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Comparative Features of Comprehensive Achievement Batteries

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This bulletin compares several dimensions of six major achievement batteries (WJ III[®] ACH, DAB-3, WIAT[®]-II, PIAT-R/NU, K-TEA/NU, and DATA-2), including test content, administration, interpretation, and technical features. It also examines how the tests differ in their coverage of the Cattell-Horn-Carroll (CHC) theory's broad and narrow abilities, and how the tests meet the learning disability assessment areas of the Individuals with Disabilities Education Act (IDEA). Finally, it examines differences in task characteristics across batteries.

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Comparative Features of Comprehensive Achievement Batteries

This document* compares the major comprehensive achievement batteries along a number of different dimensions. It includes seven tables that compare the following elements of the tests: select content features (Table 1), administration procedures (Table 2), levels and types of interpretation (Table 3), technical characteristics (Table 4), academic abilities measured according to the Cattell-Horn-Carroll (CHC) theory (Table 5), coverage of learning disability assessment areas found in the Individuals with Disabilities Education Act (IDEA) (Table 6), and the variation in individual task characteristics (Table 7). The batteries compared in this document are listed below. This document also briefly summarizes Tables 1 through 7.

- *Woodcock-Johnson® III Tests of Achievement (WJ III® ACH)* (Woodcock, McGrew, & Mather, 2001)
- *Diagnostic Achievement Battery–Third Edition (DAB-3)* (Newcomer, 2001)
- *Wechsler Individual Achievement Test®–Second Edition (WIAT®-II)* (Psychological Corporation, 2001)
- *Peabody Individual Achievement Test–Revised/Normative Update (PIAT-R/NU)* (Markwardt, 1998)
- *Kaufman Test of Educational Achievement/Normative Update (K-TEA/NU)* (Kaufman & Kaufman, 1997)
- *Diagnostic Achievement Test for Adolescents–Second Edition (DATA-2)* (Newcomer & Bryant, 1993)

Table 1 highlights the content features of each battery. For example, some batteries contain tests with items that are appropriate only for young children (e.g., ages 3 to 5), while others allow for longitudinal follow-up on all measures beginning at age 5 and extending through the entire age range of the instrument. Table 1 also shows that most batteries have computer scoring programs, while error analysis is available only for the WIAT-II and K-TEA/NU, and only the WJ III ACH has alternate forms. Table 1 also provides basic information about the age range of the batteries as well as the breadth of the independent lower-order composites that each instrument yields.

Table 2 highlights important administration features of the major achievement batteries. For example, some batteries include an audio recording to allow for standardized administration of listening ability, auditory processing, and/or memory tests. Only the WJ III ACH applies the principle of selective testing. This feature allows practitioners the flexibility to design a battery that addresses the unique referral concerns of each individual tested. Selective testing is also time efficient. The usefulness of selective testing procedures is apparent in current trends that employ modern theory in test organization and interpretation (see Flanagan, Ortiz, Alfonso, & Mascolo, 2002).

*The information contained in this document was adapted, in part, from Flanagan, D. P., Ortiz, S. O., Alfonso, V. C., and Mascolo, J. T. (2002). *The achievement test desk reference (ATDR): Comprehensive assessment and learning disabilities*. Boston: Allyn & Bacon.

Table 1.
*Content Features of
 Comprehensive
 Achievement Batteries*

Content Features	ACHIEVEMENT BATTERY					
	WJ III ACH	DAB-3	WIAT-II	PIAT-R/NU	K-TEA/NU	DATA-2
Age range	2-0 to 90+	6-0 to 14-11	4-0 to 19-11	5-0 to 22-11	6-0 to 22-11	12-0 to 18-11
Provides a total achievement composite	Yes	Yes	Yes	Yes	Yes	Yes
Tests included in total achievement composite	Letter-Word Identification Reading Fluency Calculation Math Fluency Spelling Writing Fluency Passage Comprehension Applied Problems Writing Samples	Story Comprehension Characteristics Synonyms Grammatic Completion Alphabet/Word Knowledge Reading Comprehension Capitalization Punctuation Spelling Contextual Language Story Construction Math Reasoning Math Calculation	Word Reading Reading Comprehension Pseudoword Decoding Numerical Operations Math Reasoning Spelling Written Expression Listening Comprehension Oral Expression	General Information Reading Recognition Reading Comprehension Mathematics Spelling	Mathematics Applications Reading Decoding Spelling Reading Comprehension Mathematics Computation	Receptive Vocabulary Receptive Grammar Expressive Grammar Expressive Vocabulary Word Identification Reading Comprehension Math Calculation Math Problem Solving Spelling Writing Composition
Independent lower-order composites	Broad Reading Basic Reading Skills Reading Comprehension Oral Language-Standard Oral Language-Extended Listening Comprehension Oral Expression Broad Math Math Calculation Skills Math Reasoning Broad Written Language Basic Writing Skills Written Expression Academic Knowledge Academic Skills Academic Fluency Academic Applications Phoneme/Grapheme Knowledge	Listening Speaking Reading Writing Math Spoken Language Quotient Written Language Quotient	Reading Mathematics Written Language Oral Language	Total Reading Written Language	Reading Composite Mathematics Composite	Listening Speaking Reading Math Writing Spoken Language Written Language Achievement Screener
Tasks are unsped ^a	Yes	Yes	Yes	Yes	Yes	Yes
Contains tests with items appropriate for children ages 3 to 5 years	Yes	No	No, ages 4 to 5 only	No, age 5 only	No	No

Table 1. (Continued)
*Content Features of
 Comprehensive
 Achievement Batteries*

Content Features	ACHIEVEMENT BATTERY					
	WJ III ACH	DAB-3	WIAT-II	PIAT-R/NU	K-TEA/NU	DATA-2
Ages at which longitudinal follow-up with all measures is possible	7-0 to 90+	7-0 to 14-11	5-0 to 19-11	7-0 to 22-11	6-0 to 22-11	12-0 to 18-11
Contains procedures for conducting error analysis	No	No	Yes	No	Yes	No
Provides computer scoring and interpretive profiling report	Yes	No	Yes	Yes	Yes	Yes
Alternate forms available	Yes	No	No	No	No	No

^aDoes not include tasks intended to measure speed or fluency.

Table 3 shows several interpretation features of current achievement batteries, including the type of scores yielded by each test (e.g., peer-comparison scores, proficiency-level scores, developmental-level scores) and the standard score range for the lower-order composites of each instrument. Table 3 also provides information about cognitive batteries that are either co-normed with or statistically linked to current achievement batteries. It also provides information about the types of ability-achievement discrepancy norms that are available.

Table 4 presents many technical characteristics of the achievement tests, including Rasch modeling features, norming characteristics, and the lowest and highest ages at which individual subtest floors and ceilings are adequate. This table also indicates whether bias analyses with minority samples were conducted on the tests. Additional technical information regarding individual subtest and composite internal consistency reliability by age is found in Appendixes A and B, respectively.

Table 2.
*Administration Features
 of Comprehensive
 Achievement Batteries*

Administration Features	ACHIEVEMENT BATTERY					
	WJ III ACH	DAB-3	WIAT-II	PIAT-R/NU	K-TEA/NU	DATA-2
Tests of listening ability, auditory processing, and/or memory audio recorded for standardized administration	Yes	Yes	Yes	N/A	N/A	N/A
Applies principle of selective testing ^a	Yes	No	No	No	No	No
Test manual includes examiner training activities ^b	Yes	No	No	No	No	No
Administration time (in minutes)	75 to 120 ^c	90 to 120	30 to 75	20 to 65	60	60 to 120

Note. N/A = Not applicable.

^aSelective testing means that an examiner tailors a test battery to address a subject's referral concerns rather than administering the entire battery.

^bExaminer training activities include using materials such as an examiner training checklist and an observation checklist.

^cThis estimate includes administration of both the Standard and Extended Batteries. Time varies depending on the testing purpose.

Table 3.
*Interpretation Features of
 Comprehensive
 Achievement Batteries*

Interpretation Features	ACHIEVEMENT BATTERY					
	WJ III ACH	DAB-3	WIAT-II	PIAT-R/NU	K-TEA/NU	DATA-2
Derived Scores	Standard Score Percentile Rank Normal Curve Equivalent Stanine	Standard Score Percentile Rank Normal Curve Equivalent Stanine	Standard Score Percentile Rank Normal Curve Equivalent Stanine Quartile Score Decile Score	Standard Score Percentile Rank Normal Curve Equivalent Stanine	Standard Score Percentile Rank Normal Curve Equivalent Stanine	Standard Score Percentile Rank Normal Curve Equivalent Stanine
Peer-comparison						
Proficiency-level ^a	Relative Proficiency Index CALP ^b Level	None	None	None	None	None
Developmental-level	Rasch Ability Score Age Equivalent Grade Equivalent	Grade Equivalent	Age Equivalent Grade Equivalent	Age Equivalent Grade Equivalent Developmental Scaled Score ^c	Age Equivalent Grade Equivalent	None
College/university norms ^d	Yes	N/A	Yes ^e	Yes	Yes	N/A
Co-normed with tests of cognitive ability	Yes—WJ III COG	No	No	No	No	No
Statistically linked to tests of cognitive ability	N/A	No	Yes—WISC-III, WPPSI-R, WAIS-III	No	No	No
Ability (Aptitude)/Achievement analysis based on <i>actual</i> discrepancy norms ^f	Yes	No	No	No	No	No
Ability (Aptitude)/Achievement analysis based on <i>estimated</i> discrepancy norms ^g	N/A	No	Yes	Yes ^h	Yes ^h	Yes ^h
Significant high or low scores, compared to examinee's other scores, immediately identifiable on Record Form or computer printout (i.e., separate tables are not needed)	Yes	No	Yes	Yes	Yes	Yes
Standard score range for lower- order composites	0 to 200	34 to >164	40 to 160	55 to 145	40 to 160	38 to 164
Confidence bands for composites centered on estimated true scores	Yes	No	Yes	No	No	No

Note. N/A = Not applicable

^aQuality of performance on age- or grade-level tasks

^bCALP = Cognitive-academic language proficiency

^cFor Written Expression only

^dSeparate grade norms are available to compare the individual to other college/university students.

^eAvailable in *WIAT-II Supplement for College Students and Adults* (Psychological Corporation, 2001).

^fAnalyses based on *actual* discrepancy norms allow an individual's aptitude/achievement discrepancy to be compared to actual distributions of discrepancy scores obtained from a nationally representative sample (McGrew, 1994, p. 215; see also McGrew & Woodcock, 2001).

^g(i.e., correction for regression procedures)

^hAvailable from the scoring program.

Table 4.

*Technical Features of
Comprehensive
Achievement Batteries*

Technical Features	ACHIEVEMENT BATTERY		
	WJ III ACH	DAB-3	WIAT-II
Rasch model used for item analysis and scaling	Yes	Yes	Yes
Person variables in norming plan	Sex Race/ethnicity Socio-economic status Type of school/college/university	Sex Race/ethnicity Socio-economic status Disability status	Sex Race/ethnicity Socio-economic status
Community variables in norming plan	Geographic region Residence	Geographic region Residence	Geographic region
Size of norming sample	8,818	1,094	2,950
Norms weighted to correct sample mismatch to population	Yes	No	No
Age blocks in norm tables ^a	1 month: 2-0 to 19-11 1 year: 20-0 to 89-11	6 months: 6-0 to 14-11	4 months: 4-0 to 13-11 1 year: 14-0 to 16-11 3 years: 17-0 to 19-11
Grade-based norms available	Yes	No	Yes
Bias analyses conducted with minority samples	Yes	Yes	No
Lowest age at which floor is adequate; highest age at which ceiling is adequate (by test)	Letter-Word Identification: 4-1, 17-11 Reading Fluency: 7-1, 90+ Story Recall: 5-7, 90+ Understanding Directions: 3-7, 90+ Calculation: 6-7, 90+ Math Fluency: 7-1, 90+ Spelling: 3-7, 90+ Writing Fluency: 8-1, 90+ Passage Comprehension: 5-7, 90+ Applied Problems: 3-1, 90+ Writing Samples: 6-1, 90+ Story Recall–Delayed: 3-0, 90+ Word Attack: 6-1, 11-11 Picture Vocabulary: 2-7, 90+ Oral Comprehension: 5-7, 90+ Editing: 9-1, 90+ Reading Vocabulary: 8-7, 90+ Quantitative Concepts: 4-7, 90+ Academic Knowledge: 2-7, 90+ Spelling of Sounds: 6-1, 90+ Sound Awareness: 5-7, 90+ Punctuation and Capitalization: 6-1, 90+	Story Comprehension: 6-0, 11-11 Characteristics: 7-6, 10-11 Synonyms: 8-0, 14-11 Grammatical Completion: 8-0, 10-5 Alphabet/Word Knowledge: 6-0, 10-11 Reading Comprehension: 8-0, 10-11 Capitalization: 9-6, 10-11 Punctuation: 8-6, 14-11 Spelling: 7-6, 10-11 Contextual Language: 8-6, 14-11 Story Construction: 10-0, 14-11 Math Reasoning: 6-0, 11-11 Math Calculation: 8-6, 14-11 Phonemic Analysis: 7-0, 6-5	Word Reading: 6-0, 13-11 Numerical Operations: 5-8, 14-11 Reading Comprehension: 4-0, 19-11 Spelling: 6-8, 16-11 Pseudoword Decoding: 9-8, 8-7 Mathematics Reasoning: 5-0, 13-3 Written Expression: 8-0, 19-11 Listening Comprehension: 4-8, 13-11 Oral Expression: 4-8, 19-11
Subtest scores reported on a scale with $M = 100$ and $SD = 15$	Yes	No. $M = 10$ and $SD = 3$	Yes
Composites reported on a scale with $M = 100$ and $SD = 15$	Yes	Yes	Yes

Table 4. (Continued)
Technical Features of
Comprehensive
Achievement Batteries

Technical Features	ACHIEVEMENT BATTERY		
	PIAT-R/NU	K-TEA/NU	DATA-2
Rasch model used for item analysis and scaling	Yes	Yes	No
Person variables in norming plan	Sex Race/ethnicity Socio-economic status Educational placement	Sex Race/ethnicity Socio-economic status Educational placement	Sex Race/ethnicity
Community variables in norming plan	Geographic region	Geographic region	Geographic region Residence
Size of norming sample	1,285 to 2,809	2,057 to 2,089	2,085
Norms weighted to correct sample mismatch to population	No	No	No
Age blocks in norm tables ^a	3 months: 5-0 to 18-11 1 year: 19-0 to 22-11	3 months: 6-0 to 18-11 1 year: 19-0 to 22-11	6 months: 12-0 to 17-5 18 months: 17-6 to 18-11
Grade-based norm tables available	Yes	Yes	No
Bias analyses conducted with minority samples	No	No	No
Lowest age at which floor is adequate; highest age at which ceiling is adequate (by test)	General Information: 5-6, 20-11 Reading Recognition: 6-3, 22-11 Reading Comprehension: 6-3, 21-11 Mathematics: 5-0, 22-11 Spelling: 5-9, 22-11 Written Expression (I): 5-0, 6-11 Written Expression (IIA): 7-0, 18-11 Written Expression (IIB): 7-0, 18-11	Mathematical Applications: 6-0, 22-11 Reading Decoding: 6-0, 17-11 Spelling: 8-3, 22-11 Reading Comprehension: 8-9, 21-11 Mathematical Computation: 6-3, 21-11	Receptive Vocabulary: 12-0, 18-11 Receptive Grammar: 17-0, 18-11 Expressive Grammar: 12-0, 18-11 Expressive Vocabulary: 13-6, 18-11 Word Identification: 12-0, 12-5 Reading Comprehension: none, 15-5 Math Calculation: 13-6, 15-11 Math Problem Solving: 13-6, 17-5 Spelling: none, 16-5 Writing Composition: 13-0, 15-5 Science: 12-6, 18-11 Social Studies: 16-6, 18-11 Reference Skills: 12-0, 12-5
Subtest scores reported on a scale with $M = 100$ and $SD = 15$	Yes	Yes	No. $M = 10$ and $SD = 3$
Composites reported on a scale with $M = 100$ and $SD = 15$	Yes	Yes	Yes

Note. N/A = Not applicable.

^aIn most cases age blocks represent linear interpolations.

Table 5 presents the broad and narrow CHC abilities that underlie the major achievement batteries. This information may help practitioners interpret tests and may provide insight into the breadth and depth of abilities measured by current instruments.

Tables 6 and 7 provide information about each achievement battery within the context of the federal definition (IDEA) of learning disability (LD). Table 6 is a quick reference to identify whether an achievement battery contains measures that assesses one or more of the seven areas of academic achievement listed in the federal definition. These seven areas are: Oral Expression, Listening Comprehension, Written Expression, Basic Reading Skills, Reading Comprehension, Math Calculation, and Math Reasoning. Table 7 provides a more

Table 5.

Coverage of Cattell-Horn-Carroll Broad and Narrow Abilities on Comprehensive Achievement Batteries

BROAD ABILITY FACTOR	TESTS	PRIMARY NARROW ABILITIES
WJ III ACH		
Reading and Writing (<i>Grw</i>)	*** Letter-Word Identification *** Reading Fluency * Spelling * Writing Fluency *** Passage Comprehension *** Writing Samples * Word Attack * Editing * Reading Vocabulary * Spelling of Sounds *** Punctuation and Capitalization *** Calculation * Quantitative Concepts * Math Fluency	Reading Decoding Reading Speed Spelling Ability Writing Ability Rate of Test Taking Reading Comprehension Cloze Ability Writing Ability Reading Decoding Phonetic Coding: Analysis English Usage Knowledge Grammatical Sensitivity Verbal (Printed) Language Comprehension Lexical Knowledge Spelling Ability Phonetic Coding: Analysis English Usage Knowledge Math Achievement Math Knowledge Quantitative Reasoning Math Achievement Number Facility
Quantitative Knowledge (<i>Gq</i>)		Lexical Knowledge Language Development Listening Ability General (Verbal) Information Information About Culture Science Information Geography Achievement Listening Ability Working Memory
Crystallized Intelligence (<i>Gc</i>)	*** Picture Vocabulary *** Oral Comprehension *** Academic Knowledge * Understanding Directions	Phonetic Coding: Analysis Phonetic Coding: Synthesis None Meaningful Memory Listening Ability Meaningful Memory Quantitative Reasoning Math Achievement Math Knowledge
Auditory Processing (<i>Ga</i>)	*** Sound Awareness	None
Short-Term Memory (<i>Gsm</i>)	None	None
Long-Term Retrieval (<i>Gltr</i>)	* Story Recall *** Story Recall–Delayed * Applied Problems	Meaningful Memory Listening Ability Meaningful Memory Quantitative Reasoning Math Achievement Math Knowledge
Fluid Reasoning (<i>Gf</i>)		None
Visual Processing (<i>Gv</i>)	None	None

detailed analysis of the subtests that measure aspects of one or more of these seven academic domains using comprehensive descriptions of task characteristics by LD assessment area. The information contained in Tables 6 and 7 may be particularly useful for selecting tests when referral concerns are well defined. In addition, this information should prove useful when testing hypotheses regarding unexpected differences between tests that purport to measure the same achievement domain (e.g., Reading Comprehension).

The comparison of contemporary achievement batteries presented in Tables 1 through 7 provides professionals with a useful guide for selecting tests of academic abilities to best address specific referral concerns. The information in these tables may also serve as a guide to theory-based interpretation of academic performance and may assist

Table 5. (Continued)
Coverage of Cattell-Horn-Carroll Broad and Narrow Abilities on Comprehensive Achievement Batteries

BROAD ABILITY FACTOR	TESTS	PRIMARY NARROW ABILITIES
DAB-3		
Reading and Writing (<i>Grw</i>)	Alphabet/Word Knowledge Reading Comprehension Capitalization Punctuation Spelling Contextual Language Story Construction	Reading Decoding Reading Comprehension English Usage Knowledge English Usage Knowledge Spelling Ability Writing Ability Writing Ability
Quantitative Knowledge (<i>Gq</i>)	Math Reasoning Math Calculation	Math Knowledge Math Achievement
Crystallized Intelligence (<i>Gc</i>)	Story Comprehension Characteristics Synonyms Grammatical Completion	Listening Ability Listening Ability Lexical Knowledge Grammatical Sensitivity
Auditory Processing (<i>Ga</i>)	Phonemic Analysis	Phonetic Coding: Analysis
Short-Term Memory (<i>Gsm</i>)	None	None
Long-Term Retrieval (<i>Glr</i>)	None	None
Processing Speed (<i>Gs</i>)	None	None
Fluid Reasoning (<i>Gf</i>)	None	None
Visual Processing (<i>Gv</i>)	None	None
WIAT-II		
Reading and Writing (<i>Grw</i>)	Word Reading Reading Comprehension Spelling Pseudoword Decoding Written Expression	Reading Decoding Reading Comprehension Spelling Ability Reading Decoding Writing Ability
Quantitative Knowledge (<i>Gq</i>)	Numerical Operations	Math Achievement
Crystallized Intelligence (<i>Gc</i>)	Listening Comprehension Oral Expression	Listening Ability Communication Ability
Auditory Processing (<i>Ga</i>)	None	None
Short-Term Memory (<i>Gsm</i>)	None	None
Long-Term Retrieval (<i>Glr</i>)	None	None
Processing Speed (<i>Gs</i>)	None	None
Fluid Reasoning (<i>Gf</i>)	Mathematics Reasoning	Quantitative Reasoning
Visual Processing (<i>Gv</i>)	None	None
PIAT-R/NU		
Reading and Writing (<i>Grw</i>)	Reading Recognition Reading Comprehension Spelling Written Expression I Written Expression II	Reading Decoding Reading Comprehension Spelling Ability Phonetic Coding: Analysis Spelling Ability Writing Ability
Quantitative Knowledge (<i>Gq</i>)	Mathematics	Mathematical Knowledge
Crystallized Intelligence (<i>Gc</i>)	General Information	General (Verbal) Information
Auditory Processing (<i>Ga</i>)	None	None
Short-Term Memory (<i>Gsm</i>)	None	None
Long-Term Retrieval (<i>Glr</i>)	None	None
Processing Speed (<i>Gs</i>)	None	None
Fluid Reasoning (<i>Gf</i>)	None	None
Visual Processing (<i>Gv</i>)	None	None

Table 5. (Continued)
Coverage of Cattell-Horn-Carroll Broad and Narrow Abilities on Comprehensive Achievement Batteries

BROAD ABILITY FACTOR	TESTS	PRIMARY NARROW ABILITIES
K-TEA/NU		
Reading and Writing (<i>Grw</i>)	Reading Decoding Spelling Reading Comprehension	Reading Decoding Spelling Ability Reading Comprehension
Quantitative Knowledge (<i>Gq</i>)	Mathematics Applications Mathematics Computation	Math Achievement Math Achievement
Crystallized Intelligence (<i>Gc</i>)	None	None
Auditory Processing (<i>Ga</i>)	None	None
Short-Term Memory (<i>Gsm</i>)	None	None
Long-Term Retrieval (<i>Glr</i>)	None	None
Processing Speed (<i>Gs</i>)	None	None
Fluid Reasoning (<i>Gf</i>)	None	None
Visual Processing (<i>Gv</i>)	None	None
DATA-2		
Reading and Writing (<i>Grw</i>)	Word Identification Reading Comprehension Spelling Writing Composition	Reading Decoding Reading Comprehension Spelling Ability Writing Ability
Quantitative Knowledge (<i>Gq</i>)	Math Calculation Math Problem Solving	Math Achievement Math Achievement
Crystallized Intelligence (<i>Gc</i>)	Receptive Vocabulary Receptive Grammar Expressive Vocabulary Science Social Studies Reference Skills	Language Development Grammatical Sensitivity Oral Production and Fluency General Science Information General (Verbal) Information General (Verbal) Information
Auditory Processing (<i>Ga</i>)	None	None
Short-Term Memory (<i>Gsm</i>)	Expressive Grammar	Memory Span
Long-Term Retrieval (<i>Glr</i>)	None	None
Processing Speed (<i>Gs</i>)	None	None
Fluid Reasoning (<i>Gf</i>)	None	None
Visual Processing (<i>Gv</i>)	None	None

Note. Definitions of broad and narrow CHC abilities included in this table are in Appendix C. Tests with an asterisk were based on the present authors' interpretation of the factor analyses reported in the WJ III *Technical Manual* (McGrew & Woodcock, 2001); tests without an asterisk were classified based on expert consensus (Flanagan et al., [2002]). Because narrow ability classifications of the WJ III were based on an independent expert consensus study, they may differ slightly from the classifications in Table 2-2 of the WJ III *Technical Manual* (McGrew & Woodcock, 2001).

*** These tests are strong empirical measures (McGrew & Woodcock, 2001).

** These tests are moderate empirical measures (McGrew & Woodcock, 2001).

* These tests are mixed empirical measures (McGrew & Woodcock, 2001).

professionals in analyzing potential reasons for differences in performance on similar measures. In addition, because these tables highlight many important strengths and limitations of contemporary achievement batteries, they may provide test developers with a foundation from which to evaluate existing batteries, construct new instruments, and advance achievement test technology. Although it was not possible to include all the useful, informative, and innovative characteristics of current achievement tests, the information included in Tables 1 through 7 shows that all current measures of academic abilities have important content, administration, interpretation, technical, and theoretical features that can inform practice and advance achievement test technology.

Table 6.
*Tests in Comprehensive
 Achievement Batteries
 Corresponding to Learning
 Disability Area*

Learning Disability Assessment Areas	ACHIEVEMENT BATTERY					
	WJ III ACH	DAB-3	WIAT-II	PIAT-R/NU	K-TEA/NU	DATA-2
Oral Expression	Picture Vocabulary Story Recall Story Recall– Delayed		Oral Expression			Expressive Vocabulary
Listening Comprehension	Story Recall Understanding Directions Oral Comprehension	Story Comprehension Characteristics	Listening Comprehension			Receptive Vocabulary Receptive Grammar
Written Expression ^a	Spelling Spelling of Sounds Writing Fluency Writing Samples Editing Punctuation and Capitalization	Capitalization Punctuation Spelling Contextual Language Story Construction	Spelling Written Expression	Spelling Written Expression I, II	Spelling	Spelling Writing Composition
Basic Reading Skills	Letter-Word Identification Word Attack Sound Awareness	Alphabet/Word Knowledge Phonemic Analysis	Word Reading Pseudoword Decoding	Reading Recognition	Reading Decoding	Word Identification
Reading Comprehension	Passage Comprehension Reading Vocabulary Reading Fluency	Reading Comprehension	Reading Comprehension	Reading Comprehension	Reading Comprehension	Reading Comprehension
Math Calculation	Calculation Math Fluency	Math Calculation	Numerical Operations	Mathematics	Mathematics Computation	Math Calculation
Math Reasoning	Applied Problems Quantitative Concepts	Math Reasoning	Math Reasoning		Mathematics Applications	Math Problem Solving

Note. LD area labels are consistent with those included in IDEA's definition of LD. In most cases it will be necessary to administer more than one measure to obtain an adequate assessment of any given LD area (see Flanagan et al., [2002] for details).

^aWritten Expression, as an IDEA area, includes both basic skills and application skills.

Table 7.
*Variation in Task
 Characteristics of
 Comprehensive Achievement
 Batteries by Learning
 Disability Assessment Area*

Learning Disability Assessment Areas Task Characteristic	ACHIEVEMENT BATTERY					
	WJ III ACH	DAB-3	WIAT-II	PIAT-R/NU	K-TEA/NU	DATA-2
Oral Expression						
Multi-word response	Story Recall Story Recall– Delayed		Oral Expression			Expressive Vocabulary
Single-word response	Picture Vocabulary	Synonyms Grammatic Comprehension				
Visual stimuli	Picture Vocabulary		Oral Expression			
Examiner reads	Story Recall– Delayed	Synonyms Grammatic Comprehension	Oral Expression			Expressive Vocabulary
Listening Comprehension						
Use of audio recording	Story Recall Understanding Directions Oral Comprehension	Story Comprehension				
Examiner reads	Story Recall	Characteristics	Listening Comprehension			Receptive Vocabulary Receptive Grammar Expressive Grammar
Requires verbatim responses		Story Comprehension				Expressive Grammar
Use of pictures	Understanding Directions		Listening Comprehension			
Pointing response allowed or required	Understanding Directions		Listening Comprehension			
Oral response required	Story Recall Oral Comprehension	Story Comprehension Characteristics	Listening Comprehension			Receptive Vocabulary Receptive Grammar Expressive Grammar
Single-word response	Oral Comprehension	Story Comprehension Characteristics				Receptive Vocabulary Receptive Grammar
Multi-word response	Story Recall	Story Comprehension	Listening Comprehension			Expressive Grammar
Isolated stimuli (e.g., single words)			Listening Comprehension			Receptive Vocabulary
Connected stimuli (e.g., sentence)	Story Recall Understanding Directions Oral Comprehension	Story Comprehension Characteristics	Listening Comprehension			Receptive Grammar Expressive Grammar

Table 7. (Continued)
Variation in Task Characteristics of Comprehensive Achievement Batteries by Learning Disability Assessment Area

Learning Disability Assessment Areas Task Characteristic	ACHIEVEMENT BATTERY					
	WJ III ACH	DAB-3	WIAT-II	PIAT-R/NU	K-TEA/NU	DATA-2
Written Expression						
Dictated spelling (isolation)	Spelling Spelling of Sounds		Spelling		Spelling	Spelling
Dictated spelling (context)		Spelling		Spelling		Spelling
Multiple choice				Spelling		
Real words	Spelling Writing Fluency Writing Samples Editing Punctuation and Capitalization	Capitalization Punctuation Spelling Contextual Language Story Construction	Spelling Written Expression	Spelling Written Expression I, II	Spelling	Spelling Writing Composition
Pseudowords	Spelling of Sounds					
Isolated response (single word)	Spelling Editing Punctuation and Capitalization Spelling of Sounds	Capitalization Punctuation Spelling	Spelling	Spelling Written Expression I	Spelling	Spelling
Connected response (sentences)	Writing Fluency Writing Samples	Contextual Language Story Construction	Written Expression	Written Expression I, II		Writing Composition
Writing mechanics assessed	Spelling Editing Punctuation and Capitalization	Capitalization Punctuation Contextual Language	Spelling	Spelling Written Expression I, II		Spelling
Proofing or editing required	Editing Punctuation and Capitalization	Capitalization Punctuation				
Time limit	Writing Fluency	Contextual Language Story Construction	Written Expression			
Picture prompt	Writing Fluency Writing Samples	Contextual Language Story Construction		Written Expression II		Writing Composition
Oral prompt	Spelling Spelling of Sounds	Spelling Contextual Language Story Construction	Spelling	Spelling Written Expression I	Spelling	Spelling
Written prompt	Writing Fluency Writing Samples Editing	Capitalization Punctuation	Written Expression			

Table 7. (Continued)
Variation in Task Characteristics of Comprehensive Achievement Batteries by Learning Disability Assessment Area

Learning Disability Assessment Areas Task Characteristic	ACHIEVEMENT BATTERY					
	WJ III ACH	DAB-3	WIAT-II	PIAT-R/NU	K-TEA/NU	DATA-2
Basic Reading Skills						
Real words	Letter-Word Identification Word Attack ^a Sound Awareness ^b	Alphabet/Word Knowledge Phonemic Analysis	Word Reading	Reading Recognition	Reading Decoding	Word Identification
Pseudowords	Word Attack		Pseudoword Decoding			
Isolated stimuli (letters, words)	Letter-Word Identification Word Attack	Alphabet/Word Knowledge Phonemic Analysis	Word Reading Pseudoword Decoding	Reading Recognition	Reading Decoding	Word Identification
Reading Comprehension						
Cloze format	Passage Comprehension					
Open-ended questions	Reading Vocabulary	Reading Comprehension	Reading Comprehension		Reading Comprehension	Reading Comprehension
Multiple choice				Reading Comprehension		
Literal questions	Reading Fluency	Reading Comprehension	Reading Comprehension		Reading Comprehension	Reading Comprehension
Inferential questions		Reading Comprehension	Reading Comprehension		Reading Comprehension	Reading Comprehension
Silent reading	Passage Comprehension	Reading Comprehension	Reading Comprehension	Reading Comprehension	Reading Comprehension	Reading Comprehension
Examinee reads	Passage Comprehension Reading Vocabulary Reading Fluency			Reading Comprehension	Reading Comprehension	Reading Comprehension
Examiner and examinee read		Reading Comprehension	Reading Comprehension			
Time limit	Reading Fluency					
Examinee can refer back to text	Passage Comprehension		Reading Comprehension		Reading Comprehension	
Math Calculation						
Uses worksheet	Calculation Math Fluency	Math Calculation	Numerical Operations		Mathematics Computation	Math Calculation
Easel format				Mathematics		
Time limit	Math Fluency					
Mental computations				Mathematics		
Paper/pencil computations	Calculation Math Fluency	Math Calculation	Numerical Operations		Mathematics Computation	Math Calculation

Table 7. (Continued)
Variation in Task Characteristics of Comprehensive Achievement Batteries by Learning Disability Assessment Area

Learning Disability Assessment Areas Task Characteristic	ACHIEVEMENT BATTERY					
	WJ III ACH	DAB-3	WIAT-II	PIAT-R/NU	K-TEA/NU	DATA-2
Math Calculation (Continued)						
Scrap paper allowed		Math Calculation	Numerical Operations			Math Calculation
Multiple choice				Mathematics		
Examiner reads						
Examinee reads		Math Calculation			Mathematics Computation	Math Calculation
Examiner and examinee read			Numerical Operations	Mathematics		
Math Reasoning						
Uses worksheet		Math Reasoning				Math Problem Solving
Easel format	Applied Problems Quantitative Concepts		Math Reasoning		Mathematical Applications	
Mental computations	Applied Problems	Math Reasoning	Math Reasoning		Mathematical Applications	
Scrap paper allowed	Applied Problems Quantitative Concepts (Number Series)		Math Reasoning			
Uses visual stimuli	Applied Problems	Math Reasoning	Math Reasoning		Mathematical Applications	
Word problems	Applied Problems	Math Reasoning	Math Reasoning			Math Problem Solving
Multiple choice						
Examiner reads	Applied Problems Quantitative Concepts (Concepts)	Math Reasoning	Math Reasoning		Mathematical Applications	Math Problem Solving
Examinee reads	Quantitative Concepts (Number Series)					

Note. LD area labels are consistent with those included in IDEA's definition of LD. Task characteristics were adapted from Flanagan, Ortiz, Alfonso, and Mascolo (2002). Classifications of the WJ III were made by the tests' authors and, therefore, may differ from those presented in Flanagan et al. (2002). Definitions of task characteristics are included in Appendix D.

^aThis task requires the examinee to read aloud letter combinations that are phonically consistent, or regular, patterns in English orthography but that are nonwords or low-frequency words (Mather & Woodcock, 2001, p. 14).

^bAlthough the Sound Awareness test is a measure of oral language, it is highly related to beginning reading skills.

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Appendix A.
Internal Consistency
Reliability of Achievement
Subtests by Age

RELIABILITY	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
WJ III ACH																	
Letter-Word Identification																	
Reading Fluency																	
Story Recall																	
Understanding Directions																	
Calculation																	
Math Fluency																	
Spelling																	
Writing Fluency																	
Passage Comprehension																	
Applied Problems																	
Writing Samples																	
Story Recall-Delayed																	
Word Attack																	
Picture Vocabulary																	
Oral Comprehension																	
Editing																	
Reading Vocabulary																	
Quantitative Concepts																	
Academic Knowledge																	
Spelling of Sounds																	
Sound Awareness																	
Punctuation and Capitalization																	
DAB-3																	
Story Comprehension																	
Characteristics																	
Synonyms																	
Grammatical Completion																	
Alphabet/Word Knowledge																	
Reading Comprehension																	
Capitalization																	
Punctuation																	
Spelling																	
Contextual Language																	
Story Construction																	
Math Reasoning																	
Math Calculation																	
Phonemic Analysis																	
WIAT-II																	
Word Reading																	
Numerical Operations																	
Reading Comprehension																	
Spelling																	
Pseudoword Decoding																	
Math Reasoning																	
Written Expression ^a																	
Listening Comprehension																	
Oral Expression ^a																	

Appendix A. (Continued)

Internal Consistency

Reliability of Achievement

Subtests by Age

RELIABILITY	19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+
WJ III ACH															
Letter-Word Identification															
Reading Fluency															
Story Recall															
Understanding Directions															
Calculation															
Math Fluency															
Spelling															
Writing Fluency															
Passage Comprehension															
Applied Problems															
Writing Samples															
Story Recall-Delayed															
Word Attack															
Picture Vocabulary															
Oral Comprehension															
Editing															
Reading Vocabulary															
Quantitative Concepts															
Academic Knowledge															
Spelling of Sounds															
Sound Awareness															
Punctuation and Capitalization															
DAB-3															
Story Comprehension															
Characteristics															
Synonyms															
Grammatical Completion															
Alphabet/Word Knowledge															
Reading Comprehension															
Capitalization															
Punctuation															
Spelling															
Contextual Language															
Story Construction															
Math Reasoning															
Math Calculation															
Phonemic Analysis															
WIAT-II															
Word Reading															
Numerical Operations															
Reading Comprehension															
Spelling															
Pseudoword Decoding															
Math Reasoning															
Written Expression ^a															
Listening Comprehension															
Oral Expression ^a															

Appendix A. (Continued)
Internal Consistency
Reliability of Achievement
Subtests by Age

RELIABILITY	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
PIAT-R/NU^b																	
General Information				■	■	■	■	■	■	■	■	■	■	■	■	■	■
Reading Recognition				■	■	■	■	■	■	■	■	■	■	■	■	■	■
Reading Comprehension				■	■	■	■	■	■	■	■	■	■	■	■	■	■
Mathematics				■	■	■	■	■	■	■	■	■	■	■	■	■	■
Spelling				■	■	■	■	■	■	■	■	■	■	■	■	■	■
Written Expression I ^c				■	■	■	■	■	■	■	■	■	■	■	■	■	■
Written Expression IIA ^c				■	■	■	■	■	■	■	■	■	■	■	■	■	■
Written Expression IIB ^c				■	■	■	■	■	■	■	■	■	■	■	■	■	■
K-TEA/NU^d																	
Math Applications					■	■	■	■	■	■	■	■	■	■	■	■	■
Reading Decoding					■	■	■	■	■	■	■	■	■	■	■	■	■
Spelling					■	■	■	■	■	■	■	■	■	■	■	■	■
Reading Comprehension					■	■	■	■	■	■	■	■	■	■	■	■	■
Math Computation					■	■	■	■	■	■	■	■	■	■	■	■	■
DATA-2																	
Receptive Vocabulary											■	■	■	■	■	■	■
Receptive Grammar											■	■	■	■	■	■	■
Expressive Grammar											■	■	■	■	■	■	■
Expressive Vocabulary											■	■	■	■	■	■	■
Word Identification											■	■	■	■	■	■	■
Reading Comprehension											■	■	■	■	■	■	■
Math Calculation											■	■	■	■	■	■	■
Math Problem Solving											■	■	■	■	■	■	■
Spelling											■	■	■	■	■	■	■
Writing Composition											■	■	■	■	■	■	■
Science											■	■	■	■	■	■	■
Social Studies											■	■	■	■	■	■	■
Reference Skills											■	■	■	■	■	■	■

Appendix A. (Continued)

Internal Consistency

Reliability of Achievement

Subtests by Age

RELIABILITY	19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+
PIAT-R/NU^b															
General Information															
Reading Recognition															
Reading Comprehension															
Mathematics															
Spelling															
Written Expression I ^c															
Written Expression IIA ^c															
Written Expression IIB ^c															
K-TEA/NU^d															
Math Applications															
Reading Decoding															
Spelling															
Reading Comprehension															
Math Computation															
DATA-2															
Receptive Vocabulary															
Receptive Grammar															
Expressive Grammar															
Expressive Vocabulary															
Word Identification															
Reading Comprehension															
Math Calculation															
Math Problem Solving															
Spelling															
Writing Composition															
Science															
Social Studies															
Reference Skills															

Reliability Coefficients:  = $\geq .90$  = .80 to .89  = $< .80$  = No information available  = Not applicable

^aTest-retest reliability coefficients are reported for these subtests.

^bAll reliability data reported in the test manual, and thus in this appendix, pertain to the 1989 (PIAT-R) standardization sample.

^cCoefficients were reported by grade in the test manual. Therefore, corresponding ages were estimated by the authors.

^dAll reliability data reported in the test manual, and thus in this appendix, pertain to the 1985 (K-TEA) standardization sample.

Appendix B.

Internal Consistency
Reliability of Achievement
Test Composites by Age

RELIABILITY	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
WJ III ACH																	
Broad Reading Skills																	
Basic Reading Skills																	
Reading Comprehension																	
Listening Comprehension																	
Oral Expression																	
Broad Math																	
Math Calculation Skills																	
Math Reasoning																	
Broad Written Language																	
Basic Writing Skills																	
Written Expression																	
Academic Knowledge																	
Academic Skills																	
Academic Fluency																	
Academic Applications																	
Phoneme/Grapheme Knowledge																	
<i>Total</i>																	
DAB-3																	
Listening																	
Speaking																	
Reading																	
Writing																	
Math																	
Spoken Language																	
Written Language																	
<i>Total</i>																	
WIAT-II																	
Reading																	
Mathematics																	
Written Language																	
Oral Language																	
<i>Total</i>																	
PIAT-R/NU^a																	
Total Reading																	
Written Language I																	
Written Language II																	
<i>Total</i>																	
K-TEA/NU^b																	
Reading																	
Mathematics																	
<i>Total</i>																	

Appendix B. (Continued)

Internal Consistency

Reliability of Achievement

Test Composites by Age

RELIABILITY	19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+
WJ III ACH															
Broad Reading Skills															
Basic Reading Skills															
Reading Comprehension															
Listening Comprehension															
Oral Expression															
Broad Math															
Math Calculation Skills															
Math Reasoning															
Broad Written Language															
Basic Writing Skills															
Written Expression															
Academic Knowledge															
Academic Skills															
Academic Fluency															
Academic Applications															
Phoneme/Grapheme Knowledge															
<i>Total</i>															
DAB-3															
Listening															
Speaking															
Reading															
Writing															
Math															
Spoken Language															
Written Language															
<i>Total</i>															
WIAT-II															
Reading															
Mathematics															
Written Language															
Oral Language															
<i>Total</i>															
PIAT-R/NU^a															
Total Reading															
Written Language I															
Written Language II															
<i>Total</i>															
K-TEA/NU^b															
Reading															
Mathematics															
<i>Total</i>															

Appendix B. (Continued)
Internal Consistency
Reliability of Achievement
Test Composites by Age

RELIABILITY	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
DATA-2																	
Speaking																	
Reading																	
Math																	
Writing																	
Spoken Language																	
Written Language																	
Screener																	
<i>Total</i>																	

RELIABILITY	19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+
DATA-2															
Speaking															
Reading															
Math															
Writing															
Spoken Language															
Written Language															
Screener															
<i>Total</i>															

Reliability Coefficients:  = $\geq .90$  = .80 to .89  = $< .80$  = No information available  = Not applicable

*All reliability data reported in the test manual, and thus in this appendix, pertain to the 1989 (PIAT-R) standardization sample.

*All reliability data reported in the test manual, and thus in this appendix, pertain to the 1985 (K-TEA) standardization sample.

Appendix C.

Select Broad and Narrow Cattell-Horn-Carroll Ability Definitions

NAME (Code)	DEFINITION
Reading and Writing (<i>Grw</i>)	Basic reading skills necessary for comprehending written language and expressing thoughts and ideas through writing
Reading Decoding (RD)	Ability to recognize and decode words or pseudowords in reading
Reading Comprehension (RC)	Ability to comprehend connected discourse during reading
Verbal (Printed) Language Comprehension (V)	General development, or the understanding of words, sentences, and paragraphs in native language, as measured by reading vocabulary and reading comprehension tests
Cloze Ability (CZ)	Ability to supply words deleted from prose passages
Spelling Ability (SG)	Ability to spell
Writing Ability (WA)	Ability to write with clarity of thought, organization, and good sentence structure
English Usage Knowledge (EU)	Knowledge of writing in the English language with respect to capitalization, punctuation, usage, and spelling
Reading Speed (RS)	Time required to silently read a passage or series of sentences as quickly as possible
Quantitative Knowledge (<i>Gq</i>)	Ability to understand quantitative concepts and relationships and manipulate mathematical symbols
Mathematical Knowledge (KM)	Range of general knowledge about mathematics
Mathematical Achievement (A3)	Measured mathematics achievement
Crystallized Intelligence (<i>Gc</i>)	The breadth and depth of an individual's general knowledge (including verbal communication)
Language Development (LD)	General development, or the understanding of words, sentences, and paragraphs (<i>not</i> requiring reading) in spoken native language skills
Lexical Knowledge (VL)	Extent of vocabulary that can be understood in terms of correct word meanings
Grammatical Sensitivity (MY)	Knowledge or awareness of the grammatical features of the native language
Communication Ability (CM)	Ability to speak in an adult-like manner in "real life" situations (e.g., lecture, group participation)
Oral Production and Fluency (OP)	More specific, or narrow, oral communication skills than reflected by Communication Ability (CM)
Listening Ability (LS)	Ability to listen to and comprehend oral communications
General (Verbal) Information (K0)	Range of general knowledge
Information About Culture (K2)	Range of cultural knowledge (e.g., music, art)
General Science Information (K1)	Range of scientific knowledge (e.g., biology, physics, engineering, mechanics, electronics)
Auditory Processing (<i>Ga</i>)	Ability to analyze and synthesize auditory information
Phonetic Coding: Analysis (PC: A)	Ability to segment larger units of speech sounds into smaller units of speech sounds
Phonetic Coding: Synthesis (PC: S)	Ability to blend smaller units of speech together into larger units of speech
Short-Term Memory (<i>Gsm</i>)	Ability to hold information in immediate awareness and then use information within a relatively short period of time (usually seconds)
Memory Span (MS)	Ability to attend to and immediately recall temporally ordered elements in the correct order after a single presentation

Appendix C. (Continued)
*Select Broad and Narrow
 Cattell-Horn-Carroll Ability
 Definitions*

NAME (Code)	DEFINITION
Long-Term Retrieval (<i>Glr</i>)	Ability to store information and retrieve it at a later time through association
Meaningful Memory (MM)	Ability to recall a set of items where there is a meaningful relation between items or the items comprise a meaningful story or connected discourse
Processing Speed (<i>Gs</i>)	Ability to fluently and automatically perform cognitive tasks, especially when under pressure to maintain focused attention and concentration
Number Facility (N)	Ability to rapidly and accurately manipulate and deal with numbers, from elementary skills of counting and recognizing numbers to advanced skills of adding, subtracting, multiplying, and dividing numbers
Fluid Reasoning (<i>Gf</i>)	Ability to reason, form concepts, and problem solve using novel information and/or procedures
Quantitative Reasoning (RO)	Ability to inductively and deductively reason with concepts involving mathematical relations and properties

Note. Names in bold are from broad stratum II. Names not in bold are from narrow stratum I. Names and definitions were adapted from Carroll (1993).

Appendix D.
*Definitions of Task
 Characteristics by
 Academic Skill Area*

TASK CHARACTERISTIC	DEFINITION
Oral Expression	
Multi-word response	Examinee must provide multi-word responses (e.g., describe a pictured scene in detail).
Single-word response	Examinee must provide single-word responses (e.g., provide a synonym for a presented word).
Visual stimuli	Task involves the use of visual stimuli (e.g., pictures).
Examiner reads	Examiner reads test stimuli.
Listening Comprehension	
Use of audio recording	Test items are presented using an audiorecording.
Examiner reads	Examiner reads test stimuli.
Requires verbatim repetition	Examinee must repeat a word, phrase, or sentence exactly as presented.
Multiple choice	Examinee must select the correct response from a series of possible answers.
Use of pictures	Test stimuli involve the use of pictures.
Pointing response allowed or required	Examinee must point (or is given the option of pointing) to some specified stimuli (e.g., picture, object) as indicated by task directions.
Oral response required	Examinee must provide oral responses throughout the task.
Single-word response	Examinee must provide only single-word responses throughout the task.
Multi-word response	Examinee must provide multi-word responses throughout the task.
Isolated stimuli	Stimuli are presented in isolation (e.g., a series of single words are presented individually and the examinee must point to a picture that matches each word).
Connected stimuli	Stimuli are presented in context (e.g., the examinee must listen to a sentence, or series of sentences, and perform an action consistent with the directions).
Written Expression	
Dictated spelling (isolation)	Examinee must print or write dictated words in isolation.
Dictated spelling (context)	Spelling is evaluated in the context of connected text (e.g., sentence, paragraph).
Multiple choice	Examinee must select a correctly spelled word from a series of choices.
Real words	Test stimuli involve actual words appearing in the English language.
Pseudowords	Test stimuli involve nonwords (e.g., nonsense words).x
Isolated response (single word)	Examinee must produce a single-word response in isolation (e.g., spelling an individual word).
Connected response	Examinee must produce a response in context (e.g., write sentences, paragraphs).
Writing mechanics assessed	Task assesses of punctuation, capitalization, and/or usage skills.
Proofing or editing required	Examinee must proofread or edit a sentence or paragraph that contains grammatical errors.
Time limit	Examinee must write and/or respond to written questions while being timed.
Picture prompt	Examinee is provided with a visual prompt from which to write a complete sentence or story.
Oral prompt	Examinee must respond to an oral prompt (spoken by the examiner or presented via audio recording) by writing a complete sentence or story.
Written prompt	Examinee must respond to a written prompt by writing a complete sentence or story.

Appendix D. (Continued)
*Definitions of Task
 Characteristics by
 Academic Skill Area*

CHARACTERISTIC	DEFINITION
Basic Reading Skills	
Real words	Test stimuli involve actual words occurring in the English language.
Pseudowords	Test stimuli involve nonwords (e.g., nonsense words).
Isolated stimuli (letters, words)	Real words or pseudowords are presented in isolation (e.g., via a word list).
Reading Comprehension	
Cloze format	Text includes a missing key word that can only be supplied based on passage content.
Open-ended questions	Comprehension questions allow open-ended responses.
Multiple choice	Comprehension questions are presented in a multiple-choice format.
Literal questions	Comprehension questions relate to factual, literal information presented in the passage (e.g., Where did Mary go on Monday?).
Inferential questions	Comprehension questions relate to information that can be inferred from the passage (e.g., How do you think Mary was feeling when she lost her puppy?).
Silent reading	Passages or sentences are intended to be read silently.
Examinee reads	Test stimuli are read by the examinee.
Examiner and examinee read	Test stimuli are read by both the examiner and examinee (e.g., the examiner reads a passage aloud while the examinee reads the passage silently).
Time limit	Examinee must read and/or respond to questions while being timed.
Examinee can refer back to text	The examinee can refer back to previously read text when responding to comprehension questions.
Math Calculation	
Uses worksheet	Test items are presented in a worksheet format.
Easel format	Test items are presented in an easel format.
Time limit	Examinee is provided a specified time in which to complete computations.
Mental computations	Task involves the mental computation of problems.
Paper/pencil computations	Task involves computing problems through use of paper and pencil.
Scrap paper allowed	Examinee is allowed to use scrap paper.
Multiple choice	Examinee must select a correct response from a series of possible answers.
Examiner and examinee reads	Test stimuli are read by both the examiner and examinee (e.g., the examiner reads a problem aloud while the examinee reads the problem silently).
Math Reasoning	
Uses worksheet	Test items are presented in a worksheet format.
Easel format	Test items are presented in an easel format.
Mental computations	Task involves the mental computation of problems.
Scrap paper allowed	Examinee allowed to use scrap paper.
Uses visual stimuli	Task involves the use of visual stimuli (e.g., graphs, pie charts).
Word problems	Task involves word problems.
Multiple Choice	Examinee must select the correct response from a series of possible choices.
Examiner reads	Examiner reads the test stimuli.
Examinee reads	Examinee reads the test stimuli.



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