be considered best-case estimates because they do not consider other major sources of error such as long-term temporal stability, administration errors, or scoring errors (Hanna, Bradley, & Holen, 1981) known to influence test scores in clinical assessments.

Short-term test-retest stability was investigated for 298 individuals from four age groups with retest intervals ranging from 8–82 days (mean retest interval of 22 days). Stability coefficients were highest for the FSIQ and VCI followed by the PRI, WMI, and PSI scores, and generally lower for the subtests as found in other intelligence tests. Also, mean changes across time were observed with scores at second testing higher and “practice effects” greatest for PRI subtests (Block Design, Visual Puzzles, Figure Weights, and Picture Completion) also observed with the other Wechsler intelligence scales in short-term retest intervals. Research examining long-term stability of WAIS-IV scores is needed to determine which scores and comparisons are consistent across longer time intervals. Such longitudinal investigations are not expected to be included at the time of publication as they would be an undue burden.

Interscorer agreement was examined by comparing two independent scorers of all WAIS-IV standardization record forms. Agreement ranged from .98–.99. Subtests where examiner judgment is involved (Similarities, Vocabulary, Information,

Comprehension) were further examined for inter-scoring agreement with a sample of 60 randomly selected standardization cases. Three raters (clinical psychology graduate students) independently scored these four subtests, and intraclass correlation coefficients were high, ranging from .91 to .97. These are encouraging results but it remains to be seen if similar results are obtained by clinicians not trained by the publisher in administration and scoring of the WAIS-IV.

Standard errors of measurement are provided based on internal consistency estimates by age group and for the total sample. Estimated true score confidence intervals (90% and 95%) are provided in the administration and scoring manual tables for composite scores. Obtained score confidence intervals are not provided although the formula for calculating them is presented in the technical and interpretive manual. When the assessment question is concerned with estimating the true score of the individual at the time of the evaluation (rather than the long-term estimate), the obtained score confidence interval is appropriate (Glutting, McDermott, & Stanley, 1987; Sattler, 2008). Obtained score and estimated true score confidence intervals will be quite close in cases where the reliability coefficient is high as with the WAIS-IV.

*Validity.* WAIS-IV score validity estimates were reported based on test content, internal structure (factor structure), relationships with other tests (convergent and divergent/discriminant comparisons), and distinct group differences comparisons. Examination of subtest and index score correlation matrices indicated that subtests within the same domain had higher correlations with each other than with subtests from a different domain. All intersubtest correlations were positive and reflected Spearman's (1904) positive manifold, shared variance, and measurement of the general intelligence factor (*g*). Although Gorsuch (1983) noted the complementary nature of exploratory (EFA) and confirmatory (CFA) factor analytic procedures and general confidence in the latent structure when *both* were in agreement, the WAIS-IV technical and interpretive manual presents *only* CFA analyses. This is a disappointing trend among many of the most recently published intelligence tests, particularly given results of Frazier and Youngstrom (2007) who demonstrated that among tests of cognitive abilities, CFA procedures tend to support the presence of more latent factors than EFA factor extraction criteria such as Horn's

parallel analysis (HPA; Horn, 1965), Cattell's scree test (Cattell, 1966), and minimum average partials (MAP; Velicer, 1976).

WAIS-IV correlations with the Wechsler Individual Achievement Test—Second Edition (WIAT-II; Wechsler, 2002) were obtained from 93 16–19-year-old high school students. Typically, high correlations were obtained across academic areas with WAIS-IV FSIQ correlations with WIAT-II composites ranging .65–.88 and ranging .42–.80 for WIAT-II subtests. Relationships between the WAIS-IV and the recently published Wechsler Individual Achievement Test—Third Edition (WIAT-III; Wechsler, 2009) with a small sample ( $N = 59$ ) were similar with WAIS-IV FSIQ correlations with WIAT-III composites ranging .59–.82 and ranging .33–.81 for WIAT-III subtests. Thus, typically strong concurrent relationships with academic achievement measures were observed. Due to the hierarchical nature of the WAIS-IV and the structure of intelligence, it would be more informative to discern the incremental predictive validity of factor index scores above and beyond the FSIQ (cf. Glutting, Watkins, Konold, & McDermott, 2006) in order to discern the relative importance of the factor index scores compared to the FSIQ in predicting academic achievement. If factor index scores are to be of importance in interpretation, they should account for meaningful portions of achievement variance over and above the FSIQ.

A number of small sample special group studies were conducted to examine WAIS-IV differences between the special group and a demographically matched (sex, race/ethnicity, educational level, geographic region) normal control group. As noted in the technical and interpretive manual, these studies and scores on the WAIS-IV should not be used as sole criteria for classification or diagnosis. Special groups examined included individuals identified as intellectually gifted, as well as persons with mild intellectual disability, moderate intellectual disability, borderline intellectual functioning, reading disorder, mathematics disorder, attention deficit-hyperactivity disorder, traumatic brain injury, autism, Asperger's disorder, major depression, mild cognitive impairment, and Alzheimer's dementia. Group differences in expected directions were typically observed but additional research is obviously required to replicate and extend these preliminary studies. It would be of great value to examine the diagnostic utility of WAIS-IV scores in correct classification of individuals with disorders related

to intellectual or cognitive difficulties, as distinct group differences are a necessary but not sufficient condition for diagnostic utility.

COMMENTARY AND SUMMARY. The WAIS-IV is a welcome improvement over its predecessor and clinicians will find it a useful and more efficient measure of general intelligence than the WAIS-III for a wide range of individuals and abilities. The large and nationally representative standardization sample for the U.S. is a major strength and internal consistency estimates were uniformly strong across composite scores. The addition of new, creative, and interesting subtests (Visual Puzzles and Figure Weights) provide for better assessment of fluid reasoning—although Figure Weights is a supplemental subtest, so it does not enter into consideration unless replacing one of the core perceptual reasoning subtests. Supplemental subtests are provided (one each for the VCI, WMI, and PSI scales and two for the PRI scale), however; Figure Weights, Letter-Number Sequencing, and Cancellation are not available for 70–90-year-olds. Neither the administration and scoring manual nor the technical and interpretation manual indicate *why* those 70–90 years of age are excluded from these three subtests. Also missing are norms tables for computing factor index scores and the FSIQ when supplemental subtests are used in place of core subtests.

Examination and support of the hierarchical model in CFA was quite informative and use of hierarchical CFA is commendable. Disappointing, however, is the absence of any EFA and use of more accurate procedures to identify how many factors to extract and retain (HPA, MAP). Although CFA procedures support the hierarchical model of intelligence with four first-order factors and higher order *g*, this finding supports the *theoretical* structure. CFA procedures are very useful for testing theory but cannot be directly applied in clinical interpretation (Oh, Glutting, Watkins, Youngstrom, & McDermott, 2004). There are, however, other more practical aspects of test structure that help to determine the viability of the different test scores. Proportions of variance accounted for by the higher order *g*-factor and the four first-order factors are notably absent from the technical and interpretive manual. Subtest specificity estimates are also not provided. Thus, clinicians are unable to judge the relative importance of the factor index scores and subtest scores. If the factor index scores and subtests do not capture sufficient portions of true

score variance, their usefulness in assessment will be questionable.

Although the WAIS-IV technical and interpretive manual presents much useful and supportive preliminary reliability and validity information, there is an absence of critical analyses and data to aid the clinician in adequately determining how best to interpret the different available scores. The technical and interpretive manual presents steps in performing profile analysis beyond the FSIQ (i.e., ipsative subtest comparisons, subtest level discrepancies, pairwise subtest comparisons) together with caveats about the common occurrence of strengths and weaknesses in normal subjects, information leading the clinician to a priori suspicion of profile differences, and recommendation for further external corroboration to prevent overinterpretation. However, there is no mention of the extensive research evidence demonstrating that such interpretations have often proven unreliable and invalid (for extensive reviews see Watkins, 2003, and Watkins, Glutting, & Youngstrom, 2005) nor were data presented to demonstrate the utility of such analyses with the WAIS-IV. Standard 1.1 of the *Standards for Educational and Psychological Testing* (AERA, APA, & NCME, 1999) indicates that “a rationale should be presented for each recommended interpretation and use of test scores, together with a comprehensive summary of the evidence and theory bearing on the intended use or interpretation” including scientific evidence that is “inconsistent with the intended interpretation or use” (p. 17). Consequently, clinicians who use the WAIS-IV must become familiar with the totality of evidence and be mindful of Weiner’s (1998) advice to “(a) know what their tests can do and (b) act accordingly” (p. 829).

Obviously, there are tremendous amounts of time, effort, and resources devoted to the development and standardization of high quality instruments such as the WAIS-IV and it is impossible for the publisher to provide comprehensive evidence for *all* interpretive methods so reliance on the assistance of additional independent researchers may be of considerable help. Previously, the publisher has sought out and/or granted independent researchers access to the standardization sample data sets for independent research examinations that has helped to further delineate differential reliability and validity of various scores across a number of Wechsler scales (cf., Konold & Canivez, in press). It is hoped that Pearson will continue this prac-

tice so that important research may be conducted to help guide clinicians' appropriate WAIS-IV interpretations.

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*Review of the Wechsler Adult Intelligence Scale—Fourth Edition by GREGORY SCHRAW, Professor, Department of Educational Psychology, University of Nevada—Las Vegas, Las Vegas, NV:*

DESCRIPTION. The Wechsler Adult Intelligence Scale—Fourth Edition (WAIS-IV) provides an individually administered test of intelligence for individuals between 16 and 90 years of age. The WAIS-IV provides a composite of intellectual functioning using 15 separate subtests that are combined into four cognitive skill categories, including Verbal

Comprehension (4 subtests), Perceptual Reasoning (5 subtests), Working Memory (3 subtests), and Processing Speed (3 subtests). The total composite scale based on all subtests is interpreted as a measure of general intellectual ability.

The 15 subtests are administered in a prescribed order, which require 2 hours or less to complete for most examinees. Administration guidelines and discontinue rules are stated clearly in the 258-page administration and scoring manual. Detailed scoring rules are provided as well.

DEVELOPMENT. The WAIS-IV is a revision of its immediate predecessors, most notably the WAIS-III. The test has been in continuous use via updated versions since 1939 and retains the same general theoretical and administrative structure. All of the WAIS tests are based on hierarchical models of intelligence such as Spearman's *g* (Spearman, 1923), and the two-factor theory of Cattell (1963), which distinguishes between fluid and crystallized intelligence. Fluid ability is thought to be biologically driven and represents general ability to reason on novel tasks and unfamiliar contexts, whereas crystallized ability represents reasoning and problem solving related to task-specific knowledge and schooling (Ackerman & Lohman, 2006; Carroll, 1993). Fluid and crystallized ability may be combined to create a single composite that measures a general intelligence factor, *g*.

Theoretically, the 15 subtests load on four cognitive factors (i.e., Verbal Comprehension, Perceptual Reasoning, Working Memory, and Processing Speed), which load on fluid and crystallized forms of intelligence, which load on the composite intellectual ability factor known as *g*. Hierarchical models of intelligence are common in cognitive psychology, well researched and supported by 50 years of empirical data. Thus, the theoretical assumptions of the WAIS-IV, as well as the constructs it is purported to measure, are widely recognized as being the most plausible and comprehensive theoretical description of human ability.

TECHNICAL. The WAIS-IV is accompanied by a 218-page technical manual, complete with detailed information about test structure, standardization, reliability and validity, and interpretation of the test. In addition, the interpretation subsection includes an excellent 10-step guide to profile analysis of each examinee based on composites derived from the 15 separate subtests.

The technical manual provides extensive reliability data for individual subtests and composite

scores across 13 age bands using coefficient alpha. Coefficients are good to excellent in all cases, ranging from the low .80s to upper .90s. Stability coefficients using test-retest reliabilities are presented for each subtest and composites for four different age bands. Coefficients are good to excellent in all cases, ranging from mid .70s to upper .80s.

Both construct and criterion-related validity are discussed in detail. Regarding construct validity, a variety of confirmatory factor analyses (i.e., statistical tests of a proposed structural relationship among factors) are reported that compared six different structural models, including the four hypothesized factors described above, a one-factor model, and several multifactor combinations. Results typically supported the four-factor model based on Verbal Comprehension, Perceptual Reasoning, Working Memory, and Processing Speed subscores. In addition, structural comparisons between the 16–69 and 70–90 age bands yielded highly similar results.

Regarding criterion-related validity, WAIS-IV subscales and composites were correlated with a variety of other tests, including the WAIS-III, Wechsler Intelligence Scale for Children—Fourth Edition (WISC-IV), and Brown Attention Deficit Disorder Test (Brown ADD). In general, correlations between scores were in the .80 range with tests that measure similar constructs, providing convergent validity evidence. In contrast, WAIS-IV scores were negatively correlated with the Brown ADD scales, providing discriminant validity evidence. A complement of studies also was reported for special and gifted populations.

Detailed information is included about the sampling and standardization plan, including a wide variety of demographic variables at 13 age bands for the nationally representative sample. These percentages closely match national U.S. Census data.

**COMMENTARY.** The WAIS-IV is an excellent test of intellectual ability and has four important strengths. One is that it provides a strong theoretical framework for the development and interpretation of test scores. The underlying theory is widely accepted and has an abundance of empirical support as well. A second strength is that the 15 subtests provide a comprehensive assessment of basic cognitive skills, especially abilities related to verbal, perceptual, and working memory processing. A third strength is that the test authors provide extensive norming, validation, and standardization data that facilitate inferences drawn about examinees. A fourth strength is that

the test includes excellent support documentation such as the technical manual and the administration and scoring manual.

The WAIS-IV possesses two weaknesses. One is that the test is time and labor intensive to administer, score, and interpret; thus, it may be most appropriate when high-stakes decisions are made. A second weakness is that the test assesses what some critics have referred to as “left-brain” or “academic” intelligences, which focus on traditional cognitive abilities an examinee would use in typical school or work settings. In contrast, some experts have argued that social, kinesthetic, interpersonal, and emotional intelligence are not assessed at all by the WAIS (Gardner, 1999).

Although the WAIS-IV focuses only on intellectual ability as it is construed traditionally, it provides an outstanding measure of this construct. Moreover, although some theorists have proposed alternative intelligence factors such as emotional intelligence, there are no readily available measures of these constructs that have comparable reliability, validity, and technical validation equal to the WAIS-IV.

One unresolved yet important issue with the WAIS IV, and many other related measures of intellectual ability, is whether any or all of these skills are fixed or changeable due to instruction or social factors. The manuals do not address this question directly. However, this question is important because it affects how scores are interpreted and used to formulate educational policies, as well as assumptions we make about the relationship between intelligence, creativity, effort and deliberate practice, and worldly success (Ericsson, 2003). Opinions range from those who support the fixed position to social-constructivist orientations that argue that intellectual ability is changeable and context-bound, and perhaps, less important than many people imagine it to be (Winner, 2000).

**SUMMARY.** The WAIS-IV provides one of the best measures of general intellectual functioning available. It assesses four important dimensions of cognitive ability, including Verbal, Perceptual, Working Memory, and Processing Speed. Research shows that each of these four dimensions is a strong correlate of learning, school achievement, and cognitive development. The test is best suited for high-stakes decision making related to intellectual ability because it is labor-intensive and expensive to administer. Nevertheless, it is extremely comprehensive and provides a reliable and valid measure

of intellectual functioning relative to the demands of schooling and academic success.

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#### [ 152 ]

### Wechsler Fundamentals: Academic Skills.

**Purpose:** Designed as "a brief achievement test that measures broad skills in the areas of reading, spelling, and math computation."

**Population:** Children Kindergarten–Grade 12, adults age 18–50.

**Publication Date:** 2008.

**Scores, 5:** Word Reading, Reading Comprehension, Reading Composite, Spelling, Numerical Operations.

**Administration:** Group and individual.

**Forms, 2:** A & B.

**Price Data, 2009:** \$182 per examination kit Form A including 25 Summary of Skills Inventory and Word Reading record forms, 25 Spelling and Numerical Operations response booklets, 25 Reading Comprehension response booklets (5 each of Grade K–3, Grade 4–5, Grade 6–8, Grade 9–12, and Adult), word card, and administration and scoring manual (268 pages); \$91 per combination set (specify Form A or Form B) including 25 Summary of Skills Inventory and Word Reading record forms, 25 Spelling and Numerical Operations response booklets, and 25 Reading Comprehension response booklets (5 each of Grade K–3, Grade 4–5, Grade 6–8, Grade 9–12, and Adult); \$44 per 25 Spelling and Numerical Operations response booklets (specify Form A or B); \$10.40 per Word Card (specify Form A or Form B); \$44 per 25 Summary of Skills Inventory and Word Reading record forms (specify Form A or B); \$93.60 per administration and scoring manual; price information available from publisher for CD for technical and interpretive manual (83 pages).

**Time:** (45) minutes.

**Author:** Pearson.

**Publisher:** Pearson.

*Review of the Wechsler Fundamentals: Academic Skills by SUSAN M. BROOKHART, President, Brookhart Enterprises LLC and Duquesne University, Helena, MT:*

**DESCRIPTION.** The Wechsler Fundamentals: Academic Skills test is designed as "a brief achievement test that measures broad skills in the areas of reading, spelling, and math computation" (administration and scoring manual, p. 1). Its technical and interpretive manual (p. 1) further elaborates this purpose: "to create a brief academic inventory with multiple forms that can be administered either in a group or individual format and that corresponds to national grade-level standards." There are four subtests: Word Reading, Reading Comprehension, Spelling, and Numerical Operations. The Word Reading and Reading Comprehension subtest scores are combined for a Reading Composite Score. The Word Reading subtest is administered individually; the other subtests may be administered individually or in groups.

Each of two forms (Form A and Form B) includes a Word Card for the Word Reading test and two test booklets, a Reading Comprehension response booklet (K–3, 4–5, 6–8, 9–12, and Adults), and a Spelling and Numerical Operations response booklet (Kindergarten–Grade 12 and Adults). The materials are clear and well designed. The K–3 Reading Comprehension booklets are printed in color.

For an individual examinee, the examiner selects an item set within the booklet. Start and stop points are indicated for each grade, and may be modified for examinees whose reading or mathematics ability is not typical of his or her grade level. Examinees should take an item set where they get at least two items correct and at least two items incorrect.

All items are scored right/wrong (1/0). For the Word Reading subtest, examinees read from the Word Card as the examiner records their scores for each item. For the Reading Comprehension subtest, examinees read passages and answer multiple-choice questions by marking directly in the booklet. Items assess both literal and inferential comprehension. The Spelling and Numerical Operations booklet has spaces for students to write their answers. For the Spelling test, examinees write spelling words as the examiner dictates them. For the Numerical Operations test, examinees compute the answer to mathematics problems. There is ample space for scratch work.

Each form also includes a record form for the examiner. The record form includes places to record performance, record scores, add confidence intervals, do ability-achievement discrepancy analy-