BASI™

Basic Achievement Skills Inventory

Achilles N. Bardos, PhD

Manual for the BASI Survey Test

Product Number
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EDUMETRISIS, LLC.

Manual for the BASI™
(Basic Achievement Skills Inventory)
Survey Test

Achilles N. Bardos, PhD

Dedication

I dedicate this work to Dr. Jack A. Naglieri, a fine mentor and a great friend.

Manual for the BASI (Basic Achievement Skills Inventory) Survey Test
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January, 2020

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Garden Park High School – Cannon City, CO
Jay High School – Jay, FL
Liberty Hills School – Liberty Hills, TX
Our Lady of Providence School – Central Islip, NY
Pasco High School – Pasco, WA
Pershing Magnet School – Chicago, IL
Pine Grove Elementary School – Brooksville, FL
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Bethlehem Lutheran School – Lakewood, CO
Blalack Middle School – Carrollton, TX
Blessed Sacrament School – Charleston, SC
Blossom Wood Day School – Hazelwood, MO
Cedarcrest Academy – Maple Grove, MN
Chandler Elementary School – Chandler, TX
Douglas Middle and High Schools – Douglas, MA
Elwood Public School – Elwood, NE
Holy Ghost Catholic School – Albuquerque, NM
Immaculate Heart of Mary School – Still River, MA
Friedrich Jahn School – Chicago, IL
Leo U. Leo Elementary School – Mission, TX
Maxey Training School – Whitmore Lake, MI
(Survey test only)
Muscatine School District – Muscatine, IA
Pasco High School – Pasco, WA
Scotland Elementary School – Scotland, CT
Sealy Junior High School – Sealy, TX
Southeast School – Yoder, WY
Stockton Elementary School – Chicago, IL
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Chapter 1. Introduction

The BASI™ (Basic Achievement Skills Inventory) test is a series of multi-level, norm-referenced achievement tests that can be administered to groups or individuals. The BASI test measures reading, written language, and math skills among children and adults. It is designed to be convenient to use, broad in coverage, and well suited to a wide variety of applications.

There are two versions of the BASI test: Survey and Comprehensive. The BASI Survey is the shorter of the two instruments. It consists of two tests: Verbal Skills and Math Skills. Verbal skills are assessed using vocabulary, language mechanics, and reading comprehension questions, and math skills are assessed using math computation and math application questions. The two BASI Survey tests can be administered together or independently; each has a 25-minute time limit. The BASI Survey has norms for children and adults from ages 8 to 80.

The more in-depth BASI Comprehensive version consists of subtests at four grade-specific levels. Level 1 is for grades 3 and 4, Level 2 for grades 5 and 6, Level 3 for grades 7 and 8, and Level 4 for grades 9 through 12. For each of the four test levels there are six subtests: Vocabulary, Spelling, Language Mechanics, Reading Comprehension, Math Computation, and Math Application. Each subtest has two forms, one normed during the fall of the school year and one normed during the spring.

This manual describes the development and statistical properties of the BASI Survey and provides guidelines for interpreting and using the information it generates. There is a separate manual for the BASI Comprehensive version. (See the current Pearson Assessments catalog for more information about the BASI Comprehensive version.)

Structure of the BASI Survey

The BASI Survey Verbal Skills test provides a Verbal Skills Total score as well as scores for three more-specific skill areas: Vocabulary, Language Mechanics, and Reading Comprehension. The Math Skills test provides a Math Skills Total score and scores for more-specific Math Computation and Math Application skill areas. Table 1.1 shows, for each of the two tests, the number of test items that measure each skill area. The skill areas are briefly described below.

TABLE 1.1 Skill Areas Measured by the Verbal Skills and Math Skills Tests

Test		Skill Areas	
Verbal Skills	**73 items**	Vocabulary	21 items
		Language Mechanics	21 items
		Reading Comprehension	31 items
Math Skills	**68 items**	Math Computation	33 items
		Math Application	35 items

Verbal Skills Skill Areas

Vocabulary. Measures the test taker's skills in identifying the meaning of words within the context of a sentence, recognizing synonyms and antonyms, analyzing verbal analogies, and recognizing the meaning of words presented in isolation.

Language Mechanics. Measures the examinee's knowledge of various grammar and syntax rules, including capitalization, punctuation, verb forms, and tense agreement.

Reading Comprehension. Consists of passages that the examinee must read and understand in order to answer questions about the main idea, sequence of events, and setting. These literal comprehension questions are complemented by questions that assess inferential comprehension skills such as identifying cause and effect relationships, predicting outcomes, and drawing conclusions.

Math Skills Skill Areas

Math Computation. Assesses the test taker's ability to apply the four basic arithmetic operations to whole numbers, fractions, and decimals and to simplify numerical expressions and algebraic equations.

Math Application. Measures the test taker's ability to solve mathematical word problems using all the basic arithmetic operations, to read and interpret data presented in graphs or tables, to solve problems involving the measurement of shapes and volumes, and to demonstrate knowledge of measurement principles as they relate to length, weight, volume, perimeter, and money.

Overview of Key Characteristics

The BASI Survey uses a multiple-choice item format and is designed for ease of group administration. It can also be administered to individual examinees with relatively little supervision. An examiner may choose to administer the Verbal Skills test, the Math Skills test, or both. Each test has a 25-minute time limit. The BASI Survey tests can also be administered untimed to yield criterion-referenced performance information.

Norms for the BASI Survey are based on data collected during 2002–2003 using a nationwide sample of nearly 5,000 students and adults from ages 8 to 80 matched to the 2000 U.S. Census (see Chapter 4). These norms are used to generate a wide variety of scores: standard scores, confidence intervals, percentile ranks, grade-equivalent scores, and age-equivalent scores. The various BASI Survey scores are described in detail in Chapter 3.

The content of the two BASI Survey tests was determined using a set of curriculum standards referred to as the MCAD® (Model Curriculum and Assessment Database) standards. These standards are an amalgamation of the "best-of-the-best" local, state, and national U.S. educational standards. The methods used to develop the BASI Survey are described in Chapter 5.

The BASI Survey's Verbal Skills Total and Math Skills Total scores have strong reliability. They show significant correlations with scores from commonly used group-administered and individually administered achievement and ability tests. These and other psychometric data for the BASI Survey are presented in Chapter 5.

Finally, efforts were made in the development of the BASI Survey to minimize possible cultural bias. The curriculum experts and content specialists who wrote the test items were careful to use unbiased ethnic, racial, and cultural references, to avoid sexist language and stereotypes, and to avoid geographic and socioeconomic bias. The success of these efforts was confirmed by an independent review of item content conducted by a panel consisting of teachers, learning disability specialists, reading specialists, and college professors.

Distinguishing Features

The BASI test series was designed for *convenience of use*. Test users can choose between the shorter Survey version and the more in-depth Comprehensive version. Survey users have the flexibility to administer the Verbal Skills test, the Math Skills test, or both. Total administration time for each Survey test is relatively brief at about 30 minutes. The multiple-choice item format allows group administration (e.g., to an entire classroom) or administration to individual examinees with minimal supervision. Finally, Pearson Assessments offers a variety of con-

venient administration and scoring options for the BASI Survey, as described in Chapter 2.

The BASI Survey has also been *carefully normed*. The test's standardization sample of nearly 5,000 students and adults tested in 2002–2003 was constructed to match the 2000 U.S. Census on the following demographic variables: gender, race and ethnicity, geographic region, and socioeconomic status (measured by education level).

The BASI Survey allows assessment of achievement across a very *wide range*. The test's range of item difficulty and its norms make it suitable for use with individuals from 8 to 80 years old. Nearly all individuals, even if they are academically deficient, should be able to correctly answer some test items, allowing for differentiation of performance at low levels of achievement. Conversely, because perfect or nearly perfect scores on either test are rare, the BASI Survey can differentiate levels of academic giftedness. In other words, the test has both a low floor and a high ceiling.

Uses

The BASI Survey was designed to be useful for a wide variety of applications. It can be used to:

- quickly assess a child's or adult's strengths and weaknesses in verbal and math skills
- test groups that are diverse in age and/or ability with a single instrument
- serve as a locator test for the BASI Comprehensive version
- help screen students for gifted programs
- assist with triennial evaluations for students with an IEP or 504 plan
- help monitor academic progress
- aid in career counseling
- assist with placement and academic advisement of college students
- help make literacy, ESL, GED®, and other placement decisions for adult learners
- help evaluate offenders for program placement
- conduct research and program evaluation

Choosing the BASI Survey or Comprehensive Version

In general, the user should select the BASI Survey when a quick but accurate assessment of verbal skills, math skills, or both is required. The 25-minute testing time for the Verbal Skills test and for the Math Skills test may provide a better fit for some testing situations compared to the approximately two hours of testing time needed to administer all six BASI Comprehensive subtests. The Comprehensive version, on the other hand, offers an in-depth assessment of academic achievement. It can be used to pinpoint specific content areas through the use of individual subtests or to measure achievement across a broad spectrum through administration of all six subtests.

In particular, BASI users who work with adults will usually find the Survey more appropriate. The BASI Survey offers age-based adult norms, and the shorter testing time may be more practical for many settings in which the academic skills of adults are assessed.

Limitations

Any test can be misused. It is imperative that users of the BASI tests follow commonly accepted professional guidelines for test use and interpretation, such as those found in the *Standards for Educational and Psychological Testing* (American Educational Research Association, American Psychological Association, & National Council on Measurement in Education, 1999). Professional ethical standards and the standards of state credentialing agencies should also be adhered to. Moreover, as with any test, the BASI test should not be used in isolation but rather in conjunction with other pertinent information when making decisions about individual examinees.

User Qualifications

All materials and reports offered by Pearson Assessments are assigned a qualification level based on the credentials required to purchase them. The BASI test is a Level C product. Level C purchasers must provide credentials indicating that they have a bachelor's degree in psychology, education, human resources, or a closely related field. Specific course work or workshops are not required.

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Chapter 2. Administration and Scoring

This chapter describes how to administer and score the BASI Survey. Topics covered include test materials, factors to consider prior to test administration, how to administer the BASI Survey, and scoring options.

Test Materials

The BASI Survey materials include this test manual, test booklets, answer sheets, and computer software for test administration and scoring. These materials are listed in the current Pearson Assessments catalog. The test materials needed will vary somewhat depending on how the user chooses to administer and score the test.

Paper-and-Pencil Administration With Computer Scoring

The BASI Survey consists of separate Verbal Skills and Math Skills tests. The tests are available separately (two booklets) and combined (one booklet). The test booklets include test directions, sample items, and test items.

A scannable answer sheet is required to score a paper-and-pencil BASI Survey using Pearson Assessments software. The same scannable answer sheet is used whether the Verbal Skills test, the Math Skills test, or both tests are administered. With computer scoring, the user scans or keys in the test taker's responses. More details about computer scoring are provided later in this chapter.

Paper-and-Pencil Administration With Hand Scoring

The same test booklets are used to administer the BASI Survey regardless of whether the test will be computer scored or hand scored. However, there are different answer sheets for computer scoring and hand scoring. Hand-scoring answer sheets are available for the Verbal Skills test alone, for the Math Skills test alone, or for both tests. The hand-scoring answer sheet includes scoring directions. No separate answer keys or overlays are required, but the user must have a copy of the BASI Survey manual, which contains scoring tables. Hand scoring is discussed in more detail later in this chapter.

Computer Administration and Scoring

With Pearson Assessments software, users can administer the BASI Survey by computer. The software then scores the test and generates a score report. No test booklets or answer sheets are needed when computer administration and scoring are used. The software must be installed on each individual computer that will be used to administer the test.

Factors to Consider Prior to Testing

This section addresses the key decisions that must be made prior to administering the BASI Survey. These decisions include whether the BASI Survey or Comprehensive version should be used, timed vs. untimed administration, possible need for accommodations, and order of test administration. Some of the discussion in this section refers to the various scores that can be produced for the BASI Survey. All of the BASI Survey scores are described in detail in Chapter 3.

Choosing the Appropriate BASI Version to Administer

As discussed in Chapter 1, the BASI Survey provides a quick, accurate assessment of verbal skills and/or math skills for children and adults from ages 8 to 80. The shorter testing time and availability of adult norms make the Survey a better fit than the longer Comprehensive version for most applications with adult examinees. The Comprehensive version offers a more in-depth assessment and is designed primarily for applications with school-age examinees. Finally, the Survey version can be used to help determine which level of the BASI Comprehensive test to administer to a child or adult.

Timed or Untimed Administration

The vast majority of uses of the BASI Survey require administration using the standard 25-minute time limit for each test. Because the tests were standardized using this time limit, all scores that depend on comparisons to the standardization sample—standard scores, confidence intervals, percentile ranks, grade-equivalent scores, and age-equivalent scores—are interpretable *only for timed administrations.*

If the examiner is interested solely in what specific content the examinee has and has not mastered and not in norm-referenced performance information, the test(s) should be administered untimed. For untimed administrations, only the number (or percentage) of correct responses for individual learning objectives, for skill areas, and for the total test will be potentially meaningful. See Chapter 3 for more information about interpreting results of an untimed administration.

Need for Accommodations

Some individuals with disabilities may need to have the BASI Survey administered with accommodations so their test scores will accurately reflect their level of achievement. A thorough discussion of the various possible test-taking accommodations is beyond the scope of this manual. The examiner should follow the testing accommodations policies established by his or her organization and/or professional practice guidelines to determine appropriate accommodations for BASI test administration.

Every effort should be made to administer the BASI Survey using the standard 25-minute time limit for each test. As noted above, if untimed administration is deemed necessary as an accommodation, none of the norm-referenced scores will be meaningful.

Order of Test Administration

In the standardization of the BASI Survey, the Math Skills test was administered first, followed by the Verbal Skills test. However, it is not necessary to follow this order. If both tests are used, they can be administered in any order in one or two sessions. Each test that is begun during a testing session should be completed during that session.

Test Administration

Except for the reading of instructions and timing of the tests by an administrator, the BASI Survey is largely self-administering. In most circumstances it can easily be administered to groups (e.g., an entire class) by one or two proctors or to individual examinees with minimal supervision. The requirements for effective test administration are discussed below.

Importance of Standardized Administration

Administration of the BASI Survey must be carefully conducted following the methods described in this manual. Alteration of the instructions, materials, or time limits may affect the test taker's performance and may compromise the validity of the test scores.

Rapport

Examiners should recognize the need to create an appropriate environment for testing. This includes

developing and maintaining rapport with examinees. Several sources provide a description of good testing practices (Aiken, 1987; Hood & Johnson, 1991; Salvia & Ysseldyke, 1981; Sattler, 1992).

Testing Environment

The BASI Survey should be administered in a room that is free of distractions. The administrator should ensure that examinees can work comfortably. For paper-and-pencil administration, each examinee must have a good writing surface, adequate lighting, two No. 2 pencils with erasers, and a test booklet and answer sheet. Scratch paper is allowed, but calculators are not.

Using the Answer Sheet Correctly

When the BASI Survey is administered using a test booklet and answer sheet, it is critical that examinees mark their answer to each item in the correct place on the answer sheet. At the beginning of the testing session, the administrator should instruct examinees to periodically check that their current test item number matches their current place on the answer sheet. If possible, the proctor should check during testing to make sure examinees are filling out the answer sheet correctly.

Test Directions

Before examinees begin a test, the administrator should *read the directions aloud*. These directions, including the sample items, should be read *word for word* from the test booklet while examinees follow along. The administrator should ensure that examinees mark their answers to the sample items on their answer sheet. Timing for a test begins when the administrator instructs examinees to turn to the first page of the test.

Group Administration

The BASI Survey is designed for ease of group administration. Group administration simply requires one or more proctors to distribute the test materials, read the instructions aloud, time the test(s), and collect the completed materials. Proctors should remain available at all times to monitor examinees and answer questions. (See "Answering Questions" below.)

Individual Administration

As with group administration, individual administration of the BASI Survey requires a test administrator to distribute test materials, read the instructions aloud, time the test(s), and collect the completed materials. It is usually not necessary for the administrator to closely monitor the examinee while he or she is working on the test. However, the administrator should remain readily available in case the examinee needs assistance. In some special circumstances, continuous monitoring may be required.

Answering Questions

Administrators should not volunteer information about guessing. If examinees ask whether or not they should guess on items they don't know or don't have time to get to, the administrator should simply reiterate the importance of working quickly but carefully and trying to answer as many items as possible. If asked directly whether incorrect responses are penalized, the administrator may respond that they are not. If asked a question about a particular test item, the administrator may suggest that the examinee review the sample items, but he or she should not provide any additional information.

Scoring

This section addresses computer scoring and hand scoring of the BASI Survey.

Computer Scoring

When the BASI Survey is administered using a test booklet and scannable answer sheet, the user can score it either by scanning the answer sheet or by keying in the test responses. Before the test can be computer scored, the identifying information on the scannable answer sheet must be completed. Normally this is done at the beginning of the testing session. When the test is administered to a group, the administrator may find it convenient to have the test takers complete some or all of the information. When the test is administered to an individual examinee, the administrator may complete the information or have the examinee complete it.

On the answer sheet, the Timed Test field and the examinee's identification number, birth date, and test

date must *all* be completed in order for the software to score the test. The examinee's name, ethnic group/race, highest grade achieved, and gender are optional. In addition, the answer sheet includes a number of fields that can be used for recording optional information that may be useful for managing, analyzing, and reporting group performance data (e.g., for a class or an entire school grade). The software allows the data records for BASI test takers to be easily exported to other software programs for these purposes.

When the BASI Survey is administered by computer, scoring directions are fully contained within the software. The same information that is needed for computer scoring using a scannable answer sheet (timed or untimed, identification number, birth date, and test date) is needed for computer administration and scoring.

A Student Summary Report and an Adult Summary Report are available through computer scoring. The Student Summary Report, designed for school-age examinees, provides standard scores, confidence intervals, percentile ranks, performance descriptors, grade-equivalent scores, age-equivalent scores, and an optional listing of each item, the learning objective it measures, and whether the examinee's response was correct, incorrect, or omitted. All of these are described in detail in the next chapter. The Adult Summary Report provides the same results as the Student Summary Report except age-equivalent scores. Samples of these reports can be found in Appendix G.

Hand Scoring

The hand-scoring answer sheet must be opened for scoring. To open the form, tear off the perforated strip at the bottom. The form provides sections for recording skill area scores (for Math Computation and Math Application and/or Vocabulary, Language Mechanics, and Reading Comprehension) and for computing and recording the Math Skills Total score and/or the Verbal Skills Total score. Scoring directions are provided on the form and are not repeated here. Scoring procedures are the same for school-age examinees and adult examinees except that age-equivalent scores are not determined for individuals who are 18 or older and not in high school.

After scoring, retain the examinee's results for your records. Because the rest of the form includes the answer key, shred or discard it as you would other confidential documents or keep it in a *secure* location.

Chapter 3.

Interpreting Scores and Results

The purpose of this chapter is to describe how to interpret the various BASI Survey scores. The recommended procedures are intended to serve as guidelines that should be applied flexibly and within the context of other available information about the individual being assessed. The discussion assumes a typical timed administration of the BASI Survey following the administration guidelines presented in Chapter 2.

Interpreting Scores

There are a number of scores that can be used to interpret an individual's performance on the BASI Survey. They include standard scores, confidence intervals for standard scores, percentile ranks, grade-equivalent scores, and age-equivalent scores. These scores can be obtained using either hand scoring or computer scoring. Part of a computer-generated Student Summary Report is shown in Figure 3.1 to illustrate these scores and their interpretation. As described in Chapter 2, the computer-generated Adult Summary Report provides all of the scores that are included in the Student Summary Report except age-equivalent scores.

FIGURE 3.1 BASI Student Summary Report Excerpt

BASI™

Basic Achievement Skills Inventory

Timed: Yes
ESL Student: No
Accommodations: No
Report Date: 07/23/2004

Student Summary Report: BASI Survey - Math Skills
Achilles N. Bardos, PhD

Student: Student, Robin A.
Student ID: 111111111
Birth Date: 06/10/1989
Grade: 9
Class/Group: 12345
Teacher: Teacher, John A.
School: Roosevelt
District Code: 23456789
Test Date: 04/05/2004

Total and Skill Areas	SS	Confidence Interval	Percentile Rank	Performance	GE	AE
Math Skills Total Score	**111**	**101 - 119**	**77**	**High Average**	**12.2**	**17-4**
Math Computation	11			Average		
Math Application	14			Superior		

SS = Standard Score **(Math Skills Total Mean 100; SD=15) (Skill Area Mean 10; SD=3)** **GE** = Grade Equivalent **AE** = Age Equivalent

Total Scores vs. Skill Area Scores

The BASI Survey Verbal Skills test has 73 items. Of these, 21 are Vocabulary skill area items, 21 are Language Mechanics skill area items, and 31 are Reading Comprehension skill area items. The 68 items that make up the Math Skills test consist of 33 Math Computation skill area items and 35 Math Application skill area items.

Because more items contribute to the Verbal Skills Total and Math Skills Total scores than to the individual skill area scores, the total scores have substantially higher internal consistency reliability values. These internal consistency reliabilities are shown in Tables 5.1 and 5.2 in Chapter 5. *Because of their greater reliability, the Verbal Skills Total and Math Skills Total scores should be the primary focus of interpretation for the BASI Survey, with the skill area scores generally viewed as supplementary information*. In keeping with this perspective, all of the norm-referenced scores described below—standard scores, confidence intervals, percentile ranks, grade-equivalent scores, and age-equivalent scores—are provided at the total test level, whereas only standard scores are provided at the skill area level.

Standard Scores (Skill Areas and Total Scores)

The standard scores for a BASI Survey test are based on the skill area raw scores. The raw score for a skill area is simply the number of test items answered correctly for that area. BASI raw scores are not corrected for guessing. When a BASI Survey test is scored by hand, skill area raw scores are calculated as part of the hand-scoring process. When a BASI Survey test is computer scored, the raw scores are not reported. (However, they can be determined if desired by counting the number of correct responses for the items in each skill area. The examinee's item results in each skill area are listed on the optional second page of the report. See "Item Results" below.) Raw scores are generally not used in test interpretation but instead are transformed into standardized scores that compare an examinee's performance to that of a normative group.

For each skill area, the examinee's raw score is transformed into a standard score with a mean of 10 and a standard deviation of 3 (see point 1 in Figure 3.1). The tables in Appendix A list these transformations. The sum of the Vocabulary, Language Mechanics, and Reading Comprehension standard scores is transformed into a Verbal Skills Total standard score with a mean of 100 and a standard deviation of 15. Similarly, the sum of the Math Computation and Math Application standard scores is transformed into a Math Skills Total standard score with a mean of 100 and a standard deviation of 15 (point 2 in Figure 3.1). Appendix B lists the raw score to standard score transformations for Verbal Skills Total and Math Skills Total.

Standard scores with a mean of 100 and a standard deviation of 15 are a common metric for many individually administered achievement and intelligence tests. A standard score indicates the position of an individual's score or test performance relative to the scores of others in the test's normative sample, which in the case of the BASI Survey is intended to represent the general U.S. population of individuals in the same age group as the examinee. For example, a Verbal Skills Total standard score of 115 indicates that the examinee performed one standard deviation above the mean compared to others in the same age group in the general population. Usually, about 99% of individuals who take a test that is standardized with this metric will score between 55 (three standard deviations below the mean) and 145 (three standard deviations above the mean).

Confidence Intervals (Total Scores)

Interpretation of the BASI Survey Verbal Skills Total and Math Skills Total standard scores is further enhanced by the use of confidence intervals. An individual's score on a norm-referenced test represents an estimate of his or her true standing on the construct measured. In measurement theory, the test taker's "true score" can be estimated but not directly observed. The difference between an individual's obtained score and his or her true score is referred to as *measurement error*. All achievement tests, including the BASI Survey, have some measurement error.

Confidence intervals (see point 3 in Figure 3.1) account for the amount of measurement error associated with a test score and should be reported and used when interpreting an examinee's performance

on any test of ability or achievement. A confidence interval demonstrates the range of scores in which an individual's true score is likely to fall. In Figure 3.1, for example, the 95% confidence interval values associated with the standard score value of 111 range from 101 to 119. This suggests that it is likely (i.e., there is a 95% probability) that the individual's true score falls within the range of 101 to 119.

Confidence intervals for the BASI Survey are centered on estimated true scores rather than on obtained scores, as suggested by Nunnally and Bernstein (1994). For a Verbal Skills Total or Math Skills Total standard score, the estimated true score is calculated according to a method proposed by Dudek (1979) and Glutting, McDermott, and Stanley (1987). The estimated true score is obtained by the formula:

$$\text{Estimated True Score} = 100 + r_{xx}\,(x - 100)$$

where x is the standard score obtained and r_{xx} is the internal consistency reliability coefficient of that total score for the examinee's age group (these reliability coefficients are shown in Tables 5.1 and 5.2). The 95% confidence interval for the standard score is calculated around the estimated true score using the standard error of estimate (se_e) according to the formula proposed by Stanley (1971):

$$se_e = 15\sqrt{1 - r_{xx}\,(r_{xx})}$$

This procedure for calculating the 95% confidence interval results in an interval that is asymmetric around the obtained standard score because of a correction for true score regression toward the mean. The degree of asymmetry increases as the obtained score becomes more extreme (i.e., further from the mean of 100) and as the reliability of the test score decreases. The tables in Appendix B show the 95% confidence interval associated with each Verbal Skills Total and Math Skills Total standard score.

Performance Descriptors (Skill Areas and Total Scores)

The computer-generated score report for the BASI Survey includes a qualitative performance descriptor label for each skill area and total score (see point 4 in Figure 3.1). These labels are based on the standard scores obtained by the examinee. Table 3.1 shows the performance descriptor associated with each possible skill area, Verbal Skills Total, or Math Skills Total standard score.

TABLE 3.1 Performance Descriptor Score Ranges for Skill Areas and Total Scores

Performance Descriptor	Standard Score Range: Skill Areas	Standard Score Range: Total Scores
Very Superior	16–19	130 & above
Superior	14–15	120–129
High Average	12–13	110–119
Average	8–11	90–109
Low Average	6–7	80–89
Below Average	4–5	70–79
Well Below Average	1–3	69 & below

The performance descriptors provide a simple qualitative summary of an individual's performance on a BASI Survey test. The classifications are not meant to be diagnostic but to help describe performance in an understandable, non-technical way. The user should be aware that because of measurement error, descriptors based on scores near the cut-off points shown in Table 3.1 could easily shift into an adjacent category if the individual's "true score" were known.

Percentile Ranks (Total Scores)

Further information about BASI Survey performance is provided through the use of percentile ranks for the Verbal Skills Total and Math Skills Total scores (see point 5 in Figure 3.1). These percentile ranks indicate the percentage of scores in a normal distribution that fall at or below the examinee's standard score. For example, a standard score of 111 for Math Skills Total corresponds to a percentile rank of 77. The tables in Appendix B include percentile ranks for Survey total scores.

Although percentile ranks have intuitive appeal as a way of communicating test performance, they are best considered an ordinal level measure. For that reason, comparisons between Verbal Skills Total and Math Skills Total scores and between the BASI Survey and other tests should be made using standard scores, which are interval level measures. Such comparisons are discussed in more detail later in this chapter.

Grade-Equivalent Scores (Total Scores)

A grade-equivalent (GE) score (point 6 in Figure 3.1) is intended to represent an examinee's test performance in terms of the grade level at which the "average" student's performance matches that of the examinee. For example, a grade-equivalent score of 12.2 indicates that a person's performance is similar to the average (median) performance of 12th-grade students in the month of October (August is month 0, September is month 1, etc.). The computer-generated BASI Survey score reports for students and for adults provide grade-equivalent scores at the total test level. For hand-scored tests, these scores can be looked up in Appendix C.

Although grade-equivalent scores are frequently used, particularly in educational settings, they do have limitations. Like percentile scores, grade-equivalent scores represent ordinal, not interval, level measures; thus, they are not as well suited as standard scores for comparing different BASI scores and for comparing BASI scores with scores from other tests. For the BASI user who wishes to learn more about grade-equivalent scores and their limitations, Nitko (2001) offers a recent comprehensive review.

Age-Equivalent Scores (Total Scores)

Age-equivalent (AE) scores (point 7 in Figure 3.1) parallel grade-equivalent scores. They are intended to represent an examinee's test performance in terms of the age at which the "average" student's performance matches that of the examinee. For example, an age-equivalent score of 17-4 indicates that a person's performance is similar to the average (median) performance of individuals 17 years and 4 months old. Age-equivalent scores have the same psychometric limitations as grade-equivalent scores. The computer-generated Student Summary Report (but not the Adult Summary Report) provides age-equivalent scores at the total test level. For hand scoring, tables for determining these scores for examinees who are younger than 18 and still in high school can be found in Appendix D.

Item Results

When a BASI Survey test is computer scored, the user has the option of printing a listing that groups the test items according to skill area and shows the learning objective measured and the examinee's result for each item (correct, incorrect, or no response). A computer-scoring user can use this listing to calculate the number (or percentage) of correct answers for the total test, the skill areas, and the individual learning objectives. Hand-scoring users compute the number correct (i.e., the raw score) for each skill area as part of the scoring process and can easily sum these values to determine the number correct for a total test. However, hand-scoring users cannot determine results by learning objective because learning objectives are not identified on the hand-scoring answer sheet.

Interpreting Results of an Untimed Administration

As with other timed tests, when a BASI Survey test is administered using the standard 25-minute time limit, many examinees will run out of time before attempting all of the items. If an examiner wishes to determine what specific content an individual has and has not mastered without regard to the time limits used in the standardization of the BASI Survey, the test should be administered with no time limits. When administered untimed, a BASI Survey test can be considered a "pure power test" that yields criterion-referenced performance information.

Only the number (or percentage) of correct responses for individual learning objectives, for skill areas, and for the total test will be potentially meaningful for an untimed test. (See the preceding section for a description of how to determine the number of correct responses at these different levels.) Because the BASI Survey tests were standardized using timed administration, none of the scores that depend on comparisons to the standardization sample—standard scores, confidence intervals, percentile ranks, grade-equivalent scores, and age-equivalent scores—should be interpreted for an untimed administration. The qualitative performance descriptors in the computer-generated score report should also not be interpreted. (Note: For untimed administrations, the "Item Results" page of the report, which is usually optional, is always printed.)

Comparisons Involving BASI Survey Scores

The final sections of this chapter discuss how best to make comparisons involving BASI Survey scores. Such comparisons include:

- comparing skill area scores within a BASI Survey test
- comparing Verbal Skills Total and Math Skills Total scores
- comparing scores from repeat administrations of the same BASI Survey test
- comparing BASI Survey scores to other test scores

Comparing Skill Area Scores Within a BASI Survey Test

As discussed earlier in this chapter, the Verbal Skills Total and Math Skills Total scores should be the primary focus of BASI Survey interpretation. However, it is sometimes useful to compare results between skill areas. For example, a user may wish to compare an individual's performance on Vocabulary and Reading Comprehension. It is commonly accepted that a well-developed vocabulary is essential for successful reading comprehension. Poor performance in the Vocabulary skill area might explain poor performance in the Reading Comprehension area. Such information might have both diagnostic and instructional implications. However, because of the lower reliability of the skill area scores relative to the total test scores, particularly for younger examinees (see the detailed discussion of internal consistency reliability in Chapter 5), any conclusions based on skill area scores should be corroborated with additional data.

When a statistically significant difference exists between scores in two skill areas that contribute to a total score, the total score should be interpreted with caution because it masks the underlying discrepancy. Table 3.2 shows, according to examinee age, the minimum standard score difference between each pair of Verbal Skills area scores that is needed to achieve statistical significance at the 95% confidence level (i.e., at $p < .05$). For example, if an examinee is 15 years old, the difference between his or her Vocabulary and Language Mechanics standard scores must be 4 points or more to be statistically significant at $p < .05$. Table 3.3 shows the minimum standard score difference between Math Computation and Math Application that is needed at each age level to be statistically significant at $p < .05$.

TABLE 3.2 Minimum Statistically Significant Differences Between Verbal Skills Skill Area Scores

Examinee Age Group	VO and LM	VO and RC	LM and RC
8	6	5	6
9	5	5	5
10	4	5	4
11	4	4	4
12	4	4	4
13	4	4	4
14	4	4	3
15	4	3	3
16	3	3	3
17	4	3	3
18	4	3	4
19–25	4	3	4
26–46	3	3	3
47–80	3	3	3

Note. VO = Vocabulary, LM = Language Mechanics, RC = Reading Comprehension. Standard score differences that equal or exceed those shown in the table are statistically significant at $p < .05$.

TABLE 3.3 Minimum Statistically Significant Differences Between Math Skills Skill Area Scores

Examinee Age Group	MC and MA
8–11	5
12–16	4
17	3
18–19	4
20–80	3

Note. MC = Math Computation; MA = Math Application. Standard score differences that equal or exceed those shown in the table are statistically significant at $p < .05$.

Comparing Verbal Skills Total and Math Skills Total Scores

As another way of identifying relative strengths and weaknesses, Verbal Skills Total and Math Skills Total scores can be compared for an examinee who completed both BASI Survey tests at about the same time. The minimum difference between Verbal Skills Total and Math Skills Total standard scores that is needed to achieve statistical significance at the 95% confidence level is shown in Table 3.4 for different examinee age groups.

TABLE 3.4 Minimum Statistically Significant Differences Between Total Scores

Examinee Age Group	VST and MST
8	21
9	17
10–11	16
12–14	14
15–16	12
17	11
18–19	13
20–25	12
26–35	10
36 & older	11

Note. VST = Verbal Skills Total; MST = Math Skills Total. Standard score differences that equal or exceed those shown in the table are statistically significant at $p < .05$.

Comparing Scores From Repeat Administrations of the Same BASI Survey Test

Sometimes a user may wish to administer a BASI Survey test to one or more examinees before and after a training or instructional intervention to assess the effectiveness of the intervention. In this case, the statistical significance of the difference between the two test scores can be determined using a method described by Atkinson (1991). This method, described more fully below, should be applied only when the test-retest interval is longer than six weeks (to minimize practice effects).

The determination of whether a Verbal Skills Total or Math Skills Total score has increased (or decreased) by a statistically significant amount from a first to second administration is accomplished in two steps. First, the initial standard score is identified. Next, the standard score from the second administration is compared to the appropriate range of values found in Appendix E (Table E.1 for Math Skills Total or Table E.2 for Verbal Skills Total). These score ranges reflect the variability expected due to test-retest unreliability and regression to the mean. If the second score falls outside of the range of scores in the table, the difference between the two standard scores is statistically significant at the 90% confidence level (i.e., at $p < .10$). For example, a 10-year-old student who received an initial Math Skills Total score of 112 would have to obtain a second score greater than 124 to show statistically significant improvement (see Table E.1).

Comparing BASI Survey Scores to Other Test Scores

A user may wish to compare BASI Survey results with results from other ability or achievement tests. Appendix Table F.1 shows the minimum statistically significant differences between BASI Verbal Skills Total and Math Skills Total scores and scores from other tests with a mean of 100 and a standard deviation of 15: the WISC®-IV (Wechsler Intelligence Scale for Children®–Fourth Edition), the WAIS®-III (Wechsler Adult Intelligence Scale®–Third edition), the GAMA® (General Ability Measure for Adults; Naglieri & Bardos, 1997), the Wonderlic® Basic Skills Test, the MBA (Mini-Battery of Achievement), and the WRAT3™ (Wide Range Achievement Test–Third Edition). As additional related information becomes available, it will be reported on the Pearson Assessments website.

Comparisons between BASI Survey standard scores and scores from other tests that do not use a mean of 100 and a standard deviation of 15 can be made, but they require a few additional steps. For example, the user can identify a test score's equivalent percentile score and convert it to a standard score with a mean of 100 and a standard deviation of 15 to facilitate a direct comparison. Tables for such transformations are available in Sattler (1992).

In summary, the BASI Survey offers a variety of scores to describe a test taker's performance. These scores can be cumulated for an entire classroom, school, or other group to describe the performance of that group. BASI users can use this information to complement other data regarding academic skills and to reach better data-based decisions.

Chapter 4.

Test Development and Standardization

This chapter presents a general description of the methods used to develop the BASI Survey and describes its standardization in detail. Because the BASI Survey is norm-referenced, a sound standardization plan and sample were critical to establishing the basis for its psychometric properties. The chapter is organized in the following three sections: test development and item selection, national standardization, and derivation of standardized scores.

Test Development and Item Selection

Development of the BASI Survey began in the spring of 2001 with the initial creation of a test plan. Items were written and pilot tested in the fall of 2001 and the spring and summer of 2002. Standardization data were collected during the fall of 2002 and the spring of 2003. Validity and reliability studies were also conducted while the test was being standardized. A detailed description of the BASI test plan, item writing and item selection process, and validity and reliability results is presented in Chapter 5.

National Standardization

The BASI Survey was standardized using a stratified random sampling plan so that the standardization samples would closely match the U.S. population according to the 2000 census (www.census.gov). A school-age standardization sample consisting of students from ages 8 to 18 was tested in school settings. Adults from ages 19 to 80 were recruited using a variety of methods and were tested in a variety of settings. Details regarding how subjects in the two samples were recruited and tested, as well as each sample's demographics and match to the census, are presented below.

Subject Recruitment

To obtain the school-age standardization sample, sites were selected from a national pool of schools identified by Pearson Assessments. Letters were sent to schools throughout the country inviting them to participate in the standardization of the BASI test. Educational consultants from Pearson Digital Learning also assisted with the recruitment of schools. School principals across the various regions of the country were asked to describe the demographics of their student population and their community. Schools were invited to participate if they approximated the census-based criteria. The final sample consisted of 2,518 students from ages 8 to 18.

A variety of recruiting methods were used for the adult standardization sample. In some schools, parents of the children who participated in the standardization of the BASI test were recruited. Graduate programs in school psychology were asked to administer the test to undergraduate and graduate students. Graduate students and other individuals recruited additional subjects. Employees at some businesses agreed to be tested. In all, 2,452 adults from ages 19 to 80 made up the adult standardization sample.

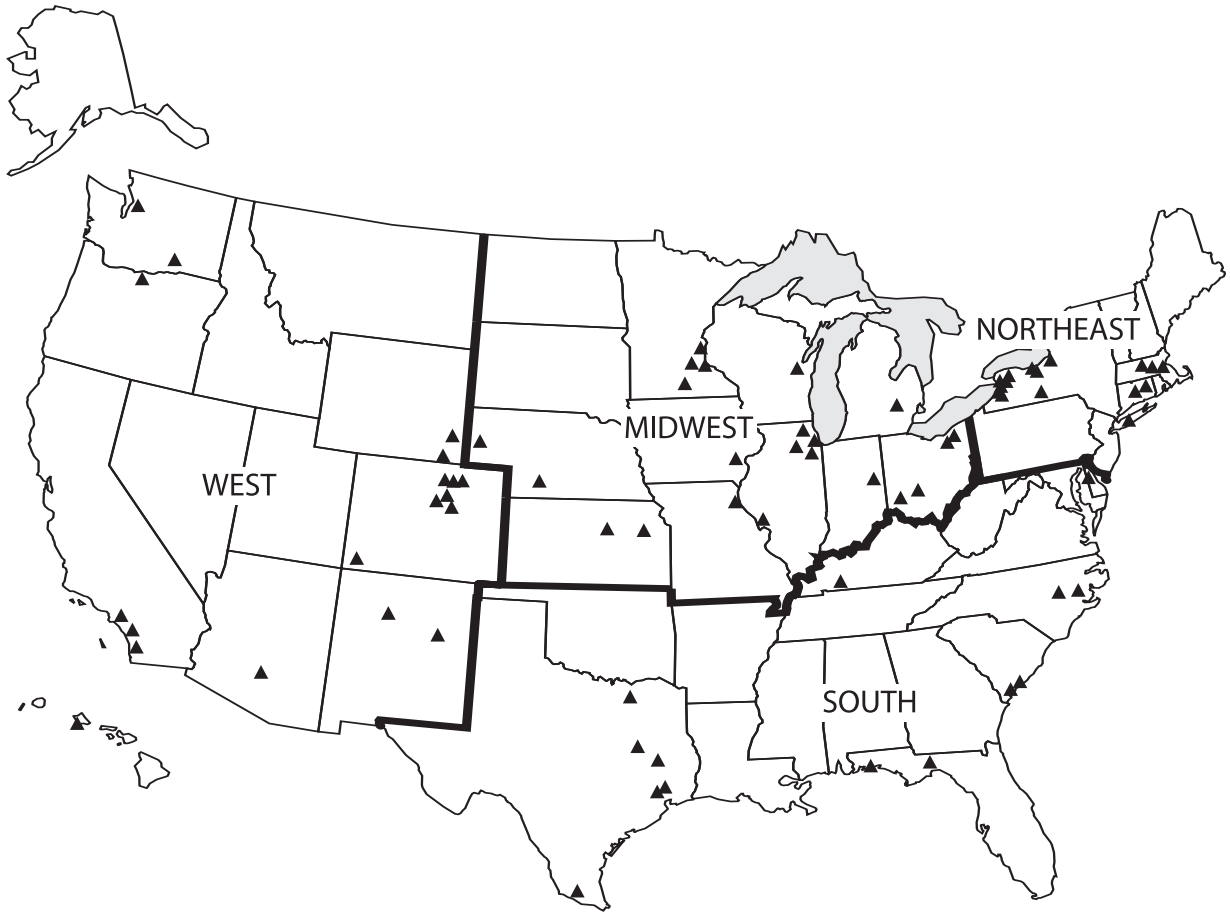
Figure 4.1 shows the locations of the sites that participated in the standardization of the BASI Survey. A list of all the sites that participated can be found in the BASI Project Participants section at the beginning of this manual.

Test Administration

Before data collection for the school-age standardization sample began, written permission to solicit participants was obtained from each school. The principal from each participating school drafted a letter that was distributed to parents/guardians encouraging them to allow their children to participate. An informed consent form was signed by a parent or guardian for each participating student. The consent form requested that the parent or guardian provide demographic information for the student.

Teachers at each participating school administered the test to their classes and returned completed test packets to Pearson Assessments according to written procedures. Teachers administered the tests in one or two sessions and completed all testing within two

FIGURE 4.1 Locations of BASI Survey Standardization Sites



weeks of the first testing session. Teachers and/or principals reviewed the student packets for completeness and returned them to Pearson Assessments for processing.

The BASI Survey was administered to members of the adult standardization sample individually or in small groups by graduate students in psychology or other test proctors according to written test administration procedures. Each adult subject also completed an informed consent form on which he or she was asked to provide demographic information.

Quality Control

Once the BASI Survey forms were returned to Pearson Assessments, they were subjected to a thorough visual inspection by trained staff prior to data processing. Data analyses and norms development were subjected to a series of quality assurance procedures by members of the Pearson Assessments test development team and external consultants.

Demographics of the Standardization Samples

The age breakdown of the 2,518 students who made up the school-age standardization sample is shown in Table 4.1. The Verbal Skills test and the Math Skills test are normed separately for each age from 8 to 18, using the subject groups shown in Table 4.1.

TABLE 4.1 Age Breakdown of the School-Age Standardization Sample

Age	*n*
8	238
9	293
10	251
11	326
12	379
13	333
14	156
15	161
16	144
17	167
18	70
Total	2,518

The 2,452 individuals in the adult standardization sample ranged in age from 19 to 80. These adults were grouped by age into norm groups, with different groupings for the Verbal Skills and Math Skills tests (explained later in this chapter). Table 4.2 shows the adult age groupings and norm group sample sizes for the Verbal Skills and Math Skills tests.

TABLE 4.2 Normative Age Groupings by Test for the Adult Standardization Sample

Verbal Skills Norm Groups	*n*
19–25 years	871
26–46 years	1,135
47–80 years	446
Total	2,452

Math Skills Norm Groups	*n*
19 years	220
20–21 years	313
22–25 years	338
26–35 years	588
36–50 years	708
51–80 years	285
Total	2,452

As mentioned earlier, the two standardization samples were constructed to match the 2000 U.S. census as closely as possible. The school-age standardization sample was stratified according to four demographic variables: (1) gender, (2) race/ethnicity (White, African American, Hispanic/Latino, Asian American, American Indian/Alaska Native, Native Hawaiian/Other Pacific Islander, and Other), (3) parental education (less than 12th grade, high school graduate or GED, 1–3 years of college or technical school, and 4 or more years of college), and (4) geographic region (Northeast, South, Midwest, and West). Information about parental education was reported separately for the mother and father on the parental consent form. If their levels of education were not the same, the higher level was used.

The adult standardization sample was also stratified by gender, race/ethnicity, and geographic region. The fourth stratification variable was the subject's own level of education, reported using the same categories that were used to classify parental education level for the school-age standardization subjects.

Table 4.3 shows the breakdowns of the school-age and adult standardization samples across the four stratification variables and how those breakdowns compare to the census values. The data in Table 4.3 show that the goal of matching the 2000 U.S. population was largely achieved for both samples. For the school-age sample, nearly all of the subgroup percentages are within 2% of the population figures, and all are within 3.3%. The population match is not quite as close for the adult sample, particularly for the geographic region variable. However, there is little evidence that geographic region systematically affects performance on tests of academic achievement such as the BASI Survey.

To correct for the discrepancies in the adult standardization sample between the subgroup percentages and the census figures, individual subject weighting was applied in building the final adult normative sample. Each individual examinee was assigned a weight for each of the four stratification variables according to his or her subgroup membership on that variable. The weights were computed by dividing the percentage for the individual's subgroup in the U.S. population by the percentage for that subgroup in the adult standardization sample. Each standardization sample member contributed to the final sample proportionally to the product of the weights for that individual across the four stratification variables.

TABLE 4.3 Demographic Characteristics of the School-Age and Adult Standardization Samples

Demographic Variable	Subgroup	U.S. %	School-Age Sample *N* = 2,518 *n*	School-Age Sample *N* = 2,518 %	Adult Sample *N* = 2,452 *n*	Adult Sample *N* = 2,452 %
Gender	Male	48.4	1,237	49.1	1,223	49.9[a]
	Female	51.6	1,281	50.9	1,228	50.1[a]
Race/Ethnicity	White	69.1	1,746	69.3	1,667	68.0
	African American	12.1	278	11.0	335	13.7
	Hispanic/Latino	12.5	322	12.8	304	12.4
	Asian American	3.6	80	3.2	52	2.1
	American Indian	0.7	46	1.8	37	1.5
	Pacific Islander	0.1	11	0.4	18	0.7
	Other	1.8	35	1.4	39	1.6
Education (parental education for the school-age sample)	Less than 12th grade	14.8	334	13.3	368	15.1[b]
	High school grad/GED	32.5	766	30.4	735	30.1[b]
	1–3 years of college	28.3	720	28.6	692	28.3[b]
	4+ years of college	24.4	698	27.7	649	26.6[b]
Region	Northeast	19.1	416	16.5	393	16.0
	South	35.7	901	35.8	749	30.5
	Midwest	22.9	625	24.8	566	23.1
	West	22.3	576	22.9	744	30.3

[a] Percentages were calculated by dividing by 2,451 because gender was not reported for 1 subject.

[b] Percentages were calculated by dividing by 2,444 because education was not reported for 8 subjects.

Derivation of Standardized Scores

Following the construction of the census-matched school-age sample, the raw score means, standard deviations, and frequency distribution statistics for each of the five skill area scores were examined across quarter-year, half-year, and one-year age intervals. For each skill area, the cumulative frequency distribution of raw scores was obtained for each age (8, 9, 10, etc., through 18) and then normalized. Raw scores were converted to standard scores so that each age-level norm group had a mean of 10 and a standard deviation of 3. The progression of standard scores within and between age levels was examined, and some smoothing was applied to correct for minor irregularities in the progression of scores. The tables for converting raw scores to standard scores for the five BASI Survey skill areas for examinees from ages 8 to 18 can be found in Appendix A.

Similar procedures were followed to determine the skill area standard score transformations for adult examinees from ages 19 to 80. Raw score means were examined by age in single years separately for the Verbal Skills skill areas (Vocabulary, Language Mechanics, and Reading Comprehension) and the Math Skills skill areas (Math Computation and Math Application). Based on the progression of mean scores, it was determined that three age groups best reflected the age trends observed in the data for the Verbal Skills skill areas and that six age groups best reflected the trends observed for the Math Skills skill areas. These age groupings are shown in Table 4.2. Once the age groupings for the adult standardization sample had been determined, the procedures that were used for the school-age sample were applied to determine the final raw score to standard score transformations for the five skill areas. These transformations are provided in Appendix A.

Verbal Skills Total standard scores are determined from the sum of the Vocabulary, Language Mechanics, and Reading Comprehension standard scores. Math Skills Total standard scores are determined from the sum of the Math Computation and Math Application standard scores. Recall that the scores for each of these five skill areas were standardized to have a mean of 10 and a standard deviation of 3 in each age-based norm group. Converting skill area raw scores to standard scores before summing them into a total score has the effect of weighting each skill area score equally in the total.

Analyses of variance showed that neither the sum of the three Verbal Skills skill area standard scores nor the sum of the two Math Skills skill area standard scores varied significantly with age in the school-age standardization sample. Thus, a single norms table was developed for transforming the sum of the three Verbal Skills skill area standard scores into a Verbal Skills Total standard score with a mean of 100 and a standard deviation of 15 for all examinees from ages 8 to 18, and another table was developed for transforming the sum of the two Math Skills skill area standard scores into a Math Skills Total standard score with a mean of 100 and standard deviation of 15 for all examinees in this age group. The same procedures were followed for the adult standardization sample. Because analyses of variance showed no significant variation by age group in the sum of the skill area standard scores for either Verbal Skills or Math Skills, a single norms table for Verbal Skills Total standard scores and a single norms table for Math Skills Total standard scores were developed for all examinees from ages 19 to 80. The norms tables for the two total scores for both school-age and adult examinees can be found in Appendix B.

In addition to the standard scores with a mean of 100 and a standard deviation of 15, other standardized scores that can be determined for the two BASI Survey total scores include 95% confidence intervals for the standard scores, percentile ranks, grade-equivalent scores, and age-equivalent scores. The score transformations for the grade-equivalent and age-equivalent scores were determined using the median raw scores for each grade for the Verbal Skills and Math Skills tests. When necessary, scores were interpolated from month to month. High school students' test scores dropped from grade 9 to 10, then rose by one point from grade 10 to 11, and rose again by one point from grade 11 to 12. The scores were smoothed by assuming a one-point increase from grade 9 to 10 and a one-point increase for each

succeeding grade. Consequently, smoothed scores for twelfth graders were two points higher than their actual scores. Guidelines for interpreting all of the BASI Survey scores are presented in Chapter 3.

Chapter 5.

Psychometric Properties: Reliability and Validity

Reliability

The reliability of a test refers to the consistency or stability of scores across items within a test or across repeat administrations of the test. For the BASI Survey, Cronbach's alpha coefficients were calculated to estimate the test's internal consistency reliability and to determine standard errors of measurement. The stability of scores over time was examined with a test-retest study. The results are reported in this section.

Internal Consistency and Standard Errors of Measurement

The internal consistency reliability coefficients (Cronbach's alpha) for the Verbal Skills test are shown in Table 5.1. The table shows, for each of the Verbal Skills test's age-based norm groups, the internal consistency values for the Vocabulary, Language Mechanics, and Reading Comprehension skill area scores and for the Verbal Skills Total score. Table 5.2 shows the comparable information for the Math Skills test. The coefficients in Tables 5.1 and 5.2 were calculated using data from the school-age and adult standardization samples described in Chapter 4. These internal consistency reliability coefficients were used for the calculation of confidence intervals for standard scores, as described in Chapter 3. As discussed in detail in that chapter, confidence intervals determine the range of values in which a test taker's "true score" probably falls.

The internal consistency reliability values for the Verbal Skills Total (Table 5.1) and Math Skills Total (Table 5.2) scores are very high overall, approaching or exceeding .90 for most age groups. The internal consistency values for the skill area scores are lower than those for the total scores. This is expected because coefficient alpha increases with test length, and the total scores are based on all the items in each test, whereas the skill area scores are based on a subset of the test items (see Table 5.4 for a breakdown of the number of items measuring each skill area on the two BASI Survey tests).

The pattern of internal consistency reliability coefficients shown in Tables 5.1 and 5.2 has important implications for the interpretation of BASI Survey scores. First, because of their greater reliability, the Verbal Skills Total and Math Skills Total scores should be the primary focus of test interpretation (this was also discussed in Chapter 3). Second, whereas the skill area scores may be viewed as providing useful supplemental detail for examinees age 12 and older, these scores should generally be interpreted with caution for examinees younger than 12 because of their lower reliability. This is particularly true for the age/skill area combinations where the alpha values fall below .70.

Tables 5.1 and 5.2 also show the standard error of measurement *(SEM)* for each BASI Survey score at each age level. These *SEM* values were obtained from the corresponding internal consistency reliability coefficients using the following formula:

$$SEM = SD_x \sqrt{1-r_{xx}}$$

where SD_x is the obtained standard deviation of the skill area or total test standard score for that age group in the standardization sample (generally close to but not exactly 3 for the skill area scores and close to but not exactly 15 for the total scores), and r_{xx} is the coefficient alpha reliability coefficient shown next to the *SEM* value in the table. The formula above produces *SEM* values that are on the same scale as the standard scores (i.e., a standard deviation of 3 for the skill area scores and 15 for the total scores). This explains why the *SEM* values are much smaller for the skill area scores than for the total scores. The other factor that influences the size of the *SEM* is the reliability coefficient on which it is based: as reliability increases, *SEM* decreases.

Test-Retest Reliability

Test-retest reliability coefficients indicate the stability of the scores obtained when the same people are tested twice over a period of time. Test-retest stability for the BASI Survey was examined with a sample of 33 college students who completed the test twice with a retest interval of four weeks. These students ranged in age from 18 to 27, with a mean age of 19.7 years (*SD* = 1.4). The sample consisted of 14 (42.4%) males, 18 (54.5%) females, and 1 (3.0%) student who did not report gender. There were 27 (81.8%) whites, 1 (3.0%) Hispanic, 3 (9.1%) who indicated two or more races, and 2 (6.1%) who did not report race/ethnicity.

Table 5.3 shows the means and standard deviations for the two administrations of the test, the gain scores, and the test-retest reliability coefficients (which are the correlations between the scores on the two administrations of the test). The mean scores on the Verbal Skills test were comparable across the two administrations. Unexpectedly, mean scores on the Math Skills test declined. All but one of the test-retest reliability coefficients were statistically significant. However, the values were fairly modest. Further data on the test-retest reliability of the BASI Survey with larger samples and with other age groups are desirable.

TABLE 5.1 Cronbach's Alpha Internal Consistency Reliability Coefficients and Standard Errors of Measurement for the Verbal Skills Test

		Verbal Skills Total		Vocabulary		Language Mechanics		Reading Comprehension	
Age	*N*	r_{xx}	*SEM*	r_{xx}	*SEM*	r_{xx}	*SEM*	r_{xx}	*SEM*
School-Age Norm Groups									
8	238	.75	5.7	.42	2.1	.50	2.0	.60	1.8
9	293	.86	5.2	.69	1.8	.71	1.9	.67	1.6
10	251	.89	5.1	.74	1.9	.73	1.7	.73	1.7
11	326	.89	4.7	.74	1.7	.74	1.6	.79	1.4
12	379	.90	4.4	.79	1.6	.73	1.6	.82	1.3
13	333	.90	4.4	.78	1.6	.75	1.6	.82	1.2
14	156	.94	4.1	.84	1.6	.80	1.4	.87	1.3
15	161	.94	4.2	.83	1.6	.81	1.4	.88	1.3
16	144	.94	4.2	.86	1.6	.81	1.4	.88	1.2
17	167	.94	4.0	.85	1.6	.79	1.3	.88	1.2
18	70	.92	4.0	.85	1.5	.76	1.3	.83	1.3
Adult Norm Groups									
19–25	871	.92	3.9	.81	1.5	.73	1.6	.88	1.1
26–46	1,135	.95	3.6	.86	1.5	.81	1.6	.91	0.9
47–80	446	.94	3.5	.87	1.2	.81	1.5	.90	0.9

Note. r_{xx} = internal consistency reliability coefficient; *SEM* = standard error of measurement.

TABLE 5.2 Cronbach's Alpha Internal Consistency Reliability Coefficients and Standard Errors of Measurement for the Math Skills Test

Age	*N*	Math Skills Total r_{xx}	Math Skills Total *SEM*	Math Computation r_{xx}	Math Computation *SEM*	Math Application r_{xx}	Math Application *SEM*
School-Age Norm Groups							
8	238	.73	6.6	.56	1.9	.61	1.9
9	293	.79	6.1	.66	1.8	.72	1.7
10	251	.80	6.4	.59	1.9	.74	1.8
11	326	.80	5.9	.66	1.7	.72	1.7
12	379	.87	5.6	.77	1.5	.80	1.6
13	333	.87	5.2	.82	1.4	.76	1.6
14	156	.84	5.8	.76	1.3	.76	1.9
15	161	.89	5.7	.83	1.4	.79	1.8
16	144	.89	5.2	.85	1.4	.76	1.7
17	167	.91	5.6	.87	1.4	.81	1.7
18	70	.89	5.7	.83	1.4	.80	1.8
Adult Norm Groups							
19	220	.89	4.7	.81	1.4	.83	1.2
20–21	313	.91	4.6	.84	1.2	.85	1.2
22–25	338	.92	4.4	.84	1.2	.88	1.1
26–35	588	.93	3.9	.87	1.1	.89	1.0
36–50	708	.92	4.2	.85	1.2	.88	1.0
51–80	285	.93	4.1	.88	1.1	.87	1.2

Note. r_{xx} = internal consistency reliability coefficient; *SEM* = standard error of measurement.

TABLE 5.3 Test-Retest Data for the BASI Survey

Skill Area or Total Score	First Test Mean	First Test *SD*	Retest Mean	Retest *SD*	Gain	Reliability
Verbal Skills Total	*108.1*	*10.6*	*108.1*	*8.6*	*0.0*	*.63***
Vocabulary	12.7	2.3	12.4	2.3	–0.3	.36*
Language Mechanics	13.1	2.0	13.4	2.0	0.3	.49**
Reading Comprehension	11.8	3.0	12.0	2.6	0.2	.49**
Math Skills Total	*113.0*	*12.9*	*105.8*	*12.9*	*–7.2*	*.55***
Math Computation	12.3	2.7	10.3	2.9	–2.0	.23
Math Application	12.2	3.2	11.3	2.6	–0.9	.62**

Note. $N = 33$. *SD* = standard deviation.

* $p < .05$. ** $p < .01$.

Validity

"Validity refers to the degree to which evidence and theory . . . provide a sound scientific basis for the proposed score interpretations" (American Educational Research Association et al., 1999, p. 9). The validity of a test therefore refers to the quality of inferences that can be made from the test score(s) and the evidence that is presented to support these inferences. In this respect, test validation is a continuous process of gathering data for various uses across settings, individuals, and situations.

The BASI Survey was designed to evaluate a test taker's verbal and math skills using a variety of academic tasks relevant to those two skill areas. The validity evidence for the BASI Survey as a measure of verbal and math skills includes evidence of its content validity, developmental trends in test scores,

relationships to other group-administered achievement tests, relationships to individually administered achievement tests, relationships to ability tests, and findings from studies with special populations.

Content Validity

Content validity refers to the degree to which test items represent the achievement domains or content areas that the test is designed to measure. This section describes the procedures that were followed to ensure that the content goals for the BASI Survey were validly achieved in the final test.

Content Goals for the BASI Survey

The BASI Survey was developed jointly with the BASI Comprehensive test (described in Chapter 1). The BASI Comprehensive test provides a focused, in-depth assessment of specific content areas at specific grade levels. This is accomplished through the use of six content-specific subtests, each with two forms at each of four grade-specific levels, for a total of 48 subtests. The content of each BASI Comprehensive subtest was determined using a test blueprint (called the *test specification matrix*) that was developed and further refined in consultation with content experts using the Model Curriculum and Assessment Database (MCAD). The MCAD, a proprietary database of NCS Pearson California, is an amalgamation of local, state, and national educational standards from U.S. schools.

One goal of the BASI Survey is to represent the breadth of content contained in the BASI Comprehensive version using two relatively brief tests, Verbal Skills and Math Skills. A second goal is to have each BASI Survey test be suitable for examinees from ages 8 to 80, thus requiring the test items to span a range of difficulty from an 8-year-old level to an adult level. To summarize, the BASI Survey targets both the breadth of content and the range of difficulty encompassed by the entire 48-subtest BASI Comprehensive test series using only two relatively brief tests. The BASI Comprehensive and Survey versions were developed from the same large item pool, as described in the next section.

Item Development

A large initial item pool was developed to measure the content areas included in the BASI Comprehensive test specification matrices. The item writers were teachers in the subject matter areas covered by the BASI test. They received extensive item-writing training from NCS Pearson California and had participated in other academic achievement test development projects. Each item writer was assigned to a team that was coordinated by a Pearson Education professional with extensive background in the respective content area. Before an item was submitted for consideration for the item pool, the Pearson content expert reviewed the item, provided any necessary feedback to the item writer, and reviewed any revisions to the item. Then a team of four to five Pearson Education professionals with content expertise reviewed each item before it was submitted as a potential item for the BASI test.

All submitted items were further reviewed by the author and the Pearson Assessments BASI test development team. Furthermore, a team of teachers at various grade levels and with appropriate content area expertise served as consultants and reviewed the test items and the content coverage of the BASI learning objectives and test booklets. At each review cycle, all items were checked for possible racial, gender, and regional bias.

Pilot Testing and Test Construction

A total of 2,665 items were written and pilot tested for potential inclusion in the final BASI tests. A large initial pilot study was conducted in the fall of 2001 using a convenience sample consisting of schools and individuals recruited from across the country. Eighteen different test forms (six forms at each of three grade-specific levels, grades 3–4, 5–8, and 9–12) were administered to a total of 1,874 students in grades 3 through 12 with no time limits so that individual item statistics for all items could be calculated. A student was excluded from data analyses if his or her parents reported on the parental consent form that he or she had a learning disability or other diagnosis and/or used prescribed medication that could influence test performance. Students receiving services from English as a Second Language (ESL) programs and students who engaged in obvious response patterns (e.g., chose A as the response to every item) were also excluded from the analyses.

Traditional item analysis statistics were calculated, and each item was reviewed for its psychometric properties. This review prompted an additional smaller pilot study that was conducted in the spring of 2002 with 450 students in grades 9–12, all of whom were tested solely on reading comprehension items. Some of these items were carried over from the first pilot study and some were created in response to the results of the study. Again, item analysis statistics were calculated and reviewed.

At this point, a 73-item Verbal Skills test and a 68-item Math Skills test were constructed for the BASI Survey by selecting from the large pool of pilot-tested items. Three primary criteria were used in the construction of these test forms. One was that the selected items had demonstrated strong psychometric properties in the initial pilot studies. The second was that the content of the two tests together sampled from the domains represented by five of the six BASI Comprehensive subtests: Vocabulary, Language Mechanics, Reading Comprehension (the three skill areas measured by the Verbal Skills test), Math Computation, and Math Application (the two skill areas measured by the Math Skills test). Spelling, the sixth BASI Comprehensive subtest, is not included in the BASI Survey. The final criterion was that the items chosen for the Verbal Skills and Math Skills tests spanned a range of difficulty from an eight-year-old level through an adult level.

These two test forms were then pilot tested in the summer of 2002 using a convenience sample consisting of 239 adults recruited from across the country. These individuals were administered the Verbal Skills and Math Skills tests with a 25-minute time limit for each. Analysis of the data from this pilot study indicated that the psychometric properties of the two test forms were adequate and that no changes were needed prior to standardization. The BASI Survey was then standardized during the fall of 2002 and spring of 2003, as described in Chapter 4.

Achievement of Content Goals

As described earlier, the BASI Survey was constructed with the aim of representing both the breadth of content and the range of difficulty encompassed by the BASI Comprehensive test series using relatively brief Verbal Skills and Math Skills tests. Each item in the original item pool from which the BASI Survey was constructed was designated as appropriate in difficulty for grades 3–4, 5–8, or 9–12. Table 5.4 shows how the items that make up the final Verbal Skills and Math Skills tests break down across these grade ranges. Items designed to be appropriate in difficulty for high school students will also have a difficulty level appropriate for most adults. As the breakdown in Table 5.4 shows, the items measuring each of the five specific skill areas and the two total skill areas cover the appropriate range of difficulty for a test designed for examinees from ages 8 to 80.

TABLE 5.4 Breakdown of Items by Item Difficulty Level

	Number of Items			
Skill Area or Total Test	**Grades 3–4**	**Grades 5–8**	**Grades 9–12**	**Total**
Vocabulary	5	6	10	21
Language Mechanics	8	8	5	21
Reading Comprehension	6	7	18	31
Verbal Skills Total	*19*	*21*	*33*	*73*
Math Computation	8	13	12	33
Math Application	8	13	14	35
Math Skills Total	*16*	*26*	*26*	*68*

Table 5.4 also shows how the goal of sampling from five of the six content areas represented by the BASI Comprehensive version was achieved. In addition to its skill area designation, each BASI Survey item is characterized according to a more specific learning objective measured by that item. BASI Survey users who score the test by computer have the option of printing a listing that groups the test items by skill area and shows the *learning objective* measured by each item. It also reports the examinee's result (correct, incorrect, or no response) for each item (see Chapter 3 for more detail). See Appendix G for sample reports that include this optional listing.

Construct Validity

Current conceptions of construct validity emphasize the breadth of evidence that should be considered when evaluating how well a test measures the constructs it was designed to measure. For the BASI Survey, data concerning intercorrelations of test scores, developmental trends, relationships with scores on other tests of academic achievement, relationships with scores on ability tests, and the performance of special populations is presented to support construct validity.

Intercorrelations of BASI Survey Scores

In Table 5.5, the intercorrelations among the BASI Survey skill area scores and total scores are shown for the school-age standardization sample (below the diagonal) and the adult standardization sample (above the diagonal). As expected, all of the BASI Survey scores are positively correlated. Also as expected, the score intercorrelations within tests (i.e., among Verbal Skills Total, Vocabulary, Language Mechanics, and Reading Comprehension for the Verbal Skills test and among Math Skills Total, Math Computation, and Math Application for the Math Skills test) are almost all higher than the correlations between tests. Thus, the internal correlational structure of the BASI Survey tests provides support for their construct validity.

Developmental Trends

For students, the number of correct answers on an achievement test such as the BASI Survey is expected to increase with age through about the middle of high school. This developmental trend was indeed observed in the BASI Survey's school-age standardization sample, as shown in Table 5.6. The table shows the mean total raw score (i.e., the average total number of items answered correctly) for the Verbal Skills and Math Skills tests at each age. Mean total raw scores on both tests increase each year up to the age of 15, at which point they level off. When student age was correlated with the two total raw scores in this sample, substantial relationships were found for both the verbal score (r = .54) and the math score (r = .62). This confirmation of the expected developmental trend in raw score performance provides further support for the construct validity of the BASI Survey. Although no relationship between BASI Survey raw scores and age was expected in the adult standardization sample, these data are presented in Table 5.7 for the sake of completeness.

TABLE 5.5 Intercorrelations Among BASI Survey Scores

Skill Area or Total Score	1	2	3	4	5	6	7
1 ***Verbal Skills Total***		.89	.88	.87	.68	.62	.65
2 **Vocabulary**	.90		.71	.67	.57	.52	.54
3 **Language Mechanics**	.86	.69		.64	.59	.54	.55
4 **Reading Comprehension**	.84	.64	.58		.66	.58	.65
5 ***Math Skills Total***	.58	.51	.47	.52		.93	.93
6 **Math Computation**	.53	.46	.46	.47	.89		.73
7 **Math Application**	.51	.46	.39	.47	.91	.61	

Note. Correlations for the school-age standardization sample (N = 2,518) are below the diagonal; correlations for the adult standardization sample (N = 2,452) are above the diagonal.

TABLE 5.6 Total Raw Score Means and Standard Deviations for the Verbal Skills and Math Skills Tests by Age in the School-Age Standardization Sample

Age	*n*	Verbal Skills Total Raw Score Mean	Verbal Skills Total Raw Score *SD*	Math Skills Total Raw Score Mean	Math Skills Total Raw Score *SD*
8	238	20.47	6.81	14.31	5.93
9	293	21.26	8.67	16.24	6.47
10	251	26.04	10.07	21.00	6.82
11	326	31.24	10.39	23.45	6.40
12	379	36.46	11.17	29.35	8.38
13	333	39.24	11.09	31.47	8.22
14	156	41.04	13.53	32.76	7.55
15	161	42.22	13.62	35.13	9.76
16	144	42.51	13.80	34.87	9.17
17	167	40.87	13.64	32.54	11.17
18	70	41.73	12.37	34.49	10.05

TABLE 5.7 Total Raw Score Means and Standard Deviations for the Verbal Skills and Math Skills Tests by Age Group in the Adult Standardization Sample

Age Group	*n*	Verbal Skills Total Raw Score Mean	Verbal Skills Total Raw Score *SD*
19–25	871	49.34	11.26
26–46	1,135	49.73	12.95
47–80	446	53.12	11.89

Age Group	*n*	Math Skills Total Raw Score Mean	Math Skills Total Raw Score *SD*
19	220	38.54	8.75
20–21	313	34.47	9.78
22–25	338	36.82	10.10
26–35	588	34.91	10.79
36–50	708	33.94	10.28
51–80	285	34.51	10.67

Relationships With Other Tests

This section presents the results of 11 studies in which scores on the BASI Survey were compared with scores on other achievement tests or with scores on tests of cognitive ability. These studies are grouped according to whether the other test is an achievement test or an ability test and whether it is group administered or individually administered. The studies are presented in the following order: relationships with group-administered achievement tests, relationships with individually administered achievement tests, relationships with group-administered ability tests, and relationships with individually administered ability tests.

In many of these studies, particularly those with adult samples, the variability of test scores was restricted compared to that in the tests' standardization samples. This was reflected in test score standard deviations that were much smaller than the standardization values in the particular samples studied. Such *restriction of range* is known to statistically attenuate the magnitude of correlations relative to what those correlations would be in a sample without range restriction. For that reason, the correlations obtained in samples with range restriction were corrected, and both the uncorrected and corrected correlations are presented. In the study involving the Wonderlic® Personnel Test, the correlations obtained were corrected for restriction of range in only the BASI Survey scores using the standard correction formula (Guilford & Fruchter, 1978). In other studies, correlations were corrected for restriction of range in both the BASI Survey scores and scores on the other test. In these cases, the obtained correlations were first corrected for restriction of range in BASI Survey scores using the standard formula. Then the BASI-corrected correlations were input into the formula for a second correction, this time based on the variability of scores on the other test.

Relationships With Group-Administered Achievement Tests

The BASI Survey and the ITED® (High School Sample). This study examined the relationships between the BASI Survey and the ITED (Iowa Tests of Educational Development®; published by Riverside Publishing) in a sample consisting of 1 ninth grader and 100 tenth graders. Among these students, 44 (43.6%) were males and 57 (56.4%) were females, with 8 receiving special education services and 3 identified as gifted. Data on race/ethnicity and parental education were missing for too many of these students to allow meaningful breakdowns.

The BASI Survey was administered by school personnel as part of the standardization data collection process. The ITED data were provided by the school for the purpose of this study. All students took the two tests within a six-week period.

The test score means shown in Table 5.8 indicate that the students in this sample performed in the lower end of the average range on the BASI Survey Verbal Skills test and in the average range on the Math Skills test. The correlations between the BASI Survey scores and the ITED scores are shown in Table 5.9. Correlations of moderate magnitude, most of which were statistically significant, were obtained between the two instruments.

TABLE 5.8 High School Sample's Performance on the BASI Survey and the ITED

BASI Survey	Mean	*SD*
Verbal Skills Total	*93.1*	*15.2*
Vocabulary	9.2	3.9
Language Mechanics	8.9	2.6
Reading Comprehension	8.3	3.5
Math Skills Total	*99.6*	*14.6*
Math Computation	10.3	2.6
Math Application	10.4	3.8
ITED		
Reading Vocabulary	245.4	31.5
Reading–Literary Materials	256.6	36.2
Iowa Reading Total	250.9	31.5
Expression Advanced Skills	259.0	48.2
Expression Total	261.6	36.3
Quantitative Thinking Advanced Skills	258.6	45.2
Quantitative Thinking Advanced Skills Total	265.2	31.5

Note. $N = 101$. ITED = Iowa Tests of Educational Development. *SD* = standard deviation.

TABLE 5.9 Correlations Between the BASI Survey and the ITED (High School Sample)

	BASI Survey						
ITED	**VST**	**VO**	**LM**	**RC**	**MST**	**MC**	**MA**
Reading Vocabulary	.50**	.56**	.35**	.41**	.26**	.18	.29**
Reading–Literary Materials	.53**	.57**	.32**	.47**	.25*	.16	.29**
Iowa Reading Total	.56**	.61**	.36**	.48**	.28**	.18	.32**
Expression Advanced Skills	.56**	.59**	.48**	.43**	.39**	.34**	.35**
Expression Total	.58**	.60**	.49**	.43**	.43**	.38**	.38**
Quantitative Thinking Advanced Skills	.41**	.48**	.33**	.28**	.38**	.30**	.36**
Quantitative Thinking Advanced Skills Total	.45**	.51**	.37**	.33**	.41**	.32**	.37**

Note. $N = 101$. ITED = Iowa Tests of Educational Development. VST = Verbal Skills Total, VO = Vocabulary, LM = Language Mechanics, RC = Reading Comprehension, MST = Math Skills Total, MC = Math Computation, MA = Math Application.

* $p < .05$. ** $p < .01$.

The BASI Survey and the TABE® 7/8 Complete Battery (High School Sample). In this study, the BASI Survey tests were administered to 40 high school students in grades 9 (n = 14; 35%), 10 (n = 8; 20%), 11 (n = 10; 25%), and 12 (n = 8; 20%). Three students were identified as receiving special education services, and one was identified as gifted. There were 22 (55%) male and 18 (45%) female students. The group consisted of 17 (42.5%) whites, 1 (2.5%) African American, 16 (40.0%) Hispanics, 3 (7.5%) American Indians, and 3 (7.5%) "other." The parents of these individuals reported their own educational background as follows: 2 (5.0%) less than 12th grade, 18 (45.0%) high school graduate or GED, 13 (32.5%) 1–3 years of college, 4 (10.0%) 4 or more years of college. Parental education was not reported for the remaining 3 (7.5%) students.[1]

These students completed the TABE 7/8 Complete Battery (Tests of Adult Basic Education; published by CTB/McGraw-Hill) and the BASI Survey tests within a period of six weeks. TABE scores were made available by the school district for the purpose of this study. Table 5.10 shows the means and standard deviations of the sample's BASI Survey and TABE scores. The sample performed in the lower end of the average range on the BASI Verbal Skills test and in the below-average range on the Math Skills test.

Table 5.11 provides correlations between BASI Survey scores and TABE scores. Unlike the TABE, the BASI Survey does not measure spelling. The BASI Survey demonstrated statistically significant correlations of moderately high magnitude with all TABE scores except Spelling.

TABLE 5.10 High School Sample's Performance on the BASI Survey and the TABE

BASI Survey	Mean	*SD*
Verbal Skills Total	*91.2*	*15.4*
Vocabulary	8.6	3.8
Language Mechanics	8.5	2.8
Reading Comprehension	8.3	3.4
Math Skills Total	*87.0*	*15.6*
Math Computation	7.4	3.4
Math Application	8.1	3.6
TABE		
Reading Comprehension	528.1	70.8
Math Computation	512.1	82.9
Math Application	523.4	72.4
Language	521.9	83.6
Spelling	520.7	77.5
Total Math	517.5	72.7
Total Battery	522.2	68.6

Note. N = 40. TABE = Tests of Adult Basic Education 7/8 Complete Battery. *SD* = standard deviation.

TABLE 5.11 Correlations Between the BASI Survey and the TABE (High School Sample)

	BASI Survey						
TABE	**VST**	**VO**	**LM**	**RC**	**MST**	**MC**	**MA**
Reading Comprehension	.62**	.58**	.48**	.57**	.61**	.47**	.63**
Math Computation	.47**	.41**	.45**	.42**	.64**	.62**	.51**
Math Application	.53**	.46**	.45**	.48**	.54**	.60**	.38*
Language	.60**	.53**	.49**	.55**	.62**	.58**	.54**
Spelling	.30	.26	.13	.37*	.31*	.33*	.25
Total Math	.53**	.46**	.48**	.48**	.63**	.65**	.48**
Total Battery	.64**	.58**	.54**	.59**	.69**	.63**	.61**

Note. N = 40. TABE = Tests of Adult Basic Education 7/8 Complete Battery. VST = Verbal Skills Total, VO = Vocabulary, LM = Language Mechanics, RC = Reading Comprehension, MST = Math Skills Total, MC = Math Computation, MA = Math Application.

* $p < .05$. ** $p < .01$.

[1]All parental education data reported in this chapter are based on the higher level of educational attainment between the parents.

The BASI Survey and the RAI™ (College Sample). The RAI tests (Reading and Arithmetic Indexes; NCS Pearson, Inc., 2000) were developed to measure basic reading and arithmetic skills in employment settings. In this study, 44 college students completed the two RAI tests and the two BASI Survey tests in one or two testing sessions within a period of two weeks. The sample consisted of 21 (47.7%) males and 23 (52.3%) females ranging in age from 18 to 30, with a mean of 20.7 years (*SD* = 2.3). There were 40 (90.9%) whites, 3 (6.8%) Hispanics, and 1 (2.3%) Asian American.

Subjects' raw scores on the RAI Reading Index and Arithmetic Index were converted to percentile scores using the 1989 general industrial norms in the RAI manual. To facilitate comparison to the BASI Survey, these scores were then transformed into standard scores with a mean of 100 and a standard deviation of 15 using normal curve percentile equivalents. Table 5.12 shows the means and standard deviations of the BASI Survey scores and the transformed RAI scores. The mean scores for BASI Math Skills Total and the RAI Arithmetic Index were virtually identical. However, the sample as a whole scored quite a bit higher on BASI Verbal Skills Total than on the RAI Reading Index.

As can be seen in Table 5.12, the sample standard deviations for the two BASI total scores and the two transformed RAI scores were quite a bit smaller than 15. The standard deviations for the five BASI skill area scores were all smaller than the standardization value of 3. Thus, the correlations between the BASI Survey and the RAI were corrected for restriction of range in both tests. The uncorrected and corrected correlations are shown in Table 5.13. Statistically significant correlations with the RAI Reading Index were obtained for the BASI Survey Verbal Skills Total score and the Language Mechanics and Reading Comprehension skill area scores. The BASI Survey scores generally did not correlate at a statistically significant level with the RAI Arithmetic Index until after the range restriction corrections were applied.

TABLE 5.12 College Sample's Performance on the BASI Survey and the RAI

BASI Survey	Mean	*SD*
Verbal Skills Total	*114.4*	*10.8*
Vocabulary	13.1	2.8
Language Mechanics	13.5	2.1
Reading Comprehension	12.4	2.9
Math Skills Total	*104.6*	*10.3*
Math Computation	11.1	2.2
Math Application	11.6	2.6
RAI		
Reading Index	103.2	12.2
Arithmetic Index	104.8	10.3

Note. *N* = 44. RAI = Reading and Arithmetic Indexes. *SD* = standard deviation.

TABLE 5.13 Correlations Between the BASI Survey and the RAI (College Sample)

	BASI Survey						
RAI	**VST**	**VO**	**LM**	**RC**	**MST**	**MC**	**MA**
Reading Index	.45**/.65**	.15/.24	.58**/.84**	.41**/.56**	.10/.18	.06/.12	.12/.20
Arithmetic Index	.27/.50**	.18/.28	.37*/.65**	.17/.24	.16/.32*	.06/.12	.19/.31*

Note. *N* = 44. RAI = Reading and Arithmetic Indexes. VST = Verbal Skills Total, VO = Vocabulary, LM = Language Mechanics, RC = Reading Comprehension, MST = Math Skills Total, MC = Math Computation, MA = Math Application. The correlation on the left in each cell is uncorrected; the correlation on the right is corrected for restriction of range in both test scores.

* $p < .05$. ** $p < .01$.

The BASI Survey and Comprehensive Versions (School-Age Sample). As part of the standardization of the BASI Comprehensive version and the BASI Survey version, both tests were administered to groups of students in grades 3 through 12 in various locations across the country. This allowed an analysis of the relationships between the Comprehensive and Survey versions of the test. Table 5.14 shows the demographic characteristics of the 1,500 students who took Form A of the Comprehensive version and the BASI Survey during the fall of 2002. Table 5.15 shows the demographics for the 1,519 students who took the Survey in the fall of 2002 and Comprehensive Form B in the spring of 2003. Tables 5.16 and 5.17 show, for the Comprehensive Form A and Form B samples respectively, the BASI test means and standard deviations. (Like the BASI Survey Verbal Skills Total and Math Skills Total scores, all BASI Comprehensive scores are standardized with a mean of 100 and a standard deviation of 15.) Mean Verbal Skills Total scores on the Survey were similar to mean Reading Total and Written Language Total scores on the Comprehensive test, and mean Total Math scores were similar across the two versions.

Both the Comprehensive and the Survey version of the BASI test yield scores for Vocabulary, Language Mechanics, Reading Comprehension, Math Computation, and Math Application. Table 5.18 shows how each of these scores correlated between the two versions of the test, with values provided for each of the eight student samples defined by the Comprehensive test level and form taken. All correlations obtained between the same skill areas measured by the two versions of the test were highly statistically significant ($p < .001$), providing support for the concurrent validity of both test versions. Overall, the results of this study indicate that the BASI Survey can be used with confidence when a quick estimate of verbal and math skills is needed.

TABLE 5.14 Demographic Characteristics of Students Who Completed BASI Comprehensive Form A and the BASI Survey

		Level 1 Sample *N* = 270		Level 2 Sample *N* = 237		Level 3 Sample *N* = 518		Level 4 Sample *N* = 475	
		n	%	*n*	%	*n*	%	*n*	%
Gender	Male	125	46.3	119	50.2	251	48.5	216	45.5
	Female	145	53.7	118	49.8	267	51.5	259	54.5
Grade	3	142	52.6						
	4	128	47.4						
	5			116	48.9				
	6			121	51.1				
	7					274	52.9		
	8					244	47.1		
	9							106	22.3
	10							133	28.0
	11							118	24.8
	12							118	24.8
Race/Ethnicity	White	143	53.0	164	69.2	400	77.2	347	73.1
	African American	30	11.1	21	8.9	17	3.3	17	3.6
	Hispanic/Latino	82	30.4	37	15.6	64	12.4	75	15.8
	Asian American	7	2.6	7	3.0	19	3.7	17	3.6
	American Indian	5	1.9	1	0.4	5	1.0	9	1.9
	Pacific Islander	—	—	—	—	4	0.8	4	0.8
	Other	3	1.1	6	2.5	4	0.8	5	1.1
	Not reported	—	—	1	0.4	5	1.0	1	0.2
Parental Education	Less than 12th grade	48	17.8	27	11.4	16	3.1		
	High school grad/GED	76	28.1	63	26.6	73	14.1		
	1–3 years of college	74	27.4	78	32.9	168	32.4		
	4+ years of college	71	26.3	68	28.7	261	50.4		
	Not reported	1	0.4	1	0.4	—	—		

Note. Too many students in the Level 4 sample were missing parental education data to allow meaningful breakdowns.

TABLE 5.15 Demographic Characteristics of Students Who Completed BASI Comprehensive Form B and the BASI Survey

		Level 1 Sample *N* = 459		Level 2 Sample *N* = 409		Level 3 Sample *N* = 287		Level 4 Sample *N* = 364	
		n	%	*n*	%	*n*	%	*n*	%
Gender	Male	231	50.3	195	47.7	152	53.0	181	49.7
	Female	228	49.7	214	52.3	135	47.0	183	50.3
Grade	3	216	47.1						
	4	243	52.9						
	5			237	57.9				
	6			172	42.1				
	7					145	50.5		
	8					142	49.5		
	9							68	18.7
	10							87	23.9
	11							108	29.7
	12							101	27.7
Race/Ethnicity	White	221	48.1	240	58.7	209	72.8	268	73.6
	African American	23	5.0	20	4.9	10	3.5	15	4.1
	Hispanic/Latino	184	40.1	119	29.1	45	15.7	56	15.4
	Asian American	12	2.6	12	2.9	15	5.2	10	2.7
	American Indian	9	2.0	4	1.0	4	1.4	5	1.4
	Pacific Islander	2	0.4	1	0.2	—	—	1	0.3
	Other	4	0.9	7	1.7	2	0.7	6	1.6
	Not reported	4	0.9	6	1.5	2	0.7	3	0.8
Parental Education	Less than 12th grade	72	15.7	35	8.6	4	1.4		
	High school grad/GED	80	17.4	67	16.4	36	12.5		
	1–3 years of college	119	25.9	119	29.1	70	24.4		
	4+ years of college	141	30.7	159	38.9	156	54.4		
	Not reported	47	10.2	29	7.1	21	7.3		

Note. Too many students in the Level 4 sample were missing parental education data to allow meaningful breakdowns.

TABLE 5.16 School-Age Samples' Performance on BASI Comprehensive Form A and the BASI Survey

	Level 1 Sample *N* = 270		Level 2 Sample *N* = 237		Level 3 Sample *N* = 518		Level 4 Sample *N* = 475	
Comprehensive Scores	**Mean**	***SD***	**Mean**	***SD***	**Mean**	***SD***	**Mean**	***SD***
Vocabulary	101.1	14.8	101.9	15.8	104.3	13.9	104.1	18.9
Spelling	104.4	14.6	102.7	15.9	103.7	13.4	102.4	16.0
Language Mechanics	101.8	14.2	100.9	15.3	104.2	14.5	104.0	17.7
Reading Comprehension	102.9	15.7	101.1	15.3	104.1	14.5	101.4	18.4
Math Computation	104.4	13.9	102.7	12.9	104.0	13.6	103.9	18.6
Math Application	101.4	14.7	103.1	15.0	102.7	14.4	100.5	15.2
Reading Total	100.1	14.7	101.6	14.7	104.0	13.6	102.5	16.6
Written Language Total	101.5	15.2	101.4	15.7	103.1	13.3	102.6	16.3
Math Total	101.2	15.4	102.0	15.7	103.5	14.6	102.5	16.1
Survey Scores								
Verbal Skills Total	*99.3*	*13.0*	*102.7*	*14.0*	*104.6*	*12.7*	*105.4*	*17.5*
Vocabulary	9.5	3.3	10.5	3.5	11.3	3.2	11.7	4.1
Language Mechanics	10.0	3.2	10.8	3.0	11.3	2.8	11.1	3.2
Reading Comprehension	10.5	2.8	10.7	3.0	10.7	2.7	10.8	3.8
Math Skills Total	*97.3*	*14.4*	*102.3*	*13.1*	*106.3*	*14.2*	*102.0*	*15.9*
Math Computation	10.0	3.1	10.7	2.8	11.4	3.0	10.5	3.3
Math Application	9.7	3.3	11.0	3.2	11.9	3.3	10.9	3.7

Note. SD = standard deviation.

TABLE 5.17 School-Age Samples' Performance on BASI Comprehensive Form B and the BASI Survey

	Level 1 Sample *N* = 459		Level 2 Sample *N* = 409		Level 3 Sample *N* = 287		Level 4 Sample *N* = 364	
Comprehensive Scores	**Mean**	***SD***	**Mean**	***SD***	**Mean**	***SD***	**Mean**	***SD***
Vocabulary	102.5	17.5	103.1	14.2	106.2	14.4	102.0	16.9
Spelling	103.4	14.3	101.3	14.6	104.9	14.4	101.2	16.8
Language Mechanics	104.3	15.0	102.3	15.0	107.2	15.1	103.6	17.3
Reading Comprehension	100.7	15.3	101.4	16.4	104.9	16.1	101.3	17.1
Math Computation	105.0	17.0	104.9	16.5	107.8	16.8	101.7	15.8
Math Application	103.2	15.2	103.0	14.0	107.5	16.5	101.0	16.7
Reading Total	100.2	15.2	101.1	14.8	105.9	14.8	100.5	15.7
Written Language Total	103.0	13.7	102.6	15.4	105.9	13.8	102.2	17.1
Math Total	103.3	15.9	104.0	15.8	105.9	15.3	100.6	16.2
Survey Scores								
Verbal Skills Total	*98.4*	*14.1*	*100.4*	*15.2*	*105.2*	*13.2*	*100.5*	*17.2*
Vocabulary	9.4	3.4	10.0	3.5	11.3	3.3	10.6	4.2
Language Mechanics	10.0	3.4	10.3	3.2	11.4	2.8	10.2	3.3
Reading Comprehension	10.1	2.8	10.5	3.4	10.8	2.9	10.0	3.7
Math Skills Total	*96.4*	*14.6*	*101.9*	*14.3*	*106.4*	*14.2*	*97.6*	*18.2*
Math Computation	9.9	3.3	10.7	3.1	11.3	3.0	9.8	3.8
Math Application	9.4	3.3	10.8	3.3	12.0	3.2	10.1	3.9

Note. SD = standard deviation.

TABLE 5.18 Correlations Between BASI Comprehensive and Survey Scores in the Same Skill Areas (School-Age Sample)

BASI Scores	**Level 1 Form A Sample *N* = 270**	**Level 1 Form B Sample *N* = 459**	**Level 2 Form A Sample *N* = 237**	**Level 2 Form B Sample *N* = 409**	**Level 3 Form A Sample *N* = 518**	**Level 3 Form B Sample *N* = 287**	**Level 4 Form A Sample *N* = 475**	**Level 4 Form B Sample *N* = 364**
Vocabulary	.55	.47	.64	.59	.64	.54	.65	.59
Language Mechanics	.52	.57	.61	.65	.64	.60	.65	.59
Reading Comprehension	.46	.45	.45	.52	.56	.41	.57	.42
Math Computation	.39	.42	.47	.48	.56	.56	.61	.60
Math Application	.38	.30	.43	.36	.53	.50	.55	.53

Note. Correlations in the first row are between Vocabulary scores on the BASI Survey version and the Comprehensive version, those in the second row are between Language Mechanics scores on the two versions, etc. All correlations are statistically significant at $p < .001$.

Relationships With Individually Administered Achievement Tests

The BASI Survey and the WRAT3™ (Adult Sample). This study examined the relationships between the BASI Survey and one of the most frequently used screening measures of academic achievement, the WRAT3 (Wide Range Achievement Test–Third Edition; published by Wide Range, Inc.). The WRAT3 is an individually administered test that assesses three basic areas of achievement: reading, spelling, and arithmetic. The sample for this study consisted of 52 adults ranging in age from 20 to 54, with a mean of 25.2 years (*SD* = 6.7). There were 25 (48.1%) males and 27 (51.9%) females. The group included 38 (73.1%) whites, 5 (9.6%) African Americans, 3 (5.8%) Hispanics, 3 (5.8%) Asian Americans, 1 (1.9%) Pacific Islander, and 2 (3.8%) "other." These individuals reported their educational background as follows: 2 (3.8%) high school graduate or GED, 22 (42.3%) 1–3 years of college, and 28 (53.8%) 4 or more years of college.

The subjects completed the WRAT3 and the two BASI Survey tests within a period of two weeks. Table 5.19 shows the sample's test score means and standard deviations. Mean scores were similar between BASI Verbal Skills Total and WRAT3

Reading and between BASI Math Skills Total and WRAT3 Arithmetic. Nearly all of the standard deviations showed significant restriction relative to the standardization values of 15 (for the two BASI total scores and the WRAT3 scores) and 3 (for the BASI skill area scores).

The uncorrected and corrected correlations between scores on the two tests are shown in Table 5.20. Statistically significant correlations were obtained between measures of similar constructs. The means and correlations found in this study provide support for the BASI Survey tests as measures of academic achievement that yield results similar to those obtained from a widely known individually administered measure.

The BASI Survey and the MBA (Adult Sample). This study examined the relationships between the BASI Survey Verbal Skills and Math Skills tests and the MBA (Mini-Battery of Achievement; Woodcock, McGrew, & Werder, 1994), a frequently used, brief, individually administered achievement test. The sample consisted of 45 adults, 22 (48.9%) males and 23 (51.1%) females, who ranged in age from 19 to 62, with a mean of 33 years (*SD* = 12). The group consisted of 42 (93.3%) whites, 1 (2.2%) African American, 1 (2.2%) Hispanic, and 1 (2.2%) Asian American. These individuals reported their educational background as follows: 1 (2.2%) less than 12th grade, 5 (11.1%) high school graduate or GED, 13 (28.9%) 1–3 years of college, and 26 (57.8%) 4 or more years of college.

TABLE 5.19 Adult Sample's Performance on the BASI Survey and the WRAT3

BASI Survey	Mean	*SD*
Verbal Skills Total	*112.5*	*10.3*
Vocabulary	13.8	1.8
Language Mechanics	14.0	1.8
Reading Comprehension	12.2	3.0
Math Skills Total	*105.8*	*10.5*
Math Computation	10.6	2.3
Math Application	11.0	2.2
WRAT3		
Reading	109.6	6.3
Spelling	108.4	5.8
Arithmetic	105.1	9.3

Note. *N* = 52. WRAT3 = Wide Range Achievement Test–Third Edition. *SD* = standard deviation.

TABLE 5.20 Correlations Between the BASI Survey and the WRAT3 (Adult Sample)

	BASI Survey						
WRAT3	**VST**	**VO**	**LM**	**RC**	**MST**	**MC**	**MA**
Reading	.31*/.75**	.47**/.90**	–.11/–.40**	.29*/.59**	.08/.27	.04/.11	.11/.34*
Spelling	.26/.70**	.08/.31*	.23/.70**	.22/.50**	.09/.32*	.12/.36**	.04/.15
Arithmetic	.32*/.62**	.21/.50**	.13/.33*	.31*/.47**	.53**/.83**	.49**/.76**	.48**/.77**

Note. *N* = 52. WRAT3 = Wide Range Achievement Test–Third Edition. VST = Verbal Skills Total, VO = Vocabulary, LM = Language Mechanics, RC = Reading Comprehension, MST = Math Skills Total, MC = Math Computation, MA = Math Application. The correlation on the left in each cell is uncorrected; the correlation on the right is corrected for restriction of range in both test scores.

* $p < .05$. ** $p < .01$.

These subjects completed the two BASI Survey tests and the MBA in one or two testing sessions within a period of five days. Table 5.21 shows the sample's test score means and standard deviations. Like the BASI Survey total scores, the MBA scores are standardized with a mean of 100 and a standard deviation of 15. All mean scores were above average across the BASI Survey and the MBA. All standard deviations were smaller than the standardization values, particularly for BASI Verbal Skills Total and MBA Basic Skills. The uncorrected and corrected correlations between the BASI Survey and MBA scales are shown in Table 5.22. Many statistically significant correlations of moderate magnitude were obtained between the two instruments.

Relationships With Group-Administered Ability Tests

The BASI Survey and the GAMA® Test (Adult Sample). The GAMA (General Ability Measure for Adults; Naglieri & Bardos, 1997), a nonverbal intelligence test, and the two BASI Survey tests were administered in counterbalanced order to a sample of 112 adults. The subjects ranged in age from 18 to 70, with a mean of 33.5 years (*SD* = 10.9). There were 57 (50.9%) males and 54 (48.2%) females (1 subject did not report gender). The sample consisted of 105 (93.8%) whites, 2 (1.8%) African Americans, 2 (1.8%) Asian Americans, 1 (0.9%) Hispanic, and 1 (0.9%) American Indian (1 subject did not report

TABLE 5.21 Adult Sample's Performance on the BASI Survey and the MBA

BASI Survey	Mean	*SD*
Verbal Skills Total	*107.7*	*9.8*
Vocabulary	12.8	2.4
Language Mechanics	13.0	2.4
Reading Comprehension	11.8	2.6
Math Skills Total	*107.2*	*12.3*
Math Computation	10.8	2.9
Math Application	11.4	2.3
MBA		
Basic Skills	109.4	10.4
Reading	118.8	13.6
Writing	106.2	12.8
Mathematics	112.3	12.6
Factual Knowledge	102.2	14.9

Note. *N* = 45. MBA = Mini-Battery of Achievement. *SD* = standard deviation.

TABLE 5.22 Correlations Between the BASI Survey and the MBA (Adult Sample)

	BASI Survey						
MBA	**VST**	**VO**	**LM**	**RC**	**MST**	**MC**	**MA**
Basic Skills	.36*/.65**	.08/.15	.47**/.68**	.21/.34*	.41**/.62**	.47**/.63**	.28/.49**
Reading	.33*/.51**	.24/.32*	.29/.38**	.18/.24	.22/.29	.23/.27	.18/.26
Writing	.18/.31*	–.10/–.15	.46**/.60**	.00/.00	.24/.33*	.32*/.38*	.12/.19
Mathematics	.18/.32*	–.02/–.02	.22/.31*	.22/.29	.49**/.63**	.56**/.64**	.35*/.50**
Factual Knowledge	.42**/.58**	.08/.09	.28/.33*	.57**/.63**	.20/.24	.21/.22	.17/.22

Note. *N* = 45. MBA = Mini-Battery of Achievement. VST = Verbal Skills Total, VO = Vocabulary, LM = Language Mechanics, RC = Reading Comprehension, MST = Math Skills Total, MC = Math Computation, MA = Math Application. The correlation on the left in each cell is uncorrected; the correlation on the right is corrected for restriction of range in both test scores.

* $p < .05$. ** $p < .01$.

race/ethnicity). In terms of their educational background, 1 (0.9%) examinee had less than a 12th grade education, 9 (8.0%) had a high school diploma or GED, 22 (19.6%) had 1–3 years of college, and 69 (61.6%) had 4 or more years of college. Eleven subjects (9.8%) did not report their educational level.

The mean GAMA IQ score for this sample was 111.9, well above the population average of 100. The GAMA IQ standard deviation was 11.0, which is somewhat smaller than the standardization value of 15. The mean BASI Survey scores, shown in Table 5.23, were also above average, especially in the Verbal Skills area. The BASI standard deviations were also smaller than their standardization values. Five of the seven BASI Survey scores displayed statistically significant correlations of modest magnitude with GAMA IQ (these correlations are in the rightmost column of Table 5.23, to the left of the slashes). After correcting for restriction of range in both BASI and GAMA scores, all seven BASI Survey measures had statistically significant correlations with GAMA IQ, with the larger values reaching moderate magnitude.

The BASI Survey and the Shipley (Adult Sample). The BASI Survey Verbal Skills and Math Skills tests and the Shipley Institute of Living Scale (Shipley; published by Western Psychological Services) were administered to 74 adults in counterbalanced order within a period of two weeks. The sample included 24 (32.4%) males and 50 (67.6%) females who ranged in age from 20 to 62, with a mean of 30.6 years (*SD* = 11.2). There were 61 (82.4%) whites, 5 (6.8%) African Americans, 3 (4.1%) Hispanics, 2 (2.7%) Asian Americans, 2 (2.7%) American Indians, and 1 (1.4%) "other." These individuals reported their educational background as follows: 7 (9.5%) high school graduate or GED, 22 (29.7%) 1–3 years of college, and 45 (60.8%) 4 or more years of college.

Standardized scores for the Shipley are reported as T scores with a mean of 50 and a standard deviation of 10. Table 5.24 shows the means and standard deviations of the sample's scores on the two tests. All mean scores were above average. The standard deviations were severely restricted relative to the population values, particularly for the Shipley. The correlations (uncorrected and corrected) between the BASI Survey and the Shipley are shown in Table 5.25. Before they were corrected for range restriction, most of the correlations between BASI Survey scores and the Shipley Vocabulary and Total Score were statistically significant, whereas most correlations with the Shipley Abstraction score were not. After correcting for restriction of range in both tests, all correlations between BASI Survey and Shipley measures were statistically significant, with several of very high magnitude.

TABLE 5.23 BASI Survey Means, Standard Deviations, and Correlations With GAMA IQ (Adult Sample)

Skill Area or Total Score	Mean	*SD*	*r* With GAMA IQ[a]
Verbal Skills Total	*108.9*	*9.9*	*.25**/.48***
Vocabulary	13.2	2.3	.13/.22*
Language Mechanics	13.1	2.4	.15/.26**
Reading Comprehension	11.9	2.6	.27**/.40**
Math Skills Total	*106.6*	*11.2*	*.32**/.52***
Math Computation	10.7	2.6	.31**/.45**
Math Application	11.2	2.1	.28**/.48**

Note. $N = 112$. GAMA = General Ability Measure for Adults.

[a]The correlation on the left is uncorrected; the correlation on the right is corrected for restriction of range in both test scores.

* $p < .05$. ** $p < .01$.

TABLE 5.24 Adult Sample's Performance on the BASI Survey and the Shipley

BASI Survey	Mean	*SD*
Verbal Skills Total	*112.1*	*10.2*
Vocabulary	13.6	2.3
Language Mechanics	14.0	1.8
Reading Comprehension	12.2	2.7
Math Skills Total	*105.6*	*10.3*
Math Computation	10.4	2.4
Math Application	11.1	2.1
Shipley		
Vocabulary	55.4	5.6
Abstraction	62.3	3.5
Total Score	60.7	4.0

Note. $N = 74$. Shipley = Shipley Institute of Living Scale. *SD* = standard deviation.

TABLE 5.25 Correlations Between the BASI Survey and the Shipley (Adult Sample)

	BASI Survey						
Shipley	**VST**	**VO**	**LM**	**RC**	**MST**	**MC**	**MA**
Vocabulary	.55**/.87**	.31**/.61**	.38**/.77**	.48**/.74**	.32**/.66**	.31**/.58**	.27*/.58**
Abstraction	.09/.34**	–.10/–.33**	.15/.59**	.11/.34**	.25*/.73**	.25*/.67**	.18/.60**
Total Score	.35**/.82**	.15/.44**	.30**/.80**	.31**/.68**	.37**/.82**	.37**/.78**	.28*/.72**

Note. $N = 74$. Shipley = Shipley Institute of Living Scale. VST = Verbal Skills Total, VO = Vocabulary, LM = Language Mechanics, RC = Reading Comprehension, MST = Math Skills Total, MC = Math Computation, MA = Math Application. The correlation on the left in each cell is uncorrected; the correlation on the right is corrected for restriction of range in both test scores.

* $p < .05$. ** $p < .01$.

The BASI Survey and the Wonderlic® (Adult Sample). The two BASI Survey tests and the Wonderlic (Wonderlic Personnel Test; published by Wonderlic, Inc.) were administered to 49 adults in counterbalanced order within a period of two weeks. The sample included 22 (44.9%) male and 27 (55.1%) female examinees ranging in age from 20 to 54, with a mean of 25.2 years ($SD = 6.8$). These individuals reported their race/ethnicity as follows: 36 (73.5%) white, 5 (10.2%) African American, 3 (6.1%) Hispanic, 3 (6.1%) Asian American, 1 (2.0%) Pacific Islander, and 1 (2.0%) "other." Forty-seven of the 49 subjects were students: 23 in college and 24 in graduate school. The remaining 2 subjects had a high school diploma or GED.

On the Wonderlic, this sample achieved a mean raw score (number correct) of 25.6, with a standard deviation of 6.1. The BASI Survey means, standard deviations, and correlations (uncorrected and corrected) with the Wonderlic raw score are shown in Table 5.26. The sample's average Verbal Skills Total score of 116 was more than a standard deviation higher than the population mean, and the standard deviation of 8.6 was far smaller than the population value of 15. The average Math Skills Total score (101.5) was slightly higher than the population mean. The variability of that score was also restricted relative to the population, but less so than for the Verbal Skills Total score. The uncorrected correlations of the BASI Survey with the Wonderlic were all statistically significant at $p < .01$, ranging from the high .30s for the Vocabulary and Language Mechanics skill area scores to over .60 for the Verbal Skills Total and Math Skills Total scores. After correcting for restriction of range in the BASI Survey scores, the correlations were very high: between .56 and .66 for the skill area scores, .74 for Math Skills Total, and .82 for Verbal Skills Total.

TABLE 5.26 BASI Survey Means, Standard Deviations, and Correlations With the Wonderlic (Adult Sample)

Skill Area or Total Score	Mean	*SD*	*r* With Wonderlic[a]
Verbal Skills Total	*116.0*	*8.6*	*.64/.82*
Vocabulary	13.8	1.8	.38/.56
Language Mechanics	14.0	1.8	.39/.57
Reading Comprehension	12.1	3.0	.60/.60
Math Skills Total	*101.5*	*10.8*	*.62/.74*
Math Computation	10.7	2.4	.52/.60
Math Application	10.7	2.5	.60/.66

Note. $N = 49$. Wonderlic = Wonderlic Personnel Test.

[a]The correlation on the left is uncorrected; the correlation on the right is corrected for restriction of range in BASI Survey scores. All correlations are statistically significant at $p < .01$.

Relationships With Individually Administered Ability Tests

The BASI Survey and the WISC-III® (School-Age Sample). This study examined the relationships between the BASI Survey and the WISC-III (Wechsler Intelligence Scale for Children®–Third Edition; published by Harcourt Assessment, Inc.), the most widely used individually administered intelligence test for children. The sample included 37 students ranging in age from 8 to 16, with a mean of 11.2 years (*SD* = 2.2). There were 15 (40.5%) male and 22 (59.5%) female students; 33 (89.2%) were white and 4 (10.8%) were Hispanic.

Table 5.27 shows the school-age sample's BASI Survey scores and WISC-III IQ and index scores. The BASI Verbal Skills Total score was similar to most of the WISC-III scores; the BASI Math Skills Total score was somewhat lower. Table 5.28 presents the correlations (uncorrected and corrected) between the BASI and WISC-III scores. Many substantial correlations were obtained, suggesting that the BASI Survey can complement the WISC-III as part of a psychoeducational battery by offering an estimate of an examinee's verbal and math skills.

The BASI Survey and the WAIS®-III (Adult Sample). This study examined the relationships of the BASI Survey with the WAIS-III (Wechsler Adult Intelligence Scale®–Third Edition; published by Harcourt Assessment, Inc.), the most widely used individually administered adult intelligence test. The sample was made up of 49 adults ranging in age from 19 to 70, with a mean of 34.7 years (*SD* = 12.9). There were 22 (44.9%) male and 26 (53.1%) female examinees (1 subject did not report gender). The sample includ-

TABLE 5.27 School-Age Sample's Performance on the BASI Survey and the WISC-III

BASI Survey	*n*	Mean	*SD*
Verbal Skills Total	*37*	*108.8*	*8.8*
Vocabulary	37	12.3	2.5
Language Mechanics	37	12.2	2.0
Reading Comprehension	37	11.1	2.0
Math Skills Total	*37*	*99.2*	*11.5*
Math Computation	37	9.9	2.8
Math Application	37	10.5	2.3
WISC-III			
Verbal IQ	37	109.7	15.9
Performance IQ	37	105.0	14.0
Full Scale IQ	37	108.4	14.6
Verbal Comprehension	37	110.7	15.8
Perceptual Organization	37	106.3	14.2
Freedom From Distractibility	28	104.8	15.6
Processing Speed	27	103.1	10.4

Note. WISC-III = Wechsler Intelligence Scale for Children–Third Edition. *SD* = standard deviation.

TABLE 5.28 Correlations Between the BASI Survey and the WISC-III (School-Age Sample)

	BASI Survey						
WISC-III	**VST**	**VO**	**LM**	**RC**	**MST**	**MC**	**MA**
Verbal IQ	.59**/.76**	.51**/.55**	.59**/.72**	.34*/.46**	.39*/.46**	.35*/.35*	.36*/.43**
Performance IQ	.41*/.64**	.28/.35*	.52**/.70**	.23/.36*	.35*/.42**	.37*/.42**	.27/.37*
Full Scale IQ	.59**/.79**	.49**/.56**	.64**/.79**	.34*/.49**	.39*/.49**	.38*/.41*	.33*/.42**
Verbal Comprehension	.60**/.77**	.50**/.54**	.67**/.78**	.29/.41*	.26/.31	.21/.21	.25/.30
Perceptual Organization	.50**/.72**	.33*/.40*	.59**/.75**	.34*/.50**	.32/.43**	.31/.34*	.28/.37*
Freedom From Distractibility	.32/.48*	.37/.41*	.35/.47*	.04/.06	.62**/.70**	.62**/.63**	.52**/.61**
Processing Speed	.07/.09	.15/.32	.13/.28	–.16/–.26	.18/.32	.34/.49**	–.03/–.06

Note. $N = 37$ for correlations involving WISC-III Verbal IQ, Performance IQ, Full Scale IQ, Verbal Comprehension, and Perceptual Organization. $N = 28$ for correlations involving WISC-III Freedom From Distractibility. $N = 27$ for correlations involving WISC-III Processing Speed. WISC-III = Wechsler Intelligence Scale for Children—Third Edition. VST = Verbal Skills Total, VO = Vocabulary, LM = Language Mechanics, RC = Reading Comprehension, MST = Math Skills Total, MC = Math Computation, MA = Math Application. The correlation on the left in each cell is uncorrected; the correlation on the right is corrected for restriction of range in both test scores.

* $p < .05$. ** $p < .01$.

ed 44 (89.8%) whites, 2 (4.1%) African Americans, and 2 (4.1%) Asian Americans (1 subject did not report race/ethnicity). Sample members reported their educational level as follows: 1 (2.0%) less than 12th grade, 5 (10.2%) high school graduate or GED, 12 (24.5%) 1–3 years of college, and 23 (46.9%) 4 or more years of college. The remaining 8 (16.3%) did not report their level of education.

Table 5.29 shows the sample's performance on the BASI Survey tests and the WAIS-III IQ and index scores. On both tests, the mean scores were generally well above the population averages of 100 (for the WAIS-III scores and BASI Survey total scores) and 10 (for the BASI Survey skill area scores). There was also significant restriction of variability in most scores relative to the population standard deviations of 15 (for the WAIS-III scores and BASI Survey total scores) and 3 (for the BASI Survey skill area scores).

The correlations (uncorrected and corrected) between the various scores on the two tests are presented in Table 5.30. Many substantial correlations were obtained, suggesting that the BASI Survey can complement the WAIS-III as part of a psychoeducational battery by offering an estimate of an examinee's verbal and math skills.

TABLE 5.29 Adult Sample's Performance on the BASI Survey and the WAIS-III

BASI Survey	**Mean**	***SD***
Verbal Skills Total	*109.1*	*9.3*
Vocabulary	13.0	2.1
Language Mechanics	13.2	2.8
Reading Comprehension	12.1	2.3
Math Skills Total	*106.9*	*10.8*
Math Computation	10.8	2.8
Math Application	11.3	1.8
WAIS-III		
Verbal IQ	115.3	10.6
Performance IQ	109.5	10.3
Full Scale IQ	114.0	10.5
Verbal Comprehension	114.8	11.5
Perceptual Organization	111.5	11.4
Working Memory	109.0	11.5
Processing Speed	104.0	12.9

Note. $N = 49$. WAIS-III = Wechsler Adult Intelligence Scale–Third Edition. *SD* = standard deviation.

TABLE 5.30 Correlations Between the BASI Survey and the WAIS-III (Adult Sample)

	BASI Survey						
WAIS-III	**VST**	**VO**	**LM**	**RC**	**MST**	**MC**	**MA**
Verbal IQ	.62**/.88**	.29*/.52**	.54**/.70**	.45**/.69**	.50**/.75**	.52**/.69**	.37**/.68**
Performance IQ	.41**/.72**	.21/.41**	.39**/.56**	.26/.46**	.52**/.78**	.58**/.75**	.34*/.65**
Full Scale IQ	.59**/.86**	.32*/.56**	.51**/.68**	.41**/.65**	.58**/.82**	.63**/.78**	.40**/.72**
Verbal Comprehension	.67**/.88**	.35*/.57**	.52**/.65**	.51**/.71**	.29*/.48**	.34*/.46**	.15/.31*
Perceptual Organization	.33*/.60**	.19/.34*	.32*/.43**	.21/.35*	.33*/.54**	.38**/.51**	.21/.42**
Working Memory	.17/.34*	.10/.18	.18/.25	.06/.11	.58**/.79**	.51**/.64**	.57**/.83**
Processing Speed	.22/.39**	.14/.22	.16/.20	.18/.26	.49**/.67**	.54**/.63**	.32*/.54**

Note. $N = 49$. WAIS-III = Wechsler Adult Intelligence Scale–Third Edition. VST = Verbal Skills Total, VO = Vocabulary, LM = Language Mechanics, RC = Reading Comprehension, MST = Math Skills Total, MC = Math Computation, MA = Math Application. The correlation on the left in each cell is uncorrected; the correlation on the right is corrected for restriction of range in both test scores.

* $p < .05$. ** $p < .01$.

Research With Special Populations

In this section, data pertaining to the use of the BASI Survey with certain special populations is presented. These populations include adult offenders, adolescent behavioral health treatment facility residents, and various special education groups.

BASI Survey Performance and Correlations With the TABE 7/8 Survey in a State Corrections Setting

With the cooperation of the state department of corrections in a western state, the BASI Survey was administered to 207 male offenders at a centralized intake center. During the data collection period, the BASI Survey was added to the department's existing battery of intake tests, which included the TABE 7/8 Survey. The TABE was administered in the morning and the BASI Survey in the afternoon. The department provided TABE scores for the purpose of this study.

There were 197 male offenders with complete data on the BASI Survey and the TABE. These subjects ranged in age from 17 to 57, with a mean of 32.4 years ($SD = 9.8$). There were 101 (51.3%) whites, 67 (34.0%) Hispanics, 13 (6.6%) African Americans, 5 (2.5%) American Indians, 2 (1.0%) Asian Americans, 1 (0.5%) Pacific Islander, 4 (2.0%) "other," and 4 (2.0%) who did not report their race/ethnicity. Sample members reported their level of education as follows: 54 (27.4%) less than 12th grade, 98 (49.7%) high school graduate or GED, 32 (16.2%) 1–3 years of college, 6 (3.0%) 4 or more years of college. The remaining 7 (3.6%) did not report their level of education.

Because these offenders as a group were much less educated than the BASI Survey standardization sample, below-average BASI Survey scores were expected. The mean scores shown in Table 5.31 confirm that expectation. The correlations between the BASI Survey and TABE scores in this offender sample are shown in Table 5.32. All correlations were statistically significant at $p < .01$.

BASI Survey Performance and Correlations With the WIAT®-II in a Behavioral Health Treatment Setting

In this study, the BASI Survey was administered to 30 residents of a behavioral health treatment facility for female adolescents in a western state. These subjects also completed the WIAT-II (Wechsler Individual Achievement Test®–Second Edition; Wechsler, 2001) as part of the facility's regular educational assessment and placement process. The WIAT-II is a widely used, individually administered achievement test that is often used to diagnose academic difficulties and assist with the determination of possible placement in special education. The BASI Survey Math Skills test, the BASI Survey Verbal Skills test, and the WIAT-II were administered in a counterbalanced order by the facility's mental health personnel.

TABLE 5.31 Adult Male Offender Sample's Performance on the BASI Survey and the TABE

BASI Survey	Mean	*SD*
Verbal Skills Total	*91.8*	*11.9*
Vocabulary	9.5	3.7
Language Mechanics	9.1	2.7
Reading Comprehension	9.0	2.6
Math Skills Total	*90.9*	*11.5*
Math Computation	7.5	2.4
Math Application	8.4	2.4
TABE Survey		
Reading Comprehension	590.6	74.5
Math Application	562.7	76.3
Language	552.2	87.3
Total Math	539.3	70.9
Total Battery	560.7	68.7

Note. N = 197. TABE = Tests of Adult Basic Education 7/8 Survey. *SD* = standard deviation.

TABLE 5.32 Correlations Between the BASI Survey and the TABE in an Adult Male Offender Sample

	BASI Survey						
TABE Survey	**VST**	**VO**	**LM**	**RC**	**MST**	**MC**	**MA**
Reading Comprehension	.73	.62	.61	.67	.60	.51	.57
Math Application	.63	.57	.50	.55	.63	.58	.58
Language	.74	.63	.63	.62	.62	.56	.57
Total Math	.61	.54	.47	.55	.65	.62	.57
Total Battery	.79	.68	.65	.69	.70	.63	.65

Note. N = 197. TABE = Tests of Adult Basic Education 7/8 Survey. VST = Verbal Skills Total, VO = Vocabulary, LM = Language Mechanics, RC = Reading Comprehension, MST = Math Skills Total, MC = Math Computation, MA = Math Application. All correlations are statistically significant at $p < .01$.

The 30 females in this sample included 2 (6.7%) seventh graders, 3 (10.0%) eighth graders, 7 (23.3%) ninth graders, 6 (20.0%) tenth graders, 8 (26.7%) eleventh graders, and 4 (13.3%) twelfth graders. There were 23 (76.7%) whites, 3 (10.0%) African Americans, 2 (6.7%) Hispanics, 1 (3.3%) Asian American, and 1 (3.3%) "other."

All mean scores for this sample on both the BASI Survey and the WIAT-II were noticeably below average, as shown in Table 5.33. On both tests, the math scores were particularly low. Table 5.34 shows that many statistically significant correlations were obtained between scores on the two tests. These data support the use of the BASI Survey as a measure of academic achievement that yields results similar to those from the WIAT-II.

Performance of Special Education Groups: School-Age Sample

The consent form that was completed by parents prior to data collection for the school-age standardization sample included the following question: "Does your child receive any special services or extra help in school or has he/she been diagnosed with any of the following?" Parents who answered yes to this question were asked to choose all that applied from 12 categories of services or diagnoses that included "gifted," 10 specific kinds of impairment, and "other." The accuracy of parental reports of services and diagnoses was not verified with school records.

Five of the categories reflecting specific impairments, plus the "other" category, were identified as applica-

TABLE 5.33 Behavioral Health Treatment Sample's Performance on the BASI Survey and the WIAT-II (Adolescent Female Sample)

BASI Survey	Mean	*SD*
Verbal Skills Total	*92.5*	*10.8*
Vocabulary	8.8	3.0
Language Mechanics	9.0	2.4
Reading Comprehension	8.2	2.0
Math Skills Total	*82.0*	*15.1*
Math Computation	7.1	2.9
Math Application	6.4	3.9
WIAT-II		
Word Reading	90.2	16.6
Reading Comprehension	89.5	15.8
Pseudoword Decoding	89.4	8.3
Reading Composite	86.8	11.8
Numerical Operations	82.4	14.3
Math Reasoning	81.9	13.4
Math Composite	79.8	14.7
Spelling	88.3	13.1
Written Expression	84.1	15.5
Written Language Composite	83.9	15.1

Note. $N = 30$. WIAT-II = Wechsler Individual Achievement Test–Second Edition. *SD* = standard deviation.

TABLE 5.34 Correlations Between the BASI Survey and the WIAT-II in a Behavioral Health Treatment Sample (Adolescent Female Sample)

	BASI Survey						
WIAT-II	**VST**	**VO**	**LM**	**RC**	**MST**	**MC**	**MA**
Word Reading	.65**/.73**	.69**/.65**	.48**/.55**	.38*/.49**	.55**/.51**	.51**/.48**	.48**/.36
Reading Comprehension	.66**/.76**	.66**/.64**	.47**/.54**	.53**/.66**	.48**/.46*	.55**/.54**	.33/.25
Pseudoword Decoding	.38*/.72**	.49**/.71**	.24/.49**	.16/.40*	.47**/.69**	.49**/.72**	.37*/.49**
Reading Composite	.74**/.89**	.78**/.85**	.52**/.70**	.48**/.72**	.63**/.71**	.64**/.74**	.50**/.49**
Numerical Operations	.48**/.62**	.39*/.41*	.60**/.71**	.18/.27	.50**/.51**	.63**/.66**	.30/.25
Math Reasoning	.59**/.75**	.52**/.56**	.59**/.72**	.34/.52**	.51**/.55**	.55**/.61**	.38*/.33
Math Composite	.57**/.70**	.49**/.50**	.63**/.73**	.29/.41*	.55**/.56**	.64**/.66**	.38*/.31
Spelling	.67**/.82**	.58**/.63**	.61**/.75**	.45*/.65**	.50**/.55**	.55**/.62**	.37*/.33
Written Expression	.53**/.64**	.49**/.48**	.49**/.48**	.30/.41*	.34/.33	.46*/.46*	.19/.14
Written Language Composite	.66**/.77**	.60**/.60**	.60**/.60**	.42*/.56**	.46**/.46*	.55**/.56**	.32/.25

Note. $N = 30$. WIAT-II = Wechsler Individual Achievement Test–Second Edition. VST = Verbal Skills Total, VO = Vocabulary, LM = Language Mechanics, RC = Reading Comprehension, MST = Math Skills Total, MC = Math Computation, MA = Math Application. The correlation on the left in each cell is uncorrected; the correlation on the right is corrected for restriction of range in both test scores.

* $p < .05$. ** $p < .01$.

ble for 40 or more students. Table 5.35 provides the gender, grade level, parental education, and race/ethnicity breakdowns for each of these six groups.

BASI Survey means and standard deviations for each of these six groups are shown in Table 5.36. With one exception, all of the mean scores in this table are lower than the standardization sample means of 100 for the total scores and 10 for the skill area scores. This indicates that each of the six services/diagnoses groups scored below average on every BASI Survey measure, with the exception of the mean score of 10.2 in the Math Application skill area for the attention deficit disorder group. The groups identified as having a learning disability in reading, writing, or math had lower overall mean scores than the speech/language disability, attention deficit disorder, and "other" groups. Overall, these results suggest that the BASI Survey can be used effectively as part of a screening process to identify students with academic difficulties or during a comprehensive psychoeducational evaluation.

TABLE 5.35 Description of School-Age Examinees Receiving Special Education Services

		Learning Disability: Reading *N* = 119	Learning Disability: Writing *N* = 64	Learning Disability: Math *N* = 77	Speech or Language Disability *N* = 72	Attention Deficit Disorder *N* = 69	Other *N* = 46
Gender	Male	69	42	43	43	49	25
	Female	50	22	34	29	20	21
Grade	3	25	5	12	18	14	11
	4	32	16	10	14	8	5
	5	12	7	19	11	9	2
	6	10	7	7	5	7	12
	7	13	7	7	9	6	8
	8	11	5	1	3	10	3
	9	1	1	3	6	4	2
	10	7	7	6	3	3	2
	11	4	2	3	1	2	—
	12	4	7	9	2	6	1
Parental Education	Less than 12th grade	37	15	34	9	1	5
	High school grad/GED	41	28	31	24	24	17
	1–3 years of college	29	12	7	25	28	16
	4+ years of college	12	9	5	14	16	8
Race/Ethnicity	White	67	44	33	49	59	35
	African American	15	5	13	8	4	—
	Hispanic/Latino	34	14	25	10	1	8
	Asian American	—	—	—	1	—	—
	American Indian	1	1	3	2	4	2
	Pacific Islander	—	—	—	1	—	—
	Other	2	—	3	1	1	1

TABLE 5.36 BASI Survey Means and Standard Deviations of School-Age Examinees Receiving Special Education Services

	Learning Disability: Reading *N* = 119		Learning Disability: Writing *N* = 64		Learning Disability: Math *N* = 77		Speech or Language Disability *N* = 72		Attention Deficit Disorder *N* = 69		Other *N* = 46	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Verbal Skills Total	*86.4*	*10.7*	*85.4*	*10.7*	*86.3*	*9.5*	*91.3*	*15.9*	*96.9*	*15.1*	*94.8*	*10.9*
Vocabulary	7.2	2.4	7.0	2.4	7.2	2.3	8.3	3.5	9.8	3.8	9.1	3.2
Language Mechanics	7.4	2.4	7.4	2.4	7.5	2.1	8.5	3.6	9.5	3.1	9.4	2.6
Reading Comprehension	7.9	2.7	7.5	2.6	7.7	2.3	8.5	3.6	9.3	3.1	8.8	2.3
Math Skills Total	*89.5*	*12.7*	*87.3*	*12.2*	*84.4*	*14.1*	*93.4*	*14.9*	*97.4*	*15.3*	*89.4*	*13.5*
Math Computation	8.1	2.7	7.8	2.9	7.0	2.9	8.9	3.2	9.5	3.5	7.7	2.8
Math Application	8.4	3.2	8.0	2.4	7.5	3.5	9.5	3.4	10.2	3.4	8.8	3.5

Performance of Special Education Groups: Adult Sample

The adults who participated in the standardization of the BASI Survey were asked a question related to special education services on their consent form: "Did you receive any special services or extra help while attending elementary or high school or have you been diagnosed with any of the following?" The same 12 categories that were used with the school-age sample ("gifted," 10 specific kinds of impairment, and "other") were used to capture specific services or diagnoses received by the adults who answered yes to this question. As with the school-age examinees, the accuracy of these reports of services and diagnoses was not independently corroborated.

Five of the categories reflecting specific impairments were identified as applicable for 30 or more adults. These five groups are broken down by gender, level of education, and race/ethnicity in Table 5.37, and their BASI Survey means and standard deviations are presented in Table 5.38. The results parallel those for the school-age special education sample in that, for each of the five services/diagnoses groups, the mean Verbal Skills Total and Math Skills Total scores are lower than 100, and most of the mean skill area scores are below 10. Once again, the lowest-scoring groups were those identified as having a learning disability in reading, writing, or math. These results suggest that the BASI Survey can be used effectively as part of a screening process to identify adults with learning difficulties or as part of a comprehensive psychoeducational evaluation.

TABLE 5.37 Description of Adult Examinees Who Received Special Education Services While in School

		Learning Disability: Reading *N* = 78	Learning Disability: Writing *N* = 57	Learning Disability: Math *N* = 68	Attention Deficit Disorder *N* = 81	Emotional Disability *N* = 36
Gender	Male	33	28	38	59	17
	Female	45	29	30	22	19
Level of Education	Less than 12th grade	32	25	36	31	12
	High school grad/GED	26	21	23	26	13
	1–3 years of college	16	9	6	21	3
	4+ years of college	4	2	2	3	8
	Not reported	—	—	1	—	—
Race/Ethnicity	White	49	40	37	66	24
	African American	17	11	19	10	5
	Hispanic/Latino	7	4	6	1	5
	Asian American	—	—	1	1	—
	American Indian	1	—	2	1	—
	Pacific Islander	—	—	1	—	1
	Other	4	2	2	2	1

TABLE 5.38 BASI Survey Means and Standard Deviations of Adult Examinees Who Received Special Education Services While in School

	Learning Disability: Reading *N* = 78		Learning Disability: Writing *N* = 57		Learning Disability: Math *N* = 68		Attention Deficit Disorder *N* = 81		Emotional Disability *N* = 36	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Verbal Skills Total	*89.0*	*15.3*	*88.1*	*15.7*	*85.5*	*14.3*	*95.3*	*14.2*	*97.3*	*15.5*
Vocabulary	8.3	4.4	8.2	4.3	7.4	4.0	10.0	3.7	10.5	4.1
Language Mechanics	8.9	3.2	8.6	3.2	8.1	3.4	10.6	3.6	10.7	3.5
Reading Comprehension	8.5	2.9	8.3	2.9	8.0	2.7	9.2	2.9	9.7	3.2
Math Skills Total	*91.7*	*15.0*	*91.3*	*15.5*	*84.5*	*14.2*	*95.9*	*12.8*	*96.2*	*14.2*
Math Computation	7.9	3.0	7.6	3.3	6.7	3.0	8.5	2.5	8.4	2.8
Math Application	8.4	3.1	8.5	3.0	7.1	2.7	9.3	2.8	9.5	2.9

Summary of Psychometric Properties

This chapter presented evidence regarding the reliability and validity of the BASI Survey. Reliability was established using estimates of internal consistency and test-retest reliability. The internal consistency reliability of the two BASI Survey total scores is very high, and the internal consistency of the skill area scores is high for all but the youngest age groups.

In addition, the chapter offered evidence for the validity of the BASI Survey as a measure of achievement in verbal and math academic areas. Validity was defined as the quality of inferences that can be made from the BASI Survey scores. Validity evidence was established using several methods. The section on content validity described the procedures that were followed to ensure that the BASI Survey met the goal of representing both the breadth of content and the range of difficulty encompassed by the BASI Comprehensive test series using relatively brief Verbal Skills and Math Skills tests. Empirical studies comparing BASI Survey scores with scores on other group and individually administered tests showed a general pattern of statistically significant correlations and similarity in mean scores. These correlational studies encompassed 13 school-age and adult (including college) samples tested in a variety of settings. These studies and the other research described in this chapter support the validity of the BASI Survey as a measure of verbal and math skills.

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Appendix A

Raw Scores to Standard Scores—Skill Areas

TABLE A.1 Raw Scores to Standard Scores for the Math Computation Skill Area

MATH COMPUTATION

	Standard Score By Age																
Raw Score	8 Years	9 Years	10 Years	11 Years	12 Years	13 Years	14 Years	15 Years	16 Years	17 Years	18 Years	19 Years	20–21 Years	22–25 Years	26–35 Years	36–50 Years	51+ Years
0	4	3	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	5	4	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	5	5	3	2	1	1	1	1	1	1	1	1	1	1	1	1	1
3	6	5	4	2	2	2	1	1	1	1	1	1	1	1	1	1	1
4	8	6	4	3	2	2	1	1	1	1	1	1	1	1	1	1	1
5	8	7	5	4	3	2	2	2	1	1	1	1	1	1	2	2	2
6	9	8	5	4	3	3	2	2	2	2	1	1	1	1	2	2	2
7	10	9	6	5	4	3	3	3	3	3	2	2	2	2	3	2	2
8	11	9	7	6	4	4	3	3	3	3	2	2	3	2	3	3	3
9	12	10	8	6	5	4	4	4	4	4	3	2	3	3	4	4	4
10	13	11	9	7	6	5	4	4	4	4	3	3	4	3	4	5	5
11	14	11	10	8	7	5	5	5	5	5	4	3	5	4	5	5	6
12	14	12	10	9	8	6	5	5	5	5	5	4	6	4	5	6	6
13	15	13	11	10	8	7	6	6	6	6	5	4	6	5	6	7	7
14	16	15	12	11	9	7	7	7	6	6	6	5	6	6	7	7	7
15	17	16	13	11	10	8	7	7	7	7	6	5	7	6	7	8	8
16	18	17	14	12	10	9	8	8	8	8	7	6	8	7	8	8	9
17	18	18	15	13	11	9	9	9	9	9	8	6	9	8	9	9	9
18	19	18	16	14	12	10	9	9	9	9	9	7	9	8	9	10	10
19	19	19	17	15	13	11	10	10	10	10	9	8	10	9	10	10	11
20	19	19	18	16	13	12	11	11	11	11	10	9	11	9	11	11	11
21	19	19	18	17	14	13	12	12	11	11	11	10	11	10	11	12	12
22	19	19	19	17	15	13	12	12	12	12	11	11	12	11	12	12	12
23	19	19	19	18	15	14	13	13	13	13	12	12	12	11	12	13	13
24	19	19	19	18	16	15	13	13	13	13	12	12	13	12	12	13	13
25	19	19	19	19	17	15	14	14	14	14	13	12	13	13	13	14	13
26	19	19	19	19	18	15	14	14	14	14	13	13	14	13	13	14	14
27	19	19	19	19	18	16	15	15	15	15	14	13	14	13	14	14	14
28	19	19	19	19	19	16	15	15	15	15	14	13	14	14	14	14	14
29	19	19	19	19	19	17	16	16	16	16	15	14	15	14	14	15	15
30	19	19	19	19	19	18	16	16	16	16	16	15	16	15	15	15	15
31	19	19	19	19	19	19	17	17	17	17	17	16	17	16	15	16	15
32	19	19	19	19	19	19	18	18	18	18	18	17	18	16	16	17	16
33	19	19	19	19	19	19	19	19	19	19	19	19	19	18	17	18	17

TABLE A.2 Raw Scores to Standard Scores for the Math Application Skill Area

MATH APPLICATION

	Standard Score By Age																
Raw Score	8 Years	9 Years	10 Years	11 Years	12 Years	13 Years	14 Years	15 Years	16 Years	17 Years	18 Years	19 Years	20–21 Years	22–25 Years	26–35 Years	36–50 Years	51+ Years
0	3	3	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	4	4	3	2	1	1	1	1	1	1	1	1	2	1	2	2	1
2	5	5	4	3	2	1	1	1	1	1	1	1	2	2	2	2	2
3	6	6	5	4	3	2	1	1	1	1	1	1	3	2	3	3	3
4	7	7	6	5	4	3	2	2	1	1	1	2	3	3	3	3	3
5	8	8	7	6	5	4	3	3	2	2	1	3	4	3	4	4	4
6	9	9	8	7	6	5	4	4	3	3	2	3	4	4	4	5	4
7	10	10	9	8	7	6	5	5	4	4	3	4	5	5	5	6	5
8	11	11	10	9	8	7	5	5	4	4	3	4	6	5	6	6	5
9	12	12	11	10	9	8	6	6	5	5	4	5	7	6	7	7	6
10	13	13	12	11	10	9	7	7	6	6	5	5	7	6	7	7	7
11	14	14	13	12	11	10	8	8	7	7	6	6	8	7	8	8	7
12	14	14	14	13	12	11	9	9	8	8	7	7	8	8	8	8	8
13	15	15	14	14	13	12	10	10	9	9	8	7	9	8	9	9	9
14	15	15	15	14	13	13	11	11	9	9	8	8	9	9	9	9	9
15	16	16	15	15	14	13	12	12	10	10	9	9	10	9	10	10	10
16	16	16	16	15	14	14	13	13	11	11	10	9	11	10	10	11	10
17	17	17	16	16	15	14	14	14	12	12	11	10	11	11	11	11	11
18	18	18	17	16	15	15	15	15	13	13	12	11	12	11	12	12	11
19	19	19	18	17	16	15	15	15	13	13	12	11	13	12	12	12	12
20	19	19	19	17	16	16	16	16	14	14	13	12	13	13	13	13	13
21	19	19	19	18	17	16	16	16	14	14	13	13	14	13	13	13	13
22	19	19	19	19	17	17	17	17	15	15	14	14	14	14	14	14	14
23	19	19	19	19	18	17	17	17	15	15	14	14	15	14	14	14	14
24	19	19	19	19	18	18	18	18	16	16	15	14	15	14	14	14	15
25	19	19	19	19	18	18	18	18	16	16	15	15	16	15	15	15	15
26	19	19	19	19	19	19	19	19	17	17	16	15	16	15	15	15	16
27	19	19	19	19	19	19	19	19	17	17	16	15	17	16	16	16	16
28	19	19	19	19	19	19	19	19	18	18	17	16	17	16	16	16	17
29	19	19	19	19	19	19	19	19	18	18	17	16	18	17	16	16	17
30	19	19	19	19	19	19	19	19	19	19	18	17	18	17	16	17	18
31	19	19	19	19	19	19	19	19	19	19	18	17	19	17	16	17	18
32	19	19	19	19	19	19	19	19	19	19	19	18	19	18	17	18	19
33	19	19	19	19	19	19	19	19	19	19	19	19	19	18	17	18	19
34	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19
35	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19

TABLE A.3 Raw Scores to Standard Scores for the Vocabulary Skill Area

VOCABULARY

	Standard Score By Age													
Raw Score	8 Years	9 Years	10 Years	11 Years	12 Years	13 Years	14 Years	15 Years	16 Years	17 Years	18 Years	19–25 Years	26–46 Years	47+ Years
0	3	3	2	2	1	1	1	1	1	1	1	1	1	1
1	4	4	3	3	2	1	1	1	1	1	1	1	1	1
2	5	5	4	4	3	2	2	1	1	1	1	1	1	1
3	6	6	5	5	4	3	3	2	2	2	1	2	2	2
4	7	7	6	5	4	3	3	3	3	3	2	2	2	2
5	9	8	7	6	5	4	4	3	3	3	3	3	2	2
6	10	9	8	7	6	5	5	4	4	4	4	3	3	3
7	11	10	9	8	7	6	6	5	5	5	4	4	3	3
8	12	11	10	9	8	7	7	5	5	5	5	4	4	4
9	13	12	11	9	8	7	7	6	6	6	5	5	4	4
10	14	13	12	10	9	8	8	7	7	7	6	5	4	4
11	15	14	13	11	10	8	8	7	7	7	6	6	5	5
12	16	15	14	12	10	9	9	8	8	8	7	7	5	5
13	17	16	15	13	11	10	10	9	9	9	7	7	6	6
14	18	17	16	14	12	11	11	10	10	10	8	8	6	6
15	19	18	16	15	13	12	12	11	11	11	9	8	7	7
16	19	19	17	16	14	13	13	12	12	12	10	9	8	8
17	19	19	18	17	15	14	14	13	13	13	11	9	8	8
18	19	19	19	18	16	15	15	14	14	14	12	10	10	10
19	19	19	19	19	17	16	16	15	15	15	13	12	12	11
20	19	19	19	19	18	17	17	16	16	16	14	14	14	13
21	19	19	19	19	19	18	18	18	18	18	16	16	16	15

TABLE A.4 Raw Scores to Standard Scores for the Language Mechanics Skill Area

LANGUAGE MECHANICS

	Standard Score By Age													
Raw Score	8 Years	9 Years	10 Years	11 Years	12 Years	13 Years	14 Years	15 Years	16 Years	17 Years	18 Years	19–25 Years	26–46 Years	47+ Years
0	2	2	1	1	1	1	1	1	1	1	1	1	1	1
1	3	3	2	2	1	1	1	1	1	1	1	1	1	1
2	4	4	3	2	2	2	3	3	3	2	1	1	2	2
3	5	5	4	3	2	2	4	4	4	2	1	2	3	2
4	6	6	5	4	3	3	4	4	4	3	2	2	3	3
5	7	7	6	5	4	4	4	4	4	4	3	3	4	4
6	8	8	7	6	5	5	5	5	5	4	3	4	4	4
7	9	9	8	7	6	6	6	6	6	5	4	4	5	4
8	10	10	9	8	7	7	6	6	6	7	5	5	6	5
9	11	11	10	8	8	8	7	7	7	7	6	5	6	5
10	12	12	11	9	8	8	8	8	8	8	6	6	7	6
11	13	13	11	10	9	9	8	8	8	8	7	7	7	7
12	14	14	12	11	9	9	9	9	9	9	8	7	8	7
13	15	15	13	12	10	10	9	9	9	9	8	8	9	8
14	16	16	14	12	11	11	10	10	10	10	9	9	10	8
15	17	17	15	13	12	12	11	11	11	10	9	10	11	9
16	17	17	16	14	13	13	12	12	12	11	10	11	12	10
17	18	18	17	15	14	14	13	13	13	12	11	12	13	11
18	18	18	17	16	15	15	14	14	14	13	12	13	14	13
19	18	18	18	17	16	16	15	15	15	14	13	14	15	14
20	19	19	18	18	17	17	16	16	16	15	14	15	16	15
21	19	19	19	19	18	18	17	17	17	16	15	16	17	16

TABLE A.5 Raw Scores to Standard Scores for the Reading Comprehension Skill Area

READING COMPREHENSION

	Standard Score By Age													
Raw Score	8 Years	9 Years	10 Years	11 Years	12 Years	13 Years	14 Years	15 Years	16 Years	17 Years	18 Years	19–25 Years	26–46 Years	47+ Years
0	4	4	3	2	1	1	1	1	1	1	1	1	1	1
1	5	5	4	3	2	2	2	1	1	2	1	1	1	1
2	6	6	5	4	3	3	3	2	2	3	1	2	2	2
3	7	7	6	5	4	3	3	2	2	3	2	2	3	3
4	8	8	7	6	5	4	4	3	3	4	3	3	4	4
5	9	9	8	7	6	5	5	4	4	5	4	4	5	5
6	10	10	9	8	7	6	6	5	5	6	5	5	5	5
7	11	11	10	9	8	7	7	5	5	7	5	6	6	5
8	11	11	10	10	8	7	7	6	6	7	6	6	6	5
9	12	12	11	10	9	8	8	6	6	8	6	7	7	6
10	13	13	12	11	10	9	9	7	7	9	7	7	7	6
11	14	14	13	12	10	10	10	8	8	10	7	7	8	7
12	15	15	14	12	11	10	10	9	9	10	8	8	8	7
13	16	16	15	13	12	11	11	9	9	11	8	9	8	8
14	17	17	16	14	12	11	11	10	10	11	9	9	9	8
15	17	17	17	15	12	11	11	10	10	11	9	9	9	9
16	18	18	17	15	13	12	12	11	11	12	10	10	10	9
17	18	18	18	16	13	12	12	11	11	12	10	10	10	10
18	19	19	18	16	14	13	13	12	12	13	11	11	10	10
19	19	19	19	17	14	13	13	12	12	13	11	11	11	10
20	19	19	19	17	15	14	14	13	13	14	12	12	11	11
21	19	19	19	18	15	14	14	13	13	14	12	12	12	11
22	19	19	19	18	16	15	15	14	14	15	13	13	12	12
23	19	19	19	19	16	15	15	14	14	15	13	13	12	12
24	19	19	19	19	17	16	16	15	15	16	14	14	13	13
25	19	19	19	19	17	17	17	15	15	17	15	14	14	13
26	19	19	19	19	18	17	17	16	16	17	16	15	14	14
27	19	19	19	19	18	18	18	16	16	18	17	16	15	14
28	19	19	19	19	19	18	18	17	17	18	18	17	17	15
29	19	19	19	19	19	19	19	18	18	19	19	18	18	17
30	19	19	19	19	19	19	19	19	19	19	19	19	19	19
31	19	19	19	19	19	19	19	19	19	19	19	19	19	19

Appendix B

Standard Scores, Percentile Ranks, and Confidence Intervals—Total Scores

TABLE B.1 Standard Scores, Percentile Ranks, and Confidence Intervals for Math Skills Total Scores—Students (8–18 Years)

MATH SKILLS TOTAL

Sum of Skill Area Standard Scores	Standard Score	Percentile Rank	95% Confidence Interval	
			Low End	High End
0	52	0.1	48	65
1	53	0.1	48	66
2	54	0.1	49	67
3	55	0.1	50	68
4	57	0.2	52	69
5	60	0.4	55	72
6	63	0.7	58	75
7	66	1	60	78
8	68	2	62	79
9	70	2	64	81
10	71	3	65	82
11	74	4	68	85
12	77	6	70	88
13	80	9	73	90
14	83	13	76	93
15	86	18	79	96
16	89	24	82	99
17	92	29	84	101
18	94	34	86	103
19	96	40	88	105
20	98	45	89	107
21	100	50	91	109
22	103	58	94	111
23	106	64	96	114
24	109	73	100	117
25	111	77	101	119
26	113	81	103	120
27	115	84	105	122
28	118	88	108	125
29	121	92	110	128
30	124	95	113	131
31	127	96	116	133
32	130	98	119	136
33	133	99	122	139
34	136	99.2	124	141
35	139	99.5	127	144
36	142	99.7	130	147
37	145	99.9	132	150
38	148	99.9	135	152

TABLE B.2 Standard Scores, Percentile Ranks, and Confidence Intervals for Math Skills Total Scores—Adults (19–80 Years)

MATH SKILLS TOTAL

Sum of Skill Area Standard Scores	Standard Score	Percentile Rank	95% Confidence Interval	
			Low End	High End
0	50	0.1	46	62
1	52	0.1	48	64
2	54	0.1	49	66
3	56	0.2	51	68
4	59	0.3	54	70
5	62	0.6	57	73
6	65	1	60	76
7	68	2	62	79
8	70	2	64	80
9	72	3	66	82
10	75	5	69	85
11	78	7	71	88
12	81	10	74	90
13	83	13	76	93
14	86	17	79	95
15	88	22	81	97
16	91	28	84	100
17	94	35	86	103
18	97	42	89	105
19	100	49	92	108
20	102	55	93	110
21	104	61	96	112
22	107	67	98	114
23	109	73	100	117
24	112	79	103	119
25	114	82	105	121
26	117	87	107	124
27	119	90	110	126
28	122	92	112	128
29	124	94	114	130
30	127	96	117	133
31	130	98	120	136
32	133	99	122	138
33	135	99.1	125	141
34	138	99.5	127	144
35	141	99.7	130	146
36	144	99.8	132	149
37	147	99.9	135	152
38	150	99.9	138	154

TABLE B.3 Standard Scores, Percentile Ranks, and Confidence Intervals for Verbal Skills Total Scores—Students (8–18 Years)

VERBAL SKILLS TOTAL

Sum of Skill Area Standard Scores	Standard Score	Percentile Rank	95% Confidence Interval	
			Low End	High End
0	51	0.1	47	62
1	52	0.1	48	63
2	53	0.1	49	63
3	54	0.1	50	64
4	55	0.1	50	65
5	56	0.2	51	66
6	58	0.3	54	69
7	60	0.4	55	70
8	62	0.5	57	71
9	63	0.7	58	73
10	65	0.9	59	74
11	66	1	61	76
12	68	2	63	77
13	70	2	64	79
14	71	3	66	81
15	72	3	66	81
16	74	4	68	83
17	76	6	70	85
18	78	7	72	87
19	80	9	74	89
20	82	11	75	90
21	84	14	78	92
22	86	17	79	94
23	88	20	81	96
24	89	23	82	97
25	91	27	84	99
26	93	33	86	101
27	95	37	88	103
28	97	41	89	104
29	98	45	91	106
30	100	50	92	107
31	101	53	93	108
32	102	56	95	110
33	104	61	97	111
34	106	65	98	113
35	108	69	100	115
36	109	73	101	116
37	111	76	103	117
38	112	79	104	119
39	114	82	105	120
40	115	84	107	122
41	117	88	109	124
42	119	90	110	125
43	121	92	112	127
44	123	94	114	129
45	125	95	116	131

(continued)

Sum of Skill Area Standard Scores	Standard Score	Percentile Rank	95% Confidence Interval	
			Low End	High End
46	127	96	117	132
47	128	97	119	134
48	131	98	121	136
49	133	99	123	138
50	135	99	125	140
51	137	99.3	127	142
52	139	99.5	129	144
53	141	99.7	131	146
54	143	99.8	133	148
55	146	99.9	136	150
56	149	99.9	138	153
57	150	99.9	139	154

TABLE B.4 Standard Scores, Percentile Ranks, and Confidence Intervals for Verbal Skills Total Scores—Adults (19–80 Years)

VERBAL SKILLS TOTAL

Sum of Skill Area Standard Scores	Standard Score	Percentile Rank	95% Confidence Interval	
			Low End	High End
0	46	0.1	42	56
1	47	0.1	43	57
2	48	0.1	44	57
3	49	0.1	45	58
4	50	0.1	46	59
5	53	0.1	49	62
6	55	0.1	50	64
7	58	0.2	53	67
8	60	0.4	55	69
9	62	0.6	57	71
10	64	0.8	59	73
11	66	1	61	74
12	68	2	63	76
13	69	2	64	77
14	70	2	65	78
15	72	3	67	80
16	75	5	70	83
17	77	6	72	85
18	78	7	73	86
19	80	9	74	88
20	81	11	76	89
21	83	12	77	90
22	84	15	79	92
23	85	16	79	93
24	86	18	80	93
25	88	22	82	96
26	90	25	83	97
27	91	27	85	98
28	92	30	86	99
29	93	32	87	100
30	94	34	88	101
31	96	39	89	103
32	98	44	91	105
33	100	50	93	107
34	101	52	94	108
35	102	56	95	109
36	104	61	97	111
37	106	65	99	112
38	108	70	101	114
39	110	75	103	116
40	112	79	105	118
41	114	82	106	120
42	115	84	107	121
43	118	88	110	124
44	120	91	112	126
45	123	94	115	129

(continued)

Sum of Skill Area Standard Scores	Standard Score	Percentile Rank	95% Confidence Interval	
			Low End	High End
46	125	95	117	130
47	128	97	120	133
48	130	98	122	135
49	133	99	125	138
50	135	99	126	140
51	138	99.4	129	143
52	140	99.6	131	145
53	142	99.7	133	147
54	144	99.8	135	148
55	146	99.9	137	150
56	148	99.9	139	152
57	150	99.9	141	154

Appendix C

Grade-Equivalent Scores—Math Skills and Verbal Skills Total Scores

TABLE C.1 Grade-Equivalent Scores Corresponding to Math Skills Total Scores

MATH SKILLS TOTAL

Raw Score	Grade Equivalent
0–13	<3.0
14	3.2
15	3.5
16	3.9
17	4.2
18	4.4
19	4.6
20	4.8
21	5.0
22	5.2
23	5.7
24	6.2
25	6.3
26	6.5
27	6.6
28	6.8
29	6.9
30	7.1
31	7.2
32	8.2
33	9.0
34	9.4
35	10.2
36	11.2
37	12.2
38–68	12.9

TABLE C.2 Grade-Equivalent Scores Corresponding to Verbal Skills Total Scores

VERBAL SKILLS TOTAL

Raw Score	Grade Equivalent
0–18	<3.0
19	3.2
20	3.7
21	4.2
22	4.5
23	4.8
24	5.1
25	5.3
26	5.5
27	5.6
28	5.7
29	5.8
30	5.9
31	6.0
32	6.1
33	6.2
34	6.4
35	6.6
36	6.8
37	7.0
38	7.2
39	7.7
40	8.2
41	8.5
42	8.8
43	9.1
44	9.4
45	10.2
46	11.2
47	12.2
48–73	12.9

Appendix D

Age-Equivalent Scores—Math Skills and Verbal Skills Total Scores

TABLE D.1 Age-Equivalent Scores Corresponding to Math Skills Total Scores

MATH SKILLS TOTAL

Raw Score	Age Equivalent
0–13	<8–0
14	8–4
15	8–10
16	9–4
17	9–7
18	9–9
19	9–11
20	10–1
21	10–4
22	10–10
23	11–4
24	11–6
25	11–8
26	11–10
27	12–0
28	12–2
29	12–4
30	12–10
31	13–4
32	13–10
33	14–4
34	14–10
35	15–4
36	16–4
37	17–4
38–68	18–0

TABLE D.2 Age-Equivalent Scores Corresponding to Verbal Skills Total Scores

VERBAL SKILLS TOTAL

Raw Score	Age Equivalent
0–19	<8–0
20	8–4
21	8–10
22	9–4
23	9–10
24	10–4
25	10–5
26	10–7
27	10–8
28	10–10
29	10–11
30	11–1
31	11–2
32	11–4
33	11–7
34	11–10
35	12–1
36	12–4
37	12–7
38	12–9
39	12–11
40	13–1
41	13–4
42	14–4
43	15–4
44	16–4
45	17–4
46–73	18–0

Appendix E

Expected Variability in Total Scores From Repeat Administrations of the Same BASI Test

Use this appendix to compare scores from repeat administrations of the same BASI test. The score ranges in these tables reflect the variability expected due to test-retest unreliability and regression to the mean. Choose the appropriate table for the examinee (Math Skills Total or Verbal Skills Total and appropriate age norms). In the left column, find his or her standard score for the first administration. Then read across to find the range of scores for the examinee's age. If the examinee's score for the second administration falls within that range, the difference between the test-retest scores is not statistically significant. If the second score falls outside the range, the difference is statistically significant. For more information, see "Comparing Scores From Repeat Administrations of the Same BASI Survey Test" in Chapter 3.

TABLE E.1 Expected Variability in Scores From Repeat Administrations of the Same BASI Test—Math Skills Total Scores

Standard Score (First Admin.)	Expected Retest Score								
	Age 8	Age 9	Age 10	Age 11	Age 12	Age 13	Age 14	Age 15	Age 16
150	120–153	124–155	125–155	125–155	131–156	131–156	129–155	133–156	133–156
149	119–153	124–154	124–154	124–154	130–155	130–155	128–155	132–155	132–155
148	118–152	123–153	124–153	124–153	130–154	130–154	127–154	131–154	131–154
147	117–151	122–152	123–152	123–152	129–153	129–153	126–153	131–153	131–153
146	117–150	121–151	122–152	122–152	128–152	128–152	125–152	130–152	130–152
145	116–150	120–151	121–151	121–151	127–151	127–151	124–151	129–151	129–151
144	115–149	120–150	120–150	120–150	126–150	126–150	124–150	128–150	128–150
143	115–148	119–149	120–149	120–149	125–150	125–150	123–150	127–150	127–150
142	114–148	118–148	119–148	119–148	124–149	124–149	122–149	126–149	126–149
141	113–147	117–148	118–148	118–148	124–148	124–148	121–148	125–148	125–148
140	112–146	116–147	117–147	117–147	123–147	123–147	120–147	124–147	124–147
139	112–145	116–146	116–146	116–146	122–146	122–146	119–146	123–146	123–146
138	111–145	115–145	116–145	116–145	121–145	121–145	119–145	123–145	123–145
137	110–144	114–144	115–144	115–144	120–144	120–144	118–144	122–144	122–144
136	109–143	113–144	114–144	114–144	119–143	119–143	117–144	121–143	121–143
135	109–142	113–143	113–143	113–143	118–143	118–143	116–143	120–142	120–142
134	108–142	112–142	112–142	112–142	117–142	117–142	115–142	119–142	119–142
133	107–141	111–141	112–141	112–141	117–141	117–141	114–141	118–141	118–141
132	106–140	110–140	111–140	111–140	116–140	116–140	113–140	117–140	117–140
131	106–139	109–140	110–140	110–140	115–139	115–139	113–139	116–139	116–139
130	105–139	109–139	109–139	109–139	114–138	114–138	112–139	115–138	115–138
129	104–138	108–138	108–138	108–138	113–137	113–137	111–138	115–137	115–137
128	104–137	107–137	108–137	108–137	112–137	112–137	110–137	114–136	114–136
127	103–137	106–136	107–136	107–136	111–136	111–136	109–136	113–135	113–135
126	102–136	105–136	106–136	106–136	110–135	110–135	108–135	112–134	112–134
125	101–135	105–135	105–135	105–135	110–134	110–134	108–134	111–133	111–133
124	101–134	104–134	104–134	104–134	109–133	109–133	107–134	110–133	110–133
123	100–134	103–133	104–133	104–133	108–132	108–132	106–133	109–132	109–132
122	99–133	102–133	103–132	103–132	107–131	107–131	105–132	108–131	108–131
121	98–132	101–132	102–132	102–132	106–130	106–130	104–131	107–130	107–130
120	98–131	101–131	101–131	101–131	105–130	105–130	103–130	107–129	107–129

Note. A score that is below or above the expected retest score range is statistically significant ($p < .10$).

TABLE E.1 Expected Variability in Scores From Repeat Administrations of the Same BASI Test—Math Skills Total Scores

Standard Score (First Admin.)	Expected Retest Score							
	Age 17	Age 18	Age 19	Age 20–21	Age 22–25	Age 26–35	Age 36–50	Age 51 Plus
150	135–156	133–156	133–156	135–156	136–156	137–156	136–156	137–156
149	134–155	132–155	132–155	134–155	135–155	137–155	135–155	137–155
148	133–154	131–154	131–154	133–154	134–154	136–154	134–154	136–154
147	133–153	131–153	131–153	133–153	134–153	135–153	134–153	135–153
146	132–152	130–152	130–152	132–152	133–152	134–152	133–152	134–152
145	131–151	129–151	129–151	131–151	132–151	133–151	132–151	133–151
144	130–150	128–150	128–150	130–150	131–150	132–150	131–150	132–150
143	129–149	127–150	127–150	129–149	130–149	131–149	130–149	131–149
142	128–148	126–149	126–149	128–148	129–148	130–148	129–148	130–148
141	127–148	125–148	125–148	127–148	128–147	129–147	128–147	129–147
140	126–147	124–147	124–147	126–147	127–146	128–146	127–146	128–146
139	125–146	123–146	123–146	125–146	126–146	127–145	126–146	127–145
138	124–145	123–145	123–145	124–145	125–145	126–144	125–145	126–144
137	123–144	122–144	122–144	123–144	124–144	125–143	124–144	125–143
136	123–143	121–143	121–143	123–143	123–143	124–143	123–143	124–143
135	122–142	120–142	120–142	122–142	123–142	123–142	123–142	123–142
134	121–141	119–142	119–142	121–141	122–141	123–141	122–141	123–141
133	120–140	118–141	118–141	120–140	121–140	122–140	121–140	122–140
132	119–139	117–140	117–140	119–139	120–139	121–139	120–139	121–139
131	118–138	116–139	116–139	118–138	119–138	120–138	119–138	120–138
130	117–138	115–138	115–138	117–138	118–137	119–137	118–137	119–137
129	116–137	115–137	115–137	116–137	117–136	118–136	117–136	118–136
128	115–136	114–136	114–136	115–136	116–135	117–135	116–135	117–135
127	114–135	113–135	113–135	114–135	115–135	116–134	115–135	116–134
126	113–134	112–134	112–134	113–134	114–134	115–133	114–134	115–133
125	113–133	111–133	111–133	113–133	113–133	114–132	113–133	114–132
124	112–132	110–133	110–133	112–132	112–132	113–131	112–132	113–131
123	111–131	109–132	109–132	111–131	111–131	112–130	111–131	112–130
122	110–130	108–131	108–131	110–130	111–130	111–130	111–130	111–130
121	109–129	107–130	107–130	109–129	110–129	110–129	110–129	110–129
120	108–128	107–129	107–129	108–128	109–128	110–128	109–128	110–128

Note. A score that is below or above the expected retest score range is statistically significant ($p < .10$).

TABLE E.1 Expected Variability in Scores From Repeat Administrations of the Same BASI Test—Math Skills Total Scores

Standard Score (First Admin.)	Expected Retest Score								
	Age 8	Age 9	Age 10	Age 11	Age 12	Age 13	Age 14	Age 15	Age 16
119	97–131	100–130	100–130	100–130	104–129	104–129	103–129	106–128	106–128
118	96–130	99–129	100–129	100–129	103–128	103–128	102–129	105–127	105–127
117	96–129	98–129	99–128	99–128	103–127	103–127	101–128	104–126	104–126
116	95–129	98–128	98–128	98–128	102–126	102–126	100–127	103–125	103–125
115	94–128	97–127	97–127	97–127	101–125	101–125	99–126	102–125	102–125
114	93–127	96–126	96–126	96–126	100–124	100–124	98–125	101–124	101–124
113	93–126	95–125	96–125	96–125	99–123	99–123	98–124	100–123	100–123
112	92–126	94–125	95–124	95–124	98–123	98–123	97–123	99–122	99–122
111	91–125	94–124	94–124	94–124	97–122	97–122	96–123	99–121	99–121
110	90–124	93–123	93–123	93–123	97–121	97–121	95–122	98–120	98–120
109	90–123	92–122	92–122	92–122	96–120	96–120	94–121	97–119	97–119
108	89–123	91–121	92–121	92–121	95–119	95–119	93–120	96–118	96–118
107	88–122	90–121	91–120	91–120	94–118	94–118	92–119	95–117	95–117
106	88–121	90–120	90–120	90–120	93–117	93–117	92–118	94–117	94–117
105	87–121	89–119	89–119	89–119	92–117	92–117	91–118	93–116	93–116
104	86–120	88–118	88–118	88–118	91–116	91–116	90–117	92–115	92–115
103	85–119	87–117	88–117	88–117	90–115	90–115	89–116	91–114	91–114
102	85–118	86–117	87–116	87–116	90–114	90–114	88–115	91–113	91–113
101	84–118	86–116	86–116	86–116	89–113	89–113	87–114	90–112	90–112
100	83–117	85–115	85–115	85–115	88–112	88–112	87–113	89–111	89–111
99	82–116	84–114	84–114	84–114	87–111	87–111	86–113	88–110	88–110
98	82–115	83–114	84–113	84–113	86–110	86–110	85–112	87–109	87–109
97	81–115	83–113	83–112	83–112	85–110	85–110	84–111	86–109	86–109
96	80–114	82–112	82–112	82–112	84–109	84–109	83–110	85–108	85–108
95	79–113	81–111	81–111	81–111	83–108	83–108	82–109	84–107	84–107
94	79–112	80–110	80–110	80–110	83–107	83–107	82–108	83–106	83–106
93	78–112	79–110	80–109	80–109	82–106	82–106	81–108	83–105	83–105
92	77–111	79–109	79–108	79–108	81–105	81–105	80–107	82–104	82–104
91	77–110	78–108	78–108	78–108	80–104	80–104	79–106	81–103	81–103
90	76–110	77–107	77–107	77–107	79–103	79–103	78–105	80–102	80–102
89	75–109	76–106	76–106	76–106	78–103	78–103	77–104	79–101	79–101

Note. A score that is below or above the expected retest score range is statistically significant ($p < .10$).

TABLE E.1 Expected Variability in Scores From Repeat Administrations of the Same BASI Test—Math Skills Total Scores

Standard Score (First Admin.)	Expected Retest Score							
	Age 17	Age 18	Age 19	Age 20–21	Age 22–25	Age 26–35	Age 36–50	Age 51 Plus
119	107–128	106–128	106–128	107–128	108–127	109–127	108–127	109–127
118	106–127	105–127	105–127	106–127	107–126	108–126	107–126	108–126
117	105–126	104–126	104–126	105–126	106–125	107–125	106–125	107–125
116	104–125	103–125	103–125	104–125	105–124	106–124	105–124	106–124
115	103–124	102–125	102–125	103–124	104–123	105–123	104–123	105–123
114	103–123	101–124	101–124	103–123	103–123	104–122	103–123	104–122
113	102–122	100–123	100–123	102–122	102–122	103–121	102–122	103–121
112	101–121	99–122	99–122	101–121	101–121	102–120	101–121	102–120
111	100–120	99–121	99–121	100–120	100–120	101–119	100–120	101–119
110	99–119	98–120	98–120	99–119	100–119	100–118	100–119	100–118
109	98–118	97–119	97–119	98–118	99–118	99–117	99–118	99–117
108	97–118	96–118	96–118	97–118	98–117	98–117	98–117	98–117
107	96–117	95–117	95–117	96–117	97–116	97–116	97–116	97–116
106	95–116	94–117	94–117	95–116	96–115	97–115	96–115	97–115
105	94–115	93–116	93–116	94–115	95–114	96–114	95–114	96–114
104	93–114	92–115	92–115	93–114	94–113	95–113	94–113	95–113
103	93–113	91–114	91–114	93–113	93–112	94–112	93–112	94–112
102	92–112	91–113	91–113	92–112	92–112	93–111	92–112	93–111
101	91–111	90–112	90–112	91–111	91–111	92–110	91–111	92–110
100	90–110	89–111	89–111	90–110	90–110	91–109	90–110	91–109
99	89–109	88–110	88–110	89–109	89–109	90–108	89–109	90–108
98	88–108	87–109	87–109	88–108	88–108	89–107	88–108	89–107
97	87–107	86–109	86–109	87–107	88–107	88–106	88–107	88–106
96	86–107	85–108	85–108	86–107	87–106	87–105	87–106	87–105
95	85–106	84–107	84–107	85–106	86–105	86–104	86–105	86–104
94	84–105	83–106	83–106	84–105	85–104	85–103	85–104	85–103
93	83–104	83–105	83–105	83–104	84–103	84–103	84–103	84–103
92	82–103	82–104	82–104	82–103	83–102	83–102	83–102	83–102
91	82–102	81–103	81–103	82–102	82–101	83–101	82–101	83–101
90	81–101	80–102	80–102	81–101	81–100	82–100	81–100	82–100
89	80–100	79–101	79–101	80–100	80–100	81–99	80–100	81–99

Note. A score that is below or above the expected retest score range is statistically significant ($p < .10$).

TABLE E.1 Expected Variability in Scores From Repeat Administrations of the Same BASI Test—Math Skills Total Scores

Standard Score (First Admin.)	Expected Retest Score								
	Age 8	Age 9	Age 10	Age 11	Age 12	Age 13	Age 14	Age 15	Age 16
88	74–108	75–106	76–105	76–105	77–102	77–102	77–103	78–101	78–101
87	74–107	75–105	75–104	75–104	77–101	77–101	76–102	77–100	77–100
86	73–107	74–104	74–104	74–104	76–100	76–100	75–102	76–99	76–99
85	72–106	73–103	73–103	73–103	75–99	75–99	74–101	75–98	75–98
84	71–105	72–102	72–102	72–102	74–98	74–98	73–100	75–97	75–97
83	71–104	71–102	72–101	72–101	73–97	73–97	72–99	74–96	74–96
82	70–104	71–101	71–100	71–100	72–97	72–97	71–98	73–95	73–95
81	69–103	70–100	70–100	70–100	71–96	71–96	71–97	72–94	72–94
80	69–102	69–99	69–99	69–99	70–95	70–95	70–97	71–93	71–93
79	68–102	68–99	68–98	68–98	70–94	70–94	69–96	70–93	70–93
78	67–101	67–98	68–97	68–97	69–93	69–93	68–95	69–92	69–92
77	66–100	67–97	67–96	67–96	68–92	68–92	67–94	68–91	68–91
76	66–99	66–96	66–96	66–96	67–91	67–91	66–93	67–90	67–90
75	65–99	65–95	65–95	65–95	66–90	66–90	66–92	67–89	67–89
74	64–98	64–95	64–94	64–94	65–90	65–90	65–92	66–88	66–88
73	63–97	64–94	64–93	64–93	64–89	64–89	64–91	65–87	65–87
72	63–96	63–93	63–92	63–92	63–88	63–88	63–90	64–86	64–86
71	62–96	62–92	62–92	62–92	63–87	63–87	62–89	63–85	63–85
70	61–95	61–91	61–91	61–91	62–86	62–86	61–88	62–85	62–85
69	61–94	60–91	60–90	60–90	61–85	61–85	61–87	61–84	61–84
68	60–94	60–90	60–89	60–89	60–84	60–84	60–87	60–83	60–83
67	59–93	59–89	59–88	59–88	59–83	59–83	59–86	59–82	59–82
66	58–92	58–88	58–88	58–88	58–83	58–83	58–85	58–81	58–81
65	58–91	57–87	57–87	57–87	57–82	57–82	57–84	58–80	58–80
64	57–91	56–87	56–86	56–86	57–81	57–81	56–83	57–79	57–79
63	56–90	56–86	56–85	56–85	56–80	56–80	56–82	56–78	56–78
62	55–89	55–85	55–84	55–84	55–79	55–79	55–81	55–77	55–77
61	55–88	54–84	54–84	54–84	54–78	54–78	54–81	54–77	54–77
60	54–88	53–84	53–83	53–83	53–77	53–77	53–80	53–76	53–76
59	53–87	52–83	52–82	52–82	52–76	52–76	52–79	52–75	52–75
58	52–86	52–82	52–81	52–81	51–76	51–76	51–78	51–74	51–74

Note. A score that is below or above the expected retest score range is statistically significant ($p < .10$).

TABLE E.1 Expected Variability in Scores From Repeat Administrations of the Same BASI Test—Math Skills Total Scores

Standard Score (First Admin.)	Expected Retest Score							
	Age 17	Age 18	Age 19	Age 20–21	Age 22–25	Age 26–35	Age 36–50	Age 51 Plus
88	79–99	78–101	78–101	79–99	79–99	80–98	79–99	80–98
87	78–98	77–100	77–100	78–98	78–98	79–97	78–98	79–97
86	77–97	76–99	76–99	77–97	77–97	78–96	77–97	78–96
85	76–97	75–98	75–98	76–97	77–96	77–95	77–96	77–95
84	75–96	75–97	75–97	75–96	76–95	76–94	76–95	76–94
83	74–95	74–96	74–96	74–95	75–94	75–93	75–94	75–93
82	73–94	73–95	73–95	73–94	74–93	74–92	74–93	74–92
81	72–93	72–94	72–94	72–93	73–92	73–91	73–92	73–91
80	72–92	71–93	71–93	72–92	72–91	72–90	72–91	72–90
79	71–91	70–93	70–93	71–91	71–90	71–90	71–90	71–90
78	70–90	69–92	69–92	70–90	70–89	70–89	70–89	70–89
77	69–89	68–91	68–91	69–89	69–89	70–88	69–89	70–88
76	68–88	67–90	67–90	68–88	68–88	69–87	68–88	69–87
75	67–87	67–89	67–89	67–87	67–87	68–86	67–87	68–86
74	66–87	66–88	66–88	66–87	66–86	67–85	66–86	67–85
73	65–86	65–87	65–87	65–86	65–85	66–84	65–85	66–84
72	64–85	64–86	64–86	64–85	65–84	65–83	65–84	65–83
71	63–84	63–85	63–85	63–84	64–83	64–82	64–83	64–82
70	62–83	62–85	62–85	62–83	63–82	63–81	63–82	63–81
69	62–82	61–84	61–84	62–82	62–81	62–80	62–81	62–80
68	61–81	60–83	60–83	61–81	61–80	61–79	61–80	61–79
67	60–80	59–82	59–82	60–80	60–79	60–78	60–79	60–78
66	59–79	58–81	58–81	59–79	59–78	59–77	59–78	59–77
65	58–78	58–80	58–80	58–78	58–77	58–77	58–77	58–77
64	57–77	57–79	57–79	57–77	57–77	57–76	57–77	57–76
63	56–77	56–78	56–78	56–77	56–76	57–75	56–76	57–75
62	55–76	55–77	55–77	55–76	55–75	56–74	55–75	56–74
61	54–75	54–77	54–77	54–75	54–74	55–73	54–74	55–73
60	53–74	53–76	53–76	53–74	54–73	54–72	54–73	54–72
59	52–73	52–75	52–75	52–73	53–72	53–71	53–72	53–71
58	52–72	51–74	51–74	52–72	52–71	52–70	52–71	52–70

Note. A score that is below or above the expected retest score range is statistically significant ($p < .10$).

TABLE E.1 Expected Variability in Scores From Repeat Administrations of the Same BASI Test—Math Skills Total Scores

Standard Score (First Admin.)	Expected Retest Score								
	Age 8	Age 9	Age 10	Age 11	Age 12	Age 13	Age 14	Age 15	Age 16
57	52–85	51–81	51–80	51–80	50–75	50–75	50–77	50–73	50–73
56	51–85	50–80	50–80	50–80	50–74	50–74	50–76	50–72	50–72
55	50–84	49–80	49–79	49–79	49–73	49–73	49–76	49–71	49–71
54	50–83	49–79	48–78	48–78	48–72	48–72	48–75	48–70	48–70
53	49–83	48–78	48–77	48–77	47–71	47–71	47–74	47–69	47–69
52	48–82	47–77	47–76	47–76	46–70	46–70	46–73	46–69	46–69
51	47–81	46–76	46–76	46–76	45–70	45–70	45–72	45–68	45–68
50	47–80	45–76	45–75	45–75	44–69	44–69	45–71	44–67	44–67

Note. A score that is below or above the expected retest score range is statistically significant ($p < .10$).

TABLE E.1 Expected Variability in Scores From Repeat Administrations of the Same BASI Test—Math Skills Total Scores

Standard Score (First Admin.)	Expected Retest Score							
	Age 17	Age 18	Age 19	Age 20–21	Age 22–25	Age 26–35	Age 36–50	Age 51 Plus
57	51–71	50–73	50–73	51–71	51–70	51–69	51–70	51–69
56	50–70	50–72	50–72	50–70	50–69	50–68	50–69	50–68
55	49–69	49–71	49–71	49–69	49–68	49–67	49–68	49–67
54	48–68	48–70	48–70	48–68	48–67	48–66	48–67	48–66
53	47–67	47–69	47–69	47–67	47–66	47–65	47–66	47–65
52	46–67	46–69	46–69	46–67	46–66	46–64	46–66	46–64
51	45–66	45–68	45–68	45–66	45–65	45–63	45–65	45–63
50	44–65	44–67	44–67	44–65	44–64	44–63	44–64	44–63

Note. A score that is below or above the expected retest score range is statistically significant ($p < .10$).

TABLE E.2 Expected Variability in Scores From Repeat Administrations of the Same BASI Test—Verbal Skills Total Scores

Standard Score (First Admin.)	Expected Retest Score						
	Age 8	Age 9	Age 10	Age 11	Age 12	Age 13	Age 14
150	121–154	130–156	133–156	133–156	134–156	134–156	139–155
149	120–153	130–155	132–155	132–155	133–155	133–155	138–154
148	120–152	129–154	131–154	131–154	132–154	132–154	137–154
147	119–152	128–153	131–153	131–153	132–153	132–153	136–153
146	118–151	127–152	130–152	130–152	131–152	131–152	135–152
145	117–150	126–151	129–151	129–151	130–151	130–151	134–151
144	117–149	125–150	128–150	128–150	129–150	129–150	133–150
143	116–149	124–150	127–150	127–150	128–149	128–149	132–149
142	115–148	124–149	126–149	126–149	127–149	127–149	131–148
141	114–147	123–148	125–148	125–148	126–148	126–148	130–147
140	114–146	122–147	124–147	124–147	125–147	125–147	129–146
139	113–146	121–146	123–146	123–146	124–146	124–146	128–145
138	112–145	120–145	123–145	123–145	123–145	123–145	127–144
137	111–144	119–144	122–144	122–144	123–144	123–144	126–143
136	111–143	118–144	121–143	121–143	122–143	122–143	125–142
135	110–143	118–143	120–142	120–142	121–142	121–142	124–141
134	109–142	117–142	119–142	119–142	120–141	120–141	124–140
133	108–141	116–141	118–141	118–141	119–140	119–140	123–139
132	108–140	115–140	117–140	117–140	118–140	118–140	122–138
131	107–140	114–139	116–139	116–139	117–139	117–139	121–138
130	106–139	113–138	115–138	115–138	116–138	116–138	120–137
129	105–138	112–138	115–137	115–137	115–137	115–137	119–136
128	105–137	111–137	114–136	114–136	114–136	114–136	118–135
127	104–137	111–136	113–135	113–135	114–135	114–135	117–134
126	103–136	110–135	112–134	112–134	113–134	113–134	116–133
125	102–135	109–134	111–133	111–133	112–133	112–133	115–132
124	102–134	108–133	110–133	110–133	111–132	111–132	114–131
123	101–134	107–132	109–132	109–132	110–131	110–131	113–130
122	100–133	106–132	108–131	108–131	109–131	109–131	112–129
121	99–132	105–131	107–130	107–130	108–130	108–130	111–128
120	99–131	105–130	107–129	107–129	107–129	107–129	110–127

Note. A score that is below or above the expected retest score range is statistically significant ($p < .10$).

TABLE E.2 Expected Variability in Scores From Repeat Administrations of the Same BASI Test—Verbal Skills Total Scores

Standard Score (First Admin.)	Expected Retest Score						
	Age 15	Age 16	Age 17	Age 18	Age 19–25	Age 26–46	Age 47 Plus
150	139–155	139–155	139–155	136–156	136–156	140–155	139–155
149	138–154	138–154	138–154	135–155	135–155	139–154	138–154
148	137–154	137–154	137–154	134–154	134–154	138–153	137–154
147	136–153	136–153	136–153	134–153	134–153	137–152	136–153
146	135–152	135–152	135–152	133–152	133–152	136–151	135–152
145	134–151	134–151	134–151	132–151	132–151	135–150	134–151
144	133–150	133–150	133–150	131–150	131–150	134–150	133–150
143	132–149	132–149	132–149	130–149	130–149	133–149	132–149
142	131–148	131–148	131–148	129–148	129–148	132–148	131–148
141	130–147	130–147	130–147	128–147	128–147	131–147	130–147
140	129–146	129–146	129–146	127–146	127–146	130–146	129–146
139	128–145	128–145	128–145	126–146	126–146	129–145	128–145
138	127–144	127–144	127–144	125–145	125–145	128–144	127–144
137	126–143	126–143	126–143	124–144	124–144	127–143	126–143
136	125–142	125–142	125–142	123–143	123–143	126–142	125–142
135	124–141	124–141	124–141	123–142	123–142	126–141	124–141
134	124–140	124–140	124–140	122–141	122–141	125–140	124–140
133	123–139	123–139	123–139	121–140	121–140	124–139	123–139
132	122–138	122–138	122–138	120–139	120–139	123–138	122–138
131	121–138	121–138	121–138	119–138	119–138	122–137	121–138
130	120–137	120–137	120–137	118–137	118–137	121–136	120–137
129	119–136	119–136	119–136	117–136	117–136	120–135	119–136
128	118–135	118–135	118–135	116–135	116–135	119–134	118–135
127	117–134	117–134	117–134	115–135	115–135	118–133	117–134
126	116–133	116–133	116–133	114–134	114–134	117–132	116–133
125	115–132	115–132	115–132	113–133	113–133	116–131	115–132
124	114–131	114–131	114–131	112–132	112–132	115–131	114–131
123	113–130	113–130	113–130	111–131	111–131	114–130	113–130
122	112–129	112–129	112–129	111–130	111–130	113–129	112–129
121	111–128	111–128	111–128	110–129	110–129	112–128	111–128
120	110–127	110–127	110–127	109–128	109–128	111–127	110–127

Note. A score that is below or above the expected retest score range is statistically significant ($p < .10$).

TABLE E.2 Expected Variability in Scores From Repeat Administrations of the Same BASI Test—Verbal Skills Total Scores

Standard Score (First Admin.)	Expected Retest Score						
	Age 8	Age 9	Age 10	Age 11	Age 12	Age 13	Age 14
119	98–131	104–129	106–128	106–128	106–128	106–128	109–126
118	97–130	103–128	105–127	105–127	105–127	105–127	109–125
117	96–129	102–127	104–126	104–126	105–126	105–126	108–124
116	96–128	101–126	103–125	103–125	104–125	104–125	107–123
115	95–128	100–125	102–125	102–125	103–124	103–124	106–123
114	94–127	99–125	101–124	101–124	102–123	102–123	105–122
113	93–126	99–124	100–123	100–123	101–122	101–122	104–121
112	93–125	98–123	99–122	99–122	100–122	100–122	103–120
111	92–125	97–122	99–121	99–121	99–121	99–121	102–119
110	91–124	96–121	98–120	98–120	98–120	98–120	101–118
109	90–123	95–120	97–119	97–119	97–119	97–119	100–117
108	90–122	94–119	96–118	96–118	96–118	96–118	99–116
107	89–122	93–119	95–117	95–117	96–117	96–117	98–115
106	88–121	93–118	94–117	94–117	95–116	95–116	97–114
105	87–120	92–117	93–116	93–116	94–115	94–115	96–113
104	87–119	91–116	92–115	92–115	93–114	93–114	95–112
103	86–119	90–115	91–114	91–114	92–113	92–113	94–111
102	85–118	89–114	91–113	91–113	91–113	91–113	93–110
101	84–117	88–113	90–112	90–112	90–112	90–112	93–109
100	84–116	87–113	89–111	89–111	89–111	89–111	92–108
99	83–116	87–112	88–110	88–110	88–110	88–110	91–107
98	82–115	86–111	87–109	87–109	87–109	87–109	90–107
97	81–114	85–110	86–109	86–109	87–108	87–108	89–106
96	81–113	84–109	85–108	85–108	86–107	86–107	88–105
95	80–113	83–108	84–107	84–107	85–106	85–106	87–104
94	79–112	82–107	83–106	83–106	84–105	84–105	86–103
93	78–111	81–107	83–105	83–105	83–104	83–104	85–102
92	78–110	81–106	82–104	82–104	82–104	82–104	84–101
91	77–110	80–105	81–103	81–103	81–103	81–103	83–100
90	76–109	79–104	80–102	80–102	80–102	80–102	82–99
89	75–108	78–103	79–101	79–101	79–101	79–101	81–98

Note. A score that is below or above the expected retest score range is statistically significant ($p < .10$).

TABLE E.2 Expected Variability in Scores From Repeat Administrations of the Same BASI Test—Verbal Skills Total Scores

Standard Score (First Admin.)	Expected Retest Score						
	Age 15	Age 16	Age 17	Age 18	Age 19–25	Age 26–46	Age 47 Plus
119	109–126	109–126	109–126	108–127	108–127	110–126	109–126
118	109–125	109–125	109–125	107–126	107–126	109–125	109–125
117	108–124	108–124	108–124	106–125	106–125	108–124	108–124
116	107–123	107–123	107–123	105–124	105–124	107–123	107–123
115	106–123	106–123	106–123	104–123	104–123	107–122	106–123
114	105–122	105–122	105–122	103–123	103–123	106–121	105–122
113	104–121	104–121	104–121	102–122	102–122	105–120	104–121
112	103–120	103–120	103–120	101–121	101–121	104–119	103–120
111	102–119	102–119	102–119	100–120	100–120	103–118	102–119
110	101–118	101–118	101–118	100–119	100–119	102–117	101–118
109	100–117	100–117	100–117	99–118	99–118	101–116	100–117
108	99–116	99–116	99–116	98–117	98–117	100–115	99–116
107	98–115	98–115	98–115	97–116	97–116	99–114	98–115
106	97–114	97–114	97–114	96–115	96–115	98–113	97–114
105	96–113	96–113	96–113	95–114	95–114	97–112	96–113
104	95–112	95–112	95–112	94–113	94–113	96–112	95–112
103	94–111	94–111	94–111	93–112	93–112	95–111	94–111
102	93–110	93–110	93–110	92–112	92–112	94–110	93–110
101	93–109	93–109	93–109	91–111	91–111	93–109	93–109
100	92–108	92–108	92–108	90–110	90–110	92–108	92–108
99	91–107	91–107	91–107	89–109	89–109	91–107	91–107
98	90–107	90–107	90–107	88–108	88–108	90–106	90–107
97	89–106	89–106	89–106	88–107	88–107	89–105	89–106
96	88–105	88–105	88–105	87–106	87–106	88–104	88–105
95	87–104	87–104	87–104	86–105	86–105	88–103	87–104
94	86–103	86–103	86–103	85–104	85–104	87–102	86–103
93	85–102	85–102	85–102	84–103	84–103	86–101	85–102
92	84–101	84–101	84–101	83–102	83–102	85–100	84–101
91	83–100	83–100	83–100	82–101	82–101	84–99	83–100
90	82–99	82–99	82–99	81–100	81–100	83–98	82–99
89	81–98	81–98	81–98	80–100	80–100	82–97	81–98

Note. A score that is below or above the expected retest score range is statistically significant ($p < .10$).

TABLE E.2 Expected Variability in Scores From Repeat Administrations of the Same BASI Test—Verbal Skills Total Scores

Standard Score (First Admin.)	Expected Retest Score						
	Age 8	Age 9	Age 10	Age 11	Age 12	Age 13	Age 14
88	75–107	77–102	78–101	78–101	78–100	78–100	80–97
87	74–107	76–101	77–100	77–100	78–99	78–99	79–96
86	73–106	75–101	76–99	76–99	77–98	77–98	78–95
85	72–105	75–100	75–98	75–98	76–97	76–97	77–94
84	72–104	74–99	75–97	75–97	75–96	75–96	77–93
83	71–104	73–98	74–96	74–96	74–95	74–95	76–92
82	70–103	72–97	73–95	73–95	73–95	73–95	75–91
81	69–102	71–96	72–94	72–94	72–94	72–94	74–91
80	69–101	70–95	71–93	71–93	71–93	71–93	73–90
79	68–101	69–95	70–93	70–93	70–92	70–92	72–89
78	67–100	68–94	69–92	69–92	69–91	69–91	71–88
77	66–99	68–93	68–91	68–91	69–90	69–90	70–87
76	66–98	67–92	67–90	67–90	68–89	68–89	69–86
75	65–98	66–91	67–89	67–89	67–88	67–88	68–85
74	64–97	65–90	66–88	66–88	66–87	66–87	67–84
73	63–96	64–89	65–87	65–87	65–86	65–86	66–83
72	63–95	63–89	64–86	64–86	64–86	64–86	65–82
71	62–95	62–88	63–85	63–85	63–85	63–85	64–81
70	61–94	62–87	62–85	62–85	62–84	62–84	63–80
69	60–93	61–86	61–84	61–84	61–83	61–83	62–79
68	60–92	60–85	60–83	60–83	60–82	60–82	62–78
67	59–92	59–84	59–82	59–82	60–81	60–81	61–77
66	58–91	58–83	58–81	58–81	59–80	59–80	60–76
65	57–90	57–82	58–80	58–80	58–79	58–79	59–76
64	57–89	56–82	57–79	57–79	57–78	57–78	58–75
63	56–89	56–81	56–78	56–78	56–77	56–77	57–74
62	55–88	55–80	55–77	55–77	55–77	55–77	56–73
61	54–87	54–79	54–77	54–77	54–76	54–76	55–72
60	54–86	53–78	53–76	53–76	53–75	53–75	54–71
59	53–86	52–77	52–75	52–75	52–74	52–74	53–70
58	52–85	51–76	51–74	51–74	51–73	51–73	52–69

Note. A score that is below or above the expected retest score range is statistically significant ($p < .10$).

TABLE E.2 Expected Variability in Scores From Repeat Administrations of the Same BASI Test—Verbal Skills Total Scores

Standard Score (First Admin.)	Expected Retest Score						
	Age 15	Age 16	Age 17	Age 18	Age 19–25	Age 26–46	Age 47 Plus
88	80–97	80–97	80–97	79–99	79–99	81–96	80–97
87	79–96	79–96	79–96	78–98	78–98	80–95	79–96
86	78–95	78–95	78–95	77–97	77–97	79–94	78–95
85	77–94	77–94	77–94	77–96	77–96	78–93	77–94
84	77–93	77–93	77–93	76–95	76–95	77–93	77–93
83	76–92	76–92	76–92	75–94	75–94	76–92	76–92
82	75–91	75–91	75–91	74–93	74–93	75–91	75–91
81	74–91	74–91	74–91	73–92	73–92	74–90	74–91
80	73–90	73–90	73–90	72–91	72–91	73–89	73–90
79	72–89	72–89	72–89	71–90	71–90	72–88	72–89
78	71–88	71–88	71–88	70–89	70–89	71–87	71–88
77	70–87	70–87	70–87	69–89	69–89	70–86	70–87
76	69–86	69–86	69–86	68–88	68–88	69–85	69–86
75	68–85	68–85	68–85	67–87	67–87	69–84	68–85
74	67–84	67–84	67–84	66–86	66–86	68–83	67–84
73	66–83	66–83	66–83	65–85	65–85	67–82	66–83
72	65–82	65–82	65–82	65–84	65–84	66–81	65–82
71	64–81	64–81	64–81	64–83	64–83	65–80	64–81
70	63–80	63–80	63–80	63–82	63–82	64–79	63–80
69	62–79	62–79	62–79	62–81	62–81	63–78	62–79
68	62–78	62–78	62–78	61–80	61–80	62–77	62–78
67	61–77	61–77	61–77	60–79	60–79	61–76	61–77
66	60–76	60–76	60–76	59–78	59–78	60–75	60–76
65	59–76	59–76	59–76	58–77	58–77	59–74	59–76
64	58–75	58–75	58–75	57–77	57–77	58–74	58–75
63	57–74	57–74	57–74	56–76	56–76	57–73	57–74
62	56–73	56–73	56–73	55–75	55–75	56–72	56–73
61	55–72	55–72	55–72	54–74	54–74	55–71	55–72
60	54–71	54–71	54–71	54–73	54–73	54–70	54–71
59	53–70	53–70	53–70	53–72	53–72	53–69	53–70
58	52–69	52–69	52–69	52–71	52–71	52–68	52–69

Note. A score that is below or above the expected retest score range is statistically significant ($p < .10$).

TABLE E.2 Expected Variability in Scores From Repeat Administrations of the Same BASI Test—Verbal Skills Total Scores

Standard Score (First Admin.)	Expected Retest Score						
	Age 8	Age 9	Age 10	Age 11	Age 12	Age 13	Age 14
57	51–84	50–76	50–73	50–73	51–72	51–72	51–68
56	51–83	50–75	50–72	50–72	50–71	50–71	50–67
55	50–83	49–74	49–71	49–71	49–70	49–70	49–66
54	49–82	48–73	48–70	48–70	48–69	48–69	48–65
53	48–81	47–72	47–69	47–69	47–68	47–68	47–64
52	48–80	46–71	46–69	46–69	46–68	46–68	46–63
51	47–80	45–70	45–68	45–68	45–67	45–67	46–62
50	46–79	44–70	44–67	44–67	44–66	44–66	45–61
49	45–78	44–69	43–66	43–66	43–65	43–65	44–60
48	45–77	43–68	42–65	42–65	42–64	42–64	43–60
47	44–77	42–67	42–64	42–64	42–63	42–63	42–59
46	43–76	41–66	41–63	41–63	41–62	41–62	41–58

Note. A score that is below or above the expected retest score range is statistically significant ($p < .10$).

TABLE E.2 Expected Variability in Scores From Repeat Administrations of the Same BASI Test—Verbal Skills Total Scores

Standard Score (First Admin.)	Expected Retest Score						
	Age 15	Age 16	Age 17	Age 18	Age 19–25	Age 26–46	Age 47 Plus
57	51–68	51–68	51–68	51–70	51–70	51–67	51–68
56	50–67	50–67	50–67	50–69	50–69	50–66	50–67
55	49–66	49–66	49–66	49–68	49–68	50–65	49–66
54	48–65	48–65	48–65	48–67	48–67	49–64	48–65
53	47–64	47–64	47–64	47–66	47–66	48–63	47–64
52	46–63	46–63	46–63	46–66	46–66	47–62	46–63
51	46–62	46–62	46–62	45–65	45–65	46–61	46–62
50	45–61	45–61	45–61	44–64	44–64	45–60	45–61
49	44–60	44–60	44–60	43–63	43–63	44–59	44–60
48	43–60	43–60	43–60	42–62	42–62	43–58	43–60
47	42–59	42–59	42–59	42–61	42–61	42–57	42–59
46	41–58	41–58	41–58	41–60	41–60	41–56	41–58

Note. A score that is below or above the expected retest score range is statistically significant ($p < .10$).

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Appendix F

Minimum Statistically Significant Differences Between BASI Scores and Collateral Test Scores

The numbers in this table represent the *minimum* statistically significant difference between two scores. For example, the minimum statistically significant difference between WISC-IV Verbal Comprehension and BASI Verbal Skills Total is 10. If the difference between an examinee's scores on these two tests is equal to or greater than 10, the difference is statistically significant.

TABLE F.1 Minimum Statistically Significant Differences Between BASI, WISC-IV, WAIS-III, GAMA, Wonderlic, MBA, and WRAT3 Standard Scores

	BASI Survey	
	Verbal Skills Total	Math Skills Total
WISC-IV		
Verbal Comprehension	10	11
Perceptual Reasoning	11	12
Working Memory	11	12
Processing Speed	12	13
Full Scale	9	10
WAIS-III		
Verbal IQ	9	10
Performance IQ	10	11
Full Scale IQ	8	10
Verbal Comprehension Index	9	11
Perceptual Organization Index	10	11
Working Memory Index	11	12
Processing Speed Index	13	14
GAMA		
Total IQ Score	12	13
Wonderlic Basic Skills Test		
Form VS-1 & VS-2	11	12
Form QS-1 & QS-2	11	12
MBA		
Reading	10	11
Writing	11	12
Mathematics	11	12
Factual Knowledge	13	14
Basic Skills	11	12
WRAT3		
Reading	11	12
Spelling	11	12
Arithmetic	13	14

Note. WISC-IV = Wechsler Intelligence Scale for Children–Fourth Edition. WAIS-III = Wechsler Adult Intelligence Scale–Third Edition. GAMA = General Ability Measure for Adults. MBA = Mini-Battery of Achievement. WRAT3 = Wide Range Achievement Test–Third Edition. Statistically significant differences between scores were computed at the .05 level using the following formula:

Difference score = $Z\sqrt{SEM_a^2 + SEM_b^2}$ where Z is the normal curve value associated with the desired significance level and SEM_a and SEM_b are the standard errors of measurement of the two scores.

Appendix G

For Sample Reports please visitL
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