BRIGANCE®

Screens III
Technical Manual

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Introduction to the *BRIGANCE® Screens III*

CH 1

Overview

The *BRIGANCE® Screens III* offer developmental screening of children from infancy through first grade. The *Screens III* are conveniently grouped into five volumes that address the needs of specific users.

The *BRIGANCE® Early Childhood Screens III* include:

1. The *Early Childhood Screen III (0–35 months)*—includes screens for the Infant, Toddler, and Two-Year-Old Child
2. The *Early Childhood Screen III (3–5 years)*—includes screens for the Three-Year-Old Child, Four-Year-Old Child, and Five-Year-Old Child
3. The *Early Childhood Screen III (K & 1)*—includes screens for Kindergarten and First Grade

The *BRIGANCE® Head Start Screens III* include:

4. The *Early Head Start Screen III*—includes screens for the Infant, Toddler, and Two-Year-Old Child
5. The *Head Start Screen III*—includes screens for the Three-Year-Old Child, Four-Year-Old Child, and Five-Year-Old Child

Each *Screen III* manual includes Core Assessments that cover age-appropriate skills across key early learning domains. While skill areas vary by age, all age levels of the *Screens III* include skills across three domains.

Screens III Domain Coverage

For infants and toddlers, the domains include:

- Physical Development
- Language Development
- Adaptive Behavior

For children two years of age and older, the domains include:

- Physical Development
- Language Development
- Academic Skills and Cognitive Development

  In addition, Self-help and Social-Emotional Scales are available to offer a broader understanding of a child's development.

The *Screens III* evaluate the key predictors of school success in an age-appropriate manner—greater emphasis is placed on language and self-sufficiency skills for younger children, in contrast to more emphasis on academic skills for older children. All skill sequences are designed to scale up appropriately by developmental age. (Tables 1-1 and 1-2 on pages 6 and 7, which show examples of skill coverage for each age level.)

The assessments for each age level of the *Screens III* typically take between 10 and 15 minutes to administer and score.

Features and Benefits

The *Screens III* support the efforts of early childhood educators and others working with children to identify potential developmental delays as well as giftedness, inform instruction, and monitor child progress. The *Screens III*

- are designed for children from birth through the end of the first-grade year (7 years, 6 months).
- can be administered and scored in approximately 10 to 15 minutes.
- sample children's skills in a broad range of skill areas including physical development, language development, academic skills/cognitive development (including literacy skills and mathematics skills), and adaptive behavior (including self-help skills and social and emotional development).
- use a criterion-referenced approach to screening such that a complete sample of skills is measured (e.g., knowledge of all letters in the alphabet).
- offer norm-referenced interpretation (based on a sample of more than 1,900 children) by enabling a child's performance to be compared with that of other same-age children across the country. (See Chapter 7 for a complete description of the sample and standardization procedures.)
- are easily scored, based on the point value assigned to each skill. A child's total score for skills demonstrated can be compared to cutoff scores to identify children who potentially have developmental disabilities or delays as well as children who may be developmentally advanced or gifted.
- can be used to identify a child's strengths and weaknesses to help determine what additional evaluations may be needed.
- produce results that can be easily translated into instructional objectives. *Screens III* items can be linked to items in the comprehensive *BRIGANCE® Inventory of Early Development III* (*IED III*) and *IED III Standardized* for further assessment and instructional planning.
- support progress monitoring through multiple screening administrations.
- support communication of screening results and any referral decisions to parents/caregivers.
- provide at-risk guidelines to use in prevention programs such as Head Start to help discern which children need prompt referrals.
- include forms for teacher and parent feedback that, combined with direct assessment, can provide broad background information, which is important when making focused referrals.
- include optional behavioral observations and parent and teacher reports on self-help and social-emotional skills for two-year-old through first-grade children to assist with holistic screening of children's development.
- offer optional directions in Spanish to use with bilingual children or children who speak Spanish at home.

Appropriate Uses

Results from administering the *BRIGANCE® Screens III* are used to (1) identify as early as possible children who may have developmental delays or disabilities as well as children who may have advanced development or giftedness so that any necessary referrals for further testing or special services can take place as soon as possible; (2) determine school readiness by assessing a child's mastery of those age-appropriate skills that prepare the child for the classroom and promote the child's future success; and (3) monitor progress over time by administering assessments as pretest and post-test evaluations. For more information see pages 29 and 30 of Chapter 4.

Norm-Referenced and Criterion-Referenced

Because the items in the *BRIGANCE Screens III* are both norm-referenced and criterion-referenced, the *Screens III* are a good choice for use in educational, pediatric, and community-based settings.

1 The age-specific screens are norm-referenced and allow comparisons of individual and group performance with that of other children across the country.

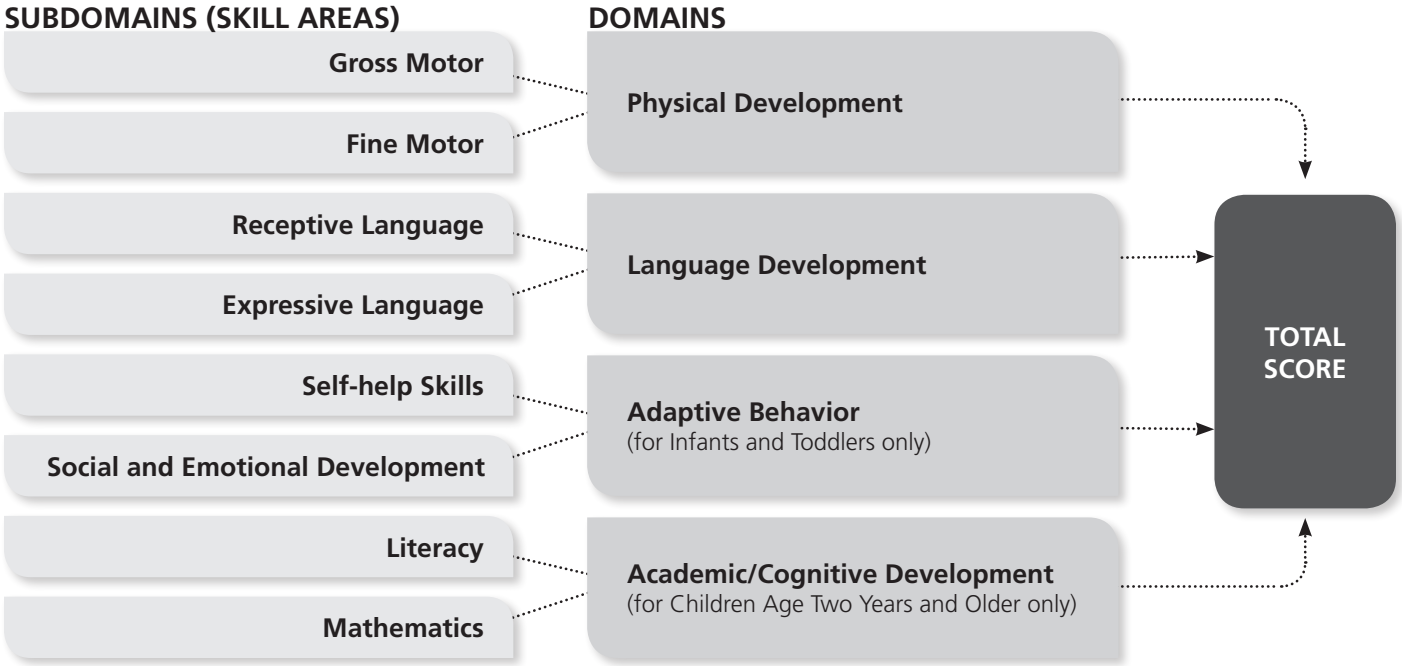
2 Items within the screen assessments are also criterion-referenced, which means they thoroughly sample a well-defined set of age-appropriate skills. For example, kindergartners are expected to recite and read the letters of the alphabet. Consequently, a child's mastery of both the skills Recites Alphabet and Reads Uppercase/Lowercase Letters is assessed using the Kindergarten Core Assessments. Accordingly, the *Screens III* can help teachers and other professionals create instructional goals that support children's efforts to master critical school-readiness tasks.

Reliability and Validity

The *Screens III* offer reliable, valid, and highly accurate scores to inform early identification and instructional planning and support school readiness for each child. The *BRIGANCE*® cutoff scores have been validated on a nationally representative sample of 1,929 children who were stratified on the basis of race/ethnicity, geographic location, and socioeconomic status across the United States. Screen items and scores

- have a high degree of accuracy in identifying children who may have potential development delays or children who are possibly advanced or gifted. (See Chapter 10 for a complete discussion of score accuracy.)
- have a high degree of internal consistency as well as test–retest and inter-rater reliability. (See Chapter 8 for a complete summary of the reliability research.)
- correlate highly with measures of academics and intelligence, as well as measures of language, social, and motor skills. (See Chapter 9 for a complete summary of the validity research.)
- have highly reliable evidence that supports the fairness of items. (See Chapter 9.)
- have a supported test structure. (See Figure 1-1 below and Chapter 9 for more details.)
- produce normative results in the form of composite scores (standard scores), percentiles, and age equivalents for both the total score and for each of the three age-appropriate domains.

Figure 1-1 Structure of the *Screens III*
The items in the age-appropriate Core Assessments of the *Screens III* assess a child's mastery of skills across key skill areas and domains, resulting in a Total Score at each age level.



Organization of the *BRIGANCE® Screens III*

The *Screens III* Age Levels

The *Screens III* provide Core Assessments to support screening for the following seven age levels:

Infant (for children from birth–11 months of age)

Toddler (for children from 12 months–23 months of age)

Two-Year-Old Child (for children from 2 years, 0 months–2 years, 11 months of age)

Three-Year-Old Child (for children from 3 years, 0 months–3 years, 11 months of age)

Four-Year-Old Child (for children from 4 years, 0 months–4 years, 11 months of age)

Five-Year-Old Child/Kindergarten (for children from 5 years, 0 months–5 years, 11 months of age)

First Grade (for children from 6 years, 0 months–7 years, 6 months of age)

Necessary Elements for Deriving Scores

The design of the *Screens III* incorporates the following elements to support scoring:

CORE ASSESSMENTS Each screening manual contains Core Assessments for either two or three of the seven age levels. The seven age levels are Infant, Toddler, Two-Year-Old Child, Three-Year-Old Child, Four-Year-Old Child, Five-Year-Old Child/Kindergarten, and First Grade. The age-appropriate screen for each of these age levels can be administered within a total of 15 minutes.

ASSESSMENT ITEM An item within a Core Assessment may measure a discrete skill (e.g., stands on one foot for ten seconds), or an item may be a component of a skill (e.g., one letter in the alphabet, where the child is asked to recite the entire alphabet). Several of the screens have similar assessments. The skill sequences within these similar assessments scale up appropriately by developmental age.

ITEM WEIGHTING The weighting of the skills in the *Screens III* is designed to enable the total scores to render a maximum of 100 points and to reflect the weight or importance of each domain in consideration of the overall outcome. For example, being able to make circles and straight lines is a critical skill needed by a three-year-old child learning to write and draw. Such skills receive more weight in scoring compared to other skills included for this age range. Weights were determined by a set of reviewers with expertise in the area of early childhood development and reflect the relative importance of these skills to the development process at different ages.

DATA SHEETS For each age level, a *Data Sheet* lists the items and scoring criteria for each Core Assessment. The *Data Sheets* also enable additional information and observations to be summarized. Produced in triplicate, copies of the *Data Sheets* can be readily shared with school administrators, curriculum supervisors, and parent(s)/caregiver(s). See sample completed *Data Sheets* in Appendix I.

SCORING As items are administered, credit is given by circling the item number on the child's *Data Sheet*; administered items for which the child does not receive credit are marked by slashing through the item number. Scoring is quickly accomplished by counting the number of correct responses (circled item numbers) per assessment and entering the totals on the *Data Sheet*. Assessment scores are then weighted and totaled to produce an overall score. (A maximum total score of 100 can be achieved). The total score can then be compared with age-appropriate BRIGANCE® cutoff scores that detect probable delays and probable academic talent or giftedness. The *BRIGANCE® Online Management System* is available to assist in viewing child performance, tracking progress, and generating reports across classrooms, schools, programs, or districts. (Subscription fees apply.) A free online scoring tool (available at www.BRIGANCE.com) allows automated scoring and comparison of a child's total score with the age-appropriate cutoffs.

Supporting Data-Gathering Tools

In addition to the Core Assessments, each of the *BRIGANCE® Screens III* manuals includes optional data-gathering materials. Information gathered with these materials helps provide a more complete picture of the child's development and background.

SUPPLEMENTAL ASSESSMENTS These age-appropriate assessments elicit more advanced skills than those included in the same-age appropriate Core Assessments. For this reason, the Supplemental Assessments are useful when additional information is needed about children who may be academically talented or gifted. These optional Supplemental Assessments have reproducible age-specific Supplemental Assessments Data Sheets. Results from administering the Supplemental Assessments do not factor into a child's Total Score.

SCREENING OBSERVATIONS FORM This form may be completed to collect additional observations captured during the screening session. This form should be filled out by the person who administered the assessments and completed the *Data Sheet* (i.e., the person who observed the child during direct screening). Items on the Screening Observations Form help identify areas that may warrant referrals for additional screening or treatment. These items address: (1) vision, including symptoms of eye fatigue, eye stress, infection, and other visual difficulties; (2) hearing and symptoms of hearing loss; (3) articulation and vocal difficulties; (4) emotional functioning, including self-reliance and symptoms of low self-esteem; (5) ratings of motor skills; and (6) signs of physical health or illness.

TEACHER FEEDBACK FORM Teacher feedback can be a helpful indicator of school success and difficulties (Coleman and Dover 1993), especially when teacher observations are structured via focused questions. However, teacher feedback should be used with additional information because this feedback sometimes is inaccurate (Kilday et al. 2011). Used for children enrolled in daycare, preschool, and elementary school, the Teacher Feedback Form elicits perceptions (no, uncertain, yes) of the child's (1) physical development (gross motor skills and fine motor skills), (2) language development, (3) academic skills and cognitive development (literacy and mathematics), and (4) adaptive behaviors (self-help skills and social-emotional development). There is a separate form for each age level. For infants and toddlers, the Parent-Child Interactions Form elicits the teacher's perceptions of how the parent and child interact.

PARENT FEEDBACK FORM Abundant research is available regarding the accuracy of parental reports that describe children's current skills and behaviors (Lichtenstein and Ireton 1984; Glascoe and Dworkin 1995; Saudino et al. 2011). Parents/caregivers often indicate that children possess skills that examiners are unable to elicit. This does not mean that parents are unrealistic or overly optimistic, but rather that parents observe children in familiar settings where they are more likely to demonstrate emerging skills (Bricker and Squires 1994; Glascoe and Dworkin 1995). Parent reports correspond well to how children actually do respond (Saudino et al. 2011). Any discrepancies between parental report and examiners' observations help indicate optimal starting points for instruction to assist children in demonstrating new skills. Given the relevance of parent input, the Parent Feedback Form is provided as a means to collect this information; the form presents a series of questions to elicit parents'/caregivers' perceptions (no, uncertain, yes) of their child's (1) physical development (gross motor skills and fine motor skills), (2) language development, (3) academic skills and cognitive development (literacy and mathematics), and (4) adaptive behaviors (self-help skills and social-emotional development). When giving parents a form to complete, it is advisable to routinely ask whether the parents would like the examiner to go through the form with them.

SELF-HELP AND SOCIAL-EMOTIONAL SCALES The Self-help and Social-Emotional Scales provide a standardized measure of self-help skills in eating, dressing, and toileting as well as social and emotional skills related to relationships with adults and peers, playing, motivation and self-confidence, and prosocial skills and behaviors. Two forms of the Self-help and Social-Emotional Scales are available; one includes age-appropriate skills for two-year-old children and the other includes age-appropriate skills for children three years of age and older. These

scales can be used to gain a broader understanding of the child's developmental level and, if needed, to derive standardized scores in these areas.

READING READINESS SCALE The Reading Readiness Scale provides a standardized measure of skills and behaviors related to a five-year-old child's emergent literacy. This scale can be used to gain a broader understanding of the child's developmental level and to guide reading instruction.

BACKGROUND INFORMATION FORM This form, which is available in Appendix A, serves two purposes. First, it provides broad background information on family structure, parental concerns about development, health data, educational history, languages spoken at home, and psychosocial risk factors. Many of the questions are validated from previous research and elicit predictors of developmental problems.

Second, it provides necessary data for a child's cumulative record including name, addresses and phone numbers of legal guardians, physician's name and phone number, and so forth. As with any form given to parents, it is important to be alert to any reading difficulties parents/caregivers may have and to ask parents whether they would like to have someone go through the form with them.

Use of Data-Gathering Tools with Formal Screening Method

To support a more complete understanding of the child's development, it is helpful to incorporate the informal observation and screening methods described previously (the Screening Observations Form, the Parent Feedback Forms, the Teacher Feedback Forms, the Supplemental Assessments, the Self-help and Social-Emotional Scales, and the Reading Readiness Scales) with the formal screening method of administering the Core Assessments in the age-specific screens.

The items that make up the Core Assessments for each screen cover age-appropriate skills across key skill areas and domains. See Table 1-1 below and Table 1-2 on page 7 for examples of skill coverage for the age-specific screens (Infant, Toddler, Two-Year-Old Child, Three-Year-Old Child, Four-Year-Old Child, Five-Year-Old Child/Kindergarten, and First Grade).

Table 1-1. Assessment Content by Skill Area (Infant and Toddler Screens)

		CORE ASSESSMENTS			
		Skill Area	**Content**	**Infant (Birth–11 months)**	**Toddler (12–23 months)**
***Screens III* DOMAINS**	**Physical Development**	**Gross Motor Skills**	Skills involving the strength and control of large groups of muscles	**Examples:** Turns head in both directions; Rolls from back to stomach **Assessment: 1A**	**Examples:** Sits erect and unsupported; Pulls to standing position **Assessment: 5B**
		Fine Motor Skills	Skills involving manipulating the small muscles of the hands and fingers	**Examples:** Places fist in mouth; Plays with hands and fingers **Assessment: 2A**	**Examples:** Squeaks toy with hand; Puts objects, such as blocks, into a container **Assessment: 6B**
	Language Development	**Receptive Language Skills**	Skills that indicate comprehension of spoken language (i.e., the ability to listen to and understand what another person is communicating)	**Examples:** Startles to loud noise; Responds to simple commands **Assessment: 3A**	**Examples:** Responds to the word *no*; Points to eyes **Assessments: 1B, 2B, 3B, 4B**
		Expressive Language Skills	Skills that demonstrate the ability to produce speech, to express ideas and feelings, and to communicate a message	**Examples:** Makes sounds other than crying; Vocalizes at others **Assessment: 4A**	**Examples:** Says multiple syllables; Pretend talks **Assessments: 7B, 8B, 9B**
	Adaptive Behavior	**Self-help Skills**	Skills that allow one to function independently in daily life	**Examples:** Brings hands to mouth; Refuses excess food **Assessment: 5A**	**Examples:** Feeds self cracker; Cooperates in dressing **Assessment: 10B**
		Social and Emotional Skills	Skills involving relationships with adults and peers, play skills, motivation, self-confidence, and prosocial behaviors and skills	**Examples:** Gets excited when a toy is presented; Smiles, coos, or gurgles for attention **Assessment: 6A**	**Examples:** Plays pat-a-cake; Gives affection by kissing, hugging, or patting **Assessment: 11B**

Table 1-2. Assessment Content by Skill Area (Two-Year-Old Child through First Grade Screens)

DOMAINS	Skill Area	Content	CORE ASSESSMENTS: Two-Year-Old Child	Three-Year-Old Child	Four-Year-Old Child	Five-Year-Old Child/ Kindergarten	First Grade
Physical Development	**Gross Motor Skills**	Skills involving strength and control of large groups of muscles	**Examples:** Jumps off the floor with both feet; Stands on one foot for one second **Assessment: 5C**	**Examples:** Stands on one foot for five seconds; Walks forward heel-to-toe four steps **Assessment: 8A**	**Examples:** Walks forward heel-to-toe five steps; Hops five hops on preferred foot **Assessment: 6B**	**Examples:** Stands on one foot for one second with eyes closed; Walks backward toe-to-heel four steps **Assessments: 3C/3A**	
Physical Development	**Fine Motor Skills**	Skills involving manipulation of the small muscles of the hands and fingers	**Examples:** Holds crayon with fingers; Builds a tower with four blocks **Assessments: 7C, 8C**	**Examples:** Draws a vertical line; Builds a tower with eight blocks **Assessments: 5A, 7A**	**Example:** Draws a circle **Assessment: 5B**	**Examples:** Draws a triangle; Prints first name **Assessments: 4C/4A, 5C/5A**	**Examples:** Prints last name; Writes numerals in sequence **Assessments: 9B, 10B**
Language Development	**Receptive Language Skills**	Skills that indicate comprehension of spoken language (i.e., the ability to listen to and understand what another person is communicating)	**Example:** Points to body parts named (e.g., head) **Assessment: 1C**	**Examples:** Points to red objects; Points to body parts named (e.g.,knees) **Assessments: 2A, 9A**	**Example:** Follows two-step directions **Assessment: 8B**		**Example:** Discriminates ending sounds **Assessment: 2B**
Language Development	**Expressive Language Skills**	Skills that demonstrate the ability to produce speech, to express ideas and feelings, and to communicate a message	**Examples:** Knows use of chair; Uses three-word phrases **Assessments: 2C, 3C, 10C**	**Examples:** Knows use of pencil; Uses prepositions **Assessments: 3A, 4A, 11A**	**Examples:** Knows names of body parts (e.g., knees); At least 90% of speech is intelligible **Assessments: 2B, 3B, 7B, 11B**	**Examples:** Knows names of body parts (e.g., shoulders); Uses sentences of at least five words **Assessments: 2C/2A, 13C/13A**	**Examples:** Identifies initial letters in words; Identifies common themes among words **Assessments: 5B, 7B**
Academic Skills/ Cognitive Development	**Literacy Skills**	Skills involving experience with books, visual discrimination, and phonological awareness	**Examples:** Repeats sentence of four syllables; Matches blocks of same color **Assessments: 4C, 9C**	**Examples:** Knows first and last name; Repeats sentence of eight syllables **Assessments: 1A, 10A**	**Examples:** Knows street address; Visually discriminates between *L* and *O* **Assessments: 1B, 4B**	**Examples:** Reads uppercase letters; Knows the front and back of a book **Assessments: 1C/1A, 6C/6A, 11C/11A, 12C/12A**	**Examples:** Visually discriminates between *e* and *c;* Knows lowercase letters **Assessments: 1B, 3B, 4B, 8B**
Academic Skills/ Cognitive Development	**Mathematical Concepts**	Skills including matching quantities with numerals; Sorting objects by size, color, and shape; Subtracting and adding numbers	**Example:** Demonstrates understanding of the number concept "one more" **Assessment: 6C**	**Example:** Demonstrates understanding of the number three **Assessment: 6A**	**Examples:** Counts by rote; Gives the correct number name for five objects **Assessments: 9B, 10B**	**Examples:** Sorts objects by size and color; Counts two groups of objects for a sum of ten **Assessments: 7C/7A, 8C/8A, 9C/9A, 10C/10A**	**Examples:** Adds numbers; Subtracts numbers **Assessments: 6B, 11B, 12B**

NOTES

General Administration Procedures

CH 2

How to Administer the *BRIGANCE® Screens III*

This chapter provides information about test security, examiner qualifications, and adherence to screening administration protocol. The chapter continues with a graphic depiction of the screening and evaluation process, using various components of the *BRIGANCE® Screens III*. The chapter also provides an explanation of the three assessment methods used to administer assessment items. Useful tips for effective administration with all children and appropriate accommodations for working with children who have special considerations or exceptionalities are discussed in the second half of the chapter. Specific procedures for administering assessments within age-specific screens are provided in Chapter 3.

Test Security

All materials associated with the *BRIGANCE® Screens III* (i.e., the spiral-bound *Screens III* manuals, the *Screens III Data Sheets*, and the *Screens III Technical Manual*) are secure materials and should be considered privileged information. It is important that no child or parent/caregiver have direct access to these materials. Having access to the Core Assessments or to information included on the *Screens III Data Sheets* prior to the standardized administration of the instrument could invalidate the child's scores. The integrity of the materials and their content is to be guarded.

Examiner Qualifications

Although the *Screens III* are easy to administer and no specific qualifications (e.g., those of a licensed school psychologist) are required, when standardized scores are going to be derived, it is critical that an examiner

- is familiar with the directions and scoring procedures,
- has practiced administration several times before administering assessments to a child, and
- is able to administer the *Screens III* in strict accordance with the directions accompanying each Core Assessment.

Examiner Adherence to Protocol

Nonstandard administration invalidates the use of cutoff scores and norms. Cutoff scores and norms are of utmost importance for examiners to identify children likely to have significant developmental delays or disabilities and children likely to be developmentally advanced or gifted, those children who may need additional testing.

Invalid administration or scoring potentially produces inflated (or sometimes deflated) scores, which means that children with special learning needs may not be identified and referred for additional evaluation or that normally developing children may be referred for unnecessary and costly evaluations.

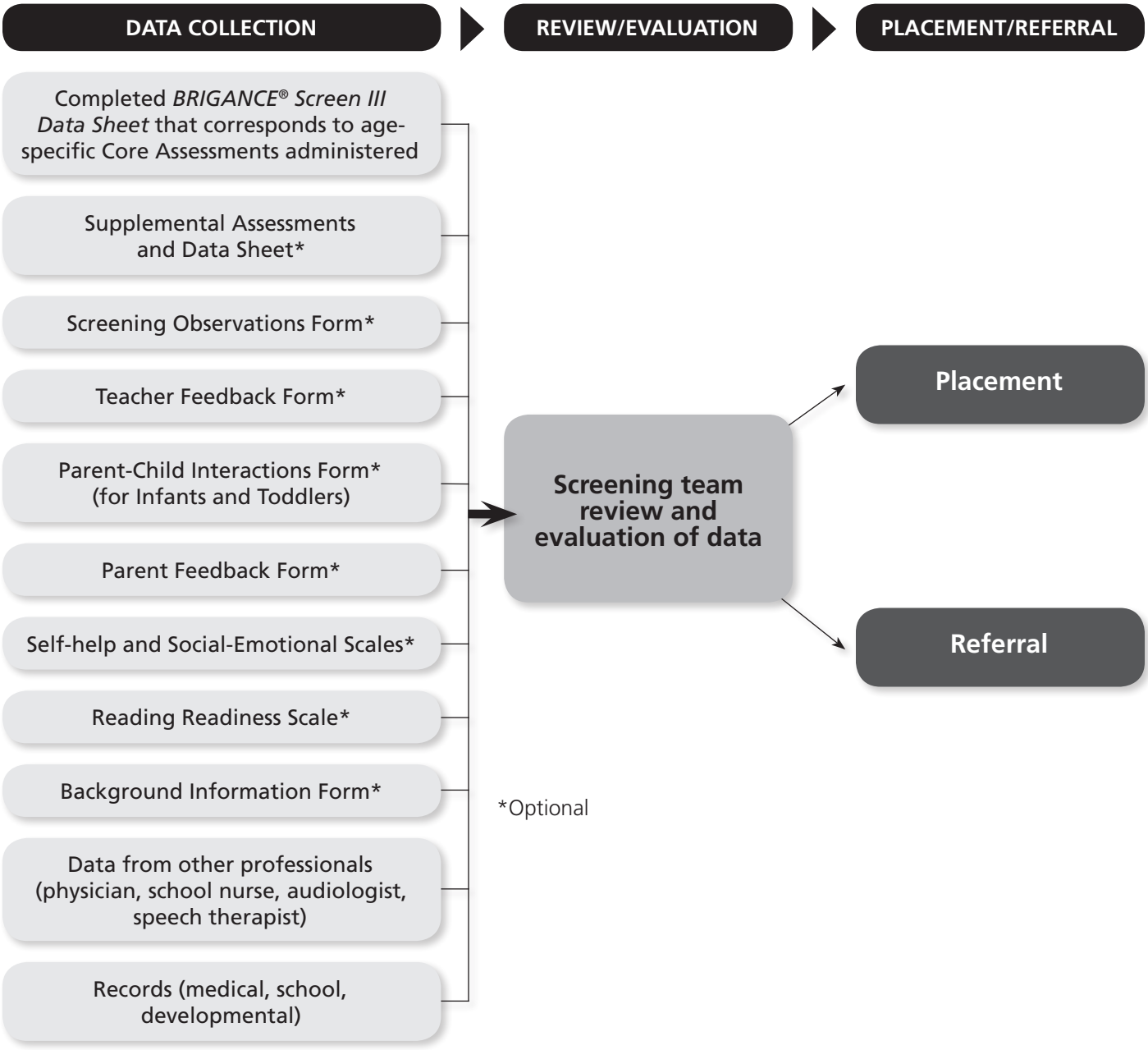
For additional information about standardized administration protocol refer to the *Standards for Educational and Psychological Testing* (American Educational Research Association, American Psychological Association, and National Council on Measurement in Education 1999).*

***Note:** The *Standards for Educational and Psychological Testing* book referenced in this manual is the 1999 edition. At the time of publication, these standards were being revised by members of the three professional groups who are credited with authoring the work: the American Educational Research Association, the American Psychological Association, and the National Council on Measurement in Education. It is anticipated that the standards or principles quoted or referenced in this manual should not change significantly in the upcoming edition because they represent basic tenets of standardized testing.

Screening and Evaluation Process

The Screening and Evaluation Flowchart shows the general process of data collection using the *BRIGANCE® Screens III*, illustrating the sequence and types of information to be collected and the process of making referrals.

Figure 2-1 Screening and Evaluation Flowchart



Planning Screening Sessions

Arrange Assessment Time

Administration time will vary and depend on the child's age. In general, plan to spend between 10 and 15 minutes per child.

Choose Setting and Environment

Items in the Core Assessments of the *Screens III* were standardized under a broad set of conditions (e.g., teachers working with children in classrooms or child care centers, psychologists working in offices with children, health care professionals working with children and parents/caregivers together in exam rooms). This means that the *Screens III* can be accurately administered in a variety of settings. When planning where to administer assessments, consider the child's comfort level and attention span. Use discretion in deciding if a child can be tested in a classroom setting or if a more private setting would be preferable.

Every effort should be made to provide an assessment environment that is free of distractions and reasonably comfortable. The room should be well lit and include a child-size table and chair. When testing infants and toddlers, because the child may be seated on the parent's lap facing the examiner, a second comfortable adult chair is needed. The examiner may sit opposite or next to the child. An alternative is to work with a young child while the child sits in an infant/toddler carrier or high chair. A child in a preschool or elementary school setting may feel more comfortable in the familiar environment of the child's classrooms. If so, it may be helpful to choose a time that other classroom activities are conducted quietly and to prevent distractions by erecting visual barriers, if possible.

Determine When to Screen

Screening can be scheduled at any time during the school year and should be offered promptly in response to concerns by parents/caregivers and teachers. Many programs and school systems also establish set times for administration of screening tests—fall, spring, or both. (See Table 2–1 below for an example screening schedule.)

FALL Fall screening provides teachers with helpful information on children's strengths and weaknesses, facilitating prompt curricular modifications and program planning. Fall screening helps school systems identify children who may need additional testing to determine if the child has special needs. Screening early in the school year can be beneficial in making timely changes in placement after further evaluation.

SPRING Screening in the spring helps teachers determine whether children have mastered skills that may be needed for success at the next curricular level. End-of-the-year screening also gives parents helpful feedback about children's skill mastery in various skill areas. Such information can help parents provide appropriate activities at home over the summer to build or reinforce needed skills.

FALL AND SPRING Screening in both the fall and spring provides pretest and post-test data to inform a child's progress. (See Chapter 6 for information about progress monitoring.) Screening at two points within the year also helps identify children who initially appear to have age-appropriate skills but who fail to master critical skills during the preschool or school year.

Table 2-1. Age Ranges and Recommended Screening Schedule

Age in Fall (months/years)	Core Assessments in Fall	Core Assessments in Spring
0 months–11 months	Infant	Infant; Toddler (if > 11 months old)
12–23 months	Toddler	Toddler; Two-Year-Old Child (if > 1 year, 11 months)
2-0 through 2-11	Two-Year-Old Child	Two-Year-Old Child; Three-Year-Old Child (if > 2 years, 11 months)
3-0 through 3-11	Three-Year-Old Child	Three-Year-Old Child; Four-Year-Old Child (if > 3 years, 11 months)
4-0 through 4-11	Four-Year-Old Child	Four-Year-Old Child; Five-Year-Old Child/Kindergarten (if > 4 years, 11 months)
5-0 through 5-11	Five-Year-Old Child Kindergarten	Five-Year-Old Child; Kindergarten; First Grade (if > 5 years, 11 months)
6-0+	First Grade	First Grade

Tips for Effective Administration

To ensure accurate information regarding a child's skill mastery and to obtain valid and reliable scores when administering assessments in the *BRIGANCE Screens III*, consider the following suggestions for effective administration.

Before You Begin Screening

- When determining the child's chronological age for the child's *Data Sheet*, remember to round up to the next month if the number of days is 15 days or more and to ignore the days if the number of days is fewer than 15.
- For infants and toddlers, remember to correct the child's chronological age for prematurity, if necessary.
- Scheduling screening early in the day may reduce the chance that the child will be hungry or tired.

During the Screening Session

- Consider the following suggestions to help make the screening process comfortable and enjoyable for you and the child.
  - Use clear but pleasant requests such as, "Come with me. We are going to look at a book and play with some blocks." Do not ask if the child would like to participate since any subsequent refusals can be challenging.
  - Incorporate "wiggle breaks." Because it is unlikely that young children can remain seated throughout the assessment, "wiggle breaks" should be interspersed among assessment items.
  - Introduce tasks as "games" rather than as tests. Present assessment items rapidly, but not so rapidly that the child feels rushed.
  - Use verbal reinforcement and show interest and enthusiasm in the child's effort. Phrases such as "Good job" and "Way to go" are appropriate since they do not indicate that the child's response was correct or incorrect. Be careful to remain objective.
  - Use stickers to reinforce the child's effort. You may wish to give the child a sticker between assessments.
  - Remember to allow as much time as you think the child needs to respond to an item unless a specific note concerning time is provided with the assessment.
- When screening with a parent/caregiver present, engage the parent/caregiver first. Ask the parent/caregiver how his/her child will be most comfortable during the screening. This will help put both the parent and child at ease. In order to maintain standardized testing conditions, consider the following issues and remind the parent/caregiver of these issues as well.
  - It is important to use the prescribed directions and exact wording provided. The wording of items cannot be reworded and no cues can be offered to the child.
  - A child in a strange environment should not be expected to demonstrate all the skills parents have observed at home, particularly those skills that have been recently learned.
  - Phrases such as "Good try" and "Nice job" should be used whether or not the child is successful with a task. Do not show feelings of disappointment when the child gives an incorrect response or feelings of satisfaction when the child is doing well.
  - If the child does not demonstrate skills that the child is known to perform otherwise, screening should be repeated at a later date. For infants and toddlers, an alternative is to administer items by parental report.
  - Observations about what a child can do at home but did not demonstrate during screening are valuable for instructional purposes. This kind of input from parents can be gathered either before or after the session is completed.
- When recording the child's performance, remember: Eliciting responses for items above the discontinue point is permissible *only for instructional planning*. DO NOT GIVE CREDIT FOR ANY ITEM ABOVE THE DISCONTINUE POINT. Doing so could inflate scores and therefore prevent detection of developmental delays or academic weaknesses.
- Consider the following suggestions, if necessary, to handle undesirable behavior.
  - Remember that the Core Assessments within an age-specific screen can be administered in any order. Consider the most appropriate order, given the child and the screening environment.
  - If the child refuses to engage in a particular assessment, switch to a different one. Later, return to the earlier assessment.

– If the child refuses to participate in the assessment process, offer choices. For example, say, "Would you like to play with blocks first or use the crayon?"
– If the child becomes upset and cannot be soothed, stop and reschedule the assessment.

The Station Method for Screening

For older children, the station method for screening may be used. With this method, three to four examiners are responsible for administering preselected assessments. Children (and their *Data Sheets*) rotate from one examiner to another. Volunteers can help children flow smoothly from one station to the next. An additional examiner can observe children as they make transitions and note any changes in behavior across assessments. This floating examiner can also complete the Screening Observations Form in order to assess children's sensory, behavioral, and emotional status. Finally, another examiner (or two) will be needed to total scores, compare performance with cutoffs, and interpret results for families.

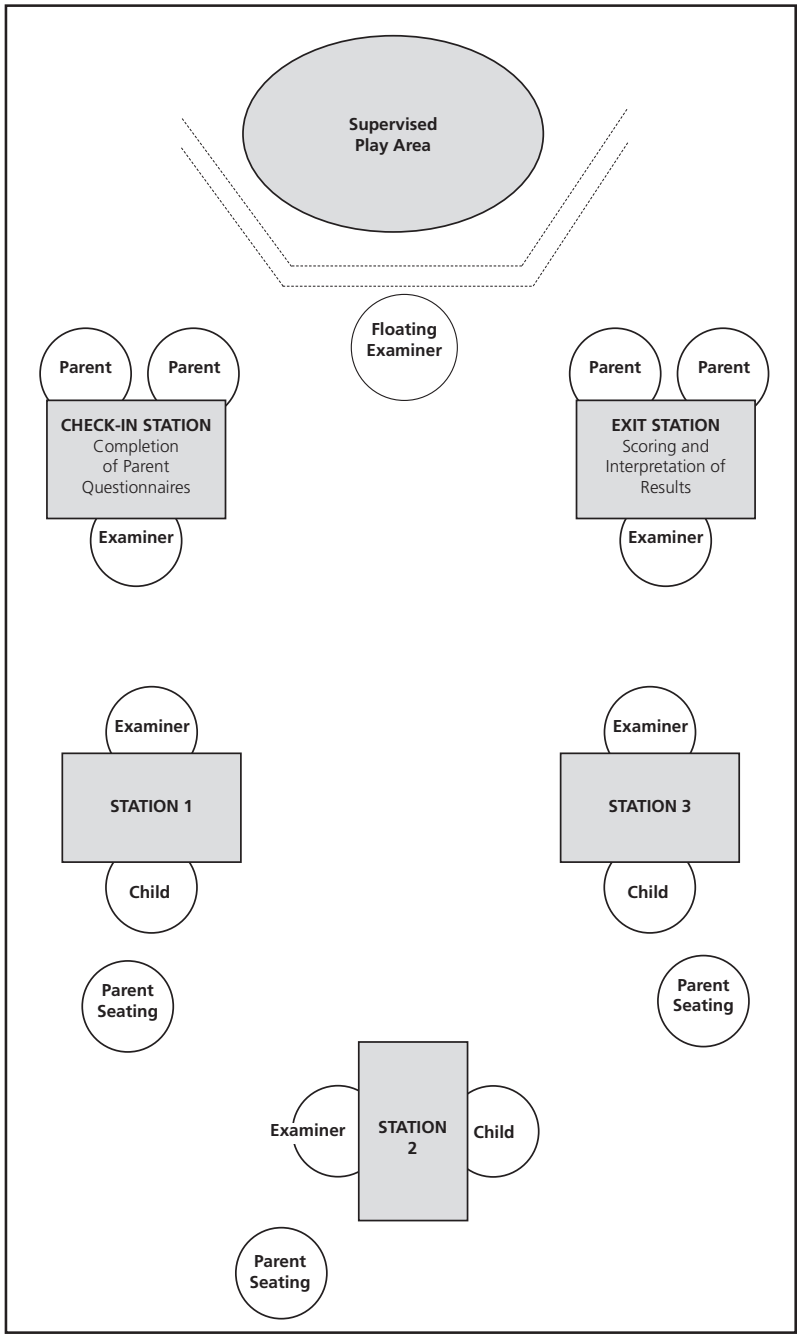
When using the station method, rapport must be established with each child in order to ensure that optimal performance is elicited. One of the most effective ways to do this is to initiate testing at each station with motor or receptive language items. This usually enhances children's responsiveness, minimizes self-consciousness, and facilitates their willingness to attempt the more challenging assessments (e.g., expressive language, number concepts).

See Figure 2-2 for a diagram showing a suggested room arrangement with a check-in station, an adjacent play area that has visual barriers from the rest of the room, extra seating for parents who are rotating with their children, and seating for children that minimizes distractions. A scoring and results interpretation station that offers relative privacy for parents is located adjacent to the play area (where children can wait for their parents to finish). Barriers can be added around stations to decrease distractions and improve acoustics. Any such additions to the space should have appealing decorations on the exterior so that children feel comfortable in their surroundings.

Using the Station Method at Screening Fairs

The *BRIGANCE® Screens III* can be effectively administered using the station method at screening fairs. In many communities, such fairs are often held in conjunction with screening by health care providers who offer vision and hearing screenings. Information about community resources is sometimes displayed at these screening fairs.

Figure 2-2 Diagram of Station Arrangement for Screening



Screening Children with Special Considerations

It is often necessary to evaluate children who are bilingual or children who have known exceptionalities to determine their skill levels, especially in areas of development that may not be affected by any of these conditions. For example, screening results may reveal that a child with motor impairment has delays in language development.

When assessing children with special considerations, accommodations may be necessary. It is important for administrators to recognize the difference between accommodations and modifications and how to use accommodations appropriately when administering assessments. This is particularly important when considering standardized assessment to avoid invalidating the results.

Accommodations are alterations for administering the assessments that enable children to more accurately demonstrate their knowledge.

Accommodations

- permit alternate test settings, testing formats, timing and test scheduling, and means of responding in order to demonstrate a child's true mastery of a skill.
- are not methods to bypass standardized scoring principles.

Accommodations are designed to reduce the effect of language limitations and other disabilities and, therefore, increase the probability that the same target construct is measured for all children. Accommodations provide fairness, not advantage, for children who have disabilities, so that the child is assessed on a level playing field with other children. Appropriate accommodations used should always be recorded in the Notes section of the child's *Data Sheet*.

In contrast, **modifications** are changes to the actual content of the assessment (for instance, changing the phrasing of a question). Modifications **cannot be used** under any circumstances when standardized scores are required. Modifying the assessment content undermines the standardization process and comparability of performance, thereby invalidating normative scores for a child.

When evaluating children with special considerations, use the following general strategies (in addition to the specific strategies that follow).

- Keep a record of the accommodations implemented.
- Be aware of the test items and the way certain accommodations may impact performance and scoring.
- Be aware of the child's strengths that will support reliable responses or those behaviors that may hinder reliable responses.
- Use information from families to identify what may act as a motivator to facilitate the child's optimal performance.

Bilingual and Non-English-Speaking Children

The following accommodations are designed to help bilingual children demonstrate skills they have mastered:

- Administer assessments to bilingual or non-English-speaking children in their primary language—the language spoken most at home. Even children who speak some English perform best when assessments are administered in the child's native tongue.
- If the examiner is not fluent in the child's language, an interpreter will be needed during the assessment for gathering parent information and interpreting results.
- A professional interpreter should evaluate a child's articulation and syntax skills in the child's native language.
- When interviewing parents/caregivers, consider their possibly limited ability to understand and communicate in English.
- The *BRIGANCE® Spanish Directions Booklets* provide direction lines in Spanish for the Core Assessments and the Supplemental Assessments of the *Screens III*. Use the *Spanish Directions Booklets* with the *Screens III* when screening Spanish-speaking children. *Data Sheets*, Parent Feedback Forms, the Parent Report for the Self-help and Social-Emotional Scales, and the Parent Report for the Reading Readiness Scale are also provided in Spanish.

Children with Exceptionalities

The following accommodations are appropriate when administering the *BRIGANCE® Screens III* and may be considered, as needed, for children with exceptionalities.

General Accommodations

- Allow Extended Time: The assessments in the *Screens III* are untimed. A child should be allowed to use as much time as necessary to complete the assessment. If a time limit is provided for a specific item (e.g., Stands on one foot for ten seconds), the time limit should be followed. Otherwise, allow as much time as needed.
- Organize Appropriate Screening Session(s):
  - Separate Space: Conduct the screening in a separate, quiet room.
  - Frequent Breaks: Although conducting an age-appropriate screen should take only 10–15 minutes, allow break times for the child to maintain focus and sufficient energy, if needed.

If there is any doubt about how an accommodation might affect the validity of the assessment results, consult with a specialist in the child's area of exceptionality or with someone experienced in administering standardized assessments, such as a school psychologist or clinical psychologist.

Strategies for Working with Children Who Have Specific Exceptionalities

The general accommodations described earlier may be helpful for assessing children with a variety of exceptionalities and should be considered as needed. Additional accommodations that are relevant for children with specific exceptionalities are included below.

Children with Motor Impairment

Possible strategies:

- Allow the child to use adaptive seating or other adaptive devices unless the assessment is explicitly testing gross motor or fine motor skills.
- Allow the child to formulate a verbal response before requiring a written response, whenever possible.
- Allow the use of different writing products.
- Allow the use of scratch paper.

Although it is tempting to want to give credit for gross motor skills to a child who is compensating effectively for motor impairment (e.g., uses a wheelchair), it is important to remember that the gross motor assessments are designed to measure actual motor skills. Because such children may still be involved in physical therapy, examiners will need to rely on results from the unadapted administration of the *Screens III* in order to monitor progress.

Children with Vision Impairment or Blindness

Possible strategies:

- Read items to the child (with the exception of any items that require the child to demonstrate specified reading skills).
- Provide magnification devices for visual stimuli, such as pictures.
- Provide additional lighting, as needed.
- Reduce visual distractions by covering additional items on a child page.

Children with Hearing Impairment or Deafness

Possible strategies:

- Allow the child to use a communication system or assistive technology if used in regular classroom work. (Note: Before screening, become familiar with the way the child communicates and receives information to ensure the most effective strategies are put in place.)
- Provide a sign language interpreter, if needed.

Children with Severe Speech Impairment

Possible strategies:

- Enlist the assistance of someone who is familiar with the child's speech patterns (e.g., a parent/caregiver) to help interpret the child's communication.
- Allow the child to use a communication system or assistive technology if used in regular classroom work. (Note: Before screening, become familiar with the way the child communicates and receives information to ensure the most effective strategies are put in place.)
- Allow alternate response methods, such as pointing or drawing, when acceptable and when these alternatives will not compromise the construction of an assessment item. For instance, if the assessment specifically requires that the

child respond using expressive language, it would invalidate the standardization to have the child respond receptively (e.g., by holding up the correct number of fingers instead of stating the number when asked how old he/she is).

Children with Emotional Disturbance and Behavior Issues

Possible strategies:

- Consult with someone who has experience with children with emotional disturbance, such as a school psychologist, clinical psychologist, or someone who has worked with the child. Ask specifically about the duration and intensity of the child's behaviors and solicit suggestions for working with the child to ensure optimum outcomes.
- Before screening, prepare the child for the assessment process. Answer any questions and attempt to dispel any anxiety that the child may have.
- Foster an assessment environment that will support positive and appropriate behaviors.

Children with Autism Spectrum Disorders (ASD) and Developmental Disorders

Possible strategies:

- Before screening, let the child know about the upcoming assessment session so that the child is aware of the change in his/her usual schedule. Tell the child what the assessment session will entail. If the child has questions, answer them and attempt to dispel any anxiety that the child may have about the assessment process.
- If the child has limited verbal skills or is nonverbal, determine the child's method of communication, and consider using the accommodations for children with hearing or speech impairments described on the previous page.
- Provide a list or pictorial representation of the assessments to be administered (then cross them off as you go), particularly for a child who is used to using a visual schedule.
- Allow alternate response methods, such as pointing or drawing, when these alternatives will not compromise the construction of an assessment item. For instance, if the assessment specifically requires that the child respond using expressive language, it would invalidate the standardization to have the child respond receptively (e.g., by holding up the correct number of fingers instead of stating the number when asked how old he/she is).
- Reduce visual distractions by covering additional items on a child page.
- Use tangible or edible reinforcers rather than social ones.
- Arrange seating that will discourage the child from leaving the work area.
- Avoid making assumptions about one skill area based on another. Children with developmental disorders often have unexpected areas of strength or weakness.

Children with Traumatic Brain Injury, Significant Health Problems, or Multiple Disabilities

The use of any strategy for the specific disabilities listed as well as the general accommodations in the previous section can be used for a child with traumatic brain injury, health problems, or multiple disabilities as needed.

Children with Possible Giftedness and Academic Talent

Possible strategies:

- Cover the examiner's directions (even though upside down) to prevent the child from reading answers. Children with academic talent often have well-developed reading skills.
- Consider asking additional questions (e.g., "What else do we call this?") if the child gives a creative, but pertinent, response to an item. (The high degree of creativity exhibited by some gifted children may lead them to produce a range of alternative responses to items.)
- After administering the age-appropriate Core Assessments, you may wish to administer the age-appropriate Supplemental Assessments. (See page 5 for more information about the Supplemental Assessments.)

Although the *Screens III* provides accommodation strategies for children with exceptionalities, use professional judgment when determining which strategies are appropriate for an individual child while ensuring the validity of the assessment is not compromised.

Specific Administration Procedures

CH 3

Step-by-Step Instructions

1 Plan Ahead

To administer the *BRIGANCE® Screens III* effectively and efficiently, it is critical that examiners

- spend time becoming familiar with the directions and scoring procedures before screening a child (or interviewing a parent).
- practice administration several times before screening a child.
- administer the *Screens III* in strict accordance with the directions given for each assessment.

To support preparation, make sure you are thoroughly familiar with the information in Chapter 2. In addition, you should establish rapport with the child and (as relevant) the child's parents/caregivers and provide a viable testing environment.

2 Organize Materials

Gather and organize all materials required for the assessments you are administering. Organizing these materials before testing will allow you to focus your attention on the child and on administering the assessments.

To administer the *BRIGANCE® Screens III*, you will need:

- A copy of the age-appropriate *BRIGANCE® Screen III* manual
- The age-specific *Data Sheet*, determined by the chronological age of the child. (See sample completed *Data Sheets* in Appendix I)
- Pens or pencils for recording the child's screening performance

The following materials are needed for administering the assessments in each of the age-specific screens:

Infant and **Toddler**: items from the *Screens III Accessories Kit* (a rattle, a squeaking toy, a spoon, blocks, crayons) as well as the child's bottle (if the child uses one), the child's pacifier (if the child uses one), a cup or sippy cup, a fork, water (milk, juice), crackers (raisins, bits of cereal), tissues, a container to hold blocks, and a small box

Two-Year-Old Child: 10 wooden blocks from the *Screens III Accessories Kit*

Three-Year-Old Child and **Four-Year-Old Child** and **Five-Year-Old Child:** items packaged with the *Screen III* manual (12 colored blocks and 16 shapes for sorting)

Kindergarten and **First Grade:** items packaged with the *Screen III* manual (12 small identical counters, 16 shapes for sorting)

Additional materials needed are common items readily available in most early childhood settings:

- A pencil (the type commonly used by the child)
- Sheets of paper (the type commonly used in the program)
- A timer or a watch with a second hand
- A copy of age-appropriate child pages that require a written response
- Blank sheets of paper for covering distracting items on a child page

Specific materials needed for conducting an assessment within an age-specific screen are listed under MATERIALS on the first page of the assessment.

The publisher grants permission to reproduce the child pages in quantities as needed for nonprofit educational use.

Optional Resources

Screening information forms are included in the *BRIGANCE® Screens III* manuals and are used to record teachers' and parents'/caregivers' observations and to aid examiners in making relevant observations about children's performance during screening. Important information can also be gathered by using the Background Information Form found in Appendix A.

- Screening Observations Form
- Teacher Feedback Forms (Two-Year-Old Child, Three-Year-Old Child, Four-Year-Old Child, Five-Year-Old Child, Kindergarten, First Grade)
- Parent-Child Interactions Form (Infant and Toddler)
- Parent Report and Teacher Report and Scoring Form for the Self-help and Social-Emotional Scales
- Parent Report and the Teacher Report and Scoring Form for the Reading Readiness Scale

The publisher grants permission to reproduce these forms in quantities as needed for nonprofit educational use.

3 Anticipate Administration Time

Screening generally takes 10 to 15 minutes per child.

4 Determine Rounded Chronological Age

In order to select the correct age-specific screen to compare a child's results to cutoff scores, and to derive standardized scores, you must first determine the child's rounded chronological age.

Use the free chronological age calculator at www.BRIGANCE.com or follow the instructions below.

For Ages 2 years (24 months) and Older

a. Computing chronological age:

On the child's *Data Sheet*, write the Date of Screening in the top row and the child's Birth Date in the second row. Subtract the Birth Date from the Date of Screening, borrowing months and years as needed. If a number for the Date of Screening is smaller than the number below it for the Birth Date, you will need to borrow.

Begin with the Day column. If you need to borrow, convert 1 month to 30 days, add 30 to the number of days, and then subtract from this revised figure. Next, subtract the numbers in the Month column. If you need to borrow, convert 1 year to 12 months, add 12 to the number of months, and then subtract.

In the example below, 30 + 7 = 37 days; 12 + 2 = 14 months.

	year	month	day
Date of Screening	2016	2 (12 + 2 = 14)	7 (30 + 7 = 37)
Birth Date	2010	5	22
Age	5 years	9 months	15 days

b. Rounding chronological age:

Once you have computed the child's chronological age in years, months, and days, round the number of days. *If there are fewer than 15 days*, simply ignore the days and use the years and months as the child's chronological age. *If there are 15 days or more*, round the month up by 1.

In the example below, the chronological age 5 years, 9 months, and 15 days is rounded up to 5 years, 10 months.

	years	months	days
Age	5	10	

For Ages 0–23 months

a. Computing chronological age:

On the child's *Data Sheet*, write the Date of Screening in the top row and the child's Birth Date in the second row. Subtract the Birth Date from the Date of Screening, borrowing months and years as needed.

In the example below, 30 + 8 = 38 days; 12 + 1 = 13 months.)

	year	month	day
Date of Screening	2016	1 (12 + 1 = 13)	8 (30 + 8 = 38)
Birth Date	2015	5	23
Age		8	15
	years	months	days

b. Rounding chronological age:

Once you have computed the age in months and days, round the number of days. *If there are fewer than 15 days*, simply ignore the number of days and use the months as the child's chronological age. *If there are 15 days or more*, round the month up by 1.

In the example below,the child who is 8 months 15 days is considered to be 9 months.

Age	years	9 ~~8~~ months	~~15~~ days

For toddlers (12–23 months), the age should be shown in months only (as with infants), not in year and months. See the example of a completed *Toddler Data Sheet* on page 199.

c. Correcting for prematurity, if needed:

Once age is computed in months and days (prior to rounding), correct for prematurity if the child was born 4 or more weeks early. Determine the number of weeks the child was born early. Convert the number of weeks premature to months and days by referencing the chart below.

Number of Weeks Premature	Month	Day
4 weeks	1 month	0 days
5 weeks	1 month	7 days
6 weeks	1 month	14 days
7 weeks	1 month	21 days
8 weeks	2 months	0 days
9 weeks	2 months	7 days
10 weeks	2 months	14 days
11 weeks	2 months	21 days
12 weeks	3 months	0 days
13 weeks	3 months	7 days
14 weeks	3 months	14 days
15 weeks	3 months	21 days
16 weeks	4 months	0 days

Subtract the number of months and days premature from the child's age, (chronological age before rounding) to determine the corrected age. Follow rounding guidelines from step b, as applicable.

	year	month	day
Date of Screening	20~~16~~	1~~2~~ (12 + 1 = 13)	~~8~~ (30 + 8 = 38, 15)
Birth Date	2015	5	23
Age	years	8 months	15 days
Months & Days Premature		1 months	7 days
Corrected Age	years	7 months	8 days

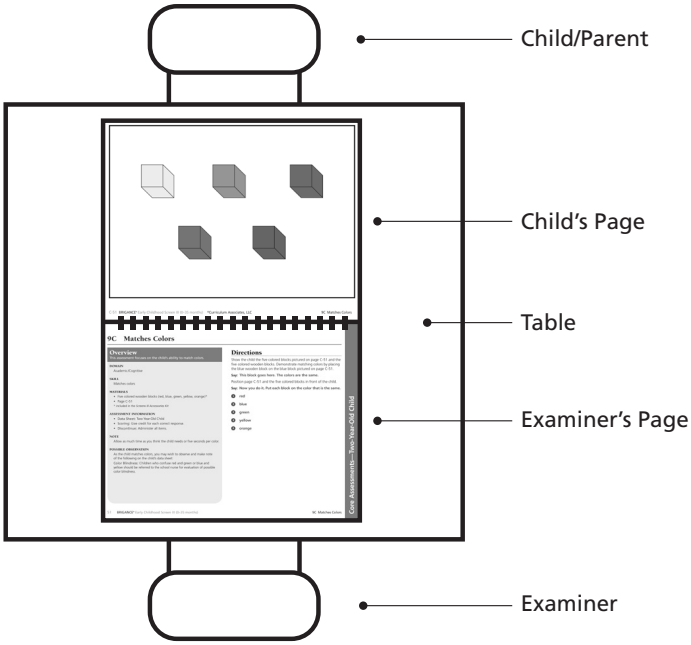
5 Select the Age-Appropriate *Screen III* and *Data Sheet*

Table 3-1. Recommended Age/Grade for the *Screens III*

Age (in years and months)	*Screens III* Age Levels
0-0 through 0-11	Infant
1-0 through 1-11	Toddler
2-0 through 2-11	Two-Year-Old Child
3-0 through 3-11	Three-Year-Old Child
4-0 through 4-11	Four-Year-Old Child
5-0 through 5-11	Five-Year-Old Child/Kindergarten
6-0+	First Grade

6 Position the Manual Correctly

Many assessments include child pages (or illustrations) that need to be shown to the child (or parent). The format of the *Screens III* allows both the examiner and the parent or child to follow the assessment procedures easily. The manual can be opened to an assessment and placed on a table between the examiner and the parent or child, as shown below.



7 Administer the Core Assessments

Entry Points

For Infants and Toddlers

Due to the rapid changes in development during the first two years of life, Core Assessments for the Infant and Core Assessments for the Toddler have suggested entry points and basals. Entry points are suggested items with which to start administration of the test; entry points allow children of different ages (e.g., 4 months old, 8 months old) to begin with items at different skill levels. Entry points are typically below expected performance for chronological age to ensure that children demonstrate, wherever possible, a series of initial successes.

Ideally, a child should correctly respond to (receive credit for) a short series of items (three items in a row), which is called the *basal*. The basal is the point in the assessment at which you can be confident the child would receive credit for all earlier items. If the child does not achieve a basal following the entry point, drop back to an earlier entry point (if there is one) and administer items until a basal is obtained. Once a basal is established, the CHILD RECEIVES CREDIT FOR ALL ITEMS BELOW THE BASAL.

Children Two Years Old and Older

Begin with item 1 on all Core Assessments for children two-years-old and older**.**

Assessment Methods

There are three assessment methods for administering the assessments in the age-specific screens of the *BRIGANCE Screens III:* Observation, Interview, and Performance. The way information is obtained depends on the age of the child and the assessments being administered. Some assessments are administered using one method. For other assessments, a choice of methods is given. If more than one method is offered for administering an assessment item, the examiner can choose the method that he/she feels will make the child most comfortable and will most efficiently produce valid results given the particular situation.

Observation

Some assessments can be conducted by observing the child in a natural setting. For younger children, it is best to observe first. The examiner should become familiar with the items to be administered by reading through them several times. Then, after spending some time observing and interacting with the child, the examiner can record the child's performance on those skills observed. (For example, if the examiner observes that the child plays with her hands and fingers and that the child's hands are predominantly open, the examiner can circle the item number for each of these skills on the child's *Data Sheet*.) After recording data for as many items as possible, the examiner can interview the parent/caregiver or administer the remaining items directly to the child, depending on the appropriate assessment method(s) for administering the specific assessment. If it is observed that the child's skill mastery is marginal, emerging, or inconsistent, credit should not be given.

Observation may not be possible in some situations. In these cases, interviewing the parent/caregiver may be the only manner in which to obtain the information.

Interview

Some assessments can be administered by interviewing the parent/caregiver or someone who knows the child well, such as the child's teacher. For these assessments, specific questions are included. It is important that the examiner use the prescribed directions and exact wording provided.

When responding to an interview question, parents/caregivers often report on a child's emerging but not-yet-mastered skills giving answers such as "sometimes," "if I let him," or "a little." Give credit only for skills the parent/caregiver or teacher can ensure the child is performing *most of the time*. It is important that the determination of whether a child receives credit for a skill is consistent for all children.

If interviewing a parent/caregiver or teacher is provided as an option in the screening directions, this method may increase the efficiency of the assessment session. Also, interviewing the parent/caregiver about items such as those related to dressing and undressing or toileting and bathing can minimize a child's discomfort.

Performance

Performance (administering items directly to the child for the child's response) is a primary method of assessment for older children (e.g., the performance method is used to assess a five-year-old child's mathematics skills).

When working with the child, the examiner should read directions and questions in a natural manner. The examiner should also pace the items in the assessments so that the child has enough time to perform the skill but not so much time that he/she becomes bored waiting for the next direction. The examiner must remember to remain objective; extra assistance given to a child during assessment can influence the child's performance and could invalidate the results.

In order to focus your attention on the child during screening, do not calculate the score until after the screening is completed. An examiner who is calculating scores while the child is responding to items may miss revealing observations.

8 Complete the *Data Sheet*

To complete the *Data Sheet*, have on hand any information about the child gathered from the Screening Observations Form, the Parent Feedback Form, or the Teacher Feedback Form. Then follow the instructions below to fill in each section of the *Data Sheet*. Sample completed *Data Sheet*s can be found in Appendix I.

A. Child's Information: This information should be current and should clearly identify the child. Use official records or information from parents/caregivers to confirm the accuracy of the child's information. If you plan to derive standardized scores, you must compute the child's chronological age. Go to www.BRIGANCE.com for a free age calculator or to page 18 for instructions on computing chronological age.

B. Core Assessments: Core Assessment information and page numbers on the *Data Sheet* correspond to the information in the assessments of an age-specific screen.

The Core Assessments in the Infant and Toddler screens provide entry points and basals. An entry is a suggested item with which to begin the assessment; entry points allow children of different ages (e.g., 4 months old, 8 months old) to begin with items at different skill levels. Entry points are typically below expected performance for chronological age to ensure that children demonstrate, wherever possible, a series of initial successes. Ideally, a child should correctly respond to (receive credit for) a short series of items (three items in a row), which is called the *basal*. The basal is the point in the assessment at which you can be confident the child would receive credit for all earlier items. If the child does not achieve a basal following the entry point, drop back to an earlier entry point (if there is one) and administer items until a basal is obtained. Once a basal is established, the CHILD RECEIVES CREDIT FOR ALL ITEMS BELOW THE BASAL.

Figure 3-1 Marking Responses on the *Data Sheet*

11C Reads Uppercase Letters O A X E B S C Z D L R T M P W K F N H I Y G U V J Q **11C Alternate—Reads Lowercase Letters** o s x c z m p w e a i k y r t v n f h u j g l b d q	Give credit for only *one* assessment—Reads Uppercase Letters *OR* Reads Lowercase Letters.	Stop after 3 incorrect responses in a row. Stop after 3 incorrect responses in a row.	___ × 0.5 OR 22 × 0.5	11/13
12C Experience with Books and Text 1. Knows the front and back of a book 2. Understands that text progresses from top to bottom 3. Understands that text progresses from left to right		Administer all items.	3 × 1.5	4.5/ 4.5
13C Verbal Fluency and Articulation 1. Uses sentences of at least five words 2. At least 90% of speech is intelligible		Administer both items.	2 × 5	10/10

⬭ = skill demonstrated (correct response) / = skill not demonstrated (incorrect response)

To keep testing time as short as possible, each assessment provides a specific discontinue point. Once this point is reached, discontinue the assessment. Because the skills within each assessment are in developmental order, you can assume that the higher-level items (those beyond the discontinue point) are too hard and you should not administer them. The exact number of incorrect responses in a row that establishes the discontinue point for an assessment is shown on the *Data Sheet*.

Circle the item number of a skill that the child demonstrates (or is reported to demonstrate); slash through the item number of a skill for which the child offers an incorrect response or does not demonstrate the skill requested. (See Figure 3-1 above for an example of marking responses on the *Data Sheet*.)

To guide your determination of skill mastery, some assessments provide criteria for determining whether a child should receive credit for a skill. If the child's skill mastery is marginal, emerging, or inconsistent, *do not give credit for the skill* on the child's *Data Sheet*.

Administer items above the discontinue point for instructional purposes *only*. Credit CANNOT be given for a correct response to an item above the discontinue point. To avoid giving credit for items above the discontinue point, clearly mark any items for which the child gives a correct response with a △. DO NOT GIVE CREDIT FOR ANY ITEM ABOVE THE DISCONTINUE POINT.

C. Scoring: Point values assigned to each assessment in an age-specific screen allow a Total Score of 100. To calculate a child's Total Score:

Step 1 Record the number of correct responses for each assessment in the **Number Correct** column. Do *not* count any correct responses above the discontinue point. For infants and toddlers, give credit for *all* items below the basal.

Step 2 Multiply the **Number Correct** by the assigned **Point Value**. Record this number in the **Child's Score** column.

Step 3 Calculate the **Total Score** by adding the numbers in the **Child's Score** column.

D. Notes/Observations: Record any significant observations made during screening in this section of the *Data Sheet* or on the back of the *Data Sheet*. You may wish to record observations regarding the child's hearing, vision, health, behavior, and emotional well-being. If English is not the child's primary language, record the child's primary language here.

E. Next Steps: Record any next steps or recommendations regarding placement and referral in this section of the *Data Sheet*. You may also wish to record if the child scored above or below cutoff scores.

Note: When using cutoff scores, it is necessary to administer all assessments within the age-specific screen. (See page 23 for more information about cutoff scores.)

Comparing a Child's Total Score with Cutoff Scores

The *BRIGANCE*® cutoff scores shown in Table 3-2 indicate that children scoring below these age-appropriate cutoff scores are probably experiencing delays either due to developmental difficulties or to psychosocial risk factors that resulted in reduced opportunity and limited experience with academic tasks.

Tables 3-3 and 3-4 on page 24 show cutoff scores that help to identify children who have advanced development or who may be gifted or academically talented.

Children scoring below the cutoff scores in Table 3-2 or above the cutoff scores in Tables 3-3 or 3-4 may need referrals for further evaluation. Teacher/examiner feedback should also be considered as a referral indicator.

Table 3-2. Cutoff Scores for Detecting Children Likely to Have Developmental Disabilities or Academic Delays

Core Assessments	Age (in years and months)		Cutoff
Infant	0 months	(0 months through 14 days)	<8
	1 month	(15 days through 1 month, 14 days)	<15
	2 months	(1 month, 15 days through 2 months, 14 days)	<17
	3 months	(2 months, 15 days through 3 months, 14 days)	<19
	4 months	(3 months, 15 days through 4 months, 14 days)	<27
	5 months	(4 months, 15 days through 5 months, 14 days)	<33
	6 months	(5 months, 15 days through 6 months, 14 days)	<36
	7 months	(6 months, 15 days through 7 months, 14 days)	<39
	8 months	(7 months, 15 days through 8 months, 14 days)	<43
	9 months	(8 months, 15 days through 9 months, 14 days)	<57
	10 months	(9 months, 15 days through 10 months, 14 days)	<60
	11 months	(10 months, 15 days through 11 months, 14 days)	<67
Toddler	12 months–13 months	(11 months, 15 days through 13 months, 14 days)	<32
	14 months–15 months	(13 months, 15 days through 15 months, 14 days)	<39
	16 months–17 months	(15 months, 15 days through 17 months, 14 days)	<49
	18 months–19 months	(17 months, 15 days through 19 months, 14 days)	<56
	20 months–21 months	(19 months, 15 days through 21 months, 14 days)	<66
	22 months–23 months	(21 months, 15 days through 23 months, 14 days)	<70
Two-Year-Old Child	2-0 through 2-2		<47
	2-3 through 2-5		<54
	2-6 through 2-8		<62
	2-9 through 2-11		<75
Three-Year-Old Child	3-0 through 3-3		<42
	3-4 through 3-7		<45
	3-8 through 3-11		<49
Four-Year-Old Child	4-0 through 4-3		<42
	4-4 through 4-7		<69
	4-8 through 4-11		<71
Five-Year-Old Child/ Kindergarten	5-0 through 5-5		<61
	5-6 through 5-11		<70
First Grade	6-0 through 6-5		<68
	6-6+		<86

Using Cutoffs in Head Start and Other Early Prevention Programs for Children with Psychosocial Risk Factors

Children with four or more psychosocial risk factors (e.g., limited parental education and income, frequent household moves or other disruptive events, parental mental health problems) are likely to have developmental and academic problems and to perform below the age-appropriate *BRIGANCE®* cutoff score. However, exceptions might be made for children who have been recently enrolled in early learning programs. Examiners may need to make special adjustments to the cutoff scores when determining which at-risk children are most likely to have developmental problems and which children are likely to increase achievement with additional exposure. Chapter 5 addresses the range of issues in distinguishing at-risk children who are likely to make adequate gains by attending prevention programs from those with true disabilities.

It is difficult to identify very young children with intellectual giftedness or special talents because of the speed with which developmental changes occur during the first two years of life. While it is possible to determine when very young children show advanced development relative to their peers, it is not consistently clear that such development is a predictor of giftedness. Thus, the following cutoffs should be used cautiously and as developmental strengths rather than as predictors.

Table 3-3. Cutoff Scores Suggesting Advanced Development (Infant and Toddler)

Core Assessments	Age	Cutoff
Infant	0 months	>14
	1 month	>22
	2 months	>28
	3 months	>32
	4 months	>38
	5 months	>44
	6 months	>51
	7 months	>55
	8 months	>62
	9 months	>68
	10 months	>75
	11 months	>82
Toddler	12–13 months	>51
	14–15 months	>54
	16–17 months	>62
	18–19 months	>75
	20–21 months	>81
	22–23 months	>89

Because the *Screens III* are designed to provide teachers with information about a range of student skills, the majority of children succeed on at least 80% or more of *Screens III* tasks. Accordingly, detection of children with giftedness and academic talent is challenging because there are few highly advanced tasks on the age-appropriate level of the *Screens III*. However, using the following cutoff scores, the majority of gifted and talented children can be identified.

Table 3-4. Cutoff Scores for Detecting Children Who May Be Gifted or Academically Talented (Two-Year-Old Child and Older)

Core Assessments	Age (in years and months)	Scores Above Cutoff
Two-Year-Old Child	2-0 through 2-2	>76
	2-3 through 2-5	>85
	2-6 through 2-8	>91
	2-9 through 2-11	>95
Three-Year-Old Child	3-0 through 3-3	>79
	3-4 through 3-7	>84
	3-8 through 3-11	>88
Four-Year-Old Child	4-0 through 4-3	>83
	4-4 through 4-7	>87
	4-8 through 4-11	>92
Five-Year-Old Child/ Kindergarten	5-0 through 5-5	>88
	5-6 through 5-11	>91
First Grade	6-0 through 6-5	>88
	6-6+	>96

Examples of Completed Recommendations (Next Steps)

Below are examples of completed recommendations sections (E. Next Steps) of the *Data Sheets*. For more guidance in making recommendations and referrals, see Chapter 4.

Child A scores above cutoff for developmental difficulties but below cutoffs for giftedness and academic talent and is viewed as performing in the normal range.

E. Next Steps: Within normal limits
No further assessment is needed

Child B scores below cutoffs for delays.

E. Next Steps: Likely developmental difficulties
Refer for further evaluation

Child C scores above cutoffs for gifted/academically talented.

E. Next Steps: Likely gifted/academically talented
Refer for further evaluation

For children with psychosocial risk factors who score below cutoffs, see Chapter 5 to guide decisions about referrals. Below are three examples of the kinds of decisions often made on behalf of these children.

Child D scores below cutoffs for delays, has numerous risk factors for developmental problems, but performance is average compared with other at-risk students. The child was recently enrolled in a Head Start program.

E. Next Steps: Below cutoff; Presence of risk factors but scores above at-risk guidelines;
Enrolled in Head Start; Rescreen in 6–9 months

Child E scores below cutoffs for delays and has numerous risk factors for developmental problems. Although she was recently enrolled in a high-quality early-learning program, she performs well below average, not only in comparison to all children her age but even in comparison to others who are at risk.

E. Next Steps: Below cutoff; Presence of risk factors and scores below at-risk guidelines;
Refer for further evaluation

Child F scores below cutoffs for delays and has risk factors for developmental problems. Although behind compared to children who are not at risk, he performs slightly better than most at-risk students. Still, he is not enrolled in a prevention program.

E. Next Steps: Below cutoff, presence of risk factors; Scores above at-risk guidelines but is not enrolled in a program; Refer for enrollment in Head Start or other high-quality program; Rescreen in 6–9 months. If enrollment not possible, refer for further evaluation

Deriving Normative Scores

In addition to interpreting the Total Score relative to cutoff scores, normative scores may also be needed for reporting purposes. Normative scores can be derived for the Total Score and for individual domain scores.

To support the discussion of each score, an example case is considered in the following sections. The child in this example scenario, Ben, is 3 years, 2 months and has a Total Score of 65, as recorded on his *Data Sheet*.

Refer to Appendix C for additional information about each normative score and appropriate uses.

Calculate the Domain Scores

Three domain scores can be derived based on the score associated with each Core Assessment (i.e., raw score). These include (1) Physical Development, (2) Language Development, and (3) either Adaptive Behavior (for infants and toddlers) or Academic Skills/Cognitive Development (for children two years of age and older). See Tables 1-1 and 1-2 in Chapter 1 for assessments within each domain.

To calculate scores for each of these domains, repeat steps 1–3 on page 22 for obtaining the Total Score; rather than summing all assessment scores, add the scores only for those assessments that make up each domain. Thus, you should have three domain scores for a child (in addition to the Total Score) once these steps are complete.

Derive Composite Scores for the Domain and Total Score

Once a domain score or Total Score has been computed, a composite score (standard score) with a mean of 100 and a standard deviation of 15 can be derived. Turn to Appendix D for Total Scores and Appendix E for Domain Scores and locate the appropriate page for the child's chronological age. Proceed with the following steps to derive composite scores:

a. Locate the appropriate age range in the top row.

b. Locate the Total Score or domain score in the far left-hand or right-hand column.

c. Locate the intersection of the age and score. This is the composite score for that domain or Total Score.

For instance, Ben has a Total Score of 65. Given his age (3 years, 2 months), Ben's composite score is 99.

Derive Confidence Intervals

To derive a confidence interval (CI) for any domain or Total Score, find the table you used to derive the composite score. At the top of the table, you will see a standard error of measurement (SEM). The SEM represents the 68% confidence level. You can create 95% (±2 SEM) or 99% (±3 SEM) intervals if you desire. Refer to Chapter 8 for details on the SEM and its use.

Proceed with the following steps:

1 Subtract the SEM from the composite score to obtain the lower end of the confidence interval.

2 Add the SEM to the composite score to obtain the higher end of the confidence interval.

The SEM for Ben's total composite score (for his Total Score) is 3. Therefore, the 68% confidence interval around his composite score of 99 would be 96–102.

Derive Percentiles

Once composite scores have been calculated, you can also derive percentiles for both the Total Score and domain scores. Turn to Appendix G and locate the relevant composite score(s). To the right of the composite score is the corresponding percentile. A composite score of 99 places the child at the 48th percentile.

Derive Age Equivalents

To derive age equivalents, turn to Appendix D for Total Scores and Appendix E for Domain Scores and locate the Total Score or domain score. To the right of the score is the corresponding age equivalent.

Note: For a child who receives a composite score that is higher or lower than the range of scores in the table, use the highest or lowest score shown. Assign the appropriate symbol (< or >) to the age equivalent.

A Total Score of 65 on the Three-Year-Old Basic Assessments reflects an age equivalent of 3-2 (3 years, 2 months). This match between chronological age and age equivalent is consistent with the composite score that placed the child at the 48th percentile (i.e., about average).

Refer to Chapter 6 for details on using Age Equivalents to monitor progress.

Derive Instructional Ranges

To derive an Instructional Range for a domain score or the Total Score, locate the table you used to derive an age equivalent score (see Appendix D for Total Scores and Appendix E for Domain Scores). In the table, you will see the corresponding standard error of the mean (SE_Z) for scores (at the top of the table for Total Score age equivalents and just below the domain name for domain score age equivalents). The SE_Z represents the 68% confidence level. You can also create 95% (± 2 SE_Z) or 99% (± 3 SE_Z) intervals if you desire.

Proceed with the following steps:

1. Subtract the SE_Z from the age-equivalent score to obtain the lower end of the instructional range.
2. Add the SE_Z to the age-equivalent score to obtain the higher end of the instructional range.

For example, given an age equivalent score of 3-2 and an SE_Z of 1 month, the instructional range for this age equivalent score would be 3-1 to 3-3.

NOTES

Interpreting the *BRIGANCE® Screens III* Results

CH 4

Rationale, Definition, and Uses for Developmental Screening

Child development is malleable and variable. To capture this variability and assist in identifying delays or potential issues, it is suggested that children's development be monitored in the context of their environments. In fact, many professional groups recommend continually monitoring a child's development. The American Academy of Pediatrics, for example, prompts pediatricians to assess development at each well-child visit, those visits regularly scheduled throughout the early years of life. Similarly, the education system frequently (within and across school years) assesses students' ability and progress in several domains. Screening plays an important role in supporting a child's early learning and development to ensure each child is on a path towards school success.

With this context in mind, developmental screening is conducted for three primary reasons.

Early Identification

A fundamental reason for screening is **early identification** of children who exhibit signs of behavioral, social, or cognitive delays. The importance of early identification is recognized in the federal Individuals with Disabilities Education Act (IDEA). Through Child Find, IDEA requires that states identify, locate, and evaluate all children in need of early intervention or special education services beginning as early as birth—that is, states are responsible for evaluating children suspected of having a disability to ensure they receive the services needed as early as possible. In addition, Head Start programs are mandated to screen all children entering their programs to identify evidence of developmental, sensory, or behavioral concerns and to identify those children who should receive a more formal evaluation to identify disabilities. Because the *Screens III* sample a range of developmental domains, school systems and agencies can use the *Screens III* to comply with Head Start mandates as well as early identification requirements under the Individuals with Disabilities Education Act (IDEA).

Following identification, early intervention with children who have special learning needs helps ensure the realization of their potential and their success with critical life tasks. Such interventions can decrease the need for later intense and expensive services, maximize potential, and improve adult functioning (Barnett and Escobar 1990; Karoly, Kilburn, and Cannon 2005).

For children who have advanced development or who are intellectually gifted or academically talented, early intervention promotes motivation, task persistence, self-worth, and standards of excellence during a critically formative period (Clarke 2001; Karnes and Johnson 1986). The positive impact of early intervention and prevention on children's current and future development provides compelling justification for detecting emerging difficulties and strengths as early as possible.

School Readiness

Screening also plays a critical role in determining **school readiness**, particularly for children entering kindergarten. Many states have their own definitions of school readiness, but in its most general form, school readiness means that a child possesses a set of prerequisite skills and abilities (e.g., knowledge, attitudes, behaviors) that will allow that child to benefit from instruction at the kindergarten level (and above) (Anastasi and Urbina 1997). In an effort to improve children's school readiness, a dramatic increase has occurred in the number of state-funded prekindergarten programs (Barnett, Epstein, Friedman, Sansanelli, and Hustedt

2009). Entire volumes of journals (*Educational Researcher*, volume 39) now focus efforts on documenting what preschools, families, and schools must do to assist our children in learning to read and write. The importance and rationale for this attention is simple: the relationship between school readiness and later achievement is positive and strong (Duncan et al. 2007). Quality readiness measures are needed to support the school readiness movement (Gotch and French 2011). Accurate screening of behavioral, language, and academic skills (with valid and reliable measures) assists in ensuring children are ready to achieve. For children who need further support to become school ready, screening helps ensure they receive the necessary resources.

Instructional Planning and Progress Monitoring

A third reason for screening is to **guide instructional planning** and **monitor child development** and growth over time. Screening measures are often used to monitor development to inform instruction for individual children or an entire program. Results from administering these brief assessments are used to identify areas of strength and areas where greater support is needed. Initial instructional plans are guided by screening results, while administering the *Screens III* over time allows for progress monitoring so that, if necessary, instructional plans can be modified accordingly.

Interpretation and Explanation

Once screening has been completed and a child's performance has been compared to cutoff scores, examiners should engage in two activities, particularly when results indicate that performance is below the cutoff for potential developmental delays.

1. **Interpret screening results**—*Decide on the most likely reason for poor performance, identify areas of apparent weakness, and make appropriate follow-up decisions.*
2. **Explain screening results**—*Help parents or caregivers understand the results and suggest next steps for following through on recommendations.*

This chapter discusses the interpretation and explanation of screening results and offers guidance about referrals and services children may need when they exhibit low performance on the *BRIGANCE® Screens III*.

Interpreting Results

When children receive scores on the *Screens III* that fall below cutoffs, it is important for examiners to consider reasons for poor performance. Reasons for poor performance can fall into three broad categories: (1) potentially unreliable performance, (2) destabilized performance, or (3) likely deficits or disabilities. Each category is discussed below, along with implications for follow-up decisions.

UNRELIABLE PERFORMANCE The development of a child is never a straight line. Each child will experience periods of rapid growth and leveling plateaus. If, however, a child demonstrates very little of what he or she is reported to know by a parent/caregiver, it is a good idea to screen again after a short amount of time (one to two weeks) to ensure more reliable results.

Unreliable performance may be attributed to one of the following conditions.

- **Poor Testing Conditions.** Uncomfortable room temperature, noise, visual distractions, or poor lighting may prevent a child from performing well. This is likely to occur when children are screened in groups (e.g., station screening) and is particularly problematic for a child who is new to a school environment or formal assessment situation. In addition, if a child finds the screening atmosphere uncomfortable, feels discouraged or unmotivated, or is tired, the child's performance may suffer. If screening conditions were not optimal, rescreen the child at a later date.
- **Poor Rapport.** When examiners have limited experience with young children and do not have a range of strategies to assist children who are reluctant to perform well, unreliably low scores are likely to occur.
- **Problematic Behavior.** A child who refuses to comply with requests; demonstrates inappropriate behavior; or is fearful, clingy, or extremely shy may not demonstrate the skills he/she possesses during an initial screening. Such behaviors can also be symptomatic of developmental or emotional

problems that require further assessment. In some cases, it may be helpful to have the screening repeated by an experienced diagnostician.

- **Health Issues.** Poor nutrition or an imbalance in body chemistry can cause a child to be lethargic or overactive, resulting in poor performance. Also, a child screened just prior to the onset of an illness or just after an illness may perform at a lower level than usual. Rescreening the child once symptoms subside is advised.

It is tempting to dismiss poor performance results as unreliable (e.g., due to limited rapport or poor testing conditions). However, it is critical to recognize that children who have true developmental difficulties or children who are at risk for school problems due to psychosocial risk factors also are likely to have scores that appear initially to be unreliably low. Children in such situations are likely to be distracted by environmental stimuli, have difficulty relating to examiners, and exhibit problematic behavior during testing. When examiners are concerned that performance is unreliable for any of the reasons described, prompt rescreening is essential in order to draw valid conclusions. Ideally, such rescreening should include a focused attempt to remedy any issues faced during the first screening (e.g., environmental, examiner, health factors).

DESTABILIZED PERFORMANCE There are several factors that do not affect the reliability of the screening results (meaning that rescreening is likely to yield the same results) but that do destabilize performance (meaning that a screening repeated several months later, might show fluctuations in skill levels). This is likely to occur after a child with some of the following conditions receives treatment or relatively modest intervention. When these conditions are present, the results of screening should be considered valid. Some referrals are usually required, as is careful monitoring.

- **Untreated Vision or Hearing Problems.** When there are behavioral indicators of sensory deficits, parent or teacher concerns, or a history of hearing or vision difficulties, prompt referrals to pediatricians and pediatric ophthalmologists should be made. Although correction of vision problems may immediately improve performance, hearing problems, whether transient or longstanding, usually have a long-term impact on a child's development, especially in the area of language. For children with hearing problems, referrals for language or developmental intervention are almost always warranted.
- **Experiential Differences.** Children with numerous psychosocial risks are likely to do poorly when screened. These children may need prompt referrals for additional evaluation to determine if there is a disability or if poor performance is caused by the presence of risk factors. Issues associated with children identified as at risk are discussed in Chapter 5.
- **Chronic Health Problems.** Children often do not perform well when screened if they have longstanding health problems such as cancer, sickle cell disease, cystic fibrosis, severe asthma, metabolic disorders, partially controlled seizure disorders, or have side effects from medications such as those given to control seizure disorders. Such conditions limit vitality and energy and can produce performance that varies considerably from one day to the next. Due to frequent school absences, hospitalizations, the changing effects of medical treatment, and variable health status, at times, children with these problems may be truly behind others in skill development. At other times, however, these children may demonstrate well-developed skills. Although it may seem generous to explain low screening scores as due simply to the transient effects of illness, health problems also interfere with performance in the classroom. Such children require further academic and adaptive behavior evaluations to determine their needs for classroom modifications, special programming, intermittent provision of homebound instruction, and other support services.

LIKELY DELAYS OR DEFICITS Although low screening scores are sometimes the result of reliability issues or destabilizing but potentially transient factors, scores below cutoffs carry a high probability that a child has either undiagnosed disabilities or substantial developmental deficits in one or more areas. For this reason, when a child's score falls below cutoffs, two questions should be considered:

1. What kinds of issues are suspected?
2. What referrals are needed?

Because children may have difficulties in more than one area of development (physical development, language development, academic skills/cognitive development, and/or adaptive behavior), it is important to identify the particular area that appears most concerning and to focus referrals accordingly. Analyzing domain scores, as discussed below, can assist with this process.

ANALYSIS OF DOMAIN SCORES To assist in identifying significantly weak or strong skills on the *BRIGANCE® Screens III* in relation to the child's peers, normative scores (composites, percentiles, age equivalents) can be computed for each domain at each age level. The process for obtaining these scores was outlined with step-by-step directions in Chapter 3. Definitions of the various normative scores are provided in Appendix C. Examiners who are unfamiliar with or who do not routinely use standard scores, percentiles, and age equivalents are encouraged to read this material prior to reviewing and presenting results to others.

Recall that composite scores are normalized standard scores with a **mean of 100 and a standard deviation of 15**. A score of 100 indicates that the child's performance for the skill area is at the mean or average within the normal distribution. A score of 115 indicates the child's performance is one standard deviation above the mean of the normative sample; a score of 85 indicates the child's performance is one standard deviation below the mean of the normative sample.

When considering the composite scores for the Total Score and the three domains, recall that most children (approximately 68%) score within one standard deviation above or below the mean. In other words, they score between 115 (100 + 15) and 85 (100 – 15).

Given that scores in the normal distribution are separated by standard deviations which are typically used to indicate where individuals fall within the distribution, it also is helpful to have additional break points along the continuum. When considering a child's scores, the following information may be used to interpret composites in relation to performance.

These break points or intervals are common in the assessment of many domains (e.g., intelligence, development, Drummond 2004):

< 70	Very weak
70–79	Weak
80–89	Below Average
90–110	Average
111–120	Above Average
121–130	Strong
> 130	Very Strong

These differences can be examined not only in terms of composite scores but also in terms of the corresponding percentiles. Composite scores falling within the range of "above average" (above the mean) and "below average" are considered within the average range. Any score below this point may signal an area where additional testing is warranted.

Once a domain is identified as a possible area of concern, refer to Tables 1-1 and 1-2 on pages 6 and 7 to locate the assessments within domain(s) of concern. Reviewing the content within these assessments will allow for a detailed analysis of skills that may need additional evaluation for that child. Examiners are cautioned not to use these composites to inform decisions about a child without also factoring in other information (e.g., parent and teacher reports) and results from other measures (e.g., other diagnostic assessments), as recommended by best practices (e.g., *Standards for Educational and Psychological Testing;* AERA, APA, and NCME 1999). This caution holds across all scores generated from administration of the *Screens III*.

EXAMPLES OF SKILL ANALYSES The profiles that follow include some examples of student performance on the *BRIGANCE® Screens III* for which analysis of domain scores was used to identify probable areas of weakness. Although this is not a perfectly precise process, it is one that clearly assists in making careful referrals for further evaluation. Actual names are not used in the following case studies.

PROFILE 1

Misha Zabriski, age 17 months, was referred to his state's Child-Find Program under the Individuals with Disabilities Education Act, by his pediatrician, Dr. Blanco. Dr. Blanco noted that Misha had had numerous ear infections and that his mother was worried about speech-language development. Dr. Blanco also noted that Misha's two audiologicals also indicated normal hearing.

When screened with the *BRIGANCE* Toddler screen, Misha's scores on all assessments were at the median. Even so, the Child-Find coordinator recognized that age-appropriate development at an early age does not always predict age-appropriate development later on. He had concerns about the possibility of future language delay given Misha's ear infections and potential for intermittent hearing loss. He also noted that Misha's mother rarely smiled and, for the most part, talked to Misha only when he was upset. Also, she did not bring any of Misha's toys to the meeting. On the intake questionnaire, which included items from the Background Information Form, Mrs. Zabriski mentioned feelings of depression and also indicated limited social support—that is, she has no one to help her care for Misha and his two older siblings (ages 3 and 5).

The Child-Find coordinator made the following recommendations:

1. Rescreen Misha in 6 months.
2. Refer Mrs. Zabriski to a social worker for counseling and assistance with social support.
3. Refer Mrs. Zabriski to a parent training class for assistance in learning how best to promote Misha's language.

PROFILE 2

Peter, at age three years, one month, came to a countywide screening fair and was administered Core Assessments for the Three-Year-Old Child from the *BRIGANCE® Screen III*. His mother accompanied him and reported that she cares for Peter at home and reads to him often. On the Background Information Form she noted that Peter had had numerous ear infections and that dyslexia runs in his dad's family.

Peter scored below the age-appropriate cutoff score on the Core Assessments for the Three-Year-Old Child, suggesting possible delays. He performed well on most tasks in the Physical Development domain and in the Academic Skills/Cognitive Development domain (with the exception of math skills). He had difficulty with tasks in the Language Development domain including: Identifies Pictures by Naming, Knows Uses of Objects, and Identifies Parts of the Body. Also, Peter failed a hearing screening.

The examiner observed that items that gave Peter trouble were in expressive and receptive language assessments, and she noted that difficulty with Understands Number Concepts could be due to language difficulties as well.

The examiner recommended that

1. Peter should see his pediatrician to consider whether further treatment was needed for ear infections and to decide whether additional referrals (e.g., to an audiologist) were needed.
2. Peter should receive a speech-language evaluation to determine whether he had significant delays or disabilities in receptive or expressive language skills.

Because Peter appeared to be having intermittent hearing loss, the pediatrician decided that tubes were needed. The doctor treated Peter with antibiotics and scheduled him for outpatient surgery. A repeat hearing screening in the pediatrician's office two weeks after the tubes were placed showed hearing within normal limits.

The speech-language pathologist found moderate delays in Peter's receptive and expressive language skills such that he met criteria for special education eligibility as a child with speech-language impairment. He recommended that Peter receive individual and small-group speech-language therapy and he gave Peter's mother suggestions for how to stimulate and build language at home.

Two years later, Peter was rescreened with the Core Assessments for Kindergarten from the *BRIGANCE® Screens III* and with a separate speech-language screening test. He scored above the cutoff scores on both screens, was dismissed from therapy, and was enrolled in a regular kindergarten program. However, because language skills can plateau in the absence of intervention, the speech-language pathologist decided to rescreen Peter's language annually for the next few years and to monitor his performance on group achievement tests, particularly in the area of reading comprehension (a sensitive indicator of language deficits in older students).

PROFILE 3

Juana, age four years, six months, had attended a Head Start program throughout the year. Juana's family communicated solely in Spanish, but the Head Start program specialized in working with children for whom English is a second language. Although Juana is making progress in English, she was administered Core Assessments for the Four-Year-Old Child in the *BRIGANCE® Head Start Screen III*, using the Spanish directions. On the Core Assessments, Juana scored well below cutoffs. She had difficulty with many items in each domain, and all domain scores were in the very low range.

Juana's teacher had difficulty identifying a clear pattern of strengths and weaknesses. She noted that Juana had more difficulty than most children in her classroom in almost all areas, despite having attended the Head Start program for more than a year. The teacher also described Juana as a child who cried frequently, was quickly frustrated, and who had difficulties with attention span. For these reasons, she also administered the Self-help and Social-Emotional Scales. On these measures, Juana also showed significant weaknesses. Thus, her teacher decided to:

1. refer Juana to the school psychologist to assess intellectual and adaptive behavior skills as well as emotional well-being, and
2. determine, on the basis of the psychologist's findings, whether speech-language evaluations were needed.

As a result of the referral, Juana was administered (in Spanish) individualized measures of intelligence and school achievement. Her mother, Mrs. Marquez, was interviewed, also in Spanish, regarding Juana's adaptive behavior skills. Mrs. Marquez commented that Juana appeared to be behind other children and that Juana's younger sister could do some things that Juana could not. On the additional assessments, Juana scored close to the first percentile in both intelligence and adaptive behavior (standard scores of 65) and appeared to be eligible for special education services. The psychologist did not, however, feel that Juana had serious emotional difficulties; behavior problems arose only when she was given tasks that were too difficult for her. This suggested that she was aware of her difficulties and was frustrated by them.

To ensure that Juana's low performance was not due primarily to language difficulties, Juana was referred for a speech-language evaluation. Her communication skills were found to be commensurate with her intellectual abilities and speech-language therapy did not appear needed.

It was recommended that Juana be enrolled in a part-time special education program for children with mild disabilities. She was also recommended for part-time mainstreaming into a bilingual kindergarten class during nonacademic activities. Related services included modified instruction to ensure that educational experiences in the mainstream classroom were appropriate to Juana's current level of achievement. Reevaluations were recommended every three years to assess the validity of the diagnosis and the need for continued special education.

PROFILE 4

Latikah, age five years, three months, was enrolled in a Head Start program. She was administered Core Assessments for the Five-Year-Old Child in the *BRIGANCE® Head Start Screen III* in May of her prekindergarten year. Latikah received a score of 59—well below the cutoff. Latikah also had numerous psychosocial risk factors for school difficulties. Those factors included having more than three siblings, being eligible for the federal free lunch program, and having a single parent who had not graduated from high school, had difficulty completing parent questionnaires independently, and was only 17 years older than her oldest child.

Ms. McElroy, Latikah's teacher, first compared her score in the Academic Skills/Cognitive Development domain with that of other children who were at risk. Latikah scored well below the cutoff for At-risk Guidelines. She performed two standard deviations below average in the Physical Development domain. Performance in the Expressive Language skill area was slightly but not significantly below average with a composite score of 91.

Latikah's performance was corroborated by her difficulties in the classroom. She had difficulty with fine motor skills, and Ms. McElroy described her as more awkward and less coordinated than other children. Latikah also seemed to have difficulty with all items assessing receptive language but not expressive language. Ms. McElroy recognized that difficulty with numeral comprehension could be related to language and that poor performance on the visual discrimination assessment could be due to misunderstanding the word *different*.

Ms. McElroy recommended that Latikah:

1. be rescreened for hearing and vision. (This was done at the beginning of the school year and found to be within normal limits but could have changed during the year.)

(*continued*)

PROFILE 4 cont'd

2 receive a language evaluation to assess receptive and expressive skills.

3 see her pediatrician for neurological screening and to determine whether an occupational therapy evaluation was needed to assess fine-motor coordination and hand use.

Latikah was found to have normal vision and hearing. The speech-language pathologist administered the Test of Language Development and found low average expressive language skills but significant weaknesses in receptive language skills. This is a disordered pattern and meant that Latikah qualified for special education services as a child with language impairment. Of the services available, individual speech-language therapy was recommended. The speech-language pathologist also knew that children who express themselves better than they comprehend present challenges in the classroom because it is easy to assume they understand much more than they do. Therefore, the speech-language pathologist also recommended frequent consultation with Latikah's kindergarten teacher throughout the next school year.

Latikah's pediatrician felt a referral for an occupational therapy evaluation was warranted due to classroom difficulties with fine-motor tasks. The occupational therapist (OT) found that Latikah's skills were far below average in the area of graphomotor development (using a pencil or a spoon). She also felt that Latikah was aware of these difficulties and tended to avoid engaging in drawing and writing tasks. Similarly, Latikah preferred to eat with her fingers rather than attempt to hold a spoon correctly. (The same pincer grasp is used for holding a spoon as well as holding a pencil.) The OT recommended increased opportunities for writing and tracing activities, together with a behavior management program to reinforce Latikah's efforts to write, color, and hold a spoon appropriately.

PROFILE 5

Michelle was six years, eight months old and finishing first grade. Her teacher administered Core Assessments for First Grade. Michelle received a score of 50, well below cutoff for her age. Her mother reported concerns about Michelle's listening skills, her ability to learn new words, and her attention span. She noted that Michelle had become increasingly unhappy about school. Michelle often did not want to go and had commented on several occasions, "I'm dumb." Twice in recent weeks, she reported a stomachache just before it was time to leave for school, but her mother thought Michelle was trying to avoid attending.

On the Core Assessments, Michelle had difficulty with most of the academic tasks, including word recognition and math-related tasks. Performance on language-related assessments also was below average.

Michelle's teacher referred her to the school psychologist to assess intellectual and achievement skills.

Diagnostic testing revealed Michelle was found to have an intelligence quotient of 83, in the low average range. Her academic performance was slightly but not significantly lower. The school psychologist also screened language development but found this to be low average and commensurate with her intelligence. As a consequence, Michelle did not qualify for special education services. The school psychologist suggested:

1 Enroll in a summer-school program to build critical school skills.

2 Rescreen Michelle at the end of the summer to determine whether she had mastered enough skills to have a more successful second-grade year.

3 Enroll Michelle in the Title 1 Reading and Math programs.

4 Enroll Michelle in a no-cost after-school program through the community center in Michelle's neighborhood help to build school skills. The community center has a literacy program with volunteers who can help Michelle with her schoolwork.

SUMMARY DISCUSSION OF PROFILES When reviewing screening scores that fall below cutoffs, the use of domain analysis (coupled with information about risk factors) is likely to reveal one or more areas of weakness. Identifying strengths and needs across skill areas (and also within skill areas) helps determine whether referrals should be made for language and hearing evaluations, psychoeducational testing, occupational or physical therapy evaluations, or medical and/or comprehensive assessments including social work, counseling, and parent training.

Communicating Screening Results

Because of the significant role parents/caregivers play in their child's development (as well as the fact that referrals for evaluations require parental consent), parents/caregivers need to be informed of their child's screening. Explaining screening results to parents requires careful handling. Poorly conducted conferences can produce much ill will and unwillingness to follow through on recommendations. Well-conducted conferences help parents adjust to difficult news and promote an optimistic attitude toward exploring possible reasons for low screening results and seeking effective interventions.

There are two pitfalls in explaining screening test results:

- Overstating the meaning by making a diagnosis
- Understating the meaning by downplaying the potential importance of the results

To avoid these pitfalls, consider the following suggestions.

How to Explain Screening Results

- Talk with parents face-to-face when discussing screening results. Giving results over the phone often leads to distress and denial by parents.
- Before discussing the screening results, ask parents if they have concerns about their child's learning or behavior. Begin the conference by acknowledging the parents' observations. For example, you might say, "I am impressed with how carefully you have observed Mario's development and by your sense that he may be having some difficulties. In screening him today, I also thought he had more trouble with certain tasks than other children. I want to recommend that he receive more in-depth assessment to see if he really is having trouble and what we can do to help him."
- When parents have not raised concerns, pause after presenting the results but before making recommendations. Ask questions such as "Have you ever noticed him/her having difficulties with _____?" and "Have you been able to watch him/her do _____ and watch how other children do _____?" It also is helpful to invite parents into the classroom so that they can observe their child's performance in comparison with others.
- Explain the need for further evaluation in a positive way. For example, you might say, "We need to explore the way Sharon learns so that we can better plan for her educational needs."
- Using phrases like "may be behind other kids," "seems to be learning more slowly," and "could be having difficulty learning" is effective but not devastating. Avoid using phrases such as "positive results" or "negative results."
- Acknowledge emotions. When parents appear anxious, it may be helpful to say, "This is hard to hear, isn't it?" This can enable them to express their fears, move beyond them, and follow through with recommendations.
- Avoid false assurances. It is natural to want to comfort parents and assure them that most likely nothing is the matter. However, if screening results reflect a true problem, false assurances may make adjustment more difficult. Simply say something like, "We need to look further to decide if Laurie actually needs more help with learning."

- Provide contact information, descriptions of services, and the purpose of the recommendations. Families who have the necessary information are more likely to follow through with next steps or recommendations. Describe potential services so that parents can visualize their child and themselves participating.
- Put recommendations in writing. Written information affirms the findings and recommendations and allows parents to share with other family members. Many programs use a form letter like the following example.

> Dear (name of Parent[s]/Caregiver[s]),
> This week, we administered the *BRIGANCE® Screen III* in our class. The *Screen III* measures language skills and early academic skills and also how well your child draws, writes, and uses his/her arms and legs to do things. Because (child's name) seemed to have trouble in some areas, we feel that further testing would be helpful in educational planning for (child's name). We recommend further testing to discover the best ways we can be of help to your child.
> Specifically we recommend the following evaluations: (Write referrals below.)
>
> _____
>
> _____
>
> We would also like to know if you could: (Write referrals that parents/caregivers must seek on their own.)
>
> _____
>
> _____
>
> To give permission for further testing, please sign the enclosed form and return it to us. (Attach standard permission form for testing).

- Offer ongoing support. Parents will often be faced with family members who are uncertain about the recommendations for further evaluations and services. Be open to parents talking to you about their concerns. They may have questions about following-through on further evaluations and services.

HELPING PARENTS PROMOTE DEVELOPMENT When screening results are explained to families, parents/caregivers often request information about what they can do to help their child develop in the best possible manner. One way to assist this process is to provide parents information that addresses the topics of their concerns. Often, the majority of parental concerns about development fall into the areas of speech-language, academics, and socialization. The handouts included in Appendix B may be helpful. *Permission to photocopy these materials for distribution to parents is given by the publisher.* When materials are given to parents, it may be useful to provide a brief overview of the information so they know what to expect in reading the materials.

The space at the end of each handout can be used to add a relevant list of local services (e.g., parent training classes, behavior management programs). **It is important to provide parents with known resources to ensure they are able to follow through on the recommendations provided for supporting their child.**

NOTES

Using the *BRIGANCE® Screens III* with Children at Risk

CH 5

Understanding Psychosocial Risk

Many factors influence children's normal development. Poverty is one of the most significant factors associated with hindered development because it is often coupled with factors such as low birth weight, poor nutrition, limited health care, and understimulated environments. Even greater than its connection to health problems and biological risk is the association between poverty and psychosocial disadvantages. These disadvantages include limited parental education, inadequate income or social support, teen parenting, single-parent households, more than three children in the home, unemployment or limited employment, frequent household moves, parental mental health issues and substance abuse, exposure to violence, and an authoritarian parenting style (in which there is little response to child-initiated conversation, few mediated learning experiences, and harsh disciplinary practices) (Bang 2008; Delgado 2007; Hanson and Carta 1995; Reynolds et al. 2001; Sameroff et al. 1987; Sameroff 2000; Walker et al. 1994). Of children from impoverished backgrounds, *between 70% and 90%* will have school difficulties (Campbell and Ramey 1994).

The greater the number of psychosocial risk factors, the more likely the child is to perform poorly in school or have developmental disabilities; that is, no single factor predicts risk or delay, instead multiple factors compound the potential effect on a child (Lucio 2012). Four or more psychosocial risk factors are associated with steep declines in school achievement and higher probabilities for children to develop difficulties (Sameroff et al. 1987; Sameroff 2000; Shaffer 2012).

The adverse effects of psychosocial risk clearly illustrate that development is influenced by the environment and is malleable (Fantuzzo 2012; Gallagher and Ramey 1987; Sameroff 2000). Given that development can be influenced by external factors, it is possible to moderate the influence of psychosocial risk through early childhood education and prevention programs, such as quality daycare, preschool programs, prekindergarten, Head Start, and Title I Reading and Math. At-risk children who participate in structured before- and after-school programs and those whose parents receive training in positive child-rearing skills make marked developmental gains (Fantuzzo 2012; Huston, McLoyd, and Coll 1994; Lucio 2012).

In accord with research on the effects of psychosocial risk (Buehler 2012; Sameroff 2000; Shaffer 2012), children with four or more risk factors tend to perform below cutoff scores on the *BRIGANCE® Screens III*. Although children scoring below BRIGANCE cutoff scores may have undetected disabilities or significant academic deficits, it is possible that some children, particularly those with psychosocial risk factors who have been recently enrolled in prevention programs, may improve their scores given additional exposure and instruction. It is acceptable, and even desirable, to refer for evaluations all children who score below cutoffs. However, for teachers and diagnosticians working with large groups of at-risk children, it may be helpful to distinguish children who may be adequately served by prevention programs from children who may have true disabilities. This chapter addresses the issue of sorting at-risk children into these two groups so that diagnostic resources can be efficiently allocated and at-risk children can realize the benefits associated with early childhood education and prevention programs.

Identifying Risk Factors and Indicators of Likely Developmental Disabilities

Before making referral decisions based on scores that fall below the BRIGANCE® cutoff scores, it is important to consider whether psychosocial risk factors are present. Key variables related to psychosocial risk are listed in Table 5-1. The Background Information Form in Appendix A elicits information associated with psychosocial risk (Mandleco 2000; Sameroff et al. 1987; Sameroff 2000; Shaffer 2012). Examiner observations about parents'/caregivers' well-being and parenting style also are important in considering at-risk status. The presence of four or more risk factors in Table 5-1 is associated with school difficulties. Use the risk factors listed in Table 5-2 below as supporting evidence of probable developmental disabilities.

Table 5-1. Psychosocial Risk Factors (at risk if four or more are present)

- Child lives in a home where English is not the primary language.
- Child lives in a single-caregiver household.
- Four or more children live in the home.
- Family has moved more than twice in the past 12 months or child has changed schools frequently. (It may be helpful to view school records of older siblings.)
- Child has no prior participation in structured early-prevention programs.
- Child has a history of being abused or exposed to domestic or neighborhood violence.
- Child or siblings participate in free/reduced lunch program and/or Medicaid.
- Parent(s) have less than a high-school education.
- Parent(s) have limited literacy.
- Parent(s) are fewer than 18 years older than the oldest child in the family.
- Parent(s) are unemployed.
- Parent reports rarely or never reading to child.
- Parent reports being or appears to be distressed, sad, lonely, angry, depressed, helpless, numb, substance abusing, or lacking in self-esteem. Flattened affect (e.g., rarely smiles or interacts with child) is a likely indicator.
- Parent reports a single concern about child's behavior, social, self-help, or gross motor skills.
- Parent reports limited social support (e.g., no one else to help care for child or children).
- Parent reports high levels of anxiety (e.g., feeling pressured, stressed, or can't relax).
- Parent is not observed to teach child new things, to talk to child about toys and objects, or to play games with child.

Table 5-2. Factors Associated with Developmental Disabilities

- Parent reports concerns about aspects of development.
- Parent reports a moderate or serious concern about child's health.
- Child failed hearing screening.
- Child has untreated vision problems.
- Child has or has had serious health problems, including substantial prematurity, birth trauma, or genetic conditions associated with disabilities.
- Child is enrolled in early prevention but continues to have difficulties.
- Child cannot engage in conversation or answer much other than rote questions (when these behaviors would be appropriate to the child's age), confuses rote questions (e.g., answers with his/her age, when asked, "How are you?"), answers in very short sentences, has a limited vocabulary, or has trouble speaking with correct sentence structure.
- Child has substantial behavior and attention problems despite intervention.
- Child is reluctant or unwilling to participate in writing or drawing tasks.
- Child has been retained a grade.

Indicators of Resilience

After identifying risk factors and indicators of developmental disabilities, it is useful to consider characteristics that suggest the child is resilient—a term used to describe children who do not develop school, emotional, or behavioral problems despite having many risk factors (Hanson and Carta 1995; Rutter 1990). Indicators of resilience can be biological factors, cognitive capacity, personality characteristics, positive home environments, parenting practices, and community resources (Mandleco 2000). Resilience in children who also are academically engaged or have engaged parents tends to moderate the connections between risks and achievement (Fantuzzo 2012).

While many factors associated with resilience are difficult to assess or observe, being aware of such factors (when possible) may provide additional support for decisions about which at-risk children will do well, especially those enrolled in prevention programs, and which children need additional evaluations and services in order to succeed in school. See Table 5-3 for a list of factors associated with resilience.

Note: Resilient children often perform well on the *BRIGANCE® Screens III* and, therefore, may not come to the attention of evaluation personnel.

Table 5-3. Factors Associated with Resilience

- Child exhibits curiosity and enthusiasm.
- Child has ability to set goals.
- Child has high self-esteem.
- Child has well-developed expressive language skills.
- Child exhibits excellence in academics, sports, music, or other activities and well-rounded development evident in other areas.
- Child is enrolled in early prevention programs, particularly one that provides parent training.
- Child attends before-school and/or after-school care programs.
- There are toys and books in child's home.
- Child's family is stable, including an intact family with involved caregivers.
- Parents are stably employed.
- Parents set appropriate rules but also are responsive to and accepting of childlike behavior.
- Parents are respectful of children's interests and unique qualities.
- Parents talk with and read to their children.
- Parents play games with their children (e.g., pat-a-cake with infants).
- Parents attend programs designed to teach child-rearing skills.
- Parents are free from mental health problems, including anxiety, depression, or substance abuse.
- Child's home has appropriate space for children to play and explore.
- Child has access to community resources (e.g., health care, youth organizations).

Performance of At-Risk Children versus Not At-Risk Children

For nearly 20 years, the *BRIGANCE*® Screens have been used with at-risk children. During this time, empirical evidence has supported the validity of inferences based on these scores. Specifically, the 1995, 2001, and 2005 validation studies illustrate the negative effects of psychosocial risks and the fact that the *BRIGANCE Screens* are sensitive to those adverse effects.

For example, children who participated in the 1995 validation study were classified as being at-risk based on the presence of four or more psychosocial risk factors like those listed in Table 5-1 on page 40. Of those children identified as being at risk, 67% either had developmental disabilities qualifying them for special education services or scored below average on diagnostic achievement measures. Furthermore, children with risk factors scored an average of ten points lower on the *BRIGANCE Screens* compared to children without risk factors. Similar findings were reported in the 2001 and 2005 validation studies.

In the 2012 standardization study, children were classified as being at risk based on parents reporting four or more of the factors listed in Table 5-1 on page 40. In that study, 233 children between the ages of 12 months and 5 years, 11 months were identified as at risk. This age range represents when risk factors would most likely affect children's development. Those results support earlier findings related to the connection between at-risk status and performance on the screening results. Moderate to large standardized differences were observed across Language and Academic Skills/Cognitive Development domains between at-risk children and children not at risk (age 18 months through five years). For example, in Table 5-4 below, the results for five-year-old children illustrate a 0.81 standard deviation difference between children at risk and those not at risk; not at-risk children performed higher compared to the at-risk group. This trend was observed for all ages, with the exception of the youngest age group (children aged 12–17 months), where no significant difference in performance was found between the two groups, which may suggest difficulty identifying at-risk status with this age group. As a group, no children in the youngest group performed below the at-risk cutoffs. Although some children in this age range were identified as having more than four risk factors, their performance was not significantly diminished.

Table 5-4. Differences Between the Scores of Children Identified as At Risk and Not At Risk

		***Screens III* Scores**		
Age Group	**Key Domains Related to Risk Status**	**Children At Risk**	**Children Not At Risk**	***d***
Toddler: 12–17 months	Physical Development	14.7	13.7	–0.31
	Adaptive Behavior	13.9	13.7	–0.05
Toddler: 18–23 months	Language Development	36.5	43.0	0.48*
Two-Year-Old Child	Language Development	31.9	41.7	0.65*
Three-Year-Old Child	Language Development	28.8	38.4	0.66*
Four-Year-Old Child	Academic Skills/Cognitive Development	21.0	28.4	0.76*
Five-Year-Old Child/Kindergarten	Academic Skills/Cognitive Development	44.6	54.7	0.81*

*$p < .05$; *d* is Cohen *d* measure of effect size.

Making Referral Decisions When Risk Factors Exist and Scores Are Below BRIGANCE® Cutoff Scores

For programs serving many children with psychosocial risk factors, it is not uncommon to have 60% to 70% or more scoring below cutoffs on the *BRIGANCE® Screens III*. While many of those scoring below cutoff scores have undetected disabilities or significant achievement deficits, it is often impractical to refer such a large group for diagnostic evaluations, because approximately half will make rapid gains and will not be eligible for, or need, additional services. By exploring the data gathered from standardization and validation studies, it was determined that at-risk children who were candidates for special services tended to have lower scores compared to other at-risk children. This makes sense because most at-risk children will probably be deficient in general knowledge, but those who are developing normally (despite lack of exposure) will at least have age-appropriate language skills, for instance. In contrast, children who do not have age-appropriate language skills may have undetected language impairments or other disabilities.

Using these findings, an additional set of guidelines was developed to identify the subset of at-risk children who, when entering prevention programs, appeared most in need of prompt evaluations due to a high probability of having developmental delays or disabilities. As previous standardization and validation studies have shown (1995 and 2005 studies of the *BRIGANCE Screens*), using these At-risk Guidelines (see Table 5-6) reduced the number of referrals by 27% (while maintaining specificity in correctly identifying normally developing children at 82%).

When using the At-risk Guidelines, it is important to consider two general principles. First, if resources permit, it is acceptable to refer all children who perform below cutoffs for further evaluation or additional services; performance below *BRIGANCE Screens III* cutoff scores (whether or not below the At-risk Guidelines) may be sufficient criteria for further evaluation. Second, the positive effects of an early prevention program and the high probability of difficulties in its absence must be considered. Any decision to postpone diagnostic testing when scores are below *Screens III* cutoffs must be based on whether the child is enrolled in an early prevention program such as Head Start, quality daycare, school-based early-education programs, Title I Reading and Math or other programs. These two principles are incorporated into the decision-making process for children with psychosocial risks as outlined below.

General Directions for Making Referral Decisions when Considering Risk Status

The following guidelines should help minimize both underreferrals and overreferrals.

For a child who scores below the age-appropriate cutoffs on the *Screens III*:

1. Use the Background Information Form, the Parent-Child Interactions Form, or other reliable sources to determine the presence of risk factors. (See the Psychosocial Risk Factors in Table 5-1 on page 40 for a list of relevant risk factors).
2. If the child scores below the cutoff score for developmental delays and fewer than four risk factors are present, there is a high probability of developmental disabilities. Refer the child for further evaluation as indicated.
3. If the child scores below the cutoff score for developmental delays and four or more risk factors are present, determine whether the child is already enrolled in a prevention program such as Head Start, preschool, early education, quality daycare, or kindergarten.
    a. If not enrolled, determine whether there are factors associated with probable disabilities and whether the child scores below the At-risk Guidelines. (See Table 5-2 on page 40 and Table 5-6 on page 45, respectively.) If both conditions exist, refer the child for further evaluation as well as to a prevention program. If factors associated with probable disabilities do not exist, refer the child to a prevention program and rescreen in six to nine months. If it is not possible to enroll the child in a prevention program, refer for further evaluation to determine eligibility for special education services.

b. If the child has been enrolled in a prevention program recently, determine whether the child's score is below the age-appropriate At-risk Guideline score as shown in Table 5-6 on page 45. If the child's score falls below the At-risk Guideline score, refer the child for further evaluation.

c. If the child has been enrolled in a prevention program recently and scores below the cutoff scores for developmental delays but does not score below the At-risk Guideline score, review Table 5-2 on page 40 to determine whether factors associated with disabilities exist. If so, refer the child for further evaluation. If not, rescreen within six months.

4 If the child has been enrolled in a prevention program for at least nine months but scores below the cutoff for developmental delays, developmental disabilities are likely and the child should be referred for further evaluation.

5 If the child is younger than two years of age, exhibits risk factors, and scores above the cutoff for developmental delays on either the Infant or Toddler screen, rescreen (within six or fewer months) and recommend preventive steps (e.g., parent training, enrollment in quality daycare or infant stimulation programs, social work services). Rescreening on an annual basis (or more frequently) is recommended throughout the preschool and early school years. It is also recommended to monitor progress and marshal needed resources (e.g., tutors, transitional classes, Head Start, remedial classes, summer school).

Specific Directions for Using the At-risk Guidelines

1 Score all *Data Sheets* and compare scores with the appropriate cutoffs for each age level (Toddlers through Five-Year-Old Children), as shown in Table 5-5 below.

2 Identify children who scored above the developmental delays cutoff. Compare these children's scores with advanced development/gifted cutoffs. (See page 24.) Refer those children who scored above the age-appropriate cutoff for further assessment of possible advanced development or giftedness.

Table 5-5. Cutoff Scores for Detecting Children Likely to Have Developmental Disabilities or Academic Delays

Age (in months/years)	Cutoff	Core Assessments
12–13 months	<32	Toddler
14–15 months	<39	
16–17 months	<49	
18–19 months	<56	
20–21 months	<66	
22–23 months	<67	
2-0 through 2-2	<47	Two-Year-Old Child
2-3 through 2-5	<54	
2-6 through 2-8	<62	
2-9 through 2-11	<75	
3-0 through 3-3	<42	Three-Year-Old Child
3-4 through 3-7	<45	
3-8 through 3-11	<49	
4-0 through 4-3	<42	Four-Year-Old Child
4-4 through 4-7	<69	
4-8 through 4-11	<71	
5-0 through 5-5	<61	Five-Year-Old Child/ Kindergarten
5-6 through 5-11	<70	

3 For all children scoring below the developmental delays cutoff, determine whether risk factors are present. If four or more risk factors are present, use Table 5-6 to identify the domain score(s) to compare with the At-risk Guideline scores.

4 Mark the assessments that make up the relevant domain(s) and total the child's scores on these assessments. Write the domain score(s) in the Next Steps section of the *Data Sheet*. An example of a completed *Data Sheet* Next Steps section is shown in Figure 5-1 below.

5 Compare the child's domain score with the score for the appropriate age range in Table 5-6. Initiate referrals for all children scoring below the guideline score listed in the far-right column. Also note this in the Next Steps section of the *Data Sheet*. See Chapter 3 for calculating domain scores and Tables 1-1 and 1-2 on pages 6 and 7 for a list of assessments that make up each domain.

Note: Use the *BRIGANCE® Online Management System* to capture risk factors in a child's file and automatically calculate a child's domain scores compared to At-risk Guidelines. (Subscription rates apply.)

Table 5-6. At-Risk Guidelines

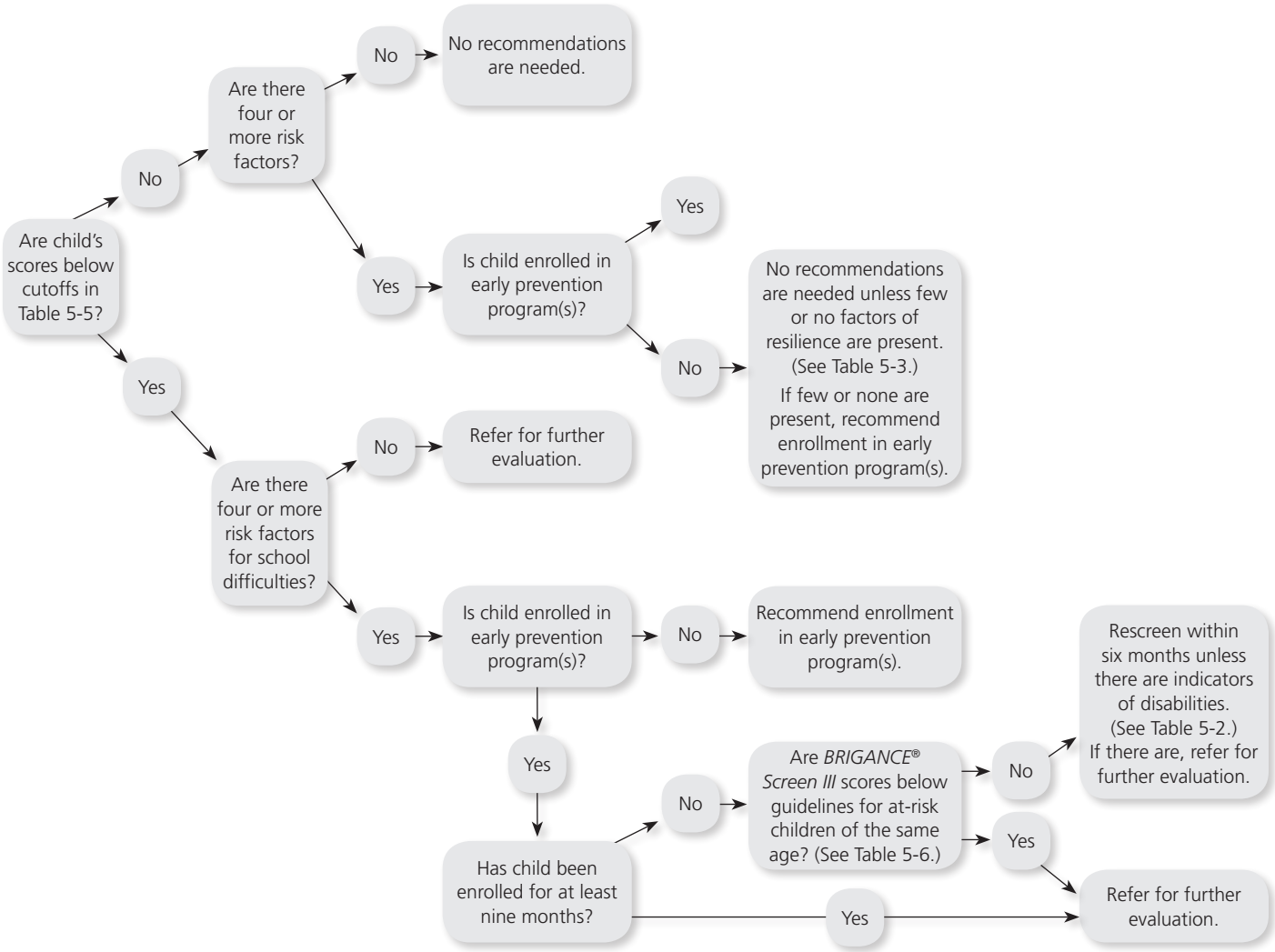
***BRIGANCE® Screens III* Core Assessments**	**Domain**	**Refer if Child is:**	**and Domain Score is:**
Toddler	Physical Development	12–13 months	<8
		14–15 months	<9
		16–17 months	<10
	Adaptive Behavior	12–13 months	<7
		14–15 months	<7
		16–17 months	<8
	Language Development	18–19 months	<21
		20–21 months	<29
		22–23 months	<39
Two-Year-Old Child	Language Development	2-0 through 2-2	<21
		2-3 through 2-5	<33
		2-6 through 2-8	<39
		2-9 through 2-11	<43
Three-Year-Old Child	Language Development	3-0 through 3-3	<23
		3-4 through 3-7	<25
		3-8 through 3-11	<38
Four-Year-Old Child	Academic Skills/ Cognitive Development	4-0 through 4-3	<18
		4-4 through 4-7	<20
		4-8 through 4-11	<28
Five-Year-Old Child/ Kindergarten	Academic Skills/ Cognitive Development	5-0 through 5-5	<38
		5-6 through 5-11	<46

Figure 5-1 Example of Completed Next Steps on the *Data Sheet* of a child age 12–13 months

E. Next Steps: *Total score < 32. Presence of risk factors. Physical Development Score is 6; below at-risk guidelines (<8). Refer for additional evaluation.*

As described in this chapter, once a child's Total Score on the *Screens III* is determined, a series of decisions about the child should be considered. This decision-making process is summarized in Figure 5-2.

Figure 5-2 Making Recommendations for Children with Psychosocial Risk Factors



Promoting Development in At-Risk Children

In addition to enrollment in a high-quality early childhood program, children with psychosocial risk factors will benefit from the following:

1. **Wait two to three weeks before screening new enrollees in your program.** Children often make tremendous progress when they enter a program. Giving them a chance to learn new skills prior to screening will minimize unnecessary referrals. Some programs prefer to screen upon program entrance and then compare performance on rescreening. In this case, it may be wise to wait to make decisions until having results from rescreening. Nevertheless, children whose difficulties are severe and apparent should be referred promptly.
2. **Monitor academic progress and target instruction** with the *BRIGANCE® Inventory of Early Development III* (*IED III*).
3. **Initiate prompt referrals** for evaluations and services when the child is not making progress.
4. **Provide small-group and one-to-one instruction.** Plan instruction with the *BRIGANCE® Readiness Activities*, a collection of lesson plans and activities linked to the assessments in the *Screens III* and *IED III*. Make use of volunteers and elementary school children to help in the classroom.
5. **Encourage parents to read to their children.** The greatest predictor of parental reading is the presence of books in the home. Send home lists of age-appropriate books that can be found at a local library. If possible, provide books for families who need them.
6. **Encourage parents to participate in parenting classes.** Many early childhood programs, schools, churches, community centers, YMCAs, and public-health offices offer parenting classes.
7. **Encourage parents to participate in classroom activities.** Inviting parents to read to the class, tell stories, or sing songs and giving parents guidance on how to do this can help parents learn to respond appropriately to children's conversations.
8. **Provide information about mental health services** for those parents who appear to be depressed or anxious or show signs of substance abuse.
9. **Refrain from correcting errors in dialect** either in conversation or in reading when culturally different or at-risk children are learning to read. Children cannot learn to use Standard English and to read simultaneously.
10. **Encourage participation in recreational activities** such as sports, music, and scouting. High achievement in any area increases the likelihood of continuing in school and improves self-concept.

NOTES

Monitoring Progress and Informing Instruction with the *BRIGANCE® Screens III*

CH 6

Using the *BRIGANCE® Screens III* in the Classroom

The *BRIGANCE® Screens III* can be used to improve learning and instruction as well as for identifying children who may have special learning needs. The *Screens III* can help teachers:

1. monitor child progress;
2. evaluate program effectiveness;
3. make preliminary decisions about which broad skill areas should be targeted for instruction;
4. determine what prerequisite or related skills require further assessment and programming; and
5. develop broad goals for IEPs/IFSPs.

These applications are the focus of this chapter, which is divided into three sections: (1) evaluating progress when the *Screens III* are administered at multiple points in time; (2) analyzing domain scores to inform program evaluation and curriculum planning; and (3) using screening results to plan individualized instruction. A section on using the *Screens III* in Head Start programs is also included.

Using the *Screens III* for Monitoring Progress and Program Evaluation

Monitoring a child's progress is critical within and across all school years and is often required. There are several ways in which progress can be measured. Results from the administration of the *Screens III* provide one means for understanding learning and skill acquisition over time.

Many factors influence growth or a potential lack of growth when assessing children's skill mastery using the *Screens III*. Certainly quality instruction in schools or in the home can lead to increased scores. However, score gains can be difficult to determine because age-based scores adjust for new learning that is expected as the child gets older. In addition, development does not occur in a linear fashion. Nonetheless, progress can be monitored with the *Screens III*. In particular, the *Screens III* can help reveal when learning is substantially slower or more rapid than expected. When assessing the rate of skill growth, explore the following possible causes:

- Effectiveness of instruction
- Undetected sensory deficits (e.g., hearing loss or fluctuations, changes in visual acuity)
- Interference or emergence of health issues
- Adverse changes in psychosocial risk status (e.g., distressing life events at home or school)

It is also important to consider that the rate of learning can differ substantially among children with and without disabilities. For example, children who have cognitive delays may have more difficulty acquiring abstract skills and generalizing these skills from one setting to another. These children also might not attend as well to relevant aspects of stimuli when learning. As a result, progress may be slower in some developmental areas, particularly as academic tasks become more abstract. However, lagging performance in such areas may be offset by gains in other areas. The rate of progress may vary across domains, depending on the child's state of development.

A specific methodology for monitoring progress with the *Screens III* is presented below.

Using Age Equivalents to Monitor Progress

Age equivalent scores (AEs) can be used to plot performance over time. Despite previously stated cautions regarding the use of AEs, they can be used to describe a child's performance at a given point in time relative to the average performance of that child's age group. In particular, AEs are useful because their scale is consistent across ages, thereby allowing the user to track performance across time from one age level of the *Screens III* to the next.

To use AEs for monitoring progress, the child's AE for the skill area(s) of interest (e.g., Total Score; Physical Development domain) must be obtained at various points in time. (See Chapter 3 for detailed directions on how to derive age equivalent scores.) Once AEs are obtained for two or more points in time, use Figure 6-1 to illustrate a child's progress. Follow this sequence of steps:

1. On the *x*-axis of the graph, locate the child's chronological age.
2. On the *y*-axis of the graph, locate the child's AE score derived from the first administration of the *Screens III*.
3. Mark the point on the graph where the chronological age and AE score intersect.
4. Complete steps 1–3 for the remaining scores across time. Draw a line between each point in time for the skill area plotted.

As an example, consider a child age five years, zero months, who is screened at the start of kindergarten with the Kindergarten screen and receives an AE score of 5-0 for the Total Score. The examiner could conclude that the child's performance is average or in the middle of the distribution of scores relative to the child's peers. Assume the child is also screened at the beginning of first grade (using the First Grade screen) when he is 6-0 years old. Now the child receives an AE score of 6-0. The shaded areas above and below the solid line represent the 75th and 25th percentile ranges across domains and the Total Score. At both time periods, the child is in the 50th percentile relative to the performance of his same-age peers. The examiner could conclude that the position of the child's performance, relative to the same-age peers, has remained consistent over the course of the noted 12-month period. If the child's progress slowed down relative to same-age peers, the curve of the line would shift accordingly; a shift in the line would also occur if the child's progress increased relative to same-age peers. (See Figure 6-1.)

To generate progress charts across multiple assessment periods, use the *BRIGANCE® Online Management System*. (Subscription rates apply.) Or, to monitor progress by hand, use a copy of the blank progress monitoring graph found in Appendix H, page 194.

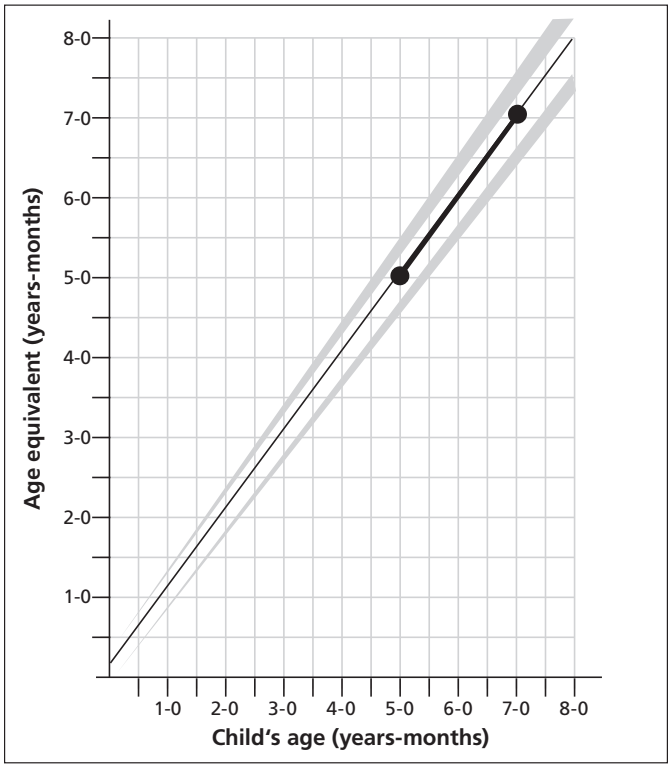


Figure 6-1 Charting Progress with Age Equivalents

Implications and Limitations of Assessing Progress

Assessing progress may help determine whether children are benefiting from their current classroom placements or general learning environment. However, when assessing progress with the *BRIGANCE® Screens III*, personnel should be aware that the standardization and validation studies of the *Screens III* are cross-sectional, not longitudinal. Thus, the performance of individual children has not been

followed over time. If systems or schools wish to develop local norms with longitudinal data, more confidence can be obtained in monitoring progress and more advanced systems can be developed.

Program Evaluation

Aggregate results from the *Screens III* can be used to evaluate the effectiveness of program models and curricular plans. Therefore, programs can use results to measure if they have succeeded in accomplishing their goals. Such use is in accordance with how other instruments are used in various types of educational research. Typical questions that might be considered include:

1. In what developmental areas are (groups of) children making progress?
2. What are the outcomes for children in different kinds of programs or forms of services (e.g., inclusion versus self-contained special education, type of curriculum employed)?
3. How do children fare developmentally according to different issues (e.g., number of psychosocial risk factors present, length of time in Head Start or special education program, age of initial participation)?
4. How do programs perform over time? Do the patterns of child performance change from year to year?

When considering the *Screens III* for such use, previous studies of this nature may help inform effective evaluation design (Shadish, Cook, and Campbell 2001).

Using the *BRIGANCE® Screens III* to Inform Instruction

Before using the *BRIGANCE® Screens III* to inform teaching and learning, it is essential to recognize that the age-specific screens include only a limited sample of skills. Screens do not encompass or reflect an entire curriculum. Although some assessments in the *Screens III* are comprehensive, criterion-referenced, and capable of providing valuable information for programming (e.g., information about which letters children can identify), other tasks are too restricted to serve as useful instructional goals (e.g., names six pictures). Teaching to the latter types of task would not only produce a dull curriculum but also fail to meet children's broad learning needs. Thus, it is crucial that teachers neither "teach to the test" nor use tasks from the *Screens III* as the sole content of a curriculum.

When considering instructional planning based on screening results, keep in mind that when children have difficulty with a task in the *Screens III*, it is usually because they have not mastered lower-level skills. Teaching prerequisite skills is essential for children to advance to higher levels of achievement. Effective instruction focuses on the gap between prerequisite skills and higher-level skills. If the gap between children's mastery of simpler skills and the content of instruction is too large, the teaching will "go over their heads" and learning will not occur. Similarly, if the gap is too small or nonexistent, teaching will be redundant, and children will not be given an opportunity to learn new skills.

An appropriate instructional plan can be informed by results from the *Screens III*, ideally coupled with broader assessment. For example, consider an assessment tool that covers a more complete range of skills necessary for school success, such as the *BRIGANCE® Inventory of Early Development III* (*IED III*). The criterion-referenced *IED III* covers hundreds of skill sequences across key developmental areas and content areas. The *IED III* can be used to further assess a student's strengths and weaknesses, to identify a broad range of educational objectives, and to craft IEPs/IFSPs.

However, because the *IED III* is a comprehensive collection of assessments designed to meet the needs of a broad range of children with varying abilities, the *IED III* should not be administered in its entirety. Using the *IED III* in conjunction with the *Screens III* can reduce the number of additional assessments required for optimal instructional planning and goal setting. The process for identifying appropriate objectives and instructional activities is described on the next page.

Setting Goals and Planning Instruction in Areas of Developmental Weakness

1 **Identify broad areas of need.** The Core Assessments within each age-specific screen can be divided into three domains. Assessments in the Infant and Toddler screens fall within the Physical Development, Language Development, and Adaptive Behavior domains. Assessments within screens designed for older children (Two-Year-Old Child through First Grade) fall within the Physical Development, Language Development, and Academic Skills/Cognitive Development domains. As discussed in Chapter 1, specific skills in the *Screens III* assessments can be categorized into these broad skills areas to identify general weaknesses in skill development.

2 **Identify specific skills in need of further assessment.** Having identified areas of weakness, return to the specific assessments in the *Screens III* to identify skills for which the child appears to need additional support. To pinpoint the child's level of skill development, administer assessments in the *IED III* that include prerequisite skills.

3 **Administer assessments that include prerequisite skills using an appropriate ongoing assessment measure, such as the *IED III*.** If the child does not give a correct response to items in the assessments considered prerequisites, administer assessments that include even lower-level skills. Continue until you reach tasks on which the child has at least partial success. Tasks at this level represent an emerging skill area, which should be targeted for instructional goal setting and programming.

4 **Administer assessments of related tasks from the *BRIGANCE® IED III* assessments.** It is important to assess the child's mastery of a range of skills in the area of need. For example, if a child had difficulty with academic skills in general, and early reading skills in particular, further assessment with the *IED III* should include a wide range of literacy skills, depending on the child's skill levels. Probing the wider range of skills should reveal a range of skills in need of instructional support.

5 **Consider whether other areas of development should be assessed.** Although the *Screens III* sample skills that are predictive of school success, some skills are not included in the Core Assessments (e.g., self-help and social-emotional development for older ages). Some children will have weakness in a single area (e.g., language, academic, motor). Other children, particularly those with more global difficulties, will need substantially broader curricular goals and activities. Use other tools provided in the *Screens III* (e.g., Self-help and Social-Emotional Scales) to gather information about additional skills.

6 **Plan instructional activities.** Once instructional objectives are set for each child, the methods and materials needed for teaching can be determined. The *BRIGANCE® Readiness Activities* can be helpful for this aspect of instructional planning. The *Readiness Activities* includes over 400 activities for varying levels of skill mastery in the areas of language, physical development, self-help, general readiness, and early reading, writing, and math.

For a resource that links the *Screens III* assessments to appropriate prerequisite assessments in the *IED III*, see www.BRIGANCE.com. Resources are also available to support the connection between assessment and instruction with the *Readiness Activities*.

Setting Goals and Planning Instruction in Areas of Strength

Depending on the nature and focus of the educational program, it may not be necessary to identify areas of strength. However, in early childhood stimulation and special education programs designed to promote development in all areas, identification of strengths is needed. The process of identifying and planning appropriate instruction in areas of strength is described below.

1. **Identify broad areas of strength.** As discussed in Chapter 1, specific skills in the *Screens III* assessments can be categorized into broad skill areas (Physical Development, Language Development, Adaptive Behavior, or Academic Skills/Cognitive Development) to identify general strength in specific domains.
2. **Identify specific skills in need of further assessment.** Having identified broad areas of strength, return to the specific assessments in the *Screens III* to identify skills that appear to be well developed. These mastered skills can now be considered prerequisites for higher-level instruction.
3. **Administer assessments of higher-level skills using an ongoing assessment measure, such as the *IED III.*** If the child has success with all items in assessments of higher-level skills, continue until reaching tasks on which the child has only partial success. Tasks at this level represent an emerging skill area, which should be targeted for instructional goal setting and programming.
4. **Administer assessments of related tasks from the *BRIGANCE® IED III* assessments.** Probing the wider range of skills in the same developmental area should reveal a broad range of skills that are strengths for a child.
5. **Consider whether other areas of development should be assessed.** For programs that have children who need broad-based instructional intervention, consider development in skills not assessed in the *Screens III* Core Assessments. Use other tools provided in the *Screens III* (e.g., Self-help & Social-Emotional Scales, Supplemental Assessments) to gather information about a broader range of skills.
6. **Plan instructional activities.** Use the *BRIGANCE® Readiness Activities* or other curriculum.

For a resource that links the *Screens III* assessments to appropriate higher-level assessments in the *IED III*, see www.BRIGANCE.com. Resources are also available to support the connection between assessment and instruction with the *Readiness Activities*.

Using the *BRIGANCE® Screens III* in Head Start Programs

The federal Office of Head Start released the Head Start Child Development and Early Learning Framework in 2010; it was revised in September 2011.

The Framework is intended "to be used to connect child assessment data to aspects of Head Start program design, including school readiness goals. . . . When used in [this way], the revised Framework will provide data for program self-assessment and [will] promote continuous quality improvement in programs and child well-being and success" (Office of Head Start).

A comprehensive alignment between the *BRIGANCE® Screens III* and the Head Start Child Development and Early Learning Framework can be found at www.BRIGANCE.com/HeadStart.

The *Screens III* meet federal Head Start requirements related to developmental screening and assessment. These requirements include:

1 "An appropriate child assessment system that aligns with their curriculum and gathers data on children's progress." (NHSCDI 2003)

2 Assessment practices that illustrate children's progress over time, with a recognition that development and learning are on a developmental continuum, and take the form of "increasing frequency of a behavior or ability, increasing breadth or depth of knowledge and understanding, or increasing proficiency or independence in exercising a skill or ability." (NHSCDI 2003)

3 Use of information from multiple sources (such as teachers, parental reports and direct assessment of children), including analysis of samples of children's work and performance. (NHSCDI 2003)

In addition, Head Start programs require that:

a. All children enrolled in Head Start are screened as the first step in the assessment process;

b. Staff also carry out ongoing developmental assessment for all enrolled children throughout the year to determine progress and to plan program activities.

Head Start programs are encouraged to, at a minimum, evaluate children's developmental status at the beginning of the year, at a midpoint in the program year, and at the end of the program year.

To facilitate these directives, the *Screens III* are not only a tool for screening but also for monitoring progress and evaluating program effectiveness. The *Screens III* can also be used in conjunction with the comprehensive assessment tool, the *BRIGANCE® Inventory of Early Development III* (*IED III*), when more detailed information on child progress and performance is needed.

Standardization of the *BRIGANCE® Screens III*

CH 7

Critical Concepts in Screening and Test Construction: Standardization and Developing Normative Information

- The domains covered and the skills assessed in the *BRIGANCE® Screens III* are in accord with current state and national standards and practices throughout the United States.
- The *Screens III* assessment content is consistent with current theory on early child development and school readiness.
- The directions for administration and scoring have been field-tested. The clarity of these directions allows the *Screens III* to be administered in the same way with all children by different examiners.
- The test has been administered to a significant sample of children who represent the geographic regions of the United States and the demographic and socioeconomic characteristics of the United States population.
- The collective performance of the representative sample serves as the test's norms.

Developmental Context for the *BRIGANCE® Screens III*

Children are thinking, moving, feeling, and interacting human beings. Early learning and development are multidimensional, characterized by highly interrelated domains of development (Berk 2008; Rhemtulla and Tucker-Drob 2011). Cognitive and social competencies, for example, influence one another (e.g., a child's language skills affect his/her ability to engage in social interactions). Thus, developmental domains cannot be considered in isolation from one another (Illinois State Board of Education 2002; Welsh, Parke, Widaman, and O'Neil 2001). An assessment that accounts for interrelatedness across a spectrum of skills explicitly recognizes the multidimensional nature of childhood development.

When considering development for children beginning at birth and continuing through the early school years, it is recommended that assessment should focus on the following key areas: language, early literacy, mathematics, social and emotional competency, regulation of attention, behavior, emotion, and physical development (U.S. Department of Health and Human Services, National Institute of Child Health and Human Development, Administration on Children, Youth, and Families, and Office of the Assistant Secretary for Planning and Evaluation 2002). In addition, the National Education Goals Panel identified major domains of school readiness to include (1) physical well-being and motor development, (2) social and emotional development, (3) approaches toward learning, (4) language development including literacy, and (5) cognition and general knowledge such as mathematics and science (National Research Council of the National Academies, Committee on Developmental Outcomes and Assessments for Young Children, Board on Children, Youth, and Families, Board on Testing and Assessment, and Division of Behavioral and Social Sciences and Education 2008). Continual assessment of skills within these domains over time allows documentation of the status of a child on key growth indicators (U.S. Department of Health and Human Services et al. 2002). The assessment content and organization of the *BRIGANCE Screens III* were built with the intent of allowing the user to assess children's mastery of skills in a prompt manner across domains representing these critical areas. Specifically, the *Screens III* include assessment of physical development, language development, and adaptive behavior for infants and toddlers and physical development, language development, and academic skills/cognitive development for those children two years of age and older. For older children (two years and older), supplemental scores can be obtained for the self-help

and social and emotional development domains (when the Self-help & Social-Emotional Scales are administered).

The domain structure of the *BRIGANCE® Screens III* is further supported by state and national early learning standards. The majority of states throughout the United States have developed early learning standards to outline the state's expectations for student learning (Scott-Little, Kagan, and Frelow 2005). Early learning standards are focused generally on skills at the preschool and kindergarten level. Programs serving children prior to entering kindergarten are held accountable for meeting these standards.

These standards have become increasingly necessary given the accountability pressures on programs serving children prior to kindergarten entry as a way to ensure future achievement and school success. The domains included in the *Screens III* (physical development, language development, adaptive behavior, and academic skills/cognitive development) are in accord with states' standards and benchmarks, the Common Core State Standards, the Head Start Child Development and Early Learning Framework, and guidelines from organizations focused on the welfare of young children (Snow and Van Hemel 2008).

In addition to the organization of the *Screens III*, there is also strong support for the content validity of the instrument and, therefore, for the applicability of its use in educational settings. The construction of the *Screens III* (like the previous editions of the *Screens*) is based on extensive reading of developmental and readiness literature and involved collaboration with numerous educators and psychologists, who assisted in item selection and field-testing.

The structure of the *Screens III* is also supported by the use and published reviews of previous test editions and studies of its parent measures, the *IED III* and the *IED III Standardized* (and previous editions of the *Inventory of Early Development*). Due to the comprehensive initial development of the *Screens* and continued investment in updated research and item construction over time, well-developed evidence supports the content validity of this screening instrument.

Developmental Content and Structure of the *BRIGANCE® Screens III*

The items in the *Screens III* allow for quick screening of a child's growth and development across a range of skill areas. As shown in Table 7-1, the assessments cluster in the following domains: physical development, language development, adaptive behavior (for infants and toddlers), and academic skills/cognitive development (for children two years of age and older). The domains measured by the *Screens III* are consistent with theoretical perspectives of early childhood development as important indicators of a child's growth and development (Snow and Van Hemel 2008). Skills included in the *Screens III* support children's school readiness and future achievement. Details of each domain are included below, along with example items. See Chapter 1 for a complete listing of the skills assessed by domain.

Table 7-1. Structure of the *Screens III*

Domain	Skill Area
Physical Development	Gross Motor Skills Fine Motor Skills
Language Development	Receptive Language Skills Expressive Language Skills
Adaptive Behavior (Infant and Toddler)	Self-help Skills Social and Emotional Skills
OR	
Academic Skills/ Cognitive Development (Two-Year-Old and older)	Literacy Skills Mathematics Skills
Total Score	

PHYSICAL DEVELOPMENT The physical development domain, also known as motor development, includes both gross motor skills and fine motor skills. Gross motor skills are those skills involving the use of large muscles (Rydz, Shevell, Majnemer, and Oskoui 2005). For example, sitting unsupported, walking up stairs, and running are gross motor skills. Fine motor skills are those skills involving the use of the small muscles of the hands and fingers (Rydz et al. 2005). For example, putting objects into a container, building with blocks, and using a writing instrument are fine motor skills.

Early assessment of the development of a child's gross motor skills and fine motor skills helps alert parents/caregivers and teachers to possible developmental delays, which can then be addressed in a timely manner (First and Palfrey 1994). Children generally achieve motor milestones in an orderly progression and attain these skills in a sequential process, making it useful to organize a developmental review of these skills as the child grows (First and Palfrey 1994; Rydz et al. 2005).

- The gross motor assessments include skills such as standing, walking, and hopping.

  Example items are "Stands on one foot with one hand held" (Infant and Toddler screens), "Walks erect with arms swinging" (Toddler screen), and "Hops five hops on preferred foot" (Four-Year-Old screen).
- The fine motor assessments include skills such as early manipulative skills, building a tower with blocks, and printing personal information.

  Example items are "Holds bottle (or sippy cup) independently" (Infant screen), "Builds a five-block tower" (Two-Year-Old screen), and "Prints first name" (Five-Year-Old/Kindergarten and First Grade screens).

LANGUAGE DEVELOPMENT The language development domain encompasses a stream of development emerging from the interactions among inherent communication abilities and environmental influences. Language development is critical in the assessment process, given the relationship between oral language skills and reading achievement (Olofsson and Niedersoe 1999). To assess language development accurately and to gain a complete picture of a child's status along the language development continuum, many different measures of oral language skills such as receptive and expressive vocabulary skills and listening skills need to be considered (Wise, Sevcik, Morris, Lovett, and Wolf 2007).

The language development domain consists of receptive and expressive language skills. Receptive language skills show comprehension of spoken language (i.e., the ability to listen to and understand what another person is communicating). For example, holding out or raising arms when a parent/caregiver says *Come here* or *Up*, pointing to a picture when it is named, and following a multistep direction are all receptive language skills. Expressive language skills demonstrate the ability to produce speech, to express ideas and feelings, and to communicate a message. For example, cooing and gurgling, explaining how a pencil is used, and describing what is happening in a picture are expressive language skills.

- The receptive language assessments include skills such as early nonverbal communication skills, understanding of verbal concepts (demonstrated by responding physically when prompted), and the ability to follow two- or three-step directions.

  Example items are "Responds to own name" (Infant screen), "Identifies parts of the body" (Toddler, Two-Year-Old, and Three-Year-Old screens), and "Identifies colors" (Three-Year-Old screen).
- The expressive language assessments include skills such as early verbal skills, verbal fluency, and the ability to use language in context.

  Example items are "Says real words" (Toddler screen), "Identifies pictures by naming" (Two-Year-Old, Three-Year-Old, and Four-Year-Old screens), and "Names parts of the body" (Four-Year-Old and Five-Year-Old/Kindergarten screens).

ACADEMIC SKILLS/COGNITIVE DEVELOPMENT The academic skills/cognitive development domain, which includes literacy and mathematics skills, measures a child's ability to problem solve using intuition, perception, and verbal and nonverbal reasoning. The skills in this domain encompass the child's ability not only to learn and understand but also to retain information and apply it as needed (Rydz et al. 2005). Assessing a child's mastery of basic academic skills and cognitive development collectively may predict later reading achievement and mathematical competence, which is important for understanding a child's learning processes (Welsh, Nix, Blair, Bierman, and Nelson 2010). Moreover, academic achievement influences other critical developmental areas such as social competence (Welsh et al. 2010).

- The literacy assessments include skills such as experience with books, visual discrimination, and phonological awareness.

  Example items are "Visual discrimination" (Four-Year-Old screen), "Knows the front and back of a

book" (Five-Year-Old/Kindergarten screen), and "Reads lowercase letters" (First Grade screen).

- The mathematics assessments include skills such as matching quantities with numerals; sorting objects by size, color, and shape; and adding and subtracting numbers.

  Example items are "Counts by rote" (Four-Year-Old and Five-Year-Old/Kindergarten screens), "Sorts by size and shape" (Five-Year-Old/Kindergarten screen), and "Subtracts numbers with minuends to 5" (First Grade screen).

The Reading Readiness Scale provides a standardized measure of skills and behaviors related to the child's emergent literacy. The scale can be used to gain a broader understanding of the child's developmental level and to guide reading instruction.

ADAPTIVE BEHAVIOR The adaptive behavior domain incorporates personal development of age-appropriate skills that allow infants and toddlers to function independently in daily life (Rydz et al. 2005) and social-emotional skills. Adaptive behaviors and skills are related to other child development domains, such as social skills that influence achievement (Gresham and Elliot 1987). In addition, there is a history of the relationship between adaptive behaviors and cognitive functioning (Sparrow and Cicchetti 1985).

- The daily living assessments include skills such as eating and dressing.

  Example items are "Feeds self cracker" (Infant and Toddler screens) and "Removes shoes" (Toddler screen).

- The social-emotional assessments include skills related to relationships and social interactions.

  Example items are "Smiles, coos, or gurgles for attention" (Infant screen), "Plays pat-a-cake" (Infant and Toddler screens), and "Initiates interactions with other children" (Toddler screen).

The Self-help and Social-Emotional Scales, provided for children two years old through first grade, provide a standardized measure of self-help skills in eating, dressing, and toileting as well as social and emotional skills in playing and getting along with others. These scales can be used to gain a broader understanding of the child's developmental level.

In addition to the research base supporting the domain structure of the *Screens III*, the content is further informed by the longtime use of previous editions of the *Screens* in the field. This historical context demonstrates the deep connection and grounding of the *Screens III* to the teaching environment and the continuing commitment of the *Screens* developers to improve the content and usability of the measure over time.

History of the *BRIGANCE®* *Screens* (1978–2010 editions)

The *BRIGANCE® Screens* items were initially drawn from the *Inventory of Early Development* (*IED*), a broader assessment, which was first published in 1978 after substantive field-testing and critiquing by school psychologists, educators, and special educators throughout the United States and Canada. The *IED* items selected for the *BRIGANCE Screens* were rated by a large group of teachers, diagnosticians, and curriculum supervisors across the United States according to the degree of correspondence between items and curriculum objectives. Items were retained if they were nominated by at least 90% of the professionals. Field testing using an experimental version of the *Screens* was then conducted in 35 different schools or districts and 13 states spanning the geographic regions of the United States. The results of the field trials were used to finalize item selection, clarify item content, and refine directions for administration and scoring for the previous editions of the *Screens*. The *Screens* were updated in 1995, 2001, and 2005, with standardization and validation research that continued to demonstrate the strength of the assessment items.

As noted earlier in this chapter and in Chapter 9, significant research has been undertaken to update the content of previous editions; however, the content validity of the current edition also rests firmly on the long history of this tool in the field. The investment in updating and expanding items for the current edition increases construct representation and continues to support the content validity argument to ensure the measure is consistent with current early child development theory and empirical findings.

2012 Standardization and Validation Study

Significant research, pilot testing, and item development began in 2010 to support the publication of the *BRIGANCE® Screens III* and the broader *IED III* and *IED III Standardized* assessments, from which screening items were selected. Details of the 2012 item selection and standardization are described below. The analysis of items was first completed to determine the final item set for the *IED III Standardized*. Next, based on additional analyses, items were reviewed and selected for each age-level of the *Screens III* to meet the goals of an accurate screening measure.

Assessment and Item Selection

To identify which assessments to include in the *IED III* standardization and validation study (those assessments that would eventually make up the *IED III Standardized* and, subsequently, the *Screens III*), a group of content experts was convened. This group included two developmental-behavioral pediatricians, a speech-language pathologist, two developmental psychologists, a developmental disabilities specialist, an early childhood curriculum specialist, and a special educator. These content experts reviewed assessments and participated in pilot work to ensure that the selected assessments were likely to be predictive of important aspects of development and that directions were sufficiently clear and replicable. A sample of existing *IED II* and *Screens II* users was also queried via survey for feedback on the assessment forms, content, and usability. This information was used to inform additions and revisions which are reflected in the *Screens III*. A separate panel was gathered for a bias and sensitivity review of the broader *IED III* (thereby informing the *Screens III*). The panel represented a wide range of demographics (e.g., gender, race/ethnicity, culture), ensuring that diverse demographic concerns were considered in the review process. Panel members reviewed key assessments, examining the items for content that could possibly provide an advantage to a certain group or that could possibly alienate certain cultures. The information gleaned from the bias and sensitivity review was considered and any necessary revisions were made.

Finally, an empirical differential item functioning analysis was conducted, as described in Chapter 9, as a second level of item screening to identify any content that might be problematic for certain groups of examinees. No significant problems were identified with the *Screens III* items.

BRIGANCE® IED III and *Screens III* Pilot Study

A pilot study was conducted to try out new assessment content and evaluate item quality. This study informed revisions to the test in advance of the general standardization process. The pilot test booklet contained standard examiner directions for administration of test content across three skill areas—Mathematics, Literacy, and Social and Emotional Development. In addition to examiner ratings of Social and Emotional Development items, a rating form was included for parents/caregivers to provide information about their child.

The Education Research Institute of America (ERIA) completed sample recruitment. The sample for the pilot study consisted of 265 children, with proportionate representation across each age group (in years) between three and seven years old. The children represented a range of development, allowing for distributions of results necessary for evaluation of item quality. Empirical item analysis, factor analysis, and content reviews by individuals with expertise in a given area were conducted. Information collected from the pilot study and recommendations from content reviewers informed the final set of newly constructed items included in the standardization study.

Empirical Item Analysis

An empirical item review was completed on each assessment. Classical test theory (CTT) and item response theory (IRT) methods were both employed to examine the functioning of items within an assessment. The five questions considered were: (1) Are items sequenced appropriately in terms of item difficulty? (2) Do the items have appropriate difficulty and discrimination properties for the purpose of each subtest? (3) Is the score reliability estimate adequate for each assessment? (4) Do entry points by age appear appropriate? and (5) Does the assessment

cover the intended ability range? This empirical information was used in combination with field-reviewer input and content-based research to ensure that revisions and additions to the assessments in the *Screens III* maintained or, in many cases, improved content coverage within each domain.

Item Analysis Criteria

Employing CTT methods, the following were examined: (1) internal consistency reliability of scores for each assessment, (2) item difficulty (i.e., proportion of children receiving credit for the item), and (3) item discrimination (i.e., children high in ability responding correctly and children low in ability responding incorrectly). When scores are used to make decisions about individuals, reliability values should be high (Nunnally and Bernstein 1994).

For a screening assessment, it is desirable to have a range of item difficulties with the average value being between 0.70 and 0.80. Therefore, the items at the start of a screening assessment will likely be around 0.95 (very easy) and the items toward the end of the assessments will have values around 0.60 (more difficult). To examine entry points for the Infant and Toddler screens, as well as basal and ceiling rules, item difficulty within age groupings was also reviewed. This process informed necessary changes in these rules, while confirming the majority of the entry, basal, and ceiling rules used for administering assessments. The idea was to select items that would result in scores that would help identify children who needed further evaluation.

In combination with the CTT analysis, IRT methods were applied when possible (e.g., large sample size). Models appropriate for items within each assessment were utilized; these models included the two-parameter logistic and the graded-response model for dichotomously (i.e., 0, 1) and polytomously (i.e., 1, 2, 3) scored items. Following this analysis, item difficulty and discrimination values were examined. In addition, the assessment IRT information functions were used to graphically evaluate where an assessment provided the most psychometric information about examinees. The combination of these IRT and CTT analyses allowed for a complete review of assessments and items.

Aggregating results from these multiple-item analyses informed minor changes across assessments, including minimal adjustments to entry points, basals, and ceilings as well as item sequencing.

Standardization Sample

Recruitment Procedures

Once the content was readied for field trials, sites were recruited. As with the pilot study, recruitment and administration duties were carried out by ERIA. Because the circumstances in which the *Screens III* are used vary widely (e.g., across geographic regions, socioeconomic status, child educational and ethnic background, and program curricula), a range of demographic information was accounted for in the selection of testing sites and examinees. Overall, the recruitment procedures helped ensure that the sample included children representative of the United States as a whole. Testing was conducted and data were collected on a rolling basis from February 2011 to February 2012.

Testing sites included public and private schools, childcare and preschool programs, parent support groups and education programs, university research centers, after-school and summer-enrichment programs that support learning (both public and private), birth centers, healthcare agencies, and Head Start and Early Head Start programs. In addition, independent examiners with backgrounds in healthcare, childcare, social work or education, and many with previous experience administering BRIGANCE® assessments, also conducted testing with their own research subjects from among their professional and personal contacts. At each site, examiners obtained informed consent from parents and asked them to complete a questionnaire form that captured demographic information. A total of 107 sites across 33 states in the United States participated and were reflective of the broad geographic regions of the United States. (One Canadian province also participated in the validation efforts.) See Figure 7-1 on page 63 for a map that shows where children in the sample live.

As part of the recruitment process, English language learners were included in the sample. For children

who spoke primarily Spanish at home, assessment directions were provided in Spanish. Family members completing the Parent Report were given the option to use a Spanish translation of this form. All child-facing stimuli were unaltered, with the exception of literacy items that required reading. These items were translated into Spanish as well. Providing these Spanish-language resources ensured that English language learners (for whom Spanish was the dominant language) could be included in the normative sample (although separate norms were not developed for this subsample). For additional information on implementing the *Screens III* with English language learners, see page 14.

Quality Control Procedures

Throughout the standardization and norming process, several quality control steps were taken to ensure accuracy of the various processes and data.

During the data collection process, quality control involved multiple steps.

1. To provide additional clarification about aspects of the study, instructions were included to support the use of the examiner's manual.
2. Site coordinators were contacted at multiple points during the site's examination period to ensure materials were received in the quantities requested, to answer any questions, to ensure that procedures and timelines were being adhered to, and to provide any assistance as needed.
3. A toll-free phone line and email account were maintained for support needs. Examiners were encouraged to contact ERIA with any questions or concerns.
4. When each site's data was returned, ERIA staff checked for any obvious errors, omissions, or deviations from what had been discussed with administrators at the site. When problems with a set of data were discovered, ERIA contacted the site coordinator and remedied the issue. In some cases, clarifications were made or additional information was collected via phone. In other cases, those on-site would agree to redo examinations following the proper procedures.
5. ERIA was also in regular communication with the staff at Washington State University (WSU), who, in turn, notified ERIA of issues with data that could be discovered only during the logging process of individual examination items; ERIA would then attempt to remedy those issues through means similar to those described above.
6. If issues with data quality could not be remedied, erred data or data from an entire research site was then discounted from the study.

Once the secure data arrived on-site at WSU, several steps were employed to ensure data accuracy.

1. Confirmation of the number of data booklets and correspondence to certain categories (e.g., age) that were to be received was verified.
2. Each form was visually inspected following a set protocol to check for missing assessment or demographic data. Protocol checks also involved ensuring appropriate adherence to basal and ceiling rules. When missing data appeared on certain variables at a high rate (i.e., more than three age-appropriate assessments not completed within an age range) or basal and ceiling rules were not followed appropriately, the forms were rejected.
3. Responses from data booklets were hand-entered into a scoring program. Error analysis and general data cleaning procedures occurred once entry was complete. When errors were reported, the test forms were inspected, and corrections were made based on the raw data. If, upon inspection, it was not clear how to correct the error, the entire form was rejected from the standardization sample.
4. As analyses and normative information were developed, many statistical and visual checks of the scores at each progressive step occurred. Test forms flagged in any of these checks where a resolution of error could not be determined resulted in the deletion of the form from the standardization sample.

This quality-control process, involving multiple checks of data throughout the collection, entry, and analysis phases, resulted in a final sample of 1,929 children to inform the standardization of the *Screens III*. This sample is a subset of the standardization sample that was collected for the *IED III Standardized*.

Demographic Characteristics of Children and Their Families

The final sample (*N* = 1,929) closely matches the United States population on a number of important demographic variables (e.g., age, race/ethnicity, socioeconomic status) as reported by the U.S. Bureau of the Census and the U.S. Department of Education's National Center for Education Statistics (Hussar and Bailey 2011). The following tables illustrate the characteristics of participating children as compared to the U.S. population as a whole. Overall, the results show that the *BRIGANCE® Screens III* are standardized on a sample that closely approximates U.S. demographics.

Demographic information, based on responses in the Parent Report and/or the Examiner Questionnaire, was gathered about the child and the child's living situation. Data from both forms were used to verify responses and ensure complete information. The percentages of children within a given category were within five percentage points of the U.S. population for most targets and in many cases matched the U.S. population estimates even more closely.

One exception with respect to sample representativeness related to race/ethnicity is worthy of discussion. Caucasian representation in the sample was seven percentage points higher than the U.S. Census data, and the sample for the "Other" category was subsequently lower than the U.S. Census data. The category and description of ethnicity/race on the questionnaire forms did follow the recommendations of the U.S. Office of Management and Budget (OMB); however, it is possible that parents/caregivers and examiners did not utilize the "Other" response option in line with U.S. Census protocols. In addition, given that other race and ethnicity groups were almost exact in matching the population data, it was determined that the sample was representative of the U.S. population as a whole.

The sample across age categories was large and, more important, representative of the target population. In addition to the basic geographic and demographic characteristics (e.g., age, gender, race/ethnicity), socioeconomic status (SES) also factored into the sample's representativeness. Because the standardization sample includes children from birth through seven years of age and because there is no agreed upon measure of socioeconomic level across this age range, two measures of socioeconomic level were employed. Respondents indicated (for each school-age child) if the child was eligible for free or reduced lunch and/or if the child (child's family) had health insurance through a form of Medicaid. These responses appeared to provide more stable indicators of socioeconomic status for young children than parent-level information, such as occupation, income, or mother's level of education. The latter indicators are often used in measuring SES; however, these indicators may be difficult to capture due to refusal to respond to sensitive questions. For example, 17.5% of mothers in a survey of families and households refused to answer questions about family income (Ensminger and Fothergill 2003). Thus, the two indicators employed in this study were thought to be consistent measures across ages of children and not as prone to response refusal.

Figure 7-1 Geographic Representation of Sample

Table 7-2. Number of Participating Children by Age Level of the *BRIGANCE® Screens III*

	Infant	Toddler	Two-Year-Old Child	Three-Year-Old Child	Four-Year-Old Child	Five-Year-Old Child / Kindergarten	First Grade	Total
Children	588	209	255	158	230	167	322	1929

Table 7-3. Regional Representation by Percentage

Region	*Screens III* Sample	U.S.*
Midwest	22.6	21.7
Northeast	21.2	17.9
South	30.8	37.1
West	25.5	23.3

*U.S. Census Bureau, *2010 Census*

Table 7-4. Percentage Representations of Sex, Sex by Age, Race, and Hispanic Origin

Sex	*Screens III* Sample	U.S.*
Female	50.0	48.9
Male	50.0	51.1

*U.S. Census Bureau, *2010 Census, for population under 10 years of age*

	Screens III Sample						
Sex	**Infant**	**Toddler**	**Two-Year-Old Child**	**Three-Year-Old Child**	**Four-Year-Old Child**	**Five-Year-Old Child / Kindergarten**	**First Grade**
Female	46.2	58.0	51.0	47.5	50.0	48.5	53.0
Male	53.8	42.0	49.0	52.5	50.0	51.5	47.0

Race	*Screens III* Sample	U.S.*
African Am./Black	12.5	14.3
Am. Indian/Alaska Native	0.5	1.2
Asian	4.8	4.5
Hawaiian/Pacific Islander	1.2	0.2
White	71.5	64.3
Other	3.2	9.1
Two or More Categories	6.3	6.3

*U.S. Census Bureau, *2010 Census, for population under 10 years of age*

Hispanic/Latin/Spanish Origin	*Screens III* Sample	U.S.*
Yes	19.5	24.4
No	80.5	75.6

*U.S. Census Bureau, *2010 Census, for population under 10 years of age*

Table 7-5. Percentage Representations of Receipt of Federal Free/Reduced Lunch and/or Medicaid, Location of Residence, and Parents in the Home

Free/Reduced Lunch and/or Medicaid	*Screens III* Sample	U.S.*
Yes	38.9	45.4
No	61.1	54.6

*National Center for Educational Statistics, Common Core of Data, 2009–2010

Residence	*Screens III* Sample	U.S.*
Urban/Suburban	80.0	80.7
Rural	20.0	19.3

*U.S. Census Bureau, *2010 Census*

Household	*Screens III* Sample	U.S.*
Single-parent	19.8	31.2
Two-parent	80.2	68.8

*U.S. Census Bureau, *American Community Survey*, 2006–2010 estimates

Table 7-6. Percentage Representations of Language Spoken in the Home

Language	*Screens III* Sample	U.S.*
English	89.4	79.9
Spanish	5.5	12.5
Other	5.2	7.6

*U.S. Census Bureau, *American Community Survey*, 2006–2010 estimates

Table 7-7. Percentage Representations of Children Receiving Special Services (e.g., special education services, speech/language therapy, gifted services)

Received	*Screens III* Sample	U.S.*
Yes	13.5	13.2
No	86.5	86.8

*National Center for Educational Statistics

Development of Normative Scores

The assessments in the *Screens III* produce a Total Score and three domain scores. The Total Score is a weighted score that adds to 100 across the areas assessed. The weights were determined to reflect the theoretical importance of each skill area within a child's total development (with the goal of summing to a total of 100). The three domain scores also are created by summing raw scores on the assessments within each domain. These four scores can be converted to normative scores, which include composites scores, percentile ranks, and age equivalents. To create composite scores, selected assessments were summed and converted to a mean of 100 and a standard deviation of 15. The score distributions for each age-specific screen were used to generate normalized scores. The score distributions were smoothed to ensure an even progression across ages. Total composite scores are listed in Appendix D; domain composite scores are listed in Appendix E. Domain and Total composite scores can be converted to percentiles by a standard conversion chart shown in Appendix G. Age equivalent scores were produced from the raw scores by plotting the relationship between age and score. These scores were then verified and smoothed by comparing the age equivalents to a plot of the average raw scores for each age group. The age equivalent scores are shown in Appendix D (Total Score) and Appendix E (Domain Score). Confidence intervals (68%) for the estimated true score based on the obtained score can be produced by starting with the composite score, adding and subtracting the standard error of measurement, and converting this to a range of scores, using Appendices D and E. Additional discussion about standard errors of measurement is included in Chapter 8. A confidence interval around the age equivalent score can also be produced using the standard error of the mean of the age equivalent scores.

Summary of Development and Standardization Research

- The assessment content in the *Screens III* is grounded in theory and practice.
- The clarity of the directions for the *Screens III* ensures accurate administration by a range of professionals.
- Extensive item review, using classical and modern test theory approaches and expert panel reviews, assisted in ensuring well-functioning assessments across each age level of the *Screens III*.
- Data quality was assured by sound quality-control procedures.
- Assessments in the *Screens III* were standardized on a large population of children from across the United States (and Canada) and in a variety of settings—reflecting the range of applications for the measure.
- The standardization sample is representative of the United States in terms of key demographic characteristics.

NOTES

Reliability of the *BRIGANCE® Screens III*

CH 8

Critical Concepts in Test Construction: Score Reliability

If a child is tested repeatedly with a given assessment, it is unlikely that the child's scores for that assessment will be the same. Reliability refers to the consistency of scores obtained by the same child when examined again and again with the same assessment. Reliability indicates the extent to which individual differences in scores are attributable to real differences in the abilities assessed, as opposed to being attributable to chance error. More formally, score reliability is the extent to which the variance in scores of a given test is reflective of variance in the trait measured by the test (Anastasi and Urbina 1997).

Classical test theory assumes that each person has a true score (the score the person would receive if there were no errors in measurement). Note that no assessment, especially in the educational, social, and behavioral sciences, is free of error; all measures reflect some degree of random error, so the true score is always an unknown. Therefore, a child's obtained score on the *BRIGANCE® Screens III* is an approximation of the child's true score. The difference between the obtained score and the true score is measurement error. Higher reliability values indicate that scores on an assessment such as the *Screens III* have minimal error. To confirm the reliability of the scores on the *Screens III*, score reliability was examined in several forms.

- **Internal consistency** indicates the homogeneity of item responses within the *Screens III*; that is, it indicates the extent to which items are correlated with one another and free of measurement error.
- **Standard error of measurement (SEM)** indicates how far an individual's obtained score is from his or her true score; the SEM can be used to create confidence intervals around a score.
- **Test-retest reliability** indicates the stability of a child's scores when tested at multiple points in time over a short period.
- **Inter-rater reliability** indicates consistency in observations/ratings of a child's performance across multiple examiners.

Original Reliability Research

The internal consistency of items within the *BRIGANCE® Screens* was originally established in 1991 by conducting a standardization study of the assessments in the broader *Inventory of Early Development* (*IED*). Coefficient alpha estimates were given for each task on the *IED* for 1,156 participating children between the ages of 12 months and 7 years. Values ranged from as low as 0.34 to as high as 0.99 across scores on individual assessments (Glascoe 2010).

As documented in the *Technical Report for the BRIGANCE® Screens II* (Glascoe 2010), internal consistency estimates across the *Screens II* ranged from 0.90 to 0.99. The test-retest reliability estimates across age levels of the *Screens II* ranged from 0.84 to 0.91 for the Total Score. The *Technical Report* also documents several independent studies that support the reliability of the scores of the *Screens II.* In sum, this evidence suggests that prior editions of the *Screens* have strong score reliability values. The *Screens III* builds on this reliability evidence with additional studies noted in this chapter.

General Recruitment Information

Sites from the general norming/standardization study (discussed in Chapter 7) contributed to the reliability studies. As with the broader project, sites within the reliability studies also represented diverse settings and populations and followed similar testing and data collection procedures. Sites participating in test-retest and inter-rater reliability studies (a subset of sites from the full standardization sample) agreed to administer the assessment items twice to each child. Sites scheduled both rounds of testing for each child within a short, age-appropriate period of time to prevent developmental gains from skewing results. Specific sample information appears within the test-retest and inter-rater reliability descriptions below.

Internal Consistency Score Reliability

For the 2012 study, Cronbach's Alpha coefficients (Cronbach and Meehl 1955) were estimated for the *Screens III* scores, including the Total Score and domain scores. The higher the value of the coefficient, the more consistent the scores. The acceptable range of coefficients is often cited as 0.80 and above (Nunnally and Bernstein 1994), with higher values desired when scores were used to make decisions about an individual. Thus, values at or above 0.90 are desired for the Total Score. For the *Screens III* scores, estimates were computed across seven age-specific screens for each of three domains and the Total Score. To obtain averages across age levels of the *Screens III*, Feldt and Charter's (2006) formula for Approach 5, a weighted average accounting for the different sample sizes across age groups, was employed. Reliability estimates for when combined scores were obtained with the formula for reliability of a battery composite score (Hartel 2006; Nunnally and Bernstein 1994).

Tables 8-1 and 8-2 on page 69 list internal consistency coefficients by age level. In general, reliability estimates are higher for the Total Score compared to those for the individual domain scores, as one would expect. A few estimates at the domain level are below 0.80 for certain age groups of the *Screens III*. Evaluation of the data within these domains revealed that reliability is lower due to a lack of variability; that is, at certain ages, most children mastered all or most of the items within a domain and consistently earned scores at the maximum. This is to be expected with a screening measure. Across all age levels of the *Screens III*, the range of estimates for the domain scores is 0.61 to 0.96 and for the Total Score is 0.94 to 0.99, meeting standards for reliability estimates for scores that might inform decisions about individuals (when used with other relevant information). Lower reliability can be an artifact of the lack of variability in the attribute being measured and the number of items assigned to measure the attribute. For instance, the lower reliability for first-grade examinees on physical development is likely due to mastery of these skills at the upper ages. Despite the lower reliability statistics for a few age levels and domains, recall that referral decisions are based on the Total Score; reliability estimates for these scores, in bold in Table 8-1, exceed adequate levels for this purpose at all age levels. Table 8-3, also on page 69, shows the internal consistency of items within the Reading Readiness Scale by age level.

Table 8-1. Internal Consistency Reliability Estimates of the Domain and Total Scores by Age Level for the *BRIGANCE® Screens III*

	Screens III							
Domain	**Infant**	**Toddler**	**Two-Year-Old Child**	**Three-Year-Old Child**	**Four-Year-Old Child**	**Five-Year-Old Child / Kindergarten**	**First Grade**	**Average**
Physical Development	0.95	0.88	0.70	0.82	0.82	0.81	0.61	0.80
Language Development	0.94	0.95	0.94	0.95	0.96	0.71	0.85	0.90
Adaptive Behavior	0.93	0.87	—	—	—	—	—	0.90
Academic Skills/Cognitive Development	—	—	0.90	0.84	0.93	0.96	0.97	0.92
Total Score	**0.98**	**0.95**	**0.94**	**0.96**	**0.97**	**0.96**	**0.97**	**0.96**

Table 8-2. Internal Consistency Reliability Estimates of the Self-help and Social-Emotional Scores for the *BRIGANCE® Screens III* (Two-Year-Old Child through First Grade)

	Screens III					
Domain	**Two-Year-Old Child**	**Three-Year-Old Child**	**Four-Year-Old Child**	**Five-Year-Old Child / Kindergarten**	**First Grade**	**Average**
Self-help	0.68	0.89	0.90	0.84	0.84	0.83
Social-Emotional	0.80	0.89	0.92	0.86	0.90	0.87

Table 8-3. Reliability and Performance on the Reading Readiness Scale (Five-Year-Old Child/Kindergarten)

Maximum Score	**10**			
5-0 through 5-5	median 7	sd 1.9	SEM 1.0	Reliability 0.73
Above Average	≥ 9			
Below Average	≤ 5			
5-6 through 5-11	median 8	sd 1.8	SEM 0.9	Reliability 0.75
Above Average	10			
Below Average	≤ 6			

Standard Error of Measurement

A child's score on any developmental/achievement test is only an estimate of the child's true ability on that set of skills, because a margin of error is associated with the obtained score.

The standard error of measurement (SEM) represents an estimation of how a child's scores from hypothetical repeated testing tend to be distributed around the child's true score. Thus, the SEM tells us the range within which a person's true score may fall. Higher reliability estimates lead to smaller SEMs.

The SEM can be used to provide a confidence interval (CI) around the obtained score that accounts for this measurement error. The CI provides a method of expressing the precision of the test score and reminds the user that there is error in the obtained score. The standard error is estimated by $SEM = SD_x (\sqrt{1-r_{xx'}})(\sqrt{r_{xx'}})$ where SD_x is the population standard deviation of the assessment and $r_{xx'}$ is the reliability estimate. A 68% confidence interval is calculated by adding and subtracting the SEM from the obtained raw score. Wider confidence intervals are calculated by adding multiples of the SEM; for example, if two or three multiples of the SEM are added and subtracted from the obtained score, this will result in 95% or 99% confidence intervals, respectively.

SEMs can be used to answer the following type of question: "If a six-year-old child received a composite Total Score of 98 on the First Grade screen, what is the true score range around 98?" In other words, the SEM will provide the boundary on either side of the true score for the child on the skills measured. This boundary shows the range of possible scores when error is accounted for. Thus, the question above can best be answered by estimating the child's true score based on the obtained score and building the CI around that estimated true score. The true score is estimated by $[\overline{X} + (r_{xx'})(X - \overline{X})]$, where X is the obtained score, $\overline{X}$ is the mean score from the assessment, and $r_{xx'}$ is the reliability coefficient. The SEM for the composite Total Score is then added to obtain the high end of the CI and subtracted to obtain the low end of the CI. Continuing this example, a composite score of 98 for the Total Score would have an estimated true score of 98.06, given a reliability ($r_{xx'}$) of 0.97 and a mean score on the assessment ($\overline{X}$) of 100. The 95% CI around this score would be 92.94 to 103.18. This range is interpreted as follows: there is a 95% likelihood that the child's true score on the Total Score is between 92.9 and 103.2. The 68% CI would be 95.50 to 100.62. While using the estimated true score to form the CI is the most accurate representation of a child's skills, constructing the CI around the obtained score (98 in this case) is an appropriate and often more efficient way for an examiner to estimate a child's true score.[1] Tables 8-4 and 8-5 on page 71 display the SEMs.

[1] The main limitation is that precise probability statements cannot be tied to the CIs and scores (Harvill 1991).

Table 8-4. Standard Error of Measurement for Domain and Total Scores by *Screens III*

Domain	*Screens III*							
	Infant	Toddler	Two-Year-Old Child	Three-Year-Old Child	Four-Year-Old Child	Five-Year-Old Child / Kindergarten	First Grade	Average
Physical Development	3.27	4.87	6.87	5.76	5.76	5.88	7.32	6.00
Language Development	3.56	3.27	3.56	3.27	2.94	6.81	5.36	4.50
Adaptive Behavior	3.83	5.04	—	—	—	—	—	4.50
Academic Skills/Cognitive Development	—	—	4.29	5.50	3.83	2.94	2.56	4.07
Total Score	**2.10**	**3.27**	**3.56**	**2.94**	**2.56**	**2.94**	**2.56**	**2.94**

Table 8-5. Standard Error of Measurement for Self-help and Social-Emotional Total Scores by *Screens III*

Domain	*Screens III*					
	Two-Year-Old Child	Three-Year-Old Child	Four-Year-Old Child	Five-Year-Old Child / Kindergarten	First Grade	Average
Self-help	7.00	4.69	4.50	5.50	5.50	5.63
Social-Emotional	6.00	4.69	4.07	5.20	4.50	4.98

Test-Retest Score Reliability

Examining test-retest score reliability provides one method for investigating the stability of an instrument's scores. This requires administering the assessment instrument to the same child on two separate occasions, maintaining as similar testing conditions as possible to minimize outside influences across occasions. Assessments should produce roughly the same scores, even if children are tested several days to several weeks apart. For many achievement and developmental tests, the appropriate interval between testing sessions is short to minimize natural development by the examinee; however, a sufficient amount of time still must elapse in order to control for practice or memory effects.

The test-retest data collected for the *BRIGANCE*® *Screens III* involved 338 children ages 0 to 95 months (7 years, 11 months), across 25 sites, stratified across age groups. At two distinct times, the same examiner administered all age-appropriate assessments to a child in testing environments that were as similar as possible, per administration instructions. The time interval between assessment sessions ranged from a couple of days for some infants to three weeks for older children (e.g., 6-year-olds), with an average interval of 12 days. The sample was 54% female, 71% white, and 35% free/reduced lunch and/or Medicaid-eligible.

Test-retest reliability is usually expressed as correlations between scores obtained during the two assessment sessions. Correlations should be high (ideally, 0.80 or higher), but even with the strongest tests, there will be some variability across domains. The correlations between scores from assessment sessions #1 and #2 are shown in Table 8-6 for two age groups. These values are uniformly high across domains and ages. This outcome demonstrates that the *Screens III* produce consistent results, regardless of when an assessment session takes place (within an appropriate interval of time). The test-retest reliability for the Total Score is excellent.

Table 8-7 displays the means for assessment results at time 1 and time 2 for the two age groups. The difference between the mean from assessment time 1 and the mean from assessment time 2 can be used to determine the extent to which a score is influenced by practice effects, resulting from repeated testing.

Table 8-6. Test-Retest Reliability Estimates of Domain and Total Scores by *Screens III*

Domain	*Screens III* Groups	
	Infant–Toddler	Two-Year-Old–First Grade
Physical Development	.99	.94
Language Development	.98	.95
Adaptive Behavior	.97	—
Academic Skills/ Cognitive Development	—	.99
Total Score	**.99**	**.92**

The evidence presented in Table 8-7 demonstrates that practice effects were minimal as the range of differences across age groups was constrained to fewer than three points. The domain scores and Total Score across ages appear stable and are not influenced by practice effects. This stability, in part, is a result of the quality and clarity of the standardized instructions and the short time intervals between assessments. Given rapid developmental changes,

Table 8-7. Means for Test-Retest Data for the Domain and Total Scores by *Screens III*

Domain	*Screens III* Groups			
	Infant–Toddler		Two-Year-Old–First Grade	
	Time 1	Time 2	Time 1	Time 2
Physical Development	13.0	13.2	14.3	15.0
Language Development	19.1	19.9	34.0	35.1
Adaptive Behavior	11.7	11.7	—	—
Academic Skills/ Cognitive Development	—	—	34.8	35.4
Total Score	**43.8**	**44.8**	**83.1**	**85.5**

especially with the younger ages, the stability of scores would begin to degrade with longer increments of time. That said, the minimal differences in means and the high test-retest correlations suggest that the *Screens III* can be used effectively when retesting is needed. The user may want to consider the age of the group being retested when determining the appropriate interval between testing sessions. For instance, development for infants will be more rapid compared to that of six-year-old children.

Inter-rater Reliability

Another form of test stability is inter-rater reliability, which demonstrates that a test produces roughly the same score when a child is administered the same assessments by different examiners. This type of evidence demonstrates that the assessment directions are sufficiently clear to ensure nearly identical administration and scoring across examiners. This type of reliability is less of a concern when tests are designed to be scored by computers (e.g., computer adaptive tests); however, the *Screens III* are employed in settings that require intensive examination by individuals, making it important to investigate examiner variance.

The intraclass correlation coefficient was employed to estimate inter-rater reliability (Shrout and Fleiss 1979). While inter-rater reliability is often evaluated using a Pearson correlation coefficient (referred to as the coefficient of inter-scorer reliability), the Pearson correlation coefficient accounts only for rank ordering of scores, whereas the intraclass correlation is sensitive to systematic differences in levels of scores (Anastasi and Urbina 1997; Cohen and Swerdlik 2005). Thus, if scores differ systematically among examiners, intraclass correlation coefficients do a better job of indicating this difference (Cicchetti 1994; Schuck 2004). The following guidelines were followed for determining adequate levels of reliability for clinical significance (Cicchetti 1994): $r < 0.70$ is classified as unacceptable; $r \geq 0.70$ and $r < 0.80$ as fair; $r \geq 0.80$ and $r < 0.90$ as good; and $r \geq 0.90$ as excellent.

For the 2012 study, inter-rater reliability was assessed by having a second examiner retest 330 children with the age-appropriate *Screen III*. Examiners were paired with a given child and scored the assessments individually. Data collected for the *Screens III* involved children ages 0 to 95 months (7 years, 11 months), across 33 sites. The sample was 51% female, 66% white, and 39% free/reduced lunch and/or Medicaid eligible. Each examiner administered the assessments to the child in testing environments that were as similar as possible, per administration instructions. Children were retested within three weeks of the initial administration (for younger children, this time interval was less than one week). Shown in Table 8-8 are the results by two age groups for each age-appropriate domain and the Total Score. As the data demonstrate, no values were below the good criterion. In fact, all but one value met the excellent criterion. A high degree of agreement can be attained by ensuring scoring instructions are clear and understood by the examiners and maximizing standardized observational protocols. Given reported values, one can expect a high degree of agreement between raters.

Table 8-8. Inter-rater Reliability Estimates of Domain and Total Scores by *Screens III*

	***Screens III* Groups**	
Domain	**Infant–Toddler**	**Two-Year-Old–First Grade**
Physical Development	.96	.94
Language Development	.95	.92
Adaptive Behavior	.82	—
Academic Skills/ Cognitive Development	—	.98
Total Score	**.96**	**.93**

Summary of Score Reliability Research

Evidence demonstrates that the scores in the *BRIGANCE® Screens III* have strong reliability. The Total Score and domain scores have:

- high internal consistency,
- appropriate standard errors of measurement, which can be applied to various scores to create confidence intervals around a child's score,
- a high degree of test-retest reliability, and
- a high degree of inter-rater reliability.

NOTES

Validity of the *BRIGANCE® Screens III*

CH 9

Critical Concepts in Test Construction: Test Validation

Test validation is the most essential and fundamental aspect of test construction (AERA et al. 1999). Ultimately, test score validity is said to refer to the degree to which the decisions based on test scores and the inferences on which the decisions are based, are justified by supporting evidence (Linn 2005). Many forms contribute to a body of evidence to support the construct validity of test scores for a given purpose (Messick 1989). Those forms include but are not limited to:

- mapping of skills to test items,
- expert reviews of items,
- relationships between test scores and scores on other established tests that purport to measure the same construct, and
- correlations between test scores and levels of future performance.

Modern notions of validity rely on these sources of evidence to support uses of test scores and conclusions drawn from them. Evidence of validity is continually being accumulated, as test validation is an ongoing process rather than an outcome of a single study. For this reason, continued validation research is encouraged with the *Screens III*.

As noted above, there are many types, or sources, of test validation. The multiple sources of validity evidence provided in this manual are labeled in two ways: (1) using traditional terms with which many practitioners will be familiar and (2) using labels based on new perspectives on validity. The following forms of validity evidence have been studied with regard to the *Screens III*:

- Evidence based on **test content (content validity)** answers the question, "Do *Screens III* items sample developmental and early academic skills considered to be important by developmental researchers and educators?"
- Evidence based on **internal structure (construct validity)** answers the question, "To what extent do the *Screens III* domain scores indicate a child's standing on distinct traits?"
- Evidence based on **fairness (construct validity)** answers the question, "Do children of similar ability have the same chance of receiving credit for *Screens III* items regardless of group membership (e.g., male versus female)?"
- Evidence based on **associations with other variables (criterion-related validity)** answers questions such as:
  - "Do the *Screens III* correlate with comparable and related measures (such as other tests of early development, achievement, intelligence, and language)?"
  - "Is there evidence to suggest the *Screens III* are measuring intended constructs when compared to measures that are assessing different constructs?"
  - "Does the test accurately identify potential developmental delays and probable academic giftedness?"

Validity Evidence Based on Test Content (Content Validity)

There is strong support for the content validity of the *BRIGANCE® Screens III* and, therefore, for the applicability of its use in educational settings. The item construction of the *Screens III* was based on extensive reading of developmental and readiness literature and on collaboration with numerous other educators who assisted in item selection. Similarly, the items that comprise previous editions of the *Screens* are also supported by the extensive field-testing, use, and published reviews of these editions.

Experts who reviewed previous editions of the *Screens* commented favorably on the assessment content. For example, Helfeldt (1984) concluded, "the *BRIGANCE Screens* is a well-organized criterion-referenced test designed to assist in the early identification of individuals who need further testing." Brennan (1985) commented that the *BRIGANCE Screens* has a high degree of "content validity due to its similarity to other well-established measures and has widespread use by professionals in the field of screening." Schearer (1986) interviewed 263 teachers, testing coordinators, and curriculum supervisors in New York City Public School districts, all of whom were given the choice between the *DIAL* and the *BRIGANCE Screens*. Within twelve months, all but two districts had changed to the *BRIGANCE Screens*, viewing it as "less cumbersome and less costly to administer than the *DIAL*, but as valid and reliable in its result."

2012 Standardization Study: Content Validity Updates

As stated previously, the *Screens III* contains a subset of content from the full set of items contained in the *IED III* standardization study. For the full *IED III* study and hence the *Screens III*, a panel of content experts from across the field of child development was engaged to review existing content in previous editions of these measures. To inform items in need of revision and topics to consider for new content development, input from the content review panel was combined with feedback (gathered via survey) from a representative sample of existing users and an updated review of recent literature on child development. This review also ensured that existing items represented key predictors of child development and school success and were appropriately sequenced to account for typical development. Based on this process, new assessments and items were drafted by content experts to ensure comprehensive coverage of target skill areas. For example, experts in mathematics, reading, and social-emotional domains conducted reviews of the assessments with regard to the skills covered and appropriateness for the targeted age range. These content-area experts then constructed additional items to ensure sufficient content coverage. Please see Chapter 1 for details on new and updated content related to this new edition, the *Screens III*; see Chapter 7 for additional information about the content review panel and item review process. Chapter 7 also provides details about the content and developmental framework.

Based on the development and transformation of the *Screens* over time, well-developed evidence supports the content validity of the assessment. Additional evidence was gathered in the current standardization study to further support this conclusion.

Validity Evidence Based on Internal Structure (Construct Validity)

Confirmatory Factor Analysis

Construct validation studies for assessments such as the *Screens III* demonstrate a test's suitability for making inferences about a child's development relative to same-aged peers. In addition, construct validity supports the theoretical structure of the *Screens III* to help ensure support for inferences about strengths and weaknesses of individual children based on domain scores and the Total Score. Well-conceived and properly reported validity studies provide evidence that test scores are meaningful, ensuring users that the scores truly do provide information about the content/subjects the test purports to measure.

Evidence to support a proposed test structure can be collected via confirmatory factor analysis (CFA). CFA is a theory-driven analysis requiring *a priori* specification of the relationship of indicators to underlying traits. This analysis supported the proposed domain structure of the *Screens III*.

Given that the *Screens III* spans ages zero months to seven years, six months with a different set of assessments completed across the age range (based on the age-appropriateness of each assessment), a CFA was conducted for each of seven age-specific screens. See Table 9-1 for the skill areas assessed by age. The table implies a score structure with three domain scores and one Total Score for each screen.

Table 9-1. Score Structure of the *Screens III*

Domain	Skill Area
Physical Development	Gross Motor Skills Fine Motor Skills
Language Development	Receptive Language Skills Expressive Language Skills
Adaptive Behavior (Infant and Toddler)	Self-help Skills Social and Emotional Skills
OR	
Academic Skills/ Cognitive Development (Two-Year-Old and older)	Literacy Skills Mathematics Skills
Total Score	

To confirm this structure, data from administering the *Screens III* Core Assessments were employed for each screen. This analysis confirmed the test structure advocated for by the test maker; a structure with three first-order factors (domains) and one second-order factor (i.e., Total Score). These three first-order factors have a varying number of indicators depending on the age level of the screen.

To fit the CFA models, maximum likelihood (ML) estimation was employed to analyze the covariance matrices of scores. The individual assessment scores did not show dramatic departures from normal distributions. Relative multivariate kurtosis of the scores was < 1.5 (Bentler 1998).

Following the ML estimation, model fit was evaluated using a combination of fit indices, in line with psychometric recommendations (Brown 2006; Hu and Bentler 1999). With large samples, the χ^2 statistic is sensitive to even small differences, causing the model to be spuriously rejected (Brown 2006). However, because χ^2 statistics are useful in comparing nested models, they are reported. We evaluated model fit by examining fit indices (SRMR, < 0.08; CFI, > 0.95) and values and significance of parameter estimates including the factor loadings.

In addition to the model specified by the *Screens III* score structure, we tested three plausible models to confirm that the proposed second-order factor structure did have the best fit. These models included a one-factor first-order model where all domains loaded on a general factor, a two-factor first-order model where language and academic skills were integrated into one factor, and a three-factor first-order model that followed the score structure but did not include the second-order factor. These additional models were fit across the seven screens. Only the fit on the second-order model is presented (and not the three-factor first-order model), as fit is identical for these two models. As seen in Tables 9-2 and 9-3 on the next page, the fit of these models was not acceptable, as fit indices did not meet the set criteria. In addition, the factor correlations in the two-factor model ranged from 0.76 to 0.99, suggesting overlap between the two factors.

Table 9-2. Model Fit Indices for the One-Factor First-Order Model across Age

Screens	Chi-square (χ^2)	*df*	SRMR	CFI
Infant	36.77*	9	0.01	0.99
Toddler	106.46*	44	0.06	0.91
Two-Year-Old Child	81.46*	35	0.04	0.96
Three-Year-Old Child	81.29*	44	0.09	0.86
Four-Year-Old Child	215.80*	44	0.06	0.90
Five-Year-Old Child/ Kindergarten	168.26*	65	0.07	0.81
First Grade	155.78*	54	0.06	0.88

* $p < 0.05$.

Table 9-3. Model Fit Indices for the Two-Factor First-Order Model across Age

Screens	Chi-square (χ^2)	*df*	SRMR	CFI
Infant	35.67*	8	0.01	0.99
Toddler	98.18*	43	0.06	0.92
Two-Year-Old Child	78.29*	34	0.04	0.96
Three-Year-Old Child	107.05*	43	0.05	0.93
Four-Year-Old Child	200.75*	43	0.06	0.91
Five-Year-Old Child/ Kindergarten	165.59*	64	0.07	0.82
First Grade	154.52*	53	0.06	0.88

* $p < 0.05$.

Model fit statistics appear in Table 9-4 for the three first-order factors, one second-order factor model. As seen in Table 9-4, the second-order model, across all ages, met the set fit criteria. The second-order model captures the factor correlations in the second-order loadings and represents the scoring structure of three domain scores and one Total Score. First- and second-order pattern coefficients were all significant and above a 0.30 criteria across all age levels of the *Screens III*.

Table 9-4. Model Fit Indices for the Three-Factor First-Order, One-Factor Second-Order Model across Age

Screens	*N*	Chi-square (χ^2)	*df*	SRMR	CFI
Infant	588	25.85*	7	0.02	1.00
Toddler	209	97.10*	41	0.05	0.92
Two-Year-Old Child	255	77.79*	32	0.04	0.96
Three-Year-Old Child	158	77.94*	41	0.04	0.96
Four-Year-Old Child	230	200.43*	41	0.05	0.91
Five-Year-Old Child/ Kindergarten	167[d]	162.40*	62	0.07	0.82
First Grade	322	156.16*	52	0.06	0.88

* $p < 0.05$; *N* size is the same for results reported in Tables 9-2 to 9-4.

General Conclusions for Internal Structure Test Validation

The confirmatory factor analysis results support the score structure of the *Screens III*. The structure appears to fit well across all age levels of the *Screens III*. This highly valid internal structure supports the use of *Screens III* scores in combination with other information to aid in decisions about individuals.

Validity Evidence Based on Fairness Issues—Differential Item Functioning Analysis

The evaluation of items for item bias or differential item functioning (DIF) is important to ensure fairness in the assessment process. Note, as discussed in Chapter 7, that a panel also reviewed item content for fairness and bias issues.

DIF analysis ensures that children of equal ability in a particular skill area from various groups (e.g., boys vs. girls) have the same chance of receiving credit for a given item. The *Screens III* focus on DIF, instead of bias, as many times it is difficult to determine why an item identified as a DIF item is biased. This type of evaluation is referred to as an investigation of measurement invariance, which is important in validating any instrument's scores. Such an investigation is necessary to ensure that identification of children in need of intervention or special services or prediction of student success is based on true differences in the construct and not an artifact of group affiliation (AERA et al.; Cole, Maxwell, Avery, and Salas 1993; Hancock 1997).

To assess DIF, logistic regression (LR) was employed; LR is considered an effective method for DIF detection (e.g., Narayanan and Swaminathan 1996; Swaminathan and Rogers 1990). This examination involved comparing three nested models for each item and testing the improvement of fit for these models as terms were entered. Analyses were conducted within each individual assessment. DIF was examined for gender and for race/ethnicity categories. Due to limited sample sizes within each race/ethnicity category, only two groups—Caucasian/white and Non-white—were compared. Variables were entered in the following order per recommendations (Zumbo 1999): (a) Total Score (the conditioning variable), (b) gender/race (the grouping variable), and (c) the interaction term. To classify an item as exhibiting DIF, the chi-square (χ^2) difference test was used to compare models as variables were entered into the model. In addition, an ordinal R^2 value associated with each step was used as the effect size measure.

As suggested by Zumbo (1999), the criteria of a significant 2-*df* $\chi^2_{difference}$ test between models, employing Bonferroni adjustment for multiple comparisons, and $R^2_{difference} \geq 0.130$ were used to identify DIF items. Iterative purification or scale refinement of ability (i.e., Total Score) was employed following recommendations (French and Maller 2007). Across all item analyses, no items were classified with large enough DIF to warrant consideration.

Validity Evidence Based on Associations with Other Variables

Examining a test's score relationship with scores generated from other measures provides information about the consistency with which test scores align with the constructs underlying proposed test interpretations (AERA, APA, and NCME 1999). The following section describes measures used to provide criterion-related (e.g., concurrent) evidence for *Screens III* scores. Tables 9-5 through 9-8 provide correlations between scores from the *Screens III* and scores from other measures of development, intelligence, and achievement. Correlations were calculated between domain scores and Total Scores depending on content overlap between the tests. Evidence for *Screens III* scores is provided to the extent that similar assessments (e.g., Physical Development with Physical Development) correlate highly and therefore demonstrate convergent evidence and dissimilar assessments (e.g., Physical Development with Academic Skills/Cognitive Development) correlate at lower levels and therefore demonstrate discriminant validity evidence.

Correlations of *Screens III* Scores with the *BRIGANCE® IED II Standardized* and *IED III Standardized*

The *BRIGANCE® Inventory of Early Development II Standardized* (*IED II Standardized*) is a developmental measure published by Curriculum Associates; the *IED II Standardized* is the predecessor to the *IED III Standardized*. Both of these measures comprise the longer item and assessment sets from which the *Screens III* were constructed. The expectation is that the correlations of the *Screens III* Total Scores with scores on both the *IED II Standardized* and the *IED III Standardized* should be high and positive.

A sample of 70 children, aged 1 to 82 months, from a site in Hawaii, was administered the *IED II Standardized* in addition to the *IED III Standardized*. The sample of children was 42.5% female, 10% white, and 64% free/reduced lunch and/or Medicaid eligible. Correlations of the Total Score from the *Screens III* with the *IED II Standardized* and the *IED III Standardized* were 0.82 and 0.73, respectively. The *Screens III* Physical Development scores had correlations of 0.67 and 0.99 with the *IED II Standardized* and *IED III Standardized*, respectively. The *Screens III* Language Development scores had correlations of 0.72 and 0.99 with the *IED II Standardized* and *IED III Standardized*, respectively. The *Screens III* Academic Skills/Cognitive Development scores had correlations of 0.56 and 0.62 with the *IED II Standardized* and *IED III Standardized*, respectively. Finally, the *Screens III* Adaptive Behavior scores had correlations of 0.75 and 0.51 with the *IED II Standardized* and *IED III Standardized* Daily Living scores, respectively. The values are high and reflect consistency across the longer measures and the more abbreviated measure, the *Screens III*.

Correlations of *Screens III* Scores with Developmental Scales

The ***Battelle Developmental Inventory, Second Edition*** (***BDI-2™***; Newborg 2005) is an early childhood developmental assessment that allows examiners to screen and evaluate a child's early developmental milestones. The *BDI-2* measures a child's personal-social, adaptive, motor, communication, and cognitive abilities. This assessment is administered to children from birth through 7 years, 11 months.

Samples of 50 children, aged 2 to 35 months, and 48 children, aged 36 to 92 months, were administered the *BDI-2*. The majority of the sample children came from a California site. An additional four children in the older age group resided in Illinois. In the sample of younger children, 56% were female, 76% were white, and 26% were free/reduced lunch and/or Medicaid eligible. The older sample was 65% female, 75% white, and 81% free/reduced lunch and/or Medicaid eligible. The relationships between scores on the *Screens III* domains and Total Score and the BDI-2 domains were analyzed.

Table 9-5 on page 81 shows results for the correlations between scores obtained for the *Screens III* domains and Total Score and the *BDI-2* domains for younger and older cohorts of children. In general, the correlations in bold range from moderate to high across the domains, indicating convergent validity. It is not clear why the correlation between Cognitive and Academic Skills/Cognitive Development was low for the Two-Year-Old through First Grade screens. This may be a reflection of content differences or may be a method effect. The high correlation with the *BDI-2* Communication domain, however, may support content differences (i.e., language and literacy items categorized differently across the two products). Similarly, other related domains demonstrate higher correlations (Adaptive Behavior and Motor for the Infant and Toddler screens). Nevertheless, in most cases, we see these off-diagonals being low, representing discriminant validity evidence. In addition, the *Screens III* Reading Readiness scores for five-year-olds were correlated with the *BDI-2* Communication and Cognitive scores with resulting values of 0.71 and 0.52, respectively.

Overall, the correlations provide both discriminant and convergent validity across ages. The high correlations with the Total Score and the Motor and Adaptive Behavior domains reflect the emphasis on these content areas for the younger children. The consistent moderate correlations with the same variables in the older children reflect the assessment of broader content assessed across the *Screens III* for children two years old and older.

Table 9-5. Correlations of *Screens III* Scores with the *BDI-2*™ Domains

BDI-2	*Screens III Standardized* Domains				
	Physical Development	Language Development	Adaptive Behavior	Academic Skills/ Cognitive Development	Total Score
Infant/Toddler					
Motor	**0.68**	0.53	0.56	—	0.57
Communication	0.39	**0.42**	0.14	—	0.12
Cognitive	0.61	0.34	0.33	—	0.24
Adaptive	0.47	0.32	**0.47**	—	0.41
Personal-Social	0.48	0.26	0.22	—	0.13
Two years old and older					
Motor	**0.35**	0.15	—	0.33	0.45
Communication	0.51	**0.52**	—	**0.52**	0.44
Cognitive	0.55	0.46	—	**0.26**	0.56
Adaptive	0.47	0.55	—	0.19	0.37
Personal-Social	0.56	0.51	—	0.53	0.45

Bold indicates convergent validity.
— indicates *Screens III* scores are not available for that age.

The ***Mullen Scales of Early Learning*** (***Mullen***; *Mullen* 1995) is a measure of cognitive ability and motor development. The *Mullen* is administered to children ranging from birth to 68 months old. The assessments are based on the child's responses to activities prepared by the examiner. The *Mullen* was used in these validation efforts to explicitly compare the *Screens III* Language scores with the *Mullen* Language scores on expressive and receptive domains and the *Screens III* Academic Skills/Cognitive Development scores with the *Mullen* Cognitive scores. A sample of 50 children, aged 7 to 33 months from a site in Indiana was administered the *Mullen*. The sample was 48% female, 96% white, and 10% free/reduced lunch and/or Medicaid eligible. The correlation between the *Mullen* Expressive Language scores and the *Screens III* Language Development was 0.37. In addition, the correlation between the *Mullen* Receptive Language scores and the *Screens III* Language Development scores was 0.80. The stronger correlation with the receptive domain reflects the receptive content focus for this age group within the *Screens III*. In addition, the *Mullen* Early Learning composite scores (the standardized form of the cognitive score) and the *Screens III* Academic Skills/Cognitive Development scores had a correlation of 0.85. These correlations provide convergent validity evidence.

The ***Bayley Scales of Infant and Toddler Development-3rd edition*** (***Bayley-III®***; Bayley 2006) are measures for assessing developmental delays in very young children. The areas assessed include adaptive behavior, cognitive, language, and motor skills, as well as social-emotional skills. A sample of 42 children, aged 3 to 36 months, was administered the *Bayley-III*. The sample contained 37% female, 89% white, and 9% free/reduced lunch and/or Medicaid eligible. The relationships between *Screens III* domain scores of Physical Development and Language Development as well as the Total Score and children's Motor, Language, and Cognitive scores on the *Bayley-III* were analyzed. The correlations between the *Screens III* Total Score and the *Bayley-III* Language, Cognitive, and Motor scores were 0.61, 0.57, and 0.43, respectively. The correlation between the *Screens III* Language Development score and the *Bayley-III* Language score was 0.56 where the *Screens III* Physical Development score and the *Bayley-III* Motor score was 0.39. These correlations in total support the convergent validity of the *Screens III* scores with similar measures.

The ***Vineland Adaptive Behavior Scales, Second Edition*** (***Vineland™-II***; Sparrow, Cicchetti, and Balla 2008) are measures of adaptive behavior from birth to adulthood. The *Vineland-II* evaluates several domains, including Motor Skills, Communication, Daily Living Skills, Socialization, and an optional Maladaptive Behavior Index. A sample of 46 children, aged 36 (3 years) to 95 months (7 years, 11 months), was administered the *Vineland-II*. The sample, from a site in Nevada and a site in Ohio, contained 48% female, 72% white, and 50% free/reduced lunch and/or Medicaid eligible. The relationships between *Screens III* domain scores of Physical Development and Language Development as well as the Total Score and

children's scores on Motor Skills, Communication, Daily Living Skills, and Socialization on the *Vineland-II* were analyzed. The *Screens III* domains of Physical Development and Language Development were the focus in this analysis as they more closely align with the *Vineland-II* domains.

Table 9-6 provides the correlations across the domains for the *Screens III* and the *Vineland-II*. The correlations were strong with the expected pairing of domain scores. The correlation between the Motor Skills scores and the Physical Development scores, for example, was 0.53. As another example, the correlation between the Communication and Language Development domains was 0.68. This pattern provides solid convergent validity evidence. In addition, the low correlations between Socialization and Physical Development (0.09) and Daily Living Skills and Physical Development (0.28) provide strong discriminant validity evidence. The strong correlations across domains with the *Screens III* Total Score support the range of skills captured in the assessment.

Table 9-6. Correlations of *Screens III* Scores with the *Vineland*™*-II* Scores

	***Screens III* Scores**		
Vineland-II	**Physical Development**	**Language Development**	**Total Score**
Motor Skills	**0.53**	0.54	0.51
Communication	0.48	**0.68**	0.45
Daily Living Skills	0.28	0.59	0.53
Socialization	0.09	0.43	0.52

Correlations of *Screens III* Scores with Additional Tests

The ***Woodcock-Johnson® III*** (***WJ-III™***; Woodcock, McGrew, and Mather 2001) is a set of tests for measuring general ability and specifically cognitive abilities, oral language, and academic achievement. This measure can be administered to persons 2 to 90 years old and provides a comprehensive system for measuring general intellectual ability, specific cognitive abilities, scholastic aptitude, oral language, and achievement. A sample of 50 children, aged 45 to 96 months from a site in Minnesota and a site in Louisiana, was administered the *WJ-III*. The sample was 52% female, 86% white, and 52% free/reduced lunch and/or Medicaid eligible. These children's scores on the *WJ-III* Academic Skills cluster, Academic Fluency cluster, and Writing Fluency cluster were examined in relation to selected *Screens III* Academic Skills/Cognitive Development and Language Development domain scores.

The correlation between the *Screens III* Academic Skills/Cognitive Development domain and *WJ-III* Academic Skills cluster and Academic Fluency cluster was 0.42 and 0.50, respectively. The correlation between the *Screens III* Language Development domain and the *WJ-III* Academic Fluency Cluster was 0.72. In addition, the correlation between the *Screens III* Language Development domain and the *WJ-III* Writing Fluency cluster was 0.64. The *Screens III* Reading Readiness scores were also correlated with the Academic Skills cluster with a correlation of 0.50. These correlations demonstrate evidence of validity to support the *Screens III* scores.

The ***Wechsler Intelligence Scale for Children—Fourth Edition*** (***WISC®-IV***; Wechsler 2003) is a measure of intelligence for children ages 6 to 16 years. The *WISC-IV*, a widely used intelligence test, produces four composite scores and a Full Scale IQ score. The four composite scores include Working Memory (WMI), Verbal Comprehension (VCI), Perceptual Reasoning (PRI), and Processing Speed (PSI). A sample of 25 children, aged 72 (6 years) to 95 months (7 years, 11 months), from a site in Illinois and a site in Kentucky, was administered the *WISC-IV*. The sample was 56% female, 88% white, and 8% free/reduced lunch and/or Medicaid eligible.

As seen in Table 9-7, Working Memory Index (WMI) scores had strong correlations across selected *Screens III* domains. The lower correlation with the Academic Skills/Cognitive Development domain may reflect that the skills assessed do not rely heavily on working memory skills. This overall trend of association is expected as WMI skills are essential to everyday life tasks involving cognitive processing. In addition, the correlations of the *WISC-IV* indices with the *Screens III* Academic Skills/Cognitive Development domain were strong, particularly with the Perceptual Reasoning Index and the Full Scale IQ. The lower correlations with other indices may be a reflection of the lack of timed assessments in the *Screens III*. In fact, the lack of association does provide discriminant validity that the Academic Skills/Cognitive Development assessments of the *Screens III* capture the intended skills and not a time or speed factor. The same discriminant validity evidence is seen with the pairings of Verbal Comprehension (VCI) and Physical Development scores (i.e., 0.24) and with PRI and PSI and Language Development scores (i.e., -0.17 and 0.06, respectively). The *Screens III* Total Score had strong correlations with WWI, PRI, and FSIQ supporting the validity of the scores. The lower scores with VCI and PSI are expected given the content emphasis on the *Screens III* in relation to these indices.

Table 9-7. Correlations of *Screens III* Scores with the *WISC®-IV* Scores

	***Screens III* Scores**			
WISC- IV	**Physical Development**	**Language Development**	**Academic Skills/ Cognitive Development**	**Total Score**
WMI	0.62	0.45	0.25	0.40
VCI	0.24	0.29	0.10	0.07
PRI	0.31	-0.17	0.69	0.61
PSI	0.25	0.06	0.23	0.22
FSIQ	0.46	0.18	0.44	0.42

WMI = Working Memory Index; VCI = Verbal Comprehension Index; PRI = Perceptual Reasoning Index; PSI = Processing Speed Index; FSIQ = Full Scale IQ

Wechsler Preschool and Primary Scale of Intelligence–III (***WPPSI™-III***; Wechsler 2002) is a measure of intelligence for children ages two years, six months to seven years, three months. The *WPPSI-III*, a widely used intelligence test, produces three composite scores and a Full Scale IQ score. The composite scores examined were Verbal Comprehension and Perceptual Reasoning, as well as the Full Scale score. These aligned closely with tasks on the *Screens III*. A sample of 23 children, aged 37 to 71 months, was administered the *WPPSI-III*. The sample was 57% female, 73% white, and 43% free/reduced lunch and/or Medicaid eligible.

The *Screens III* Total Score has strong correlations with the three *WPPSI-III* scores. As seen in Table 9-8, the strongest correlations with the *WPPSI-III* scores were with the Academic Skills/Cognitive Development *Screens III* scores. In addition, the correlations between the Language Development scores and the *WPPSI-III* scores support the validity of these scores. The low correlations between the *WPPSI-III* scores and the Physical Development scores provide discriminant validity evidence. The lower scores are expected given the content emphasis on the *Screens III* in relation to these indices.

Table 9-8. Correlations of *Screens III* Scores with the *WPPSI™-III* Scores

	***Screens III* Scores**			
WPPSI-III	**Physical Development**	**Language Development**	**Academic Skills/ Cognitive Development**	**Total Score**
VC	-0.03	0.43	0.53	0.49
PR	-0.26	0.33	0.55	0.40
FS	-0.28	0.33	0.53	0.37

VC = Verbal Comprehension
PR = Perceptual Reasoning
FS = Full Scale

General Conclusions for Correlations with Other Measures

The results presented above provide strong validity evidence in the form of correlations with other measures. The estimated correlations were in expected directions with developmental measures similar to the *Screens III* as well as with measures that were focused on achievement and aptitude. A few exceptions were presented; continued work is encouraged to gather further validity evidence and explore the relationships among the *Screens III* scores and other critical outcomes for children aged birth through seven years, six months.

Known Group Differences: Test-Criterion Validity Evidence

Validity evidence based on differences across known groups (AERA et al. 1999) supports a test's ability to identify children with developmental strengths or weaknesses. Unique patterns or profiles of performance are expected for children with certain characteristics, such as known developmental or learning delays. To investigate such differences, children were categorized into four groups based on the following diagnosed disabilities: (1) autism (autism spectrum disorder or ASD), (2) speech or language impairment, (3) developmental delay, and (4) other impairment (e.g., deafness, orthopedic impairment, traumatic brain injury). The Adaptive Behavior domain was not used, as the sample did not include children under two years of age with an identified disability. In addition, the last disability category could not be subdivided due to limited sample size within given impairment classifications.

As shown in the analysis reported in Table 9-9, the children with diagnosed disabilities consistently scored lower on the *Screens III* than those without such disabilities. For each disability, each diagnosed child was matched with a nondiagnosed child of the same age, sex, race, and socioeconomic status. Across 16 comparisons, 9 produced statistically significant differences. Effect size differences were of magnitudes between 0.11 and 1.48 (small to large) and were particularly pronounced for children with/without a diagnosis of autism (ASD). All groups, with the exception of the Other Impairment category, had large differences at the Total Score level, thereby supporting the use of these scores for early detection/screening of children with potential delays or disabilities.

Table 9-10 on page 85 compares children who were grouped according to whether or not they received special education services based on the information provided to the examiner. Each child receiving special education services was matched with a child of the same age, sex, race, and socioeconomic status who was not receiving such services. As shown in the analysis reported in Table 9-10, the *Screens III*

Table 9-9. Comparisons of *Screens III* Scores on the Basis of Disability Grouping

Screens III	**Autism (ASD)**			**Speech/Language Impairment**			**Developmental Delay**			**Other Impairment**		
	Yes	No	*d*	Yes	No	*d*	Yes	No	*d*	Yes	No	*d*
Domains	*N*=28	*N*=28		*N*=42	*N*=43		*N*=43	*N*=39		*N*=53	*N*=53	
Physical Development	9.48	13.78	0.51	12.33	16.62	0.60*	11.04	16.17	0.61*	10.20	13.31	0.42
Language Development	13.82	36.00	1.48*	22.09	32.84	0.74*	21.14	35.43	0.96*	20.26	26.56	0.44
Academic Skills/ Cognitive Development †	14.00	26.39	0.75*	27.18	33.96	0.33	15.77	23.18	0.49	33.51	36.18	0.11
Total Score	**37.30**	**76.17**	**1.39***	**61.44**	**83.31**	**0.94***	**48.02**	**74.43**	**1.08***	**57.28**	**70.00**	**0.41**

* $p < .01$; *d* is Cohen *d* measure of effect size.

† The screening results for three toddlers were included. Scores in the Academic Skills/Cognitive Development domain are not available for that age. Due to this, the Total Scores will not be a sum of the above.

Table 9-10. Comparisons of *Screens III* Scores on the Basis of Special Education Enrollment

Screens III	Special Education								
	0–23 months			2–4 years			5–7 years		
	Yes	No	*d*	Yes	No	*d*	Yes	No	*d*
Domains	*N=29*	*N=29*		*N=100*	*N=100*		*N=59*	*N=59*	
Physical Development	15.51	16.48	0.17	12.13	18.33	0.72*	9.32	11.08	0.49*
Language Development	22.74	24.83	0.20	23.95	43.22	1.50*	17.96	20.24	0.37
Academic Skills/Cognitive Development	—	—	—	11.93	21.30	0.99*	50.00	56.21	0.57*
Adaptive Behavior	13.90	15.45	0.26	—	—	—	—	—	—
Total Score	**52.16**	**56.76**	**0.24**	**48.01**	**82.84**	**1.55***	**77.28**	**87.53**	**0.65***

* $p < .01$; *d* is Cohen *d* measure of effect size.

performance of children receiving special education services was consistently lower compared to the performance of those not receiving such services. Across 12 comparisons, 7 produced statistically significant differences. Effect size differences were of magnitudes between 0.17 and 1.55. Differences were especially present in the older age groups where deficits become more pronounced with age. The differences at the Total Score level averaged more than a half standard deviation difference between groups across the *Screens III* scores. This evidence supports the use of the scores for early detection/screening of children with potential delays or disabilities (i.e., those who should be referred for additional evaluation to determine if special services are needed). The lack of a statistically significant difference for the oldest children on the Language Development domain is not surprising; for children this age, more minimal attention is given to these domains (in light of the greater importance of academic skills at this age). Nevertheless, the significance of the Total Score analysis ensures children in this age range would be identified for further evaluation, and this additional evaluation would identify specific language deficits if present.

General Conclusions for Contrasting Groups Evidence

The special groups identified in these analyses, such as children who were identified as having a disability (e.g., autism (ASD), a speech or language delay, or a developmental delay) and children who were receiving special services, did show predictable patterns of scores. That is, children with developmental delays demonstrated lower performance than nondiagnosed children across the *Screens III* domain scores and Total Score. Most differences in performance were statistically significant across groups.

Summary of Test Validation Evidence

- Test content in the *Screens III* is supported.
- The *Screens III* factor (domain) structure is supported.
- The *Screens III* items function similarly across major identified groups.
- Correlations with external variables reveal that the *Screens III* scores are highly correlated with other similar measures, including individually administered diagnostic tests, developmental tests, and achievement measures. In contrast, correlations across dissimilar domains demonstrate low correlation values.
- The *Screens III* scores show expected differences in groups such as children with autism (ASD), speech or language impairments, developmental delays, and other impairments.

Major forms of validity evidence were provided to support the *Screens III* scores. Inferences from children's performance on the *Screens III* are supported by this validity evidence as well as evidence provided in Chapter 5 (on at-risk children) and Chapter 10 (on accuracy of the cutoff scores).

NOTES

Accuracy of the *BRIGANCE® Screens III* in Detecting Children with Potential Delays or Giftedness

CH 10

Critical Concepts in Screening and Test Construction: Accuracy

The Known Groups Validity of a screening test is assessed by its **accuracy**, as defined by:

Sensitivity. The sensitivity of a screening test is the percentage of children whom it correctly identifies as having true developmental delays or difficulties. At least 70% of children with true delays or difficulties should be identified with the *BRIGANCE® Screens III*. This is also the case when identifying students with advanced development or academic giftedness.

Specificity. The specificity of a screening test is the percentage of children it correctly identifies as not having true developmental delays. Because more children are developing normally than not, close to 80% of children without delays or difficulties should score above cutoff on the *BRIGANCE Screens III*. This also applies when identifying students with advanced development or academic giftedness.

Overreferrals (false positives). The overreferral rate is the percentage of children who score below cutoff on a screening test, and who upon diagnostic testing are not found to have a disability. Clear standards for false-positive rates (calculated as 1 *minus* specificity) are not specified. This is understandable because many of these children fall into the "gray zone" between normal and delayed development and still need intervention, typically in the form of Head Start, quality daycare, or after-school tutoring.

Underreferrals (false negatives). The underreferral rate is the percentage of children who score above cutoff on a screening test and who upon diagnostic testing are found to have a disability. There are no definite standards for false-negative rates (calculated as 1 *minus* sensitivity). However, children with delays are likely to be found through future screenings or continued performance deficits that might be observed by problematic classroom performance.

Sensitivity and Specificity

A critical component of a screening test is the accuracy of the cutoff scores in determining if a child should be referred for additional evaluation. Accuracy is essential validity evidence; for this reason, this chapter focuses on this critical element of validity and expands on the research discussed in Chapter 9. When developing a screening measure, the developer should aim for a target of at least 70% for sensitivity (Distefano and Kamphaus 2007). Validation work with the previous editions of the *BRIGANCE® Screens* in 2001 and 2005 carefully addressed the issue of screening accuracy to identify which scores on the *BRIGANCE® Screens* detect children who appear to: (1) need additional evaluation for special education services due to a high probability of developmental delays or difficulties such as undetected learning disabilities, language impairments, developmental disability and so forth; (2) be experiencing academic difficulties, but who do not seem eligible for special education services; (3) need evaluations to determine whether they are gifted or academically talented; or (4) be performing adequately for their age. Evaluating the accuracy of these four possible conclusions drawn from the *Screens III* is critical to ensure the validity of the tool; such an evaluation was conducted by analyzing the scores of all children in the national standardization study. Children's performance on the *IED III Standardized*, a broader assessment measure than the *Screens III*, was categorized according to the presence or absence of developmental delays (approximately the lowest 10–20%) and also by the presence of superior performance (highest 10%).

Logistic regression with ***Receiver Operating Characteristic*** (***ROC***; Cody and Smith 2006) analyses was conducted to determine the cutoff scores for each of the age-specific *Screens III* that best identified children with delays or those who were at risk for academic difficulties. For this analysis, average and gifted children were grouped together, while at risk and special education candidates were grouped together. Because each of the Core Assessments in the *Screens III* covers a wide age range (i.e., 12 months) and because of the substantial age-discriminating power of the *Screens III*, separate cutoff values were developed for younger and older children within each of the ages (e.g., three sets of cutoff scores for different age bands within the Four-Year-Old age range). Table 10-1 on page 89 reveals the cutoff score that best distinguished children with and without delays or difficulties on each of the age-appropriate screens. The results in Table 10-1 reveal the sensitivity of the *Screens III* (the percentage of children with delays or difficulties correctly identified) and the specificity of the *Screens III* (the percentage of children without delays or difficulties correctly identified). Values of 70% or greater meet standards for screening measures (Distefano and Kamphaus 2007). Thus, each age level of the *Screens III* demonstrates a high degree of accuracy in correctly identifying children with and without difficulties (sensitivity and specificity rates exceeded the 70% criteria on all age levels).

Table 10-1. Cutoffs, Specificity, and Sensitivity in Detecting Children with Delays for the *BRIGANCE® Screens III*

Core Assessments	Age (in months)	Cutoff	Normal Specificity		Problematic Sensitivity	
			N detected correctly by scores above the cutoff	%	*N* detected correctly by scores below the cutoff	%
Infant	0 months	<8	451/522	86	57/63	89
	1 month	<15				
	2 months	<17				
	3 months	<19				
	4 months	<27				
	5 months	<33				
	6 months	<36				
	7 months	<39				
	8 months	<43				
	9 months	<57				
	10 months	<60				
	11 months	<67				
Toddler	12–13 months	<32	154/187	82	19/22	86
	14–15 months	<39				
	16–17 months	<49				
	18–19 months	<56				
	20–21 months	<66				
	22–23 months	<70				
	(in years and months)					
Two-Year-Old Child	2-0 through 2-2	<47	200/226	88	26/29	90
	2-3 through 2-5	<54				
	2-6 through 2-8	<62				
	2-9 through 2-11	<75				
Three-Year-Old Child	3-0 through 3-3	<42	130/140	93	17/18	94
	3-4 through 3-7	<45				
	3-8 through 3-11	<49				
Four-Year-Old Child	4-0 through 4-3	<42	179/201	89	26/29	90
	4-4 through 4-7	<69				
	4-8 through 4-11	<71				
Five-Year-Old Child/ Kindergarten	5-0 through 5-5	<61	136/152	89	14/15	93
	5-6 through 5-11	<70				
First Grade	6-0 through 6-5	<68	238/294	81	26/28	93
	6-6+	<86				
TOTAL			**1488/1722**	**86**	**185/204**	**91**

Accuracy in Identifying Gifted and Academically Talented Children

Giftedness is a broad term; children may be gifted in different ways (e.g., musical or artistic talent, scientific aptitude). For this reason, gifted children are not likely to be identified by academic or developmental screening tests alone. As in any decision about an individual, the evaluation must supplement screening results with other indicators of ability (e.g., observations about memory, verbal fluency, oral vocabulary, curiosity, motivation, humor, and creativity) before making a decision about an individual's path for resources or education. The ratings of parents/caregivers and professionals who work with children are often a helpful and inexpensive means to screen for giftedness (Silverman, Chitwood, and Waters 1986; Ashman and Vukelich 1983). That said, the *Screens III* can assist in identifying children who are gifted and talented. The results of Table 10-2 below and Table 10-3 on the next page support this use.

For children younger than two years of age, it is difficult to identify intellectual giftedness or special talents because of the speed with which developmental changes occur during this early stage of life. While it is possible to determine when very young children show advanced development relative to their peers, it is not consistently clear that such development is a predictor of giftedness. Thus, the cutoffs in Table 10-2 should be used cautiously and only to identify developmental strengths, rather than to serve as predictors of academic giftedness.

Table 10-2. Cutoff Scores Suggesting Advanced Development (Infant and Toddler)

Core Assessments	Age (in years and months)	Cutoff	Normal Specificity		Problematic Sensitivity	
			N detected correctly by scores below the cutoff	%	*N* detected correctly by scores above the cutoff	%
Infant	0 months	>14	394/470	84	100/115	87
	1 month	>22				
	2 months	>28				
	3 months	>32				
	4 months	>38				
	5 months	>44				
	6 months	>51				
	7 months	>55				
	8 months	>62				
	9 months	>68				
	10 months	>75				
	11 months	>82				
Toddler	12–13 months	>51	127/161	79	39/48	81
	14–15 months	>54				
	16–17 months	>62				
	18–19 months	>75				
	20–21 months	>81				
	22–23 months	>89				

Table 10-3. Accuracy of *BRIGANCE® Screens III* in Detecting Children with Academic Talent and Giftedness (Two-Year-Old Child and Older)

Core Assessments	Age (in years and months)	Cutoff	Normal Specificity		Problematic Sensitivity	
			N detected correctly by scores below the cutoff	%	*N* detected correctly by scores above the cutoff	%
Two-Year-Old Child	2-0 through 2-2	>76	157/210	75	41/45	91
	2-3 through 2-5	>85				
	2-6 through 2-8	>91				
	2-9 through 2-11	>95				
Three-Year-Old Child	3-0 through 3-3	>79	92/125	74	31/33	94
	3-4 through 3-7	>84				
	3-8 through 3-11	>88				
Four-Year-Old Child	4-0 through 4-3	>83	155/193	80	33/37	89
	4-4 through 4-7	>87				
	4-8 through 4-11	>92				
Five-Year-Old Child/ Kindergarten	5-0 through 5-5	>88	111/148	75	14/19	74
	5-6 through 5-11	>91				
First Grade	6-0 through 6-5	>88	286/315	91	6/7	86
	6-6+	>96				
TOTAL			**801/991**	**81**	**125/141**	**89**

Summary of Accuracy Research

- The *BRIGANCE® Screens III* are sensitive in detecting potential developmental delays using the cutoff scores provided.
- The *Screens III* are specific in correctly identifying normally developing children.
- The *Screens III* are sensitive in identifying advanced development or probable giftedness and academic talent using the cutoff scores provided.

NOTES

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NOTES

Background Information Form

Background Information Form

Date _____

School _____

Child's name _____ Phone/Cell Phone: _____
Last First Middle

Address _____ City _____ State _____ ZIP _____

Birth date _____ Age _____ Boy ☐ Girl ☐

Race (optional–Circle one or more): Caucasian African-American Hispanic Asian Other _____

Mother's name _____ Place of work _____ Phone _____
Last First Middle Initial

Highest grade completed _____ Mother's age _____

Father's name _____ Place of work _____ Phone _____
Last First Middle Initial

Highest grade completed _____ Father's age _____

Number in family _____ Adults _____ Children _____ Children in school _____

Parents living together: Yes ☐ No ☐ If no, who has legal custody? Mother ☐ Father ☐ Other _____

Names of other schools or programs this child attended:

_____
When attended Name of program Address

_____
When attended Name of program Address

Has your child been tested before or had any special services (like speech-language, physical therapy, developmental preschool)? Yes ☐ No ☐ If yes, please describe:

_____

_____

_____

What language(s) does your child speak at home? _____

What language(s) do parents speak at home? _____

Names and ages of brothers and sisters (oldest child's name first—continue on back [of sheet] if needed):

Name	Age	School	Name	Age	School

Is this child or are any of your other children in the free lunch program? Yes ☐ No ☐

Please tell us any concerns you have about the way your child is learning, developing, or behaving.

_____

_____

_____

_____

Please tell us where you think your child is excelling.

_____

_____

_____

If you have concerns about your child, why do you think he/she may be having difficulties? _____

_____

_____

What do you find most rewarding and most challenging as a parent? _____

_____

_____

How often are you able to read to your child: Never ☐ Monthly ☐ Weekly ☐ Several times per week ☐ Daily ☐

How much TV does your child watch per day: 30 minutes ☐ 1 hour ☐ $1\frac{1}{2}$ hours ☐ 2 hours ☐ 3 or more hours ☐

Who gives your child medical care? _____ Address _____

Are your child's immunizations up to date? Yes ☐ No ☐ Not sure ☐

Does your child have any medical conditions or has he/she been hospitalized previously? Yes ☐ No ☐

If yes, please describe: _____

_____

_____

Is your child taking any medicines? Yes ☐ No ☐ If yes, please indicate:

Name of Drug	Reason for Taking	How much each day?

Results of vision screening? Pass ☐ Fail ☐ Other _____ When? _____

If fail, what recommended services did your child receive? _____

Results of hearing screening? Pass ☐ Fail ☐ Other _____ When? _____

If fail, what recommended services did your child receive? _____

Is there anything else you would like us to know about you or your child? (continue on back if needed)

_____

_____

_____

_____

_____

_____

By signing below, parent understands the information given on the above form.

_____ _____

Parent's Signature Date

NOTES

Information Sheets for Parents

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Building Speech and Language Skills

Kathleen E. Mahn, MS, CCC-SLP, Speech-Language Pathologist
Vanderbilt University, Department of Pediatrics

Skills in speech (sound pronunciation) and language (listening, understanding, and using words) develop in an orderly and predictable way, although the pace may differ for different children. General guidelines are shown below. Most children will demonstrate the listed skills within six months of the ages listed.

Expressive Language Milestones

Sentence Length

1 year:	1-word utterances
2 years:	2-word sentences
3 years:	3-to-5-word sentences
4 years:	4-to-7-word sentences with consistent use of parts of speech

Speech Milestones

3 years:	sounds of the letters: *m, b, p, h, w,* and all vowels
4 years:	*k, g, t, d, n, ng, f*
5 years:	*s, z, l, v, y, th, sh, wh, ch*
6 years:	*r, j*

Speech Intelligibility

(how well your child can be understood by others)

2 years:	25%
2½ years:	60%–65%
3 years:	75%–90%
4 years:	90%

Expressive Vocabulary

1 year:	1–10 words
1½ years:	10–100 words
2 years:	100–250 words
2½ years:	250–450 words
3 years:	450–900 words
4 years:	>1500 words

Fluency

Periods of stuttering in the preschool years are common. Be sure to give your child time to say what he/she is trying to say.

Activities

Here are some things you can do to help build your child's speech and language skills:

1. **TALK, TALK, TALK.** Describe what your child is *doing* as he/she does it. ("You're smiling.") Talk about how your child might be feeling. ("You're happy because you have your favorite toy.") Name people. ("Look, there's your sister.") Talk about everyday objects (bottles, juice, bed, diaper). Mention features of objects. ("That ball is red and it's big. It is a big red ball.") Talk about sounds around you and imitate them (cat's meowing, dog's barking, bacon sizzling). Sing songs and say nursery rhymes.
2. **LISTEN, LISTEN, LISTEN.** Conversations have two sides. Follow your child's lead and talk about things your child brings up. Give your child a chance to label things. ("Oh, you're thirsty. You want a drink. What do you want?") A young child will need an example. ("There's the orange juice. Mmm, orange juice tastes good.") An older toddler may need a choice. ("Do you want juice or milk?") A young child may say only part of a sentence such as "want truck." You can expand on this and reply by saying "OK, you want the big truck," or "Here is the big yellow truck. It carries dirt! Varoom."
3. **READ, READ, READ.** Start reading early even though your child may be too young to understand what you are saying. This helps children learn that reading is fun. Early on, let your children explore the books as they want to, using cloth books or action books like *Pat the Bunny*. Encourage your child to name the pictures. ("What's that?" "What do you think will happen next?" "Look, the bunny ate the carrots.")
4. **EXPLORE, EXPLORE, EXPLORE.** Go places—to the grocery store, the gas station, the park, the library. Talk about it all. Ask your child what he/she sees and what his/her favorite things were and why.
5. **DO, DO, DO.** Let your child help do things for himself/herself. You might say, "We have to get dressed. Go get your (new)(black)(tennis) shoes." Let your child help you do things and talk about them while you do them. ("Let's wash the dishes. I'm getting the sponge. I'm putting soap on it. Now there's soap on the sponge. Can you turn on the water?") Meal and bath times are great opportunities for sharing conversation.

Tips

1. Keep natural eye contact while your child is talking.
2. Listen patiently. Respond to the message rather than to the way your child says it.
3. Set a good example. Speak slowly and without rushing.
4. Spend time every day with your child, conversing in an unhurried, relaxed way.

Remember

1. Talking is special and fun.
2. Praise your child's efforts to talk. Don't correct grammar. Just repeat your child's sentence with a grammatically correct example.
3. Use other natural cues when talking and listening. Facial expressions, gestures, and body language communicate a lot.
4. Repeat main ideas frequently and in different ways.
5. Remember that talking and communicating are natural—just do it.
6. If you have concerns about your child's speech and language skills, discuss them with your child's doctor or a speech-language pathologist.

National Resources

American Speech-Language Hearing Association, Consumer Helpline 1-800-638-8255

Speech Foundation of America, P.O. Box 11749, Memphis, TN 38111 901-452-7343

EveryDay Matters: Activities for You and Your Child. (Kit) American Guidance Services, P.O. Box 99, Circle Pines, MN 55014. 1-800-328-2560.

Hamoguchi, Patricia. 1995. *Children with Speech, Language and Listening Problems: What Every Parent Needs to Know.* New York: John Wiley and Sons.

Schwartz, Sue, and Joan Miller. 1987. *The Language of Toys: Teaching Communication Skills to Special Needs Children.* Rockville, MD: Woodbine House.

Local Resources

Building Preschool and School Skills and Getting Ready for Kindergarten

Frances Page Glascoe, Educational Specialist
Vanderbilt University, Department of Pediatrics

1 The most important preschool skill is language. Talk, listen, explore, sing, and read with your child.

2 Help your child learn concept words like *before, next, top, under, middle, forward, first, last,* and *middle*. Experience these words with your child so that your child understands their physical meanings (crawl *under* tables, *over* chairs, and so forth). Emphasize these words when you talk ("First, let's put your dolls on the shelf. Next, we can put your blocks in the toy box. Last, I will help you put your clothes in the middle drawer.") This builds important math and spatial skills and will help your child follow classroom directions.

3 Take your child to a variety of places and talk about what you both notice. This increases your child's knowledge of general information and vocabulary—important for later learning of science and social studies. Visit museums, zoos, and libraries.

4 Point out sounds around you. Imitate with your preschooler the sounds made by windshield wipers, animals, appliances, and musical instruments. This builds an awareness of sounds and helps with learning the sounds of letters in the future.

5 Read to your child every day and let your child choose books he/she likes. Recorded books are also fun. Reading often helps your child enjoy books and look forward to being able to read.

6 Encourage your child to read (or look at books) just before bedtime to get in the habit of reading daily.

7 Take your child to story time at a library or book store to build a love of language and reading.

8 Do not actively teach your child letter and number names until they are close to four years of age, unless they show interest (by asking, "What is that letter?"). Teaching letter names too early is frustrating and may "turn your child off" from prereading skills. It's okay to point out and talk about letters, but don't make your child name them until later.

9 Put magnetic letters on your refrigerator for your child to move around and play with. This helps build visual discrimination skills.

10 Point out common street and store signs. The first words that children "read" are signs.

11 Look at the newspaper with your child and show him/her advertisements with common signs in them. This helps your child recognize signs in different places, colors, and so forth.

12 Encourage your child to draw and write. Have magic markers, crayons, and paints available and spend time almost every day drawing and writing. Write your child's name on school papers and hang them in the house. This helps your child know that schoolwork is important to you and that papers are something to be appreciated.

13 Make a scrapbook of your child's artwork and papers and, with your child, put papers in it. This helps build organizational skills.

14 Help your child put toys away before getting out new ones. Show your child how to put toys away neatly—not just throw them in a box. This helps build organizational skills and neatness.

15 When your child wants to begin writing real words, write examples for your child to copy and trace.

16 Encourage your child to finish chores before playing or taking breaks. This helps your child learn to follow through with tasks and to "work first and play later."

17 Have your preschool-age child watch *Sesame Street*. Watch it together from time to time. Encourage your child to sing along, answer questions, and get involved in the program.

18 During kindergarten, your child will be taught the sounds of letters. You can help by emphasizing each sound at home while it is being taught at school. For example, if the class is working on the sound of the letter *b*, try *b*atting *b*alls into a *b*asket or *b*aking a letter *B* in *b*read dough. Such fun activities will help your child associate words, letters, and sounds.

19 Computer games can be fun for helping teach spatial concepts, color recognition, shape discrimination, counting, and alphabet skills.

20 During kindergarten and first grade, your child will begin reading words. Take turns reading with your child. Let your child pick out books to read, no matter how simple. This shows that you are interested in reading and think it is important. Let your child read to his/her brothers and sisters.

21 With early elementary children, let your child tell you short stories. Write them down, putting a sentence or two at the bottom of several sheets of paper. Staple the sheets together so that your child has a book. Let him/her draw pictures to go with the story and then help read it. This helps children understand that reading is "talk written down."

22 Meet with your child's teacher often and find out how your child is doing. Get ideas from the teacher about specific things you can do at home to build the skills being worked on in class. Volunteer to help with activities in the classroom.

23 If your child seems to be having trouble learning school skills and you need more support and assistance, consider a tutor or a summer program. Ask the resource teacher at your school for names of programs and tutors.

24 For more information on helping with homework, improving reading skills, and academic competence, visit the U.S. Department of Education website: www.ed.gov/parents/academic/help/tools-for-success/index.html.

Local Resources

For example, summer programs that build academic skills, before and after school care programs that emphasize academics, tutors, and so forth:

Social Development

Frances Page Glascoe, Educational Specialist
Vanderbilt University, Department of Pediatrics

Parents often worry that their child is "shy," "bossy," "a loner," or "doesn't get along with others." Children's personalities, emotions, and social skills, along with their experiences and the guidance you give them, all have an impact on how they act with others. So, while there are some qualities like "shyness" that some children have more than others, much social behavior is learned—mostly by imitating parents and other children. This means that many social and emotional skills can and should be taught. Some suggestions follow:

1 Young children depend on their parents to help them adjust their emotions. Parents need to use a variety of ways to meet children's emotional needs such as soothing a distressed child or removing an overexcited or overwhelmed child from an environment that is too stimulating. Gradually, children learn to soothe and calm their own emotions.

2 It is important to encourage your child's emotional attachments to important people in his/her life, including teachers, babysitters, and nannies. While as a parent you may be jealous of these relationships, they are important for your child.

3 Having too many different teachers and babysitters can cause your child to become detached. So, if possible, choose day care settings with limited staff turnover and employ teachers who are likely to care for your child over time.

4 Encourage children to explore their environments. While keeping your child in sight, let him/her wander away from you a little and explore on his/her own. This helps build independence and self-confidence. Give praise for playing by himself/herself.

5 Provide social opportunities such as playing with a diverse group of other children. Praise your child for sharing, taking turns, gentleness, and so forth.

6 If your child responds to aggressive behavior from another child by acting aggressively, such as by hitting or biting, give clear reprimands with reasons, such as "Stop hitting. Hitting hurts. When you're mad at your friends, you must get up and leave." Talk with your child about different ways to handle difficult situations, such as asking for help, saying "I'm not going to play with you right now," or leaving the group. If a specific toy is causing trouble, "time-out the toy" by removing it until children are ready to take turns.

7 Never hit, bite, or hurt your child as a way of "showing him how it feels." Talk about it instead, when your child is calmer. Ask questions such as "Has anyone ever hit you? How did you feel? How do you think your friend felt when you hit her? Do you think he felt like you do?"

8 If several children in a group are behaving poorly, remove them to chairs on the "sidelines" and let them know that this behavior is not acceptable. Also, tell them that they can return to the group when they. . . (give clear guidance for the kind of behavior you want to see). Or say, "I can't let you be around your friends when you act like that, even if they are doing it, too. Sit here until you are ready to. . ." (again, give clear directions for desired behavior).

9 Use role-playing to teach new social skills. For example, "Let's practice saying hello to people when you come into a room." Watch how children initiate play with others, and help your child practice these skills.

10 Talk about feelings and help your child understand words that describe emotions.

11 If your child is shy or clingy, prepare him/her in advance for separations ("In a few minutes we will get to school and I will be dropping you off"). Give your child encouragement that he/she will be able to survive without you ("I know you will have a wonderful day and you will do fine without me"). Let your child know when you will be back, using daily activities to help your child understand time concepts ("I will be back to get you after snack time"). Then drop your child off quickly even if he/she is crying. It will stop.

12 Don't label your child. Don't let your child hear you say "He's shy" or "She's bossy." The child will only try to live up to this expectation. Let your child know he/she can be anything he/she wants to be.

13 Praise your child for getting along with others and for handling difficult social situations. This will help your child try these desirable behaviors again in the future.

14 Set a good example. Point out to your child when you have shared things with your friends, taken turns, or helped out.

Resources for Parents

The American Academy of Child and Adolescent Psychiatry has seventy-nine information sheets that provide concise and up-to-date material on a range of issues such as autism, transitioning to daycare, and guidance and discipline. Go to www.aacap.org and click on Facts for Families. Single fact sheets can be obtained without charge by sending a self-addressed, stamped envelope to the address below. The entire set costs $25.00; or $.25 each for bulk orders. The complete set of English and Spanish "Facts for Families" comes in a plastic spiral binder for $40.00. The Facts for Families sheets may be duplicated and distributed free of charge as long as the American Academy of Child and Adolescent Psychiatry is properly credited and no profit is gained from their use. Send requests to:

American Academy of Child and Adolescent Psychiatry
Attn: PUBLIC INFORMATION
3615 Wisconsin Avenue, NW
Washington, DC 20016

Websites for Professional and Parent Issues

Parenting and Early Childhood Education

American Academy of Pediatrics' Section on Development and Behavioral Pediatrics (www.dbpeds.org); oriented for professionals, offers information on screening, various conditions, common childhood problems

Bright Futures (www.brightfutures.org); assistance for health care professionals interested in promoting child development

Children and Youth (www.cyh.com); in-depth information handouts for parents and professionals on various developmental issues, childhood problems, etc.

Early Childhood Outcomes Center (ectacenter.org/eco/)

Early Childhood Technical Assistance Center (www.ectacenter.org/)

GeneralPediatrics.com (www.generalpediatrics.com); information for parents and professionals on various childhood problems

Kids Health for Parents (Nemours Foundation) (www.kidshealth.org); information on typical problems and conditions of childhood

Kidsgrowth.com (www.kidsgrowth.com); articles and questions/answers on growth, development, parenting, etc.

National Association for the Education of Young Children (www.naeyc.org/); information on the needs, rights and education of children

National Child Care Information and Technical Assistance Center (www.acf.hhs.gov/programs/occ); provides technical assistance to daycare professionals

Parents without Partners (www.parentswithoutpartners.org); support group for single parents with numerous local chapters

Zero To Three® (www.zerotothree.org); information for professionals and parents on current research and best practices in early childhood education

Special Needs

American Academy of Child and Adolescent Psychiatry (www.aacap.org); information/handouts on divorce, mental health issues, treatment, etc.

American Academy of Pediatrics Section on Developmental and Behavioral Pediatrics (www.dbpeds.org); information on screening, various disabilities, and their treatment

American Association on Intellectual and Developmental Disabilities (www.aamr.org); referral service

The ARC (www.thearc.org); Information, support, and referral for individuals with developmental disabilities and their families. Contains links to most disabilities groups such as United Cerebral Palsy, National Down Syndrome Congress, etc.

Attention Deficit Disorder Association (www.add.org); support services

Council for Exceptional Children (www.cec.sped.org); international professional group for improving educational outcomes for children with exceptionalities

Family Voices (www.familyvoices.org); promotes family perspectives in legislation, policy, advocacy, etc.

National Alliance on Mental Illness (www.nami.org)

National Early Childhood Technical Assistance Center (www.nectac.org); information on improving special services for young children and their families

Parents Helping Parents (www.php.com); support for and by parents whose children have disabilities

Research and Training Center on Family Support and Children's Mental Health (www.rtc.pdx.edu); information on family support groups

Sibling Support Project (www.siblingsupport.org); provides support and guidance for children and teens with a disabled or chronically ill sibling

Substance Abuse and Mental Health Services Administration (www.samhsa.gov)

Gifted and Talented

Association for the Gifted (TAG) (www.cectag.org); for parents and professionals, publishes an online newsletter and a journal

The Center for Gifted Education at the College of William & Mary School of Education (www.cfge.wm.edu)

Center for Talent Development at Northwestern University (www.ctd.northwestern.edu)

The Center for Talented Youth at The Johns Hopkins University (www.city.jhu.edu)

Davidson Foundation (www.davidsongifted.org)

Duke University Talent Identification Program (www.tip.duke.edu)

Education Program for Gifted Youth at Stanford University (epgy.stanford.edu)

Gifted Children—Identification, Encouragement, and Development (www.gifted-children.com)

Gifted Development Center (www.gifteddevelopment.com)

International Baccalaureate Organization (www.ibo.org)

Intelligence Theory and Testing (www.intelltheory.com)

Mensa (www.mensa.org)

Multiple Intelligences (MI) (www.edwebproject.org)

National Association for Gifted Children (www.nagc.org)

The National Conference of Governors' Schools (www.ncogs.org); information about governors' schools

National Consortium for Specialized Secondary Schools of Science, Mathematics, and Technology (NCSSSMST) (www.ncsssmst.org)

National Research Center on the Gifted and Talented (www.gifted.uconn.edu/nrcgt)

New Horizons in Education (www.newhorizons.org)

Summer Institute for the Gifted (www.giftedstudy.com)

The TAG Project for Families of the Gifted and Talented (www.tagfam.org)

Other Resources for Parents of Children Who May Be Gifted and Talented

Baum, S. M., Owen, S. V., & Baum, S. M. 2004. To be gifted & learning disabled: strategies for helping bright students with learning & attention difficulties. Mansfield Center, CT: Creative learning Press.

Berger, S. L. (2006). College planning for gifted students: choosing and getting into the right college. Waco, TX: Prufrock Press.

Callard-Szulgit, R. 2008. Twice-exceptional kids: a guide for assisting students who are both academically gifted and learning disabled. Lanham, MD: Rowman & Littlefield Education.

Caruana, V. 2002. Educating your gifted child. Wheaton, IL: Crossway Books.

Delisle, J. R. 2006. Parenting gifted kids: tips for raising happy and successful children. Waco, TX: Prufrock Press.

Fonseca, C. 2011. Emotional intensity in gifted students: helping kids cope with explosive feelings. Waco, TX: Prufrock Press.

Galbraith, J. 2009. The gifted kids' survival guide: for ages 10 & under (Rev. & updated 3rd ed.). Minneapolis, MN: Free Spirit.

Galbraith, J. 2011. The gifted teen survival guide: smart, sharp, and ready for (almost) anything (Rev. & updated 4th ed.). Minneapolis, MN: Free Spirit Pub.

Halsted, J. W. 2009. Some of my best friends are books: guiding gifted readers from preschool to high school (3rd ed.). Scottsdale, AZ: Great Potential Press.

Hipp, E. 2008. Fighting invisible tigers: stress management for teens (Rev. & updated 3rd ed.). Minneapolis, MN: Free Spirit Pub.

Kennedy-Moore, E. 2011. Smart parenting for smart kids: nurturing your child's true potential. San Francisco, CA: Jossey-Bass.

Kerr, B. A. 1997. Smart girls: a new psychology of girls, women, and giftedness. Scottsdale, AZ: Gifted Psychology Press.

Lewis, B. A. 2005. What do you stand for? for kids: a guide to building character. Minneapolis, MN: Free Spirit Pub.

Masiello, T. S. 2010. Guiding advanced readers in middle school. Scottsdale, AZ: Great Potential Press.

National Association for Gifted Children (U.S.). 2011. Parenting gifted children: the authoritative guide. Waco, TX: Prufrock Press.

Schab, L. M. 2008. The anxiety workbook for teens: activities to help you deal with anxiety & worry. Oakland, CA: Instant Help Books.

Siegle, D. 2013. The underachieving gifted child: recognizing, understanding, and reversing underachievement. Waco, TX: Prufrock Press.

Walker, S. Y. 2002. The survival guide for parents of gifted kids: how to understand, live with, and stick up for your gifted child (Rev. & updated ed.). Minneapolis, MN: Free Spirit.

Webb, J. T. 2007. A Parent's Guide to Gifted Children.1st ed. Scottsdale, AZ: Great Potential Press.

Webb, J. T., Meckstroth, E. A., and Tolan, S. S. (1982). Guiding the gifted child. Columbus, OH: Ohio Psychology Publishing.

BRIGANCE® Screens III Scores and Their Meaning

Administration of the *Screens III* generates several scores to aid in interpreting assessment results.

Total Score and Domain Score

The process of weighting items in assessments within a screen reflects the importance of each skill area at a given age. The Total Score is used to determine if a child has scored below the set cutoff for potential developmental delays or above the cutoff for advanced development or academic giftedness. (See Chapter 3 for a full discussion about comparing a child's Total Score with cutoff scores.)

In addition to the Total Score, scores for each of three domains can also be calculated by summing the weighted assessment scores for select Core Assessments within each domain. (See Chapter 1 for a list of domains and their associated assessments for each age level.)

The Total Score (and domain scores) can also be converted into a series of composite scores, which express a child's performance relative to the mean or average performance of the standardized sample (in terms of standard deviation units away from the calculated mean). Age equivalents and percentiles may also be derived. Detailed information about interpreting each of these scores appears below. (For information on how to calculate these scores, see Chapter 3.)

Normative Scores

Composite Scores

A composite score reflects a child's performance along a normative scale (converting raw scores for the domains and Total Score to normative scores). Composites are normalized standard scores with a **mean of 100 and a standard deviation of 15.** A score of 100 indicates that the child's performance for the skill area is at the mean or average within the normal distribution. A score of 115 indicates the child's performance is one standard deviation above the mean of the normative sample; a score of 85 indicates the child's performance is one standard deviation below the mean of the normative sample. These scores are based on an equal interval scale of measurement. Thus, these scores can be arithmetically manipulated (e.g., added, subtracted).

When considering a child's scores, the following information can be used to interpret composites in relation to performance:

< 70	Very weak
70–79	Weak
80–89	Below Average
90–110	Average
111–120	Above Average
121–130	Strong
> 130	Very Strong

Examiners are cautioned *not* to use composite scores to inform decisions about a child without also factoring in other information (e.g., parent and teacher reports) and results from other measures (e.g., other diagnostic assessments), as recommended by best practices (e.g., *Standards for Educational and Psychological Testing*; AERA, APA, and NCME 1999). This caution holds across all scores generated from administration of the *Screens III.*

Percentile Ranks

A percentile is a score between 0.1 and 99.9 that reflects a child's performance in relation to that of the normative sample. A percentile rank indicates the percentage of scores within the normative sample that falls below the child's score. For example, a percentile rank of 60 means that 60% of children within the national sample scored below this point. This interpretation is important. In particular, it is worth noting that the percentile rank does not indicate the percentage of total assessment items for which the child received credit. Also note that percentile ranks are an uneven unit of measure. Fewer composite score points will move percentile ranks in the middle of the distribution compared to a greater number of score points needed to move the percentile ranks at extreme points in the distribution. For example, a composite score difference of five points in the middle of the distribution might mean the difference between the 50th and 60th percentile; whereas the same raw score difference at the top of the distribution might mean the mere difference between the 97th and 99th percentile. Remember that these scores are not based on an equal interval scale of measurement. Thus, these scores cannot be arithmetically manipulated (e.g., added, subtracted).

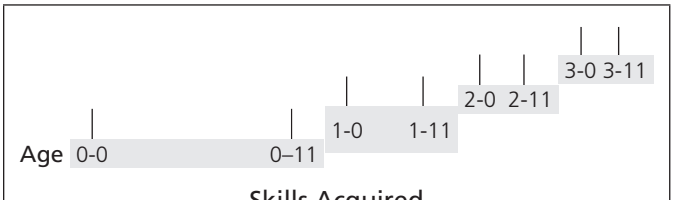
Percentiles are helpful for expressing differences in performance within the broad range of average. However, percentiles must be considered in light of the performance of a child's actual peers, if this information is available. For example, in a school with particularly rigorous academics, where average child performance clusters at the 75th percentile, the child who receives a percentile rank of 50 (average in comparison to children across the nation) is actually performing well below average for this particular setting.

Age Equivalents

Age equivalents are often reported to help indicate a child's performance compared to that of other children at a particular age. An age equivalent score indicates the median score for children of that given age.

Although it seems that these scores are explained with ease, use caution when considering age equivalents. Age equivalents are commonly misinterpreted normative scores because they lack precision and uniformity across ages. For example, the difference between the performance of a child aged 1-0 (one year, zero months) and a child aged 1-11 is quite large, but the difference between a child aged 3-0 and a child aged 3-11 is much less substantial, as shown in Figure C-1. Because of these differences, even minor discrepancies between the child's chronological age and age equivalent score must be considered seriously for younger children, but such discrepancies might be less meaningful in older children. Furthermore, recall that scores at the extreme end of the score range are difficult to interpret because data were extrapolated for these areas. These scores should be interpreted only alongside composite scores and percentile information. See Crocker and Algina (1986) for a complete discussion on these issues.

Figure C-1 Unevenness of the Age Equivalent Score*



*The first number is the year and the second number is the month.

Finally, when considering age equivalents, be aware that these scores are not generated based on developmental or academic standards. Instead these scores are generated based on comparing the child's performance to the average performance of same-age peers in the normative sample. As such, these scores do not take into account the developmental needs of the individual child. For example, a ten-year-old with an overall age equivalent score of 6-0 is quite different from a four-year-old with an age equivalent score of 6-0. Each of these children will learn very differently and need quite different instructional supports, because one child (the ten-year-old) is functioning at a low level compared to same-age peers and one child (the four-year-old) is functioning at a high level compared to same-age peers. Parents who interpret these findings imply that their child should receive intervention or instruction appropriate for an average six-year-old are mistaken.

In summary, when interpreting age equivalents, remember that the usefulness of these scores is

limited given various technical challenges (Bracken 1988; Reynolds 1981). Age equivalent scores can, however, help when selecting curricular content and materials, particularly when these scores are reported as a range. (See the discussion of instructional ranges below.) Nevertheless, age equivalent scores should not be used to make diagnostic or placement decisions.

Standard Error of Measurement and Confidence Intervals

A test score is not perfectly reliable and its interpretation should take error into account. With this in mind, a child's score on any assessment that measures development or achievement is only an estimate of the child's ability or mastery of a given set of skills. Furthermore, calculated scores assume that the set of skills measured is based on a representative set of items from the full gamut of items. (With the *Screens III*, content validity helps to ensure good representation of skills from this large range of items for each domain.) For these reasons, a margin of error will be associated with an obtained score; thus, the obtained score is considered an inexact indicator of ability.

The Standard Error of Measurement (SEM) can be used to provide a confidence band or confidence interval (CI) around the obtained score to account for this margin of error. (See Chapter 8 for detailed information about the SEMs for the *Screens III*.) Briefly, the standard error is estimated by $SEM = SD_x (\sqrt{1-r_{xx}})(\sqrt{r_{xx'}})$ (Harvill 1996) where SD_x is the population standard deviation of the assessment and $r_{xx'}$ is the reliability estimate. A 68% confidence interval is calculated by adding and subtracting the SEM from the obtained raw score. Wider confidence intervals are calculated by adding multiples of the SEM. The CI provides a method of expressing the precision of the test score and reminds the user that there is error in the obtained score. The CI will be narrower the higher the reliability estimate becomes.

Instructional Range

Results from the *Screens III* can be used to inform instructional planning; the instructional range (IR) supports this process. The instructional range, calculated by adjusting the age equivalent score with an appropriate confidence interval, is simply a suggested range; teachers may need to use a broader age range for instructional purposes, especially with older children. The range around the age equivalent score, when expressed as an instructional range, offers insight into the zone of proximal development (Vygotzky 1980) and provides guidance for selecting instructional materials. The Standard Error of the Mean (SE_Z) can be used to provide a confidence band or confidence interval (CI) around the age equivalent score. This is similar to the CIs that the user can calculate for the composite scores, but this is based on the mean and not measurement error. The lower end of the age equivalent range is an independent work level where children have mastered most skills. The higher end of the range reflects the level at which a child is likely to miss multiple items or become frustrated (even with instructional assistance). The scores in between reflect the points at which children can demonstrate skills with assistance, which means this is generally the level at which to target instruction (Parker, McMaster, and Burns 2011).

Banding scores with confidence intervals is not only psychometrically sound, but it also has helpful implications for instruction. Knowing the CI around the scores can help a teacher or practitioner gauge the range of the child's ability in that domain. Chapter 3 describes how to calculate an instructional range using a CI and the child's age equivalent scores. Using this instructional range, a teacher can select appropriate instructional goals and materials, ensuring instruction is targeted within the child's zone of proximal development. Teachers should still interpret the instructional range as a general indicator, especially with older children, due to the uneven properties of age equivalents.

Cautions When Assigning Meaning to Scores

The *Screens III* are designed to be the first step in the early identification of potential delays in development as well as giftedness. Screening results do not confirm the diagnosis of a delay, but rather suggest that additional evaluation should be considered to determine whether intervention or special services are needed. Decisions about a child's developmental or academic needs should be based on a multifaceted

assessment process involving appropriate and varied measures and sources of information. Several data points should be evaluated to ensure that the best possible decisions are made regarding each child's needs. Experts in the measurement field do not recommend making a decision about an individual child's developmental needs based on a single score or single measure (AERA, APA, and NCME 1999). Furthermore, IDEA regulations state that placement decisions cannot be made based on a single score.

In addition to the above overarching perspective, the following considerations should be taken into account when interpreting *Screens III* results:

1 **Scores should be interpreted in relation to the purpose of the test and the type of decision to be made.** It is the examiner's responsibility to understand the purpose of the *Screens III* and the validity evidence that exists to support that purpose. The examiner should be aware of the skills the assessment does and does not cover and be sure conclusions are in line with the assessed skill set.

2 **Scores should be interpreted in light of each child's particular situation.** Several factors can influence a test score. Was the child healthy enough to perform and sufficiently free of fatigue to demonstrate his or her skills? Does a language issue exist? Was the child motivated to do well? Was the environment free of distraction? If concerns exist, consider suspending the assessment until another day or until appropriate adjustments can be made to the testing environment to ensure more ideal assessment circumstances.

3 **Normative scores may be interpreted as a band or range of scores rather than as a specific value.** Because measurement inherently contains some error, reporting ranges for composites, percentiles, and age equivalents helps highlight normal variability in performance and in measurement. The inherent error within scores also affects whether additional evaluation is needed following a screening. Such evaluation might help educators better understand a child's abilities before a formal diagnostic decision is made.

4 **Use caution when interpreting Age Equivalents and Instructional Ranges.** Understanding the disadvantages and possible confusion when interpreting such scores is imperative. Interpretation of age equivalent scores, for example, is limited given various technical challenges (Bracken 1988; Reynolds 1981). Instructional ranges have similar disadvantages, given that they are based on the age equivalents. Thus, age equivalents and instructional ranges should not be used to make diagnostic or placement decisions, especially in the absence of other testing information.

5 **Scores can be informed by clinical observations.** Sometimes observations about how a child performs reveal much about the presence or absence of strengths and weaknesses. For example, did the young child demonstrate the typical strategy of talking to oneself (subvocalizing) while working, especially as items increased in difficulty? Was the child well organized—could the child find his or her place and work systematically from left to right and top to bottom? Was the child sufficiently reflective or did impulsivity lead to frequent errors? Was the child attentive to detail? Was the child willing to guess or reattempt items or did the child give up quickly? These and other observations regarding comprehension of language, behavioral and affective changes in response to certain kinds of tasks (e.g., fine motor versus gross motor tasks, verbal versus visual, novel versus familiar), and strategies employed across assessments can help pinpoint aspects of a child's learning style that are important for planning instruction.

In addition to this guidance, the examiner may want to review the standards for interpreting and reporting test scores that are published by the Code of Fair Testing Practices in Education (2004) and the Standards for Educational and Psychological Testing (AERA, APA, and NCME 1999). An examiner with a working knowledge of such information can ensure the appropriate use and interpretation of test scores when making decisions about a child.

Composite Scores and Age Equivalents for Total Scores

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D1: Composite Scores for Total Scores

Composite Scores for Core Assessments—Infant (birth–11 months)													
Total Raw Score	*Standard error of measurement = 2*												Total Raw Score
	Age (months)												
	0	1	2	3	4	5	6	7	8	9	10	11	
0	<80	<72	<72	<60	<60	<60	<60	<60	<60	<60	<60	<60	**0**
1	<80	<72	<72	<60	<60	<60	<60	<60	<60	<60	<60	<60	**1**
2	<80	<72	<72	<60	<60	<60	<60	<60	<60	<60	<60	<60	**2**
3	80	<72	<72	<60	<60	<60	<60	<60	<60	<60	<60	<60	**3**
4	80	<72	<72	<60	<60	<60	<60	<60	<60	<60	<60	<60	**4**
5	87	<72	<72	<60	<60	<60	<60	<60	<60	<60	<60	<60	**5**
6	87	<72	<72	<60	<60	<60	<60	<60	<60	<60	<60	<60	**6**
7	91	72	<72	<60	<60	<60	<60	<60	<60	<60	<60	<60	**7**
8	91	75	72	<60	<60	<60	<60	<60	<60	<60	<60	<60	**8**
9	93	77	75	<60	<60	<60	<60	<60	<60	<60	<60	<60	**9**
10	95	79	76	<60	<60	<60	<60	<60	<60	<60	<60	<60	**10**
11	95	80	78	<60	<60	<60	<60	<60	<60	<60	<60	<60	**11**
12	97	83	79	<60	<60	<60	<60	<60	<60	<60	<60	<60	**12**
13	99	86	81	<60	<60	<60	<60	<60	<60	<60	<60	<60	**13**
14	100	88	83	60	<60	<60	<60	<60	<60	<60	<60	<60	**14**
15	101	90	84	63	60	<60	<60	<60	<60	<60	<60	<60	**15**
16	102	94	86	66	62	<60	<60	<60	<60	<60	<60	<60	**16**
17	103	97	87	69	67	<60	<60	<60	<60	<60	<60	<60	**17**
18	104	100	89	72	70	<60	<60	<60	<60	<60	<60	<60	**18**
19	105	102	91	74	73	60	<60	<60	<60	<60	<60	<60	**19**
20	107	104	93	79	76	62	<60	<60	<60	<60	<60	<60	**20**
21	108	106	95	83	78	64	<60	<60	<60	<60	<60	<60	**21**
22	109	108	98	86	81	67	60	<60	<60	<60	<60	<60	**22**
23	111	110	100	90	83	69	62	<60	<60	<60	<60	<60	**23**
24	112	111	102	92	84	72	65	<60	<60	<60	<60	<60	**24**
25	114	113	103	95	86	74	67	<60	<60	<60	<60	<60	**25**
26	116	115	105	97	87	76	69	<60	<60	<60	<60	<60	**26**
27	117	117	107	100	89	79	71	60	60	<60	<60	<60	**27**
28	119	118	109	102	91	81	74	63	63	<60	<60	<60	**28**
29	120	119	111	105	92	83	76	65	65	<60	<60	<60	**29**
30	122	121	112	106	95	87	78	67	67	<60	<60	<60	**30**
31	123	122	113	107	98	90	80	71	69	60	<60	<60	**31**
32	125	124	113	109	99	92	82	73	71	62	<60	<60	**32**

Composite Scores for Core Assessments—Infant (birth–11 months)

Total Raw Score	*Standard error of measurement = 2*												Total Raw Score
	Age (months)												
	0	1	2	3	4	5	6	7	8	9	10	11	
33	>125	125	114	110	101	94	84	75	72	64	<60	<60	**33**
34	>125	>125	115	111	102	96	86	77	74	65	60	<60	**34**
35	>125	>125	115	112	104	98	88	80	75	66	64	<60	**35**
36	>125	>125	116	113	105	100	89	82	76	68	67	<60	**36**
37	>125	>125	118	114	106	101	90	83	78	69	68	<60	**37**
38	>125	>125	120	115	107	102	91	84	79	71	69	<60	**38**
39	>125	>125	121	116	108	103	92	85	80	72	70	60	**39**
40	>125	>125	123	117	108	104	93	86	81	73	70	61	**40**
41	>125	>125	125	118	110	106	94	88	82	75	71	62	**41**
42	>125	>125	>125	119	111	107	95	89	83	76	72	64	**42**
43	>125	>125	>125	120	112	109	97	92	84	78	73	65	**43**
44	>125	>125	>125	122	113	110	98	93	85	79	74	66	**44**
45	>125	>125	>125	123	114	110	99	94	86	79	75	67	**45**
46	>125	>125	>125	124	115	111	100	95	86	80	75	69	**46**
47	>125	>125	>125	125	116	112	101	96	87	82	76	70	**47**
48	>125	>125	>125	>125	117	114	101	97	88	83	77	71	**48**
49	>125	>125	>125	>125	118	116	103	100	89	84	78	73	**49**
50	>125	>125	>125	>125	119	117	104	101	91	85	79	74	**50**
51	>125	>125	>125	>125	120	118	105	102	93	86	80	75	**51**
52	>125	>125	>125	>125	121	119	107	104	95	88	81	76	**52**
53	>125	>125	>125	>125	122	120	108	105	97	89	82	76	**53**
54	>125	>125	>125	>125	123	120	110	108	98	91	83	77	**54**
55	>125	>125	>125	>125	124	121	111	109	99	92	84	78	**55**
56	>125	>125	>125	>125	124	122	112	110	100	93	85	79	**56**
57	>125	>125	>125	>125	125	123	113	111	101	93	85	80	**57**
58	>125	>125	>125	>125	>125	123	114	112	102	95	86	80	**58**
59	>125	>125	>125	>125	>125	124	115	113	103	97	86	81	**59**
60	>125	>125	>125	>125	>125	125	117	114	104	98	87	82	**60**
61	>125	>125	>125	>125	>125	>125	118	115	105	100	87	83	**61**
62	>125	>125	>125	>125	>125	>125	119	116	105	101	89	84	**62**
63	>125	>125	>125	>125	>125	>125	120	117	106	102	91	84	**63**
64	>125	>125	>125	>125	>125	>125	121	119	107	103	95	85	**64**
65	>125	>125	>125	>125	>125	>125	123	120	110	103	98	86	**65**
66	>125	>125	>125	>125	>125	>125	124	122	111	105	100	87	**66**
67	>125	>125	>125	>125	>125	>125	125	123	112	106	101	88	**67**

Composite Scores for Core Assessments—Infant (birth–11 months)

Total Raw Score	*Standard error of measurement = 2*												Total Raw Score
	Age (months)												
	0	1	2	3	4	5	6	7	8	9	10	11	
68	>125	>125	>125	>125	>125	>125	>125	124	114	108	103	91	**68**
69	>125	>125	>125	>125	>125	>125	>125	125	117	109	104	94	**69**
70	>125	>125	>125	>125	>125	>125	>125	>125	119	110	106	97	**70**
71	>125	>125	>125	>125	>125	>125	>125	>125	120	112	106	100	**71**
72	>125	>125	>125	>125	>125	>125	>125	>125	122	114	108	101	**72**
73	>125	>125	>125	>125	>125	>125	>125	>125	124	116	108	102	**73**
74	>125	>125	>125	>125	>125	>125	>125	>125	125	117	110	103	**74**
75	>125	>125	>125	>125	>125	>125	>125	>125	>125	119	110	104	**75**
76	>125	>125	>125	>125	>125	>125	>125	>125	>125	120	112	104	**76**
77	>125	>125	>125	>125	>125	>125	>125	>125	>125	121	114	106	**77**
78	>125	>125	>125	>125	>125	>125	>125	>125	>125	122	114	107	**78**
79	>125	>125	>125	>125	>125	>125	>125	>125	>125	123	115	107	**79**
80	>125	>125	>125	>125	>125	>125	>125	>125	>125	124	117	109	**80**
81	>125	>125	>125	>125	>125	>125	>125	>125	>125	125	118	111	**81**
82	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	119	112	**82**
83	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	120	114	**83**
84	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	121	115	**84**
85	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	122	117	**85**
86	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	123	119	**86**
87	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	125	121	**87**
88	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	123	**88**
89	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	125	**89**
90	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	**90**
91	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	**91**
92	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	**92**
93	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	**93**
94	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	**94**
95	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	**95**
96	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	**96**
97	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	**97**
98	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	**98**
99	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	**99**
100	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	**100**

Composite Scores for Core Assessments—Toddler (12–23 months)							
Total Raw Score	*Standard error of measurement = 3*						Total Raw Score
	Age (months)						
	12–13	14–15	16–17	18–19	20–21	22–23	
0	<60	<60	<60	<60	<60	<60	**0**
1	<60	<60	<60	<60	<60	<60	**1**
2	<60	<60	<60	<60	<60	<60	**2**
3	<60	<60	<60	<60	<60	<60	**3**
4	<60	<60	<60	<60	<60	<60	**4**
5	<60	<60	<60	<60	<60	<60	**5**
6	<60	<60	<60	<60	<60	<60	**6**
7	<60	<60	<60	<60	<60	<60	**7**
8	<60	<60	<60	<60	<60	<60	**8**
9	<60	<60	<60	<60	<60	<60	**9**
10	<60	<60	<60	<60	<60	<60	**10**
11	<60	<60	<60	<60	<60	<60	**11**
12	<60	<60	<60	<60	<60	<60	**12**
13	<60	<60	<60	<60	<60	<60	**13**
14	<60	<60	<60	<60	<60	<60	**14**
15	<60	<60	<60	<60	<60	<60	**15**
16	<60	<60	<60	<60	<60	<60	**16**
17	<60	<60	<60	<60	<60	<60	**17**
18	60	<60	<60	<60	<60	<60	**18**
19	61	<60	<60	<60	<60	<60	**19**
20	62	<60	<60	<60	<60	<60	**20**
21	64	<60	<60	<60	<60	<60	**21**
22	66	60	<60	<60	<60	<60	**22**
23	68	61	<60	<60	<60	<60	**23**
24	70	63	<60	<60	<60	<60	**24**
25	72	66	60	<60	<60	<60	**25**
26	74	68	61	<60	<60	<60	**26**
27	75	70	62	<60	<60	<60	**27**
28	76	72	66	60	<60	<60	**28**
29	78	75	67	61	<60	<60	**29**
30	79	77	68	62	<60	<60	**30**
31	81	78	69	62	60	<60	**31**
32	82	80	69	63	61	<60	**32**
33	84	82	74	64	62	<60	**33**

Note: For half-credit raw scores, use the next lowest score (e.g., 64.5 = 64).

Composite Scores for Core Assessments—Toddler (12–23 months)							
Total Raw Score	*Standard error of measurement = 3*						Total Raw Score
	Age (months)						
	12–13	14–15	16–17	18–19	20–21	22–23	
34	87	85	75	65	63	<60	**34**
35	89	85	76	65	64	<60	**35**
36	91	86	76	66	65	<60	**36**
37	93	86	77	67	67	60	**37**
38	96	87	78	68	68	61	**38**
39	99	88	79	69	69	62	**39**
40	100	90	81	70	70	63	**40**
41	102	92	83	72	71	64	**41**
42	103	93	85	74	73	65	**42**
43	104	94	87	76	74	66	**43**
44	106	95	88	78	76	67	**44**
45	108	96	89	79	77	68	**45**
46	109	97	90	80	78	69	**46**
47	110	98	91	81	79	70	**47**
48	111	99	93	82	80	71	**48**
49	112	100	94	83	81	72	**49**
50	113	101	95	84	82	73	**50**
51	114	102	96	85	82	74	**51**
52	115	103	97	86	83	75	**52**
53	116	103	97	86	84	76	**53**
54	117	104	98	87	85	77	**54**
55	118	105	99	88	85	78	**55**
56	119	105	100	88	86	78	**56**
57	120	106	101	90	87	79	**57**
58	121	106	101	91	88	79	**58**
59	122	107	102	91	88	80	**59**
60	123	107	102	91	88	81	**60**
61	124	108	102	92	88	81	**61**
62	125	108	103	93	88	81	**62**
63	127	109	104	94	89	82	**63**
64	128	109	105	94	90	83	**64**
65	130	110	105	96	91	83	**65**
66	>130	111	106	97	91	84	**66**
67	>130	112	107	98	92	84	**67**

Note: For half-credit raw scores, use the next lowest score (e.g., 64.5 = 64).

Composite Scores for Core Assessments—Toddler (12–23 months)							
Total Raw Score	*Standard error of measurement = 3*						Total Raw Score
	Age (months)						
	12–13	14–15	16–17	18–19	20–21	22–23	
68	>130	113	109	99	94	85	**68**
69	>130	114	110	100	94	86	**69**
70	>130	115	110	101	95	87	**70**
71	>130	116	112	102	96	88	**71**
72	>130	117	113	103	97	89	**72**
73	>130	118	114	104	98	90	**73**
74	>130	118	115	105	99	91	**74**
75	>130	119	116	105	100	92	**75**
76	>130	120	117	107	100	92	**76**
77	>130	121	118	108	101	93	**77**
78	>130	122	120	109	102	94	**78**
79	>130	123	121	110	103	95	**79**
80	>130	124	122	112	105	96	**80**
81	>130	125	123	113	106	97	**81**
82	>130	126	125	114	106	99	**82**
83	>130	127	126	115	108	100	**83**
84	>130	128	127	116	109	101	**84**
85	>130	129	129	117	109	102	**85**
86	>130	130	130	118	110	102	**86**
87	>130	>130	>130	119	111	104	**87**
88	>130	>130	>130	120	112	105	**88**
89	>130	>130	>130	121	112	106	**89**
90	>130	>130	>130	123	113	106	**90**
91	>130	>130	>130	125	115	107	**91**
92	>130	>130	>130	128	116	108	**92**
93	>130	>130	>130	130	117	109	**93**
94	>130	>130	>130	>130	119	110	**94**
95	>130	>130	>130	>130	121	112	**95**
96	>130	>130	>130	>130	122	113	**96**
97	>130	>130	>130	>130	130	115	**97**
98	>130	>130	>130	>130	>130	117	**98**
99	>130	>130	>130	>130	>130	125	**99**
100	>130	>130	>130	>130	>130	130	**100**

Note: For half-credit raw scores, use the next lowest score (e.g., 64.5 = 64).

Composite Scores for Core Assessments—Two-Year-Old Child					
Total Raw Score	*Standard error of measurement = 4*				Total Raw Score
	Age (years and months)				
	2.0–2.2	2.3–2.5	2.6–2.8	2.9–2.11	
0	<66	<66	<66	<60	**0**
1	<66	<66	<66	<60	**1**
2	<66	<66	<66	<60	**2**
3	<66	<66	<66	<60	**3**
4	66	<66	<66	<60	**4**
5	67	<66	<66	<60	**5**
6	68	<66	<66	<60	**6**
7	71	<66	<66	<60	**7**
8	73	66	<66	<60	**8**
9	74	67	<66	<60	**9**
10	74	68	<66	<60	**10**
11	74	68	<66	<60	**11**
12	74	69	66	<60	**12**
13	75	69	67	<60	**13**
14	76	69	67	60	**14**
15	78	70	68	61	**15**
16	80	70	68	61	**16**
17	80	71	68	62	**17**
18	81	71	69	62	**18**
19	81	71	69	63	**19**
20	82	72	70	63	**20**
21	82	72	70	64	**21**
22	83	72	71	64	**22**
23	83	73	71	65	**23**
24	84	73	71	65	**24**
25	84	74	72	66	**25**
26	84	74	72	66	**26**
27	84	74	73	67	**27**
28	84	75	73	67	**28**
29	84	75	74	68	**29**
30	85	75	74	68	**30**
31	86	76	74	69	**31**
32	86	76	75	69	**32**
33	86	76	75	70	**33**

Note: For half-credit raw scores, use the next lowest score (e.g., 64.5 = 64).

Composite Scores for Core Assessments—Two-Year-Old Child					
Total Raw Score	*Standard error of measurement = 4*				Total Raw Score
	Age (years and months)				
	2.0–2.2	2.3–2.5	2.6–2.8	2.9–2.11	
34	86	77	76	70	**34**
35	87	77	76	71	**35**
36	87	78	77	71	**36**
37	88	78	77	71	**37**
38	88	78	77	72	**38**
39	89	79	78	72	**39**
40	89	80	78	73	**40**
41	90	81	79	73	**41**
42	91	81	79	73	**42**
43	91	81	80	73	**43**
44	91	81	80	74	**44**
45	91	81	80	74	**45**
46	91	81	81	74	**46**
47	91	82	81	74	**47**
48	91	82	82	75	**48**
49	92	83	82	75	**49**
50	92	83	83	75	**50**
51	92	83	83	76	**51**
52	92	84	83	76	**52**
53	93	84	83	77	**53**
54	94	85	84	77	**54**
55	94	85	84	77	**55**
56	95	86	84	78	**56**
57	95	86	85	78	**57**
58	95	87	85	79	**58**
59	96	88	85	79	**59**
60	96	88	86	79	**60**
61	96	88	86	80	**61**
62	96	89	86	80	**62**
63	97	89	87	80	**63**
64	97	89	87	81	**64**
65	98	90	87	81	**65**
66	98	90	87	81	**66**
67	98	91	88	82	**67**

Note: For half-credit raw scores, use the next lowest score (e.g., 64.5 = 64).

Composite Scores for Core Assessments—Two-Year-Old Child					
Total Raw Score	*Standard error of measurement = 4*				Total Raw Score
	Age (years and months)				
	2.0–2.2	2.3–2.5	2.6–2.8	2.9–2.11	
68	98	91	88	82	**68**
69	99	92	88	82	**69**
70	99	92	89	83	**70**
71	100	93	90	84	**71**
72	100	94	90	84	**72**
73	101	95	91	85	**73**
74	101	96	92	85	**74**
75	102	97	93	85	**75**
76	102	98	94	87	**76**
77	103	99	94	88	**77**
78	104	100	95	88	**78**
79	105	101	96	89	**79**
80	105	101	96	89	**80**
81	106	102	97	90	**81**
82	106	103	97	90	**82**
83	107	104	98	91	**83**
84	108	105	99	92	**84**
85	108	107	100	93	**85**
86	109	109	101	94	**86**
87	110	110	102	95	**87**
88	112	112	103	96	**88**
89	114	114	104	98	**89**
90	115	115	105	99	**90**
91	116	116	107	101	**91**
92	117	117	108	102	**92**
93	120	120	110	104	**93**
94	123	123	111	105	**94**
95	125	125	113	107	**95**
96	127	127	115	110	**96**
97	129	129	117	112	**97**
98	133	133	119	115	**98**
99	135	135	122	118	**99**
100	138	138	124	122	**100**

Note: For half-credit raw scores, use the next lowest score (e.g., 64.5 = 64).

Composite Scores for Core Assessments—Three-Year-Old Child				
Total Raw Score	*Standard error of measurement = 3*			Total Raw Score
	Age (years and months)			
	3.0–3.3	3.4–3.7	3.8–3.11	
0	64	61	<61	**0**
1	65	62	<61	**1**
2	66	63	<61	**2**
3	67	65	<61	**3**
4	69	66	61	**4**
5	70	67	62	**5**
6	71	68	63	**6**
7	72	69	64	**7**
8	74	71	65	**8**
9	75	72	66	**9**
10	76	73	67	**10**
11	77	74	68	**11**
12	78	75	69	**12**
13	79	76	69	**13**
14	81	76	69	**14**
15	81	77	70	**15**
16	81	77	70	**16**
17	81	77	70	**17**
18	81	77	71	**18**
19	81	77	71	**19**
20	82	77	72	**20**
21	82	78	72	**21**
22	82	78	72	**22**
23	82	78	73	**23**
24	82	79	73	**24**
25	82	79	73	**25**
26	82	79	74	**26**
27	82	80	74	**27**
28	83	80	74	**28**
29	83	80	74	**29**
30	84	80	75	**30**
31	84	80	75	**31**
32	84	81	75	**32**
33	85	81	76	**33**

Composite Scores for Core Assessments—Three-Year-Old Child				
Total Raw Score	*Standard error of measurement = 3*			Total Raw Score
	Age (years and months)			
	3.0–3.3	3.4–3.7	3.8–3.11	
34	85	82	76	**34**
35	85	83	76	**35**
36	86	83	77	**36**
37	86	83	77	**37**
38	86	83	77	**38**
39	87	83	77	**39**
40	87	83	77	**40**
41	88	84	78	**41**
42	88	84	78	**42**
43	88	85	78	**43**
44	89	85	78	**44**
45	89	85	79	**45**
46	89	86	79	**46**
47	90	86	80	**47**
48	90	87	80	**48**
49	91	87	81	**49**
50	92	88	82	**50**
51	92	88	82	**51**
52	93	89	82	**52**
53	93	89	83	**53**
54	93	90	83	**54**
55	94	90	83	**55**
56	94	90	83	**56**
57	95	90	84	**57**
58	95	91	84	**58**
59	96	91	84	**59**
60	96	91	85	**60**
61	97	91	85	**61**
62	97	92	85	**62**
63	97	92	86	**63**
64	98	92	86	**64**
65	99	93	86	**65**
66	100	94	87	**66**
67	100	94	87	**67**

Composite Scores for Core Assessments—Three-Year-Old Child				
Total Raw Score	*Standard error of measurement = 3*			Total Raw Score
	Age (years and months)			
	3.0–3.3	3.4–3.7	3.8–3.11	
68	101	94	87	**68**
69	102	95	88	**69**
70	103	96	89	**70**
71	103	96	90	**71**
72	104	97	91	**72**
73	105	98	91	**73**
74	105	98	91	**74**
75	106	98	92	**75**
76	107	99	93	**76**
77	107	100	94	**77**
78	109	101	94	**78**
79	110	102	95	**79**
80	111	102	95	**80**
81	112	103	96	**81**
82	113	105	98	**82**
83	115	106	99	**83**
84	116	106	100	**84**
85	117	108	101	**85**
86	119	109	102	**86**
87	120	111	104	**87**
88	121	112	105	**88**
89	124	113	106	**89**
90	126	114	107	**90**
91	128	115	108	**91**
92	131	117	109	**92**
93	133	119	112	**93**
94	134	122	115	**94**
95	135	124	117	**95**
96	>135	126	118	**96**
97	>135	128	121	**97**
98	>135	131	123	**98**
99	>135	133	126	**99**
100	>135	135	128	**100**

Composite Scores for Core Assessments—Four-Year-Old Child				
Total Raw Score	*Standard error of measurement = 3*			Total Raw Score
	Age (years and months)			
	4.0–4.3	4.4–4.7	4.8–4.11	
0	<73	<64	<64	**0**
1	<73	<64	<64	**1**
2	73	<64	<64	**2**
3	75	64	<64	**3**
4	76	67	<64	**4**
5	77	68	64	**5**
6	78	68	67	**6**
7	79	69	67	**7**
8	79	69	68	**8**
9	80	70	68	**9**
10	80	70	68	**10**
11	81	70	69	**11**
12	81	71	69	**12**
13	81	71	69	**13**
14	81	72	69	**14**
15	81	72	70	**15**
16	81	72	70	**16**
17	81	73	70	**17**
18	82	73	71	**18**
19	82	74	71	**19**
20	82	74	71	**20**
21	83	74	72	**21**
22	83	75	72	**22**
23	83	75	72	**23**
24	83	75	73	**24**
25	83	75	73	**25**
26	84	76	74	**26**
27	84	76	74	**27**
28	84	76	74	**28**
29	84	76	74	**29**
30	84	76	74	**30**
31	84	76	75	**31**
32	84	76	75	**32**
33	84	76	75	**33**

Note: For half-credit raw scores, use the next lowest score (e.g., 64.5 = 64).

Composite Scores for Core Assessments—Four-Year-Old Child				
Total Raw Score	*Standard error of measurement = 3*			Total Raw Score
	Age (years and months)			
	4.0–4.3	4.4–4.7	4.8–4.11	
34	85	77	75	**34**
35	85	77	75	**35**
36	85	77	75	**36**
37	85	77	76	**37**
38	85	77	76	**38**
39	85	77	76	**39**
40	85	77	76	**40**
41	85	78	76	**41**
42	85	78	76	**42**
43	86	78	77	**43**
44	86	78	77	**44**
45	86	78	77	**45**
46	86	78	77	**46**
47	86	78	77	**47**
48	86	79	77	**48**
49	87	79	78	**49**
50	87	79	78	**50**
51	87	79	78	**51**
52	87	80	78	**52**
53	88	80	78	**53**
54	88	80	78	**54**
55	88	80	78	**55**
56	88	80	78	**56**
57	89	81	79	**57**
58	89	81	79	**58**
59	89	81	79	**59**
60	90	82	80	**60**
61	90	82	80	**61**
62	90	82	80	**62**
63	91	83	81	**63**
64	91	84	81	**64**
65	92	84	82	**65**
66	92	85	82	**66**
67	93	85	82	**67**

Note: For half-credit raw scores, use the next lowest score (e.g., 64.5 = 64).

Composite Scores for Core Assessments—Four-Year-Old Child				
Total Raw Score	*Standard error of measurement = 3*			Total Raw Score
	Age (years and months)			
	4.0–4.3	4.4–4.7	4.8–4.11	
68	93	86	83	**68**
69	94	86	84	**69**
70	94	87	85	**70**
71	95	87	85	**71**
72	96	88	86	**72**
73	96	89	86	**73**
74	97	90	87	**74**
75	98	90	87	**75**
76	99	91	88	**76**
77	100	92	89	**77**
78	101	94	90	**78**
79	102	95	91	**79**
80	103	96	92	**80**
81	104	97	93	**81**
82	105	98	94	**82**
83	105	99	95	**83**
84	106	100	96	**84**
85	107	101	97	**85**
86	107	102	98	**86**
87	109	104	99	**87**
88	110	105	100	**88**
89	110	106	102	**89**
90	111	107	103	**90**
91	112	108	105	**91**
92	114	110	106	**92**
93	115	111	108	**93**
94	117	113	111	**94**
95	118	115	113	**95**
96	121	118	115	**96**
97	123	120	117	**97**
98	126	124	121	**98**
99	129	127	124	**99**
100	132	132	128	**100**

Note: For half-credit raw scores, use the next lowest score (e.g., 64.5 = 64).

Composite Scores for Core Assessments—Five-Year-Old Child/Kindergarten

Standard error of measurement = 3

Total Raw Score	Age (years and months)	
	5.0–5.5	5.6–5.11
0	<64	<64
1	<64	<64
2	<64	<64
3	<64	<64
4	<64	<64
5	<64	<64
6	<64	<64
7	<64	<64
8	<64	<64
9	<64	<64
10	<64	<64
11	<64	<64
12	<64	<64
13	<64	<64
14	<64	<64
15	<64	<64
16	<64	<64
17	64	<64
18	65	<64
19	65	<64
20	66	<64
21	67	<64
22	67	<64
23	68	<64
24	69	<64
25	70	<64
26	70	<64
27	70	<64
28	70	<64
29	71	<64
30	71	<64
31	72	<64
32	72	<64
33	73	<64
34	73	<64
35	74	<64
36	74	<64
37	74	<64
38	74	<64
39	74	<64
40	74	<64
41	74	64
42	74	65
43	75	65
44	75	66
45	76	67
46	77	67
47	78	68
48	79	68
49	80	69
50	80	70
51	81	71
52	81	72
53	82	72
54	83	73
55	83	73
56	84	74
57	84	74
58	85	75
59	86	76
60	87	77
61	88	78
62	89	78
63	89	79
64	89	79
65	90	80
66	90	80
67	91	81
68	92	81
69	93	82
70	93	82
71	93	83
72	95	85
73	95	85
74	96	85
75	96	86
76	97	87
77	98	88
78	99	88
79	99	89
80	100	90
81	101	91
82	102	92
83	103	93
84	105	94
85	105	95
86	107	97
87	108	98
88	110	100
89	112	101
90	114	104
91	116	106
92	118	108
93	119	109
94	121	111
95	124	113
96	127	117
97	129	119
98	130	121
99	>130	125
100	>130	130

Note: For half-credit raw scores, use the next lowest score (e.g., 64.5 = 64).

Composite Scores for Core Assessments—First Grade

Standard error of measurement = 3

Total Raw Score	Age (years and months)	
	6.0–6.5	6.6+
0	<70	<61
1	<70	<61
2	<70	<61
3	<70	<61
4	<70	<61
5	<70	<61
6	<70	<61
7	<70	<61
8	<70	<61
9	<70	<61
10	70	61
11	70	61
12	70	61
13	70	61
14	70	61
15	70	61
16	71	61
17	71	61
18	71	61
19	71	61
20	71	61
21	71	61
22	71	61
23	71	61
24	71	61
25	72	61
26	72	61
27	72	61
28	72	61
29	72	61
30	72	61
31	72	61
32	72	61
33	73	61
34	73	61
35	73	61
36	73	61
37	73	61
38	73	61
39	73	62
40	73	62
41	74	63
42	74	63
43	74	64
44	74	64
45	74	64
46	75	65
47	76	65
48	76	66
49	76	66
50	76	67
51	77	67
52	77	67
53	78	68
54	79	68
55	79	68
56	79	69
57	79	69
58	79	70
59	80	70
60	82	71
61	82	72
62	83	73
63	84	74
64	85	74
65	86	75
66	87	76
67	88	76
68	88	77
69	88	77
70	89	78
71	90	79
72	90	79
73	91	80
74	92	80
75	93	81
76	93	81
77	95	83
78	95	83
79	96	84
80	97	84
81	98	86
82	99	87
83	100	88
84	102	89
85	104	91
86	105	91
87	106	93
88	108	94
89	110	95
90	111	97
91	113	98
92	115	100
93	117	102
94	119	103
95	122	106
96	126	110
97	130	113
98	>130	116
99	>130	121
100	>130	130

Note: For half-credit raw scores, use the next lowest score (e.g., 64.5 = 64).

Standard Deviations from the Mean/Deviation Units

In addition to the composite scores derived from Appendix D1, a child's screening results can also be interpreted using deviation units. States using this criterion have varying cutoffs. To identify these, Table D-1 may be helpful:

- In the left-hand column are shown common criteria.
- The next column shows the standard deviation for the *BRIGANCE® Screens III* composite score for the Total Score.
- Applying the appropriate criteria to the standard deviation yields a specific number of deviation units or points (in the third column) expressed in terms of a composite score.
- Subtracting these numbers from the mean of the composite (i.e.,100) produces cutoff values that are shown in the far right column.

Table D-1. Standard Deviations from the Mean for *BRIGANCE® Screens III* Composite Scores

Criteria	SD on Screens Composite	N of Deviation Units	Cutoff Composite
≤1.3	15	19.5	80.5
≤1.5	15	22	78
≤1.75	15	26	74
≤2.0	15	30	70

Based on the state's criteria, children scoring at or below the derived cutoff composite value may need to be referred for additional psychoeducational testing to determine specific weaknesses or additional resources that may be required.

D2: Age Equivalents for Total Scores

Age Equivalents for Core Assessments—Infant (birth–11 months)					
Standard error of the mean = 1 month					
Total Raw Score	**Age Equivalent**	**Total Raw Score**	**Age Equivalent**	**Total Raw Score**	**Age Equivalent**
0	0-1	**34**	0-4	**68**	0-11
1	0-1	**35**	0-4	**69**	0-11
2	0-1	**36**	0-5	**70**	0-11
3	0-1	**37**	0-5	**71**	1-0
4	0-1	**38**	0-5	**72**	1-0
5	0-1	**39**	0-5	**73**	1-0
6	0-1	**40**	0-5	**74**	1-0
7	0-1	**41**	0-6	**75**	1-1
8	0-1	**42**	0-6	**76**	1-1
9	0-1	**43**	0-6	**77**	1-1
10	0-1	**44**	0-6	**78**	1-1
11	0-1	**45**	0-6	**79**	1-2
12	0-1	**46**	0-6	**80**	1-2
13	0-1	**47**	0-7	**81**	1-2
14	0-1	**48**	0-7	**82**	1-2
15	0-1	**49**	0-7	**83**	1-3
16	0-1	**50**	0-7	**84**	1-3
17	0-1	**51**	0-7	**85**	1-3
18	0-1	**52**	0-8	**86**	1-4
19	0-2	**53**	0-8	**87**	1-4
20	0-2	**54**	0-8	**88**	1-5
21	0-2	**55**	0-8	**89**	1-5
22	0-2	**56**	0-8	**90**	1-6
23	0-2	**57**	0-8	**91**	1-7
24	0-2	**58**	0-9	**92**	1-8
25	0-3	**59**	0-9	**93**	1-9
26	0-3	**60**	0-9	**94**	1-10
27	0-3	**61**	0-9	**95**	1-11
28	0-3	**62**	0-9	**96**	1-11
29	0-3	**63**	0-10	**97**	1-11
30	0-4	**64**	0-10	**98**	2-0
31	0-4	**65**	0-10	**99**	2-0
32	0-4	**66**	0-10	**100**	2-0
33	0-4	**67**	0-11		

Age Equivalents for Core Assessments—Toddler (12–23 months)

Standard error of the mean = 1 month

Total Raw Score	Age Equivalent	Total Raw Score	Age Equivalent	Total Raw Score	Age Equivalent
0	0-5	**34**	1-0	**68**	1-7
1	0-5	**35**	1-0	**69**	1-7
2	0-5	**36**	1-0	**70**	1-8
3	0-6	**37**	1-0	**71**	1-8
4	0-6	**38**	1-1	**72**	1-8
5	0-6	**39**	1-1	**73**	1-8
6	0-6	**40**	1-1	**74**	1-8
7	0-6	**41**	1-1	**75**	1-9
8	0-6	**42**	1-2	**76**	1-9
9	0-7	**43**	1-2	**77**	1-9
10	0-7	**44**	1-2	**78**	1-9
11	0-7	**45**	1-2	**79**	1-10
12	0-7	**46**	1-2	**80**	1-10
13	0-7	**47**	1-3	**81**	1-10
14	0-7	**48**	1-3	**82**	1-10
15	0-8	**49**	1-3	**83**	1-11
16	0-8	**50**	1-3	**84**	1-11
17	0-8	**51**	1-3	**85**	1-11
18	0-8	**52**	1-4	**86**	1-11
19	0-8	**53**	1-4	**87**	2-0
20	0-9	**54**	1-4	**88**	2-0
21	0-9	**55**	1-4	**89**	2-0
22	0-9	**56**	1-5	**90**	2-0
23	0-9	**57**	1-5	**91**	2-1
24	0-10	**58**	1-5	**92**	2-1
25	0-10	**59**	1-5	**93**	2-1
26	0-10	**60**	1-5	**94**	2-1
27	0-10	**61**	1-6	**95**	2-2
28	0-11	**62**	1-6	**96**	2-2
29	0-11	**63**	1-6	**97**	2-2
30	0-11	**64**	1-6	**98**	2-3
31	0-11	**65**	1-6	**99**	2-4
32	0-11	**66**	1-7	**100**	2-4
33	1-0	**67**	1-7		

Age Equivalents for Core Assessments—Two-Year-Old Child

Standard error of the mean = 1 month

Total Raw Score	Age Equivalent	Total Raw Score	Age Equivalent	Total Raw Score	Age Equivalent
0	1-2	**34**	1-5	**68**	2-0
1	1-2	**35**	1-6	**69**	2-0
2	1-2	**36**	1-6	**70**	2-1
3	1-2	**37**	1-6	**71**	2-1
4	1-2	**38**	1-6	**72**	2-1
5	1-3	**39**	1-6	**73**	2-2
6	1-3	**40**	1-6	**74**	2-2
7	1-3	**41**	1-6	**75**	2-3
8	1-3	**42**	1-6	**76**	2-3
9	1-3	**43**	1-6	**77**	2-4
10	1-3	**44**	1-6	**78**	2-4
11	1-3	**45**	1-7	**79**	2-5
12	1-3	**46**	1-7	**80**	2-5
13	1-3	**47**	1-7	**81**	2-5
14	1-3	**48**	1-7	**82**	2-6
15	1-4	**49**	1-7	**83**	2-6
16	1-4	**50**	1-7	**84**	2-7
17	1-4	**51**	1-7	**85**	2-7
18	1-4	**52**	1-7	**86**	2-8
19	1-4	**53**	1-7	**87**	2-8
20	1-4	**54**	1-7	**88**	2-9
21	1-4	**55**	1-8	**89**	2-9
22	1-4	**56**	1-8	**90**	2-10
23	1-4	**57**	1-8	**91**	2-11
24	1-4	**58**	1-8	**92**	3-0
25	1-5	**59**	1-8	**93**	3-0
26	1-5	**60**	1-8	**94**	3-1
27	1-5	**61**	1-9	**95**	3-2
28	1-5	**62**	1-9	**96**	3-2
29	1-5	**63**	1-9	**97**	3-3
30	1-5	**64**	1-10	**98**	3-4
31	1-5	**65**	1-10	**99**	3-5
32	1-5	**66**	1-11	**100**	3-6
33	1-5	**67**	1-11		

Age Equivalents for Core Assessments—Three-Year-Old Child

Standard error of the mean = 1 month

Total Raw Score	Age Equivalent	Total Raw Score	Age Equivalent	Total Raw Score	Age Equivalent
0	1-10	**34**	2-6	**68**	3-2
1	1-10	**35**	2-7	**69**	3-2
2	1-10	**36**	2-7	**70**	3-3
3	1-10	**37**	2-7	**71**	3-3
4	1-11	**38**	2-7	**72**	3-3
5	1-11	**39**	2-8	**73**	3-4
6	1-11	**40**	2-8	**74**	3-4
7	1-11	**41**	2-8	**75**	3-5
8	2-0	**42**	2-8	**76**	3-5
9	2-0	**43**	2-9	**77**	3-6
10	2-0	**44**	2-9	**78**	3-6
11	2-0	**45**	2-9	**79**	3-7
12	2-1	**46**	2-9	**80**	3-7
13	2-1	**47**	2-10	**81**	3-8
14	2-1	**48**	2-10	**82**	3-8
15	2-1	**49**	2-10	**83**	3-9
16	2-2	**50**	2-10	**84**	3-9
17	2-2	**51**	2-11	**85**	3-10
18	2-2	**52**	2-11	**86**	3-11
19	2-2	**53**	2-11	**87**	4-1
20	2-3	**54**	2-11	**88**	4-2
21	2-3	**55**	2-11	**89**	4-3
22	2-3	**56**	3-0	**90**	4-5
23	2-4	**57**	3-0	**91**	4-7
24	2-4	**58**	3-0	**92**	4-9
25	2-4	**59**	3-0	**93**	4-10
26	2-4	**60**	3-0	**94**	4-11
27	2-5	**61**	3-1	**95**	4-11
28	2-5	**62**	3-1	**96**	5-0
29	2-5	**63**	3-1	**97**	5-1
30	2-5	**64**	3-1	**98**	5-2
31	2-6	**65**	3-2	**99**	5-2
32	2-6	**66**	3-2	**100**	5-3
33	2-6	**67**	3-2		

Age Equivalents for Core Assessments—Four-Year-Old Child

Standard error of the mean = 1 month

Total Raw Score	Age Equivalent	Total Raw Score	Age Equivalent	Total Raw Score	Age Equivalent
0	2-1	**34**	2-9	**68**	3-11
1	2-1	**35**	2-9	**69**	3-11
2	2-1	**36**	2-9	**70**	3-11
3	2-2	**37**	2-10	**71**	4-0
4	2-2	**38**	2-10	**72**	4-0
5	2-2	**39**	2-11	**73**	4-0
6	2-2	**40**	2-11	**74**	4-1
7	2-2	**41**	3-0	**75**	4-1
8	2-3	**42**	3-0	**76**	4-1
9	2-3	**43**	3-1	**77**	4-2
10	2-3	**44**	3-1	**78**	4-2
11	2-3	**45**	3-1	**79**	4-3
12	2-3	**46**	3-2	**80**	4-3
13	2-4	**47**	3-2	**81**	4-4
14	2-4	**48**	3-3	**82**	4-4
15	2-4	**49**	3-3	**83**	4-5
16	2-4	**50**	3-3	**84**	4-6
17	2-5	**51**	3-4	**85**	4-6
18	2-5	**52**	3-4	**86**	4-7
19	2-5	**53**	3-5	**87**	4-7
20	2-5	**54**	3-5	**88**	4-9
21	2-5	**55**	3-5	**89**	4-11
22	2-6	**56**	3-6	**90**	5-3
23	2-6	**57**	3-6	**91**	5-5
24	2-6	**58**	3-7	**92**	5-7
25	2-6	**59**	3-7	**93**	5-8
26	2-6	**60**	3-8	**94**	5-9
27	2-7	**61**	3-8	**95**	5-10
28	2-7	**62**	3-8	**96**	5-11
29	2-7	**63**	3-9	**97**	6-0
30	2-7	**64**	3-9	**98**	6-1
31	2-8	**65**	3-10	**99**	6-2
32	2-8	**66**	3-10	**100**	6-3
33	2-8	**67**	3-10		

Age Equivalents for Core Assessments—Five-Year-Old Child/Kindergarten

Standard error of the mean = 1 month

Total Raw Score	Age Equivalent	Total Raw Score	Age Equivalent	Total Raw Score	Age Equivalent
0	2-6	**34**	3-7	**68**	5-0
1	2-6	**35**	3-7	**69**	5-0
2	2-7	**36**	3-8	**70**	5-0
3	2-7	**37**	3-8	**71**	5-1
4	2-8	**38**	3-9	**72**	5-1
5	2-8	**39**	3-9	**73**	5-1
6	2-8	**40**	3-9	**74**	5-1
7	2-9	**41**	3-10	**75**	5-2
8	2-9	**42**	3-10	**76**	5-2
9	2-9	**43**	3-11	**77**	5-2
10	2-10	**44**	3-11	**78**	5-3
11	2-10	**45**	3-11	**79**	5-3
12	2-11	**46**	4-0	**80**	5-4
13	2-11	**47**	4-0	**81**	5-4
14	2-11	**48**	4-0	**82**	5-5
15	3-0	**49**	4-1	**83**	5-6
16	3-0	**50**	4-1	**84**	5-6
17	3-1	**51**	4-2	**85**	5-7
18	3-1	**52**	4-2	**86**	5-8
19	3-1	**53**	4-3	**87**	5-8
20	3-2	**54**	4-4	**88**	5-9
21	3-2	**55**	4-5	**89**	5-10
22	3-2	**56**	4-6	**90**	6-0
23	3-3	**57**	4-7	**91**	6-1
24	3-3	**58**	4-8	**92**	6-2
25	3-4	**59**	4-9	**93**	6-4
26	3-4	**60**	4-9	**94**	6-6
27	3-4	**61**	4-10	**95**	6-7
28	3-5	**62**	4-10	**96**	6-9
29	3-5	**63**	4-10	**97**	6-11
30	3-6	**64**	4-10	**98**	7-0
31	3-6	**65**	4-11	**99**	7-2
32	3-6	**66**	4-11	**100**	7-3
33	3-7	**67**	4-11		

Age Equivalents for Core Assessments—First Grade

Standard error of the mean = 1 month

Total Raw Score	Age Equivalent	Total Raw Score	Age Equivalent	Total Raw Score	Age Equivalent
0	3-4	**34**	4-7	**68**	5-9
1	3-5	**35**	4-7	**69**	5-9
2	3-5	**36**	4-7	**70**	5-9
3	3-6	**37**	4-8	**71**	5-10
4	3-6	**38**	4-8	**72**	5-10
5	3-7	**39**	4-8	**73**	5-11
6	3-7	**40**	4-9	**74**	5-11
7	3-7	**41**	4-9	**75**	6-0
8	3-8	**42**	4-10	**76**	6-0
9	3-8	**43**	4-10	**77**	6-1
10	3-9	**44**	4-11	**78**	6-1
11	3-9	**45**	4-11	**79**	6-2
12	3-9	**46**	4-11	**80**	6-2
13	3-10	**47**	5-0	**81**	6-3
14	3-10	**48**	5-0	**82**	6-3
15	3-11	**49**	5-1	**83**	6-4
16	3-11	**50**	5-1	**84**	6-5
17	3-11	**51**	5-2	**85**	6-5
18	4-0	**52**	5-2	**86**	6-6
19	4-0	**53**	5-2	**87**	6-7
20	4-0	**54**	5-3	**88**	6-8
21	4-1	**55**	5-3	**89**	6-9
22	4-1	**56**	5-4	**90**	6-10
23	4-2	**57**	5-4	**91**	7-0
24	4-2	**58**	5-4	**92**	7-1
25	4-3	**59**	5-5	**93**	7-3
26	4-3	**60**	5-5	**94**	7-7
27	4-4	**61**	5-6	**95**	7-10
28	4-4	**62**	5-6	**96**	7-11
29	4-4	**63**	5-7	**97**	8-0
30	4-5	**64**	5-7	**98**	8-1
31	4-5	**65**	5-7	**99**	8-2
32	4-6	**66**	5-8	**100**	8-3
33	4-6	**67**	5-8		

Composite Scores and Age Equivalents for Domain Scores

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E1: Composite Scores for Domain Scores

Composite Scores for Domain: Physical Development													
Core Assessments—Infant—1A, 2A													
Total Raw Score	***Standard error of measurement = 3***												**Total Raw Score**
	Age (months)												
	0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	
0	79	<79	<76	<72	<71	<69	<65	<60	<60	<60	<60	<60	**0**
1	87	79	<76	<72	<71	<69	<65	<60	<60	<60	<60	<60	**1**
2	93	80	76	<72	<71	<69	<65	<60	<60	<60	<60	<60	**2**
3	99	88	82	<72	<71	<69	<65	<60	<60	<60	<60	<60	**3**
4	104	96	89	72	71	<69	<65	<60	<60	<60	<60	<60	**4**
5	108	103	94	83	77	<69	<65	<60	<60	<60	<60	<60	**5**
6	111	107	97	91	82	69	<65	<60	<60	<60	<60	<60	**6**
7	113	110	100	98	87	75	65	<60	<60	<60	<60	<60	**7**
8	115	114	103	101	92	80	71	60	60	60	60	60	**8**
9	118	118	106	103	96	86	77	66	65	62	62	62	**9**
10	120	119	108	106	100	90	83	72	71	64	64	64	**10**
11	122	120	111	109	102	93	86	76	76	66	66	66	**11**
12	124	121	113	111	104	98	90	82	79	71	71	71	**12**
13	125	123	116	114	109	104	94	88	83	76	76	74	**13**
14	>125	124	118	117	114	109	99	91	87	81	81	78	**14**
15	>125	125	121	120	118	114	103	94	91	86	84	81	**15**
16	>125	>125	123	123	123	120	108	101	94	90	87	84	**16**
17	>125	>125	125	125	125	124	112	106	97	94	88	88	**17**
18	>125	>125	>125	>125	>125	125	116	112	99	97	91	91	**18**
19	>125	>125	>125	>125	>125	>125	118	115	102	100	94	94	**19**
20	>125	>125	>125	>125	>125	>125	121	120	104	103	99	98	**20**
21	>125	>125	>125	>125	>125	>125	124	124	107	107	102	100	**21**
22	>125	>125	>125	>125	>125	>125	125	125	112	112	105	103	**22**
23	>125	>125	>125	>125	>125	>125	>125	>125	117	117	113	108	**23**
24	>125	>125	>125	>125	>125	>125	>125	>125	125	125	123	112	**24**
25	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	125	117	**25**
26	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	121	**26**
27	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	125	**27**
28	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	**28**

Composite Scores for Domain: Language Development

Core Assessments—Infant—3A, 4A

Total Raw Score	*Standard error of measurement = 4*												Total Raw Score
	Age (months)												
	0	1	2	3	4	5	6	7	8	9	10	11	
0	82	73	<73	<60	<60	<60	<60	<60	<60	<60	<60	<60	**0**
1	82	77	73	<60	<60	<60	<60	<60	<60	<60	<60	<60	**1**
2	89	82	76	<60	<60	<60	<60	<60	<60	<60	<60	<60	**2**
3	95	87	79	<60	<60	<60	<60	<60	<60	<60	<60	<60	**3**
4	97	91	83	<60	<60	<60	<60	<60	<60	<60	<60	<60	**4**
5	100	92	84	60	<60	<60	<60	<60	<60	<60	<60	<60	**5**
6	102	97	86	62	60	60	<60	<60	<60	<60	<60	<60	**6**
7	104	100	89	68	68	64	<60	<60	<60	<60	<60	<60	**7**
8	105	102	91	74	74	68	<60	<60	<60	<60	<60	<60	**8**
9	108	105	96	77	77	71	60	<60	<60	<60	<60	<60	**9**
10	109	107	102	81	81	75	65	<60	<60	<60	<60	<60	**10**
11	113	110	108	90	87	79	71	60	60	60	60	60	**11**
12	117	114	112	100	93	87	79	69	69	65	63	62	**12**
13	121	121	117	108	98	94	86	77	77	69	65	64	**13**
14	125	125	121	112	102	99	91	82	82	74	68	66	**14**
15	>125	>125	125	117	105	102	95	86	86	76	71	68	**15**
16	>125	>125	>125	121	106	105	97	89	87	79	74	70	**16**
17	>125	>125	>125	125	108	107	100	91	90	81	76	73	**17**
18	>125	>125	>125	>125	110	110	102	94	92	83	78	75	**18**
19	>125	>125	>125	>125	113	113	106	98	94	86	80	77	**19**
20	>125	>125	>125	>125	115	115	108	101	95	88	82	80	**20**
21	>125	>125	>125	>125	117	117	111	104	98	92	85	81	**21**
22	>125	>125	>125	>125	121	120	113	106	100	95	89	83	**22**
23	>125	>125	>125	>125	125	123	115	109	102	97	91	85	**23**
24	>125	>125	>125	>125	>125	125	117	110	103	99	93	86	**24**
25	>125	>125	>125	>125	>125	>125	119	112	104	100	95	88	**25**
26	>125	>125	>125	>125	>125	>125	121	115	106	102	97	90	**26**
27	>125	>125	>125	>125	>125	>125	125	117	108	104	99	93	**27**
28	>125	>125	>125	>125	>125	>125	>125	119	110	107	101	95	**28**
29	>125	>125	>125	>125	>125	>125	>125	122	113	109	104	98	**29**
30	>125	>125	>125	>125	>125	>125	>125	124	114	112	105	100	**30**
31	>125	>125	>125	>125	>125	>125	>125	125	117	114	108	100	**31**
32	>125	>125	>125	>125	>125	>125	>125	>125	121	117	112	104	**32**
33	>125	>125	>125	>125	>125	>125	>125	>125	123	121	114	108	**33**
34	>125	>125	>125	>125	>125	>125	>125	>125	125	123	117	111	**34**

Composite Scores for Domain: Language Development													
Core Assessments—Infant—3A, 4A													
Total Raw Score	***Standard error of measurement = 4***												**Total Raw Score**
	Age (months)												
	0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	
35	>125	>125	>125	>125	>125	>125	>125	>125	>125	125	120	114	**35**
36	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	123	117	**36**
37	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	123	122	**37**
38	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	125	122	**38**
39	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	125	**39**
40	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	**40**
41	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	**41**
42	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	**42**
43	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	**43**
44	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	**44**

Composite Scores for Domain: Adaptive Behavior													
Core Assessments—Infant—5A, 6A													
Total Raw Score	***Standard error of measurement = 4***												**Total Raw Score**
	Age (months)												
	0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	
0	78	69	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	**0**
1	87	78	69	<60	<60	<60	<60	<60	<60	<60	<60	<60	**1**
2	92	87	78	<60	<60	<60	<60	<60	<60	<60	<60	<60	**2**
3	98	95	87	67	62	60	60	60	60	<60	<60	<60	**3**
4	102	99	92	80	74	70	66	66	63	60	60	60	**4**
5	104	103	96	88	82	77	70	70	68	63	63	63	**5**
6	107	106	100	94	88	82	75	75	73	67	67	67	**6**
7	109	109	104	100	94	87	80	80	76	71	71	71	**7**
8	112	112	107	104	99	92	84	84	80	76	76	76	**8**
9	114	114	110	107	104	96	88	88	83	80	79	79	**9**
10	116	116	113	110	109	101	92	92	87	83	81	81	**10**
11	118	118	116	113	113	104	96	96	89	86	83	83	**11**
12	119	119	118	116	116	108	99	99	92	89	86	85	**12**
13	121	121	120	118	118	111	101	101	94	92	88	87	**13**
14	122	122	122	120	120	113	103	103	96	94	91	89	**14**
15	125	125	125	122	122	116	105	105	98	96	94	91	**15**
16	>125	>125	>125	125	125	118	107	107	100	98	96	93	**16**
17	>125	>125	>125	>125	>125	120	109	109	101	100	99	96	**17**
18	>125	>125	>125	>125	>125	123	111	110	103	103	101	99	**18**
19	>125	>125	>125	>125	>125	125	114	113	105	105	103	101	**19**
20	>125	>125	>125	>125	>125	>125	117	115	107	107	106	103	**20**
21	>125	>125	>125	>125	>125	>125	121	118	111	111	109	106	**21**
22	>125	>125	>125	>125	>125	>125	125	122	116	116	114	109	**22**
23	>125	>125	>125	>125	>125	>125	>125	125	119	119	117	114	**23**
24	>125	>125	>125	>125	>125	>125	>125	>125	122	122	122	116	**24**
25	>125	>125	>125	>125	>125	>125	>125	>125	125	125	125	120	**25**
26	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	125	**26**
27	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	**27**
28	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	>125	**28**

Composite Scores for Domain: Physical Development							
Core Assessments—Toddler—5B, 6B							
Total Raw Score	***Standard error of measurement = 5***						**Total Raw Score**
	Age (months)						
	12–13	**14–15**	**16–17**	**18–19**	**20–21**	**22–23**	
0	<74	<74	<66	<66	<66	<66	**0**
1	<74	<74	<66	<66	<66	<66	**1**
2	<74	<74	<66	<66	<66	<66	**2**
3	<74	<74	<66	<66	<66	<66	**3**
4	<74	<74	<66	<66	<66	<66	**4**
5	<74	<74	<66	<66	<66	<66	**5**
6	<74	<74	<66	<66	<66	<66	**6**
7	<74	<74	<66	<66	<66	<66	**7**
8	74	<74	<66	<66	<66	<66	**8**
9	79	74	66	66	<66	<66	**9**
10	87	80	74	68	66	<66	**10**
11	95	87	81	76	72	<66	**11**
12	105	96	88	82	78	66	**12**
13	114	100	95	86	84	71	**13**
14	119	103	100	89	87	75	**14**
15	123	108	105	95	90	82	**15**
16	125	112	111	100	95	89	**16**
17	>125	119	115	107	99	98	**17**
18	>125	125	118	113	105	105	**18**
19	>125	>125	123	120	116	115	**19**

Composite Scores for Domain: Language Development							
Core Assessments—Toddler—1B, 2B, 3B, 4B, 7B, 8B, 9B							
Total Raw Score	***Standard error of measurement = 3***						**Total Raw Score**
	Age (months)						
	12–13	**14–15**	**16–17**	**18–19**	**20–21**	**22–23**	
0	<64	<64	<61	<60	<60	<60	**0**
1	<64	<64	<61	<60	<60	<60	**1**
2	<64	<64	<61	<60	<60	<60	**2**
3	64	64	<61	<60	<60	<60	**3**
4	67	67	<61	<60	<60	<60	**4**
5	70	70	<61	<60	<60	<60	**5**
6	74	73	<61	<60	<60	<60	**6**
7	76	74	<61	<60	<60	<60	**7**
8	78	76	61	60	<60	<60	**8**
9	80	77	64	64	60	<60	**9**
10	82	78	66	65	62	<60	**10**
11	84	79	68	67	64	<60	**11**
12	87	83	70	69	66	<60	**12**
13	90	86	73	71	68	60	**13**
14	93	89	75	72	70	62	**14**
15	97	90	77	74	71	63	**15**
16	99	92	80	76	73	65	**16**
17	100	94	82	77	74	66	**17**
18	102	95	84	78	75	68	**18**
19	103	97	86	80	77	69	**19**
20	105	98	88	81	78	70	**20**
21	107	99	90	82	79	72	**21**
22	108	100	91	84	81	73	**22**
23	109	101	93	85	82	74	**23**
24	111	102	94	86	83	75	**24**
25	111	104	95	87	84	76	**25**
26	113	105	97	89	85	77	**26**
27	115	106	97	90	86	79	**27**
28	116	107	99	91	87	80	**28**
29	117	108	101	91	88	81	**29**
30	118	109	102	92	89	82	**30**

Note: For half-credit raw scores, use the next lowest score (e.g., 54.5 = 54).

Composite Scores for Domain: Language Development							
Core Assessments—Toddler—1B, 2B, 3B, 4B, 7B, 8B, 9B							
Total Raw Score	***Standard error of measurement = 3***						**Total Raw Score**
	Age (months)						
	12–13	**14–15**	**16–17**	**18–19**	**20–21**	**22–23**	
31	119	109	103	93	89	82	**31**
32	121	110	104	94	90	83	**32**
33	122	110	104	95	91	84	**33**
34	123	111	105	96	92	84	**34**
35	124	112	106	97	92	85	**35**
36	125	113	107	98	93	86	**36**
37	127	114	108	99	94	87	**37**
38	128	115	109	101	95	88	**38**
39	129	115	110	103	96	89	**39**
40	130	117	111	104	98	90	**40**
41	131	118	112	105	99	91	**41**
42	133	119	114	106	100	92	**42**
43	134	120	115	107	100	93	**43**
44	135	121	116	109	102	94	**44**
45	136	122	117	111	103	95	**45**
46	137	124	119	112	104	96	**46**
47	>137	125	120	113	106	98	**47**
48	>137	126	122	113	107	99	**48**
49	>137	128	124	114	107	100	**49**
50	>137	>128	125	115	108	101	**50**
51	>137	>128	126	117	109	102	**51**
52	>137	>128	127	118	110	103	**52**
53	>137	>128	128	119	111	104	**53**
54	>137	>128	128	122	111	105	**54**
55	>137	>128	>128	124	114	106	**55**
56	>137	>128	>128	128	115	108	**56**
57	>137	>128	>128	>128	118	110	**57**
58	>137	>128	>128	>128	120	114	**58**
59	>137	>128	>128	>128	126	119	**59**

Note: For half-credit raw scores, use the next lowest score (e.g., 54.5 = 54).

Composite Scores for Domain: Adaptive Behavior							
Core Assessments—Toddler—10B, 11B							
Total Raw Score	***Standard error of measurement = 5***						**Total Raw Score**
	Age (months)						
	12–13	**14–15**	**16–17**	**18–19**	**20–21**	**22–23**	
0	<63	<63	<63	<63	<63	<63	**0**
1	<63	<63	<63	<63	<63	<63	**1**
2	<63	<63	<63	<63	<63	<63	**2**
3	<63	<63	<63	<63	<63	<63	**3**
4	<63	<63	<63	<63	<63	<63	**4**
5	63	63	63	63	<63	<63	**5**
6	69	69	67	67	63	<63	**6**
7	76	75	72	72	71	63	**7**
8	83	82	79	78	75	71	**8**
9	90	88	85	84	83	75	**9**
10	93	91	88	87	85	81	**10**
11	96	93	90	89	86	85	**11**
12	98	95	92	90	88	86	**12**
13	100	97	94	92	90	88	**13**
14	103	100	97	94	92	90	**14**
15	106	102	100	97	94	92	**15**
16	110	106	103	100	99	94	**16**
17	113	109	106	103	101	99	**17**
18	118	112	110	106	104	101	**18**
19	124	118	116	111	110	104	**19**
20	130	125	123	117	115	110	**20**
21	>130	130	130	124	122	115	**21**
22	>130	>130	>130	130	130	124	**22**

Composite Scores for Domain: Physical Development					
Core Assessments—Two-Year-Old Child—5C, 7C, 8C					
Total Raw Score	***Standard error of measurement = 7***				**Total Raw Score**
	Age (years and months)				
	2.0–2.2	**2.3–2.5**	**2.6–2.8**	**2.9–2.11**	
0	<60	<60	<60	<60	**0**
1	<60	<60	<60	<60	**1**
2	60	<60	<60	<60	**2**
3	63	<60	<60	<60	**3**
4	65	60	60	<60	**4**
5	68	62	61	<60	**5**
6	71	65	64	<60	**6**
7	72	67	66	60	**7**
8	76	69	67	62	**8**
9	78	72	68	64	**9**
10	80	73	70	66	**10**
11	81	74	71	67	**11**
12	81	75	72	68	**12**
13	84	78	74	70	**13**
14	86	80	76	71	**14**
15	88	82	78	73	**15**
16	90	84	79	75	**16**
17	94	88	83	78	**17**
18	96	91	85	82	**18**
19	99	93	87	83	**19**
20	100	94	88	85	**20**
21	102	97	90	87	**21**
22	106	100	93	90	**22**
23	110	104	97	94	**23**
24	115	109	101	98	**24**
25	118	113	105	102	**25**
26	123	118	109	107	**26**
27	130	126	116	114	**27**

Note: For half-credit raw scores, use the next lowest score (e.g., 24.5 = 24).

Composite Scores for Domain: Language Development					
Core Assessments—Two-Year-Old Child—1C, 2C, 3C, 10C					
Total Raw Score	***Standard error of measurement = 4***				**Total Raw Score**
	Age (years and months)				
	2.0–2.2	**2.3–2.5**	**2.6–2.8**	**2.9–2.11**	
0	72	63	63	<61	**0**
1	74	65	64	<61	**1**
2	75	67	65	<61	**2**
3	76	69	67	<61	**3**
4	78	70	68	<61	**4**
5	79	71	69	61	**5**
6	80	71	71	62	**6**
7	83	73	73	64	**7**
8	83	74	74	64	**8**
9	84	75	75	65	**9**
10	85	76	76	66	**10**
11	85	77	76	66	**11**
12	86	78	77	67	**12**
13	86	79	77	68	**13**
14	87	79	77	69	**14**
15	87	79	78	69	**15**
16	88	79	78	70	**16**
17	88	80	79	71	**17**
18	88	81	79	71	**18**
19	88	81	79	72	**19**
20	89	81	80	73	**20**
21	89	82	80	73	**21**
22	89	82	80	74	**22**
23	90	82	81	75	**23**
24	90	83	81	75	**24**
25	91	83	81	76	**25**
26	92	84	82	77	**26**
27	93	86	83	77	**27**
28	93	86	84	79	**28**
29	94	87	85	80	**29**
30	95	88	85	80	**30**

Note: For half-credit raw scores, use the next lowest score (e.g., 24.5 = 24).

Composite Scores for Domain: Language Development					
Core Assessments—Two-Year-Old Child—1C, 2C, 3C, 10C					
Total Raw Score	***Standard error of measurement = 4***				**Total Raw Score**
	Age (years and months)				
	2.0–2.2	**2.3–2.5**	**2.6–2.8**	**2.9–2.11**	
31	96	89	86	81	**31**
32	96	89	87	82	**32**
33	97	90	87	83	**33**
34	98	91	88	83	**34**
35	98	92	89	85	**35**
36	98	92	89	85	**36**
37	99	92	90	85	**37**
38	100	93	90	86	**38**
39	101	95	92	87	**39**
40	102	96	93	88	**40**
41	103	97	94	90	**41**
42	104	98	94	91	**42**
43	105	99	96	92	**43**
44	106	100	97	93	**44**
45	108	101	98	94	**45**
46	110	104	100	96	**46**
47	110	105	101	98	**47**
48	112	107	102	99	**48**
49	113	108	104	101	**49**
50	118	113	109	107	**50**
51	124	119	115	114	**51**

Note: For half-credit raw scores, use the next lowest score (e.g., 24.5 = 24).

Composite Scores for Domain: Academic Skills/Cognitive Development					
Core Assessments—Two-Year-Old Child—4C, 6C, 9C					
Total Raw Score	***Standard error of measurement = 4***				**Total Raw Score**
	Age (years and months)				
	2.0–2.2	**2.3–2.5**	**2.6–2.8**	**2.9–2.11**	
0	77	70	65	<60	**0**
1	80	75	69	<60	**1**
2	84	76	75	<60	**2**
3	84	77	76	<60	**3**
4	85	78	77	60	**4**
5	87	79	78	63	**5**
6	89	81	79	65	**6**
7	89	82	81	67	**7**
8	92	85	82	69	**8**
9	93	86	83	72	**9**
10	94	87	85	73	**10**
11	95	89	86	75	**11**
12	98	91	87	76	**12**
13	99	92	89	79	**13**
14	100	94	90	80	**14**
15	102	97	92	82	**15**
16	104	100	94	85	**16**
17	106	101	96	87	**17**
18	109	103	98	90	**18**
19	113	107	101	93	**19**
20	116	111	107	98	**20**
21	121	117	112	102	**21**

Note: For half-credit raw scores, use the next lowest score (e.g., 14.5 = 14).

Composite Scores for Domain: Physical Development				
Core Assessments—Three-Year-Old Child—5A, 7A, 8A				
Total Raw Score	***Standard error of measurement = 6***			**Total Raw Score**
	Age (years and months)			
	3.0–3.3	**3.4–3.7**	**3.8–3.11**	
0	67	66	64	**0**
1	69	69	66	**1**
2	73	73	69	**2**
3	74	74	69	**3**
4	76	75	71	**4**
5	79	76	72	**5**
6	80	77	73	**6**
7	81	77	74	**7**
8	82	78	74	**8**
9	83	79	76	**9**
10	84	80	77	**10**
11	86	81	78	**11**
12	86	83	79	**12**
13	88	84	80	**13**
14	90	85	81	**14**
15	91	87	83	**15**
16	93	89	85	**16**
17	95	90	86	**17**
18	96	91	87	**18**
19	98	93	89	**19**
20	100	95	91	**20**
21	101	96	92	**21**
22	104	98	94	**22**
23	107	100	95	**23**
24	108	101	97	**24**
25	110	103	99	**25**
26	112	105	101	**26**
27	114	107	102	**27**
28	117	109	105	**28**
29	123	114	109	**29**
30	127	118	113	**30**
31	130	121	117	**31**

Composite Scores for Domain: Language Development				
Core Assessments—Three-Year-Old Child—2A, 3A, 4A, 9A, 11A				
Total Raw Score	***Standard error of measurement = 3***			**Total Raw Score**
	Age (years and months)			
	3.0–3.3	**3.4–3.7**	**3.8–3.11**	
0	69	68	58	**0**
1	71	69	60	**1**
2	73	71	62	**2**
3	75	72	64	**3**
4	77	74	66	**4**
5	77	75	67	**5**
6	78	77	68	**6**
7	79	77	68	**7**
8	79	78	69	**8**
9	80	78	70	**9**
10	81	79	71	**10**
11	81	81	72	**11**
12	82	82	72	**12**
13	83	82	73	**13**
14	84	83	74	**14**
15	84	83	75	**15**
16	85	84	75	**16**
17	85	84	76	**17**
18	86	85	76	**18**
19	87	85	77	**19**
20	88	86	78	**20**
21	89	86	79	**21**
22	89	88	80	**22**
23	90	88	81	**23**
24	90	89	82	**24**
25	91	89	82	**25**
26	91	90	83	**26**
27	91	90	83	**27**
28	91	90	84	**28**
29	92	91	84	**29**
30	93	91	85	**30**
31	93	92	85	**31**
32	94	92	86	**32**
33	95	93	86	**33**
34	96	93	87	**34**

Composite Scores for Domain: Language Development				
Core Assessments—Three-Year-Old Child—2A, 3A, 4A, 9A, 11A				
Total Raw Score	***Standard error of measurement = 3***			**Total Raw Score**
	Age (years and months)			
	3.0–3.3	**3.4–3.7**	**3.8–3.11**	
35	97	94	88	**35**
36	98	95	89	**36**
37	99	96	90	**37**
38	101	97	91	**38**
39	102	98	92	**39**
40	103	99	94	**40**
41	104	101	95	**41**
42	107	102	97	**42**
43	109	103	99	**43**
44	111	105	100	**44**
45	113	107	103	**45**
46	114	109	105	**46**
47	118	111	108	**47**
48	122	120	117	**48**

Composite Scores for Domain: Academic Skills/Cognitive Development				
Core Assessments—Three-Year-Old Child—1A, 6A, 10A				
Total Raw Score	***Standard error of measurement = 6***			**Total Raw Score**
	Age (years and months)			
	3.0–3.3	**3.4–3.7**	**3.8–3.11**	
0	71	69	64	**0**
1	79	77	71	**1**
2	82	79	73	**2**
3	83	80	75	**3**
4	84	82	76	**4**
5	87	84	78	**5**
6	90	86	80	**6**
7	91	88	82	**7**
8	93	90	83	**8**
9	97	93	86	**9**
10	98	94	87	**10**
11	100	96	89	**11**
12	102	98	91	**12**
13	104	100	93	**13**
14	106	101	94	**14**
15	110	105	98	**15**
16	113	107	100	**16**
17	114	109	102	**17**
18	119	114	106	**18**
19	123	118	112	**19**
20	126	122	115	**20**
21	130	127	119	**21**

Composite Scores for Domain: Physical Development				
Core Assessments—Four-Year-Old Child—5B, 6B				
Total Raw Score	***Standard error of measurement = 6***			**Total Raw Score**
	Age (years and months)			
	4.0–4.3	**4.4–4.7**	**4.8–4.11**	
0	78	68	68	**0**
1	81	73	73	**1**
2	84	74	75	**2**
3	87	77	78	**3**
4	88	79	79	**4**
5	91	82	82	**5**
6	94	85	85	**6**
7	99	91	91	**7**
8	103	95	95	**8**
9	106	99	99	**9**
10	109	102	101	**10**
11	112	105	105	**11**
12	115	108	108	**12**
13	118	112	111	**13**
14	123	118	117	**14**
15	130	127	125	**15**

Composite Scores for Domain: Language Development				
Core Assessments—Four-Year-Old Child—2B, 3B, 7B, 8B, 11B				
Total Raw Score	***Standard error of measurement = 3***			**Total Raw Score**
	Age (years and months)			
	4.0–4.3	**4.4–4.7**	**4.8–4.11**	
0	74	64	60	**0**
1	77	66	62	**1**
2	79	68	64	**2**
3	80	70	66	**3**
4	81	72	68	**4**
5	82	74	69	**5**
6	83	74	69	**6**
7	83	74	70	**7**
8	83	75	70	**8**
9	83	75	71	**9**
10	83	75	71	**10**
11	83	76	71	**11**
12	83	76	72	**12**
13	83	76	72	**13**
14	84	76	73	**14**
15	84	76	73	**15**
16	84	77	73	**16**
17	85	77	74	**17**
18	85	77	74	**18**
19	85	77	75	**19**
20	85	77	75	**20**
21	86	78	75	**21**
22	86	78	76	**22**
23	86	79	76	**23**
24	86	79	76	**24**
25	87	80	76	**25**
26	88	81	77	**26**
27	90	82	77	**27**
28	90	83	78	**28**
29	91	84	79	**29**
30	92	85	80	**30**
31	94	86	81	**31**
32	95	88	83	**32**
33	96	90	84	**33**
34	97	91	86	**34**

Composite Scores for Domain: Language Development				
Core Assessments—Four-Year-Old Child—2B, 3B, 7B, 8B, 11B				
Total Raw Score	***Standard error of measurement = 3***			**Total Raw Score**
	Age (years and months)			
	4.0–4.3	**4.4–4.7**	**4.8–4.11**	
35	98	92	88	**35**
36	100	93	89	**36**
37	103	96	90	**37**
38	104	99	91	**38**
39	106	101	94	**39**
40	107	103	97	**40**
41	109	104	99	**41**
42	113	108	101	**42**
43	118	112	103	**43**
44	122	117	106	**44**
45	125	122	109	**45**
46	>125	125	112	**46**
47	>125	>125	117	**47**
48	>125	>125	121	**48**

Composite Scores for Domain: Academic Skills/Cognitive Development				
Core Assessments—Four-Year-Old Child—1B, 4B, 9B, 10B				
Total Raw Score	***Standard error of measurement = 4***			**Total Raw Score**
	Age (years and months)			
	4.0–4.3	**4.4–4.7**	**4.8–4.11**	
0	75	63	62	**0**
1	77	65	64	**1**
2	79	67	66	**2**
3	81	69	68	**3**
4	82	71	70	**4**
5	83	73	71	**5**
6	84	73	73	**6**
7	84	74	73	**7**
8	85	75	74	**8**
9	86	77	75	**9**
10	86	77	75	**10**
11	87	78	76	**11**
12	87	78	77	**12**
13	88	79	77	**13**
14	88	80	78	**14**
15	89	80	79	**15**
16	89	80	79	**16**
17	89	81	80	**17**
18	90	82	80	**18**
19	90	83	81	**19**
20	91	83	82	**20**
21	91	84	83	**21**
22	92	85	83	**22**
23	93	86	85	**23**
24	94	88	86	**24**
25	96	90	88	**25**
26	97	91	89	**26**
27	99	94	92	**27**
28	101	97	94	**28**
29	102	99	96	**29**
30	105	102	98	**30**
31	107	105	100	**31**
32	108	106	102	**32**
33	110	108	104	**33**

Note: For half-credit raw scores, use the next lowest score (e.g., 24.5 = 24).

Composite Scores for Domain: Academic Skills/Cognitive Development				
Core Assessments—Four-Year-Old Child—1B, 4B, 9B, 10B				
Total Raw Score	***Standard error of measurement = 4***			**Total Raw Score**
	Age (years and months)			
	4.0–4.3	**4.4–4.7**	**4.8–4.11**	
34	114	113	106	**34**
35	123	123	111	**35**
36	124	124	123	**36**
37	130	130	130	**37**

Note: For half-credit raw scores, use the next lowest score (e.g., 24.5 = 24).

Composite Scores for Domain: Physical Development			
Core Assessments—Five-Year-Old Child—3C, 4C, 5C **Core Assessments—Kindergarten—3A, 4A, 5A**			
Total Raw Score	***Standard error of measurement = 6***		**Total Raw Score**
	Age (years and months)		
	5.0–5.5	**5.6–5.11**	
0	<65	<65	**0**
1	66	<65	**1**
2	68	<65	**2**
3	70	<65	**3**
4	76	65	**4**
5	79	69	**5**
6	82	72	**6**
7	85	75	**7**
8	89	79	**8**
9	92	82	**9**
10	94	84	**10**
11	97	88	**11**
12	101	91	**12**
13	104	95	**13**
14	107	97	**14**
15	110	100	**15**
16	115	106	**16**
17	117	108	**17**
18	125	118	**18**

Note: For half-credit raw scores, use the next lowest score (e.g., 14.5 = 14).

Composite Scores for Domain: Language Development			
Core Assessments—Five-Year-Old Child—2C, 13C **Core Assessments—Kindergarten—2A, 13A**			
Total Raw Score	***Standard error of measurement = 7***		**Total Raw Score**
	Age (years and months)		
	5.0–5.5	**5.6–5.11**	
0	61	<59	**0**
1	67	<59	**1**
2	68	<59	**2**
3	69	<59	**3**
4	69	<59	**4**
5	70	59	**5**
6	71	63	**6**
7	73	66	**7**
8	78	71	**8**
9	81	75	**9**
10	83	78	**10**
11	86	82	**11**
12	88	84	**12**
13	89	85	**13**
14	93	90	**14**
15	102	95	**15**
16	117	112	**16**

Composite Scores for Domain: Academic Skills/Cognitive Development

Core Assessments—Five-Year-Old Child—1C, 6C, 7C, 8C, 9C, 10C, 11C, 12C
Core Assessments—Kindergarten—1A, 6A, 7A, 8A, 9A, 10A, 11A, 12A

Standard error of measurement = 3

Total Raw Score	Age (years and months)	
	5.0–5.5	5.6–5.11
0	<64	<64
1	<64	<64
2	<64	<64
3	<64	<64
4	<64	<64
5	64	<64
6	65	<64
7	65	<64
8	66	<64
9	67	<64
10	67	<64
11	68	<64
12	69	<64
13	69	<64
14	70	<64
15	71	<64
16	71	<64
17	71	<64
18	71	<64
19	71	<64
20	72	<64
21	73	<64
22	74	<64
23	74	<64
24	75	64
25	76	65
26	77	66
27	78	67
28	80	68
29	81	69
30	81	70
31	82	71
32	82	72

Total Raw Score	Age (years and months)	
	5.0–5.5	5.6–5.11
33	83	72
34	84	73
35	84	73
36	85	73
37	85	75
38	85	76
39	87	77
40	88	78
41	89	78
42	89	79
43	90	79
44	90	80
45	91	81
46	92	82
47	93	83
48	94	84
49	95	85
50	96	86
51	97	88
52	99	89
53	100	90
54	101	91
55	102	93
56	103	94
57	105	96
58	106	97
59	107	99
60	110	102
61	113	105
62	116	108
63	119	111
64	121	114
65	128	120

Note: For half-credit raw scores, use the next lowest score (e.g., 24.5 = 24).

Composite Scores for Domain: Physical Development			
Core Assessments—First Grade—9B, 10B			
Total Raw Score	***Standard error of measurement = 7***		**Total Raw Score**
	Age (years and months)		
	6.0–6.5	**6.6+**	
0	<55	<52	**0**
1	<55	<52	**1**
2	55	<52	**2**
3	65	<52	**3**
4	70	<52	**4**
5	74	52	**5**
6	77	57	**6**
7	82	64	**7**
8	84	78	**8**
9	109	104	**9**

Note: For half-credit raw scores, use the next lowest score (e.g., 4.5 = 4).

Composite Scores for Domain: Language Development			
Core Assessments—First Grade—2B, 5B, 7B			
Total Raw Score	***Standard error of measurement = 5***		**Total Raw Score**
	Age (years and months)		
	6.0–6.5	**6.6+**	
0	<68	<61	**0**
1	<68	<61	**1**
2	68	<61	**2**
3	69	61	**3**
4	69	61	**4**
5	70	61	**5**
6	71	61	**6**
7	71	62	**7**
8	72	64	**8**
9	74	65	**9**
10	74	66	**10**
11	74	67	**11**
12	74	68	**12**
13	75	69	**13**
14	78	71	**14**
15	79	72	**15**
16	83	76	**16**
17	86	78	**17**
18	86	79	**18**
19	89	82	**19**
20	90	83	**20**
21	92	85	**21**
22	95	88	**22**
23	100	93	**23**
24	104	97	**24**
25	111	104	**25**
26	122	114	**26**

Note: For half-credit raw scores, use the next lowest score (e.g., 14.5 = 14).

Composite Scores for Domain: Academic Skills/Cognitive Development					
Core Assessments—First Grade—1B, 3B, 4B, 6B, 8B, 11B, 12B					
Standard error of measurement = 3					
Total Raw Score	**Age (years and months)**		**Total Raw Score**	**Age (years and months)**	
	6.0–6.5	**6.6+**		**6.0–6.5**	**6.6+**
0	<70	<61	**33**	79	69
1	<70	<61	**34**	80	70
2	<70	<61	**35**	81	70
3	<70	<61	**36**	82	71
4	<70	<61	**37**	84	72
5	<70	<61	**38**	84	73
6	<70	<61	**39**	85	74
7	70	61	**40**	86	74
8	70	61	**41**	88	76
9	70	61	**42**	90	77
10	70	62	**43**	91	78
11	70	62	**44**	91	79
12	70	62	**45**	92	80
13	70	62	**46**	93	81
14	70	62	**47**	94	81
15	70	62	**48**	95	82
16	70	62	**49**	96	83
17	70	63	**50**	98	85
18	70	63	**51**	100	86
19	70	63	**52**	101	87
20	70	63	**53**	103	89
21	70	63	**54**	105	91
22	70	63	**55**	107	92
23	74	64	**56**	109	94
24	74	64	**57**	111	96
25	74	64	**58**	114	98
26	75	64	**59**	116	101
27	77	65	**60**	120	104
28	77	66	**61**	123	107
29	77	67	**62**	128	111
30	77	68	**63**	130	114
31	78	68	**64**	>130	122
32	79	69			

Note: For half-credit raw scores, use the next lowest score (e.g., 24.5 = 24).

E2: Age Equivalents for Domain Scores

Age Equivalents for Domain Scores				
Core Assessments—Infant (birth–11 months)				
Total Raw Score	**Physical Development**	**Language Development**	**Adaptive Behavior**	**Total Raw Score**
SE_Z	**1 month**	**1 month**	**1 month**	**SE_Z**
0	0-1	0-1	0-1	**0**
1	0-1	0-1	0-1	**1**
2	0-1	0-1	0-1	**2**
3	0-1	0-1	0-1	**3**
4	0-1	0-1	0-1	**4**
5	0-1	0-1	0-2	**5**
6	0-2	0-1	0-2	**6**
7	0-2	0-1	0-3	**7**
8	0-3	0-2	0-4	**8**
9	0-4	0-2	0-4	**9**
10	0-4	0-3	0-5	**10**
11	0-5	0-3	0-5	**11**
12	0-5	0-3	0-6	**12**
13	0-6	0-4	0-7	**13**
14	0-6	0-4	0-7	**14**
15	0-7	0-5	0-8	**15**
16	0-7	0-5	0-8	**16**
17	0-8	0-6	0-9	**17**
18	0-8	0-6	0-11	**18**
19	0-9	0-7	1-0	**19**
20	0-10	0-7	1-2	**20**
21	0-11	0-8	1-3	**21**
22	1-0	0-8	1-7	**22**
23	1-0	0-9	1-10	**23**
24	1-1	0-9	1-11	**24**
25	1-2	0-9	1-11	**25**
26	1-3	0-10	1-11	**26**
27	1-6	0-10	1-11	**27**
28	1-9	0-11	1-11	**28**
29		0-11		**29**
30		0-11		**30**
31		1-0		**31**
32		1-0		**32**

Age Equivalents for Domain Scores				
Core Assessments—Infant (birth–11 months)				
Total Raw Score	**Physical Development**	**Language Development**	**Adaptive Behavior**	**Total Raw Score**
SE_Z	**1 month**	**1 month**	**1 month**	**SE_Z**
33		1-1		**33**
34		1-1		**34**
35		1-1		**35**
36		1-2		**36**
37		1-2		**37**
38		1-3		**38**
39		1-3		**39**
40		1-4		**40**
41		1-5		**41**
42		1-7		**42**
43		1-8		**43**
44		1-9		**44**

Age Equivalents for Domain Scores				
Core Assessments—Toddler (12–23 months)				
Total Raw Score	**Physical Development**	**Language Development**	**Adaptive Behavior**	**Total Raw Score**
SE_Z	**1 month**	**1 month**	**1 month**	**SE_Z**
0	0-1	<0-9	<0-5	**0**
1	0-1	<0-9	<0-5	**1**
2	0-2	0-9	<0-5	**2**
3	0-3	0-9	<0-5	**3**
4	0-4	0-9	<0-5	**4**
5	0-5	0-9	<0-5	**5**
6	0-7	0-10	<0-5	**6**
7	0-8	0-10	<0-5	**7**
8	0-9	0-10	<0-5	**8**
9	0-10	0-11	0-5	**9**
10	0-11	0-11	0-7	**10**
11	1-1	0-11	0-9	**11**
12	1-2	1-0	0-11	**12**
13	1-3	1-0	1-1	**13**
14	1-4	1-0	1-3	**14**
15	1-6	1-1	1-5	**15**
16	1-8	1-1	1-7	**16**
17	1-10	1-1	1-9	**17**
18	2-0	1-1	1-11	**18**
19	2-2	1-2	2-1	**19**
20		1-2	2-3	**20**
21		1-2	2-5	**21**
22		1-3	2-7	**22**
23		1-3		**23**
24		1-3		**24**
25		1-4		**25**
26		1-4		**26**
27		1-4		**27**
28		1-5		**28**
29		1-5		**29**
30		1-5		**30**
31		1-5		**31**
32		1-6		**32**
33		1-6		**33**
34		1-6		**34**

Age Equivalents for Domain Scores				
Core Assessments—Toddler (12–23 months)				
Total Raw Score	Physical Development	Language Development	Adaptive Behavior	Total Raw Score
SE_Z	1 month	1 month	1 month	SE_Z
35		1-6		35
36		1-7		36
37		1-7		37
38		1-7		38
39		1-8		39
40		1-8		40
41		1-8		41
42		1-9		42
43		1-9		43
44		1-9		44
45		1-9		45
46		1-10		46
47		1-10		47
48		1-10		48
49		1-11		49
50		1-11		50
51		1-11		51
52		2-0		52
53		2-0		53
54		2-0		54
55		2-1		55
56		2-1		56
57		2-1		57
58		2-1		58
59		2-2		59

Age Equivalents for Domain Scores				
Core Assessments—Two-Year-Old Child				
Total Raw Score	Physical Development	Language Development	Academic Skills/ Cognitive Development	Total Raw Score
SE_Z	1 month	1 month	1 month	SE_Z
0	<0-10	0-6	1-0	0
1	<0-10	0-6	1-1	1
2	<0-10	0-6	1-2	2
3	<0-10	0-6	1-3	3
4	<0-10	0-6	1-4	4
5	<0-10	0-6	1-5	5
6	<0-10	0-6	1-6	6
7	<0-10	0-6	1-7	7
8	<0-10	0-6	1-8	8
9	<0-10	0-6	1-9	9
10	<0-10	0-6	1-10	10
11	0-10	0-6	1-11	11
12	1-0	0-6	2-0	12
13	1-1	0-6	2-1	13
14	1-3	0-7	2-2	14
15	1-5	0-8	2-3	15
16	1-6	0-8	2-4	16
17	1-8	0-9	2-5	17
18	1-10	0-10	2-6	18
19	2-0	0-11	2-7	19
20	2-1	0-11	2-8	20
21	2-3	1-0	2-9	21
22	2-5	1-1		22
23	2-6	1-2		23
24	2-8	1-2		24
25	2-10	1-3		25
26	3-0	1-4		26
27	3-2	1-5		27
28		1-5		28
29		1-6		29
30		1-7		30
31		1-8		31
32		1-8		32
33		1-9		33
34		1-10		34

Age Equivalents for Domain Scores				
Core Assessments—Two-Year-Old Child				
Total Raw Score	**Physical Development**	**Language Development**	**Academic Skills/ Cognitive Development**	**Total Raw Score**
SE_Z	**1 month**	**1 month**	**1 month**	**SE_Z**
35		1-11		**35**
36		1-11		**36**
37		2-0		**37**
38		2-1		**38**
39		2-2		**39**
40		2-2		**40**
41		2-3		**41**
42		2-4		**42**
43		2-5		**43**
44		2-5		**44**
45		2-6		**45**
46		2-7		**46**
47		2-8		**47**
48		2-8		**48**
49		2-9		**49**
50		3-0		**50**
51		3-3		**51**

Age Equivalents for Domain Scores				
Core Assessments—Three-Year-Old Child				
Total Raw Score	**Physical Development**	**Language Development**	**Academic Skills/ Cognitive Development**	**Total Raw Score**
SE_Z	**1 month**	**1 month**	**1 month**	**SE_Z**
0	1-9	2-0	1-11	**0**
1	1-10	2-0	2-0	**1**
2	1-11	2-1	2-2	**2**
3	2-0	2-1	2-3	**3**
4	2-1	2-1	2-4	**4**
5	2-2	2-2	2-6	**5**
6	2-3	2-2	2-7	**6**
7	2-4	2-3	2-8	**7**
8	2-5	2-3	2-10	**8**
9	2-6	2-3	2-11	**9**
10	2-7	2-4	3-1	**10**
11	2-8	2-4	3-2	**11**
12	2-9	2-5	3-4	**12**
13	2-9	2-5	3-6	**13**
14	2-10	2-5	3-7	**14**
15	2-11	2-6	3-9	**15**
16	2-11	2-6	3-11	**16**
17	3-0	2-7	4-1	**17**
18	3-0	2-7	4-3	**18**
19	3-1	2-7	4-5	**19**
20	3-2	2-8	4-7	**20**
21	3-2	2-8	4-9	**21**
22	3-3	2-9		**22**
23	3-5	2-9		**23**
24	3-7	2-9		**24**
25	3-9	2-10		**25**
26	3-11	2-10		**26**
27	4-1	2-11		**27**
28	4-3	2-11		**28**
29	4-5	2-11		**29**
30	4-7	3-0		**30**
31	4-9	3-0		**31**
32		3-0		**32**
33		3-1		**33**
34		3-1		**34**

Age Equivalents for Domain Scores				
Core Assessments—Three-Year-Old Child				
Total Raw Score	**Physical Development**	**Language Development**	**Academic Skills/ Cognitive Development**	**Total Raw Score**
SE_Z	**1 month**	**1 month**	**1 month**	**SE_Z**
35		3-2		**35**
36		3-2		**36**
37		3-2		**37**
38		3-3		**38**
39		3-4		**39**
40		3-5		**40**
41		3-6		**41**
42		3-7		**42**
43		3-8		**43**
44		3-9		**44**
45		4-3		**45**
46		4-9		**46**
47		5-0		**47**
48		5-3		**48**

Age Equivalents for Domain Scores				
Core Assessments—Four-Year-Old Child				
Total Raw Score	Physical Development	Language Development	Academic Skills/ Cognitive Development	Total Raw Score
SE_Z	1 month	1 month	1 month	SE_Z
0	2-6	1-11	1-8	0
1	2-9	2-0	1-10	1
2	3-0	2-0	1-11	2
3	3-3	2-1	2-0	3
4	3-6	2-1	2-1	4
5	3-9	2-2	2-2	5
6	3-11	2-2	2-3	6
7	4-1	2-3	2-4	7
8	4-3	2-4	2-5	8
9	4-9	2-4	2-6	9
10	4-11	2-5	2-7	10
11	5-0	2-5	2-8	11
12	5-2	2-6	2-10	12
13	5-3	2-6	2-11	13
14	5-6	2-7	3-0	14
15	5-9	2-8	3-1	15
16		2-8	3-2	16
17		2-9	3-3	17
18		2-10	3-4	18
19		2-11	3-5	19
20		2-11	3-6	20
21		3-0	3-7	21
22		3-1	3-8	22
23		3-2	3-9	23
24		3-3	3-10	24
25		3-4	3-11	25
26		3-4	4-0	26
27		3-5	4-1	27
28		3-6	4-2	28
29		3-7	4-4	29
30		3-8	4-7	30
31		3-9	4-10	31
32		3-9	5-0	32
33		3-10	5-1	33
34		3-11	5-3	34

Age Equivalents for Domain Scores				
Core Assessments—Four-Year-Old Child				
Total Raw Score	**Physical Development**	**Language Development**	**Academic Skills/ Cognitive Development**	**Total Raw Score**
SE_Z	**1 month**	**1 month**	**1 month**	**SE_Z**
35		4-1	5-7	**35**
36		4-2	5-10	**36**
37		4-4	6-0	**37**
38		4-5		**38**
39		4-7		**39**
40		4-9		**40**
41		4-10		**41**
42		5-0		**42**
43		5-1		**43**
44		5-3		**44**
45		5-6		**45**
46		5-9		**46**
47		6-0		**47**
48		6-3		**48**

Age Equivalents for Domain Scores				
Core Assessments—Five-Year-Old Child and Kindergarten				
Total Raw Score	**Physical Development**	**Language Development**	**Academic Skills/ Cognitive Development**	**Total Raw Score**
SE_Z	**1 month**	**1 month**	**1 month**	**SE_Z**
0	2-11	<2-6	<3-0	**0**
1	3-2	<2-6	<3-0	**1**
2	3-5	<2-6	<3-0	**2**
3	3-8	<2-6	<3-0	**3**
4	3-11	<2-6	<3-0	**4**
5	4-2	<2-6	<3-0	**5**
6	4-5	2-6	<3-0	**6**
7	4-8	2-9	<3-0	**7**
8	4-10	3-0	<3-0	**8**
9	4-11	3-3	<3-0	**9**
10	5-1	3-6	<3-0	**10**
11	5-2	3-9	<3-0	**11**
12	5-4	4-0	<3-0	**12**
13	5-6	4-3	<3-0	**13**
14	5-8	4-8	<3-0	**14**
15	5-10	5-3	<3-0	**15**
16	6-1	5-9	<3-0	**16**
17	6-3		<3-0	**17**
18	6-5		<3-0	**18**
19			3-0	**19**
20			3-1	**20**
21			3-2	**21**
22			3-3	**22**
23			3-4	**23**
24			3-5	**24**
25			3-6	**25**
26			3-7	**26**
27			3-8	**27**
28			3-9	**28**
29			3-10	**29**
30			3-11	**30**
31			4-0	**31**
32			4-1	**32**
33			4-2	**33**
34			4-3	**34**

Age Equivalents for Domain Scores				
Core Assessments—Five-Year-Old Child and Kindergarten				
Total Raw Score	**Physical Development**	**Language Development**	**Academic Skills/ Cognitive Development**	**Total Raw Score**
SE_Z	**1 month**	**1 month**	**1 month**	**SE_Z**
35			4-4	**35**
36			4-5	**36**
37			4-6	**37**
38			4-7	**38**
39			4-8	**39**
40			4-9	**40**
41			4-10	**41**
42			4-10	**42**
43			4-11	**43**
44			4-11	**44**
45			5-0	**45**
46			5-0	**46**
47			5-1	**47**
48			5-1	**48**
49			5-2	**49**
50			5-2	**50**
51			5-3	**51**
52			5-3	**52**
53			5-4	**53**
54			5-5	**54**
55			5-5	**55**
56			5-6	**56**
57			5-7	**57**
58			5-8	**58**
59			5-9	**59**
60			5-10	**60**
61			6-0	**61**
62			6-2	**62**
63			6-4	**63**
64			6-6	**64**
65			6-8	**65**

Age Equivalents for Domain Scores				
Core Assessments—First Grade				
Total Raw Score	**Physical Development**	**Language Development**	**Academic Skills/ Cognitive Development**	**Total Raw Score**
SE_Z	**1 month**	**1 month**	**1 month**	**SE_Z**
0	3-9	3-7	<4-0	**0**
1	4-0	3-8	<4-0	**1**
2	4-3	3-9	<4-0	**2**
3	4-6	3-11	<4-0	**3**
4	4-9	4-0	<4-0	**4**
5	5-0	4-1	<4-0	**5**
6	5-3	4-2	<4-0	**6**
7	5-6	4-4	<4-0	**7**
8	6-0	4-5	<4-0	**8**
9	6-6	4-6	<4-0	**9**
10		4-8	<4-0	**10**
11		4-9	<4-0	**11**
12		4-10	<4-0	**12**
13		4-11	<4-0	**13**
14		5-0	<4-0	**14**
15		5-2	<4-0	**15**
16		5-3	<4-0	**16**
17		5-4	<4-0	**17**
18		5-6	<4-0	**18**
19		5-7	<4-0	**19**
20		5-8	4-0	**20**
21		5-10	4-1	**21**
22		6-1	4-2	**22**
23		6-3	4-3	**23**
24		6-8	4-4	**24**
25		7-3	4-5	**25**
26		7-6	4-6	**26**
27			4-7	**27**
28			4-8	**28**
29			4-9	**29**
30			4-10	**30**
31			4-11	**31**
32			5-0	**32**
33			5-1	**33**
34			5-2	**34**

Age Equivalents for Domain Scores				
Core Assessments—First Grade				
Total Raw Score	Physical Development	Language Development	Academic Skills/ Cognitive Development	Total Raw Score
SE_Z	1 month	1 month	1 month	SE_Z
35			5-3	35
36			5-4	36
37			5-5	37
38			5-6	38
39			5-7	39
40			5-8	40
41			5-9	41
42			5-10	42
43			5-10	43
44			5-11	44
45			6-0	45
46			6-0	46
47			6-1	47
48			6-1	48
49			6-2	49
50			6-3	50
51			6-3	51
52			6-4	52
53			6-5	53
54			6-6	54
55			6-7	55
56			6-8	56
57			6-9	57
58			6-11	58
59			7-1	59
60			7-3	60
61			7-6	61
62			>7-6	62
63			>7-6	63
64			>7-6	64

Composite Scores and Age Equivalents for the Self-help & Social-Emotional Scales

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APPENDIX F: Composite Scores and Age Equivalents for Self-help & Social-Emotional Scales	
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APPENDIX F2: Age Equivalents for Self-help & Social-Emotional Scales	189

Note: The Self-help & Social Emotional Scales only produce scores for children two years of age and older. For infants and toddlers, see the Adaptive Behavior Domain Scores to assess a child's skills in these areas.

F1: Composite Scores for Self-help & Social-Emotional Scales

Composite Scores for Self-help Scale Two-Year-Old Child					
Total Raw Score	*Standard error of measurement = 7*				Total Raw Score
	Age (years and months)				
	2.0–2.2	2.3–2.5	2.6–2.8	2.9–2.11	
0	55	55	55	<55	**0**
1	67	63	63	55	**1**
2	76	71	71	61	**2**
3	85	79	78	70	**3**
4	94	88	87	80	**4**
5	105	98	96	92	**5**
6	124	115	112	111	**6**

Composite Scores for Social-Emotional Scale Two-Year-Old Child					
Total Raw Score	*Standard error of measurement = 6*				Total Raw Score
	Age (years and months)				
	2.0–2.2	2.3–2.5	2.6–2.8	2.9–2.11	
0	80	74	<67	<66	**0**
1	84	80	67	66	**1**
2	88	84	73	73	**2**
3	93	88	79	79	**3**
4	97	92	84	83	**4**
5	102	96	88	88	**5**
6	105	101	92	92	**6**
7	109	105	96	96	**7**
8	114	110	101	100	**8**
9	117	115	107	107	**9**
10	120	119	113	113	**10**
11	125	124	120	120	**11**
12	130	130	130	130	**12**

Composite Scores for Self-help Scale Three-Year-Old Child				
Total Raw Score	*Standard error of measurement = 5* Age (years and months)			Total Raw Score
	3.0–3.3	3.4–3.7	3.8–3.11	
0	68	68	68	**0**
1	73	73	70	**1**
2	77	77	72	**2**
3	80	79	74	**3**
4	83	82	76	**4**
5	84	82	77	**5**
6	85	84	79	**6**
7	88	86	81	**7**
8	91	89	85	**8**
9	95	92	88	**9**
10	98	95	91	**10**
11	102	98	94	**11**
12	105	102	98	**12**
13	109	105	102	**13**
14	114	110	106	**14**
15	122	117	114	**15**
16	130	126	123	**16**
17	>130	130	126	**17**

Composite Scores for Social-Emotional Scale Three-Year-Old Child				
Total Raw Score	*Standard error of measurement = 5*			Total Raw Score
	Age (years and months)			
	3.0–3.3	3.4–3.7	3.8–3.11	
0	68	68	68	**0**
1	75	75	75	**1**
2	83	80	80	**2**
3	88	84	84	**3**
4	92	88	88	**4**
5	95	91	91	**5**
6	99	93	93	**6**
7	101	94	93	**7**
8	102	97	97	**8**
9	105	100	100	**9**
10	108	104	104	**10**
11	111	106	106	**11**
12	114	110	110	**12**
13	117	112	112	**13**
14	120	118	117	**14**
15	125	123	122	**15**
16	130	130	129	**16**

Composite Scores for Self-help Scale Four-Year-Old Child				
Total Raw Score	*Standard error of measurement = 5*			Total Raw Score
	Age (years and months)			
	4.0–4.3	4.4–4.7	4.8–4.11	
0	68	68	< 68	**0**
1	70	69	< 68	**1**
2	72	71	68	**2**
3	76	74	70	**3**
4	78	78	74	**4**
5	81	79	74	**5**
6	83	80	76	**6**
7	85	82	78	**7**
8	91	88	84	**8**
9	93	93	89	**9**
10	96	94	91	**10**
11	98	95	91	**11**
12	99	96	93	**12**
13	100	98	94	**13**
14	102	101	97	**14**
15	108	105	102	**15**
16	116	113	110	**16**
17	126	126	122	**17**

Composite Scores for Social-Emotional Scale Four-Year-Old Child				
Total Raw Score	*Standard error of measurement = 4*			Total Raw Score
	Age (years and months)			
	4.0–4.3	4.4–4.7	4.8–4.11	
0	75	71	67	**0**
1	81	77	74	**1**
2	86	84	80	**2**
3	90	86	85	**3**
4	91	89	86	**4**
5	93	91	88	**5**
6	95	93	90	**6**
7	96	94	91	**7**
8	97	96	93	**8**
9	99	98	95	**9**
10	101	100	97	**10**
11	103	102	99	**11**
12	106	105	102	**12**
13	109	108	105	**13**
14	113	113	109	**14**
15	117	117	114	**15**
16	125	125	122	**16**

Composite Scores for Self-help Scale Five-Year-Old Child and Kindergarten			
Total Raw Score	*Standard error of measurement = 6* Age (years and months)		Total Raw Score
	5.0–5.5	5.6–5.11	
0	<68	<68	**0**
1	<68	<68	**1**
2	<68	<68	**2**
3	68	68	**3**
4	74	74	**4**
5	74	74	**5**
6	75	75	**6**
7	75	75	**7**
8	76	76	**8**
9	77	77	**9**
10	79	79	**10**
11	82	82	**11**
12	84	84	**12**
13	87	87	**13**
14	91	90	**14**
15	96	96	**15**
16	105	104	**16**
17	119	119	**17**

Composite Scores for Social-Emotional Scale Five-Year-Old Child and Kindergarten			
Total Raw Score	*Standard error of measurement = 5*		Total Raw Score
	Age (years and months)		
	5.0–5.5	5.6–5.11	
0	<72	<66	**0**
1	<72	<66	**1**
2	72	66	**2**
3	78	70	**3**
4	80	74	**4**
5	82	77	**5**
6	85	80	**6**
7	88	83	**7**
8	90	85	**8**
9	94	90	**9**
10	96	92	**10**
11	98	95	**11**
12	101	98	**12**
13	104	101	**13**
14	107	105	**14**
15	113	111	**15**
16	123	123	**16**

Composite Scores for Self-help Scale First Grade			
Total Raw Score	*Standard error of measurement = 6* Age (years and months)		Total Raw Score
	6.0–6.5	6.6+	
0	<56	<55	**0**
1	<56	<55	**1**
2	<56	<55	**2**
3	<56	<55	**3**
4	56	55	**4**
5	60	58	**5**
6	68	62	**6**
7	69	63	**7**
8	71	64	**8**
9	75	68	**9**
10	78	71	**10**
11	82	75	**11**
12	83	77	**12**
13	85	79	**13**
14	88	81	**14**
15	92	85	**15**
16	97	90	**16**
17	116	109	**17**

Composite Scores for Social-Emotional Scale First Grade			
Total Raw Score	*Standard error of measurement = 5*		Total Raw Score
	Age (years and months)		
	6.0–6.5	6.6+	
0	64	64	**0**
1	68	68	**1**
2	70	70	**2**
3	72	72	**3**
4	74	74	**4**
5	76	76	**5**
6	79	79	**6**
7	80	80	**7**
8	83	83	**8**
9	85	85	**9**
10	88	87	**10**
11	90	90	**11**
12	93	93	**12**
13	97	96	**13**
14	101	99	**14**
15	106	105	**15**
16	119	117	**16**

F2: Age equivalents for Self-help & Social-Emotional Scales

Age Equivalents for Self-help & Social-Emotional Scales Two-Year-Old Child			
Total Raw Score	**Self-help Scale**	**Social-Emotional Scale**	**Total Raw Score**
SE_Z	**1 month**	**1 month**	**SE_Z**
0	<1-3	1-5	**0**
1	1-3	1-7	**1**
2	1-6	1-9	**2**
3	1-9	1-11	**3**
4	2-0	2-1	**4**
5	2-3	2-3	**5**
6	2-9	2-5	**6**
7		2-7	**7**
8		2-9	**8**
9		2-11	**9**
10		3-1	**10**
11		3-3	**11**
12		3-5	**12**

Age Equivalents for Self-help & Social-Emotional Scales Three-Year-Old Child Through First Grade			
Total Raw Score	**Self-help Scale**	**Social-Emotional Scale**	**Total Raw Score**
SE_Z	**1 month**	**1 month**	**SE_Z**
0	1-11	<2-1	**0**
1	2-0	<2-1	**1**
2	2-2	<2-1	**2**
3	2-3	2-1	**3**
4	2-5	2-4	**4**
5	2-6	2-7	**5**
6	2-8	2-11	**6**
7	2-9	3-3	**7**
8	2-11	3-8	**8**
9	3-0	4-0	**9**
10	3-2	4-5	**10**
11	3-3	4-9	**11**
12	3-9	5-3	**12**
13	4-3	5-9	**13**
14	4-9	6-3	**14**
15	5-3	6-9	**15**
16	5-9	>6-9	**16**
17	6-9		**17**

Converting Composite Scores to Percentiles

G: Converting Composite Scores to Percentiles

Directions: For all composite scores (Total Score and Domain Scores), use the following table to derive percentile scores.

Composite Score	Percentile
45	<1
46	<1
47	<1
48	<1
49	<1
50	<1
51	<1
52	<1
53	<1
54	<1
55	<1
56	<1
57	<1
58	<1
59	<1
60	<1
61	<1
62	1
63	1
64	1
65	1
66	1
67	1
68	2
69	2
70	2
71	3
72	3

Composite Score	Percentile
73	4
74	4
75	5
76	6
77	7
78	8
79	9
80	9
81	10
82	12
83	13
84	14
85	16
86	17
87	19
88	21
89	23
90	25
91	27
92	29
93	31
94	34
95	36
96	39
97	43
98	46
99	48
100	50

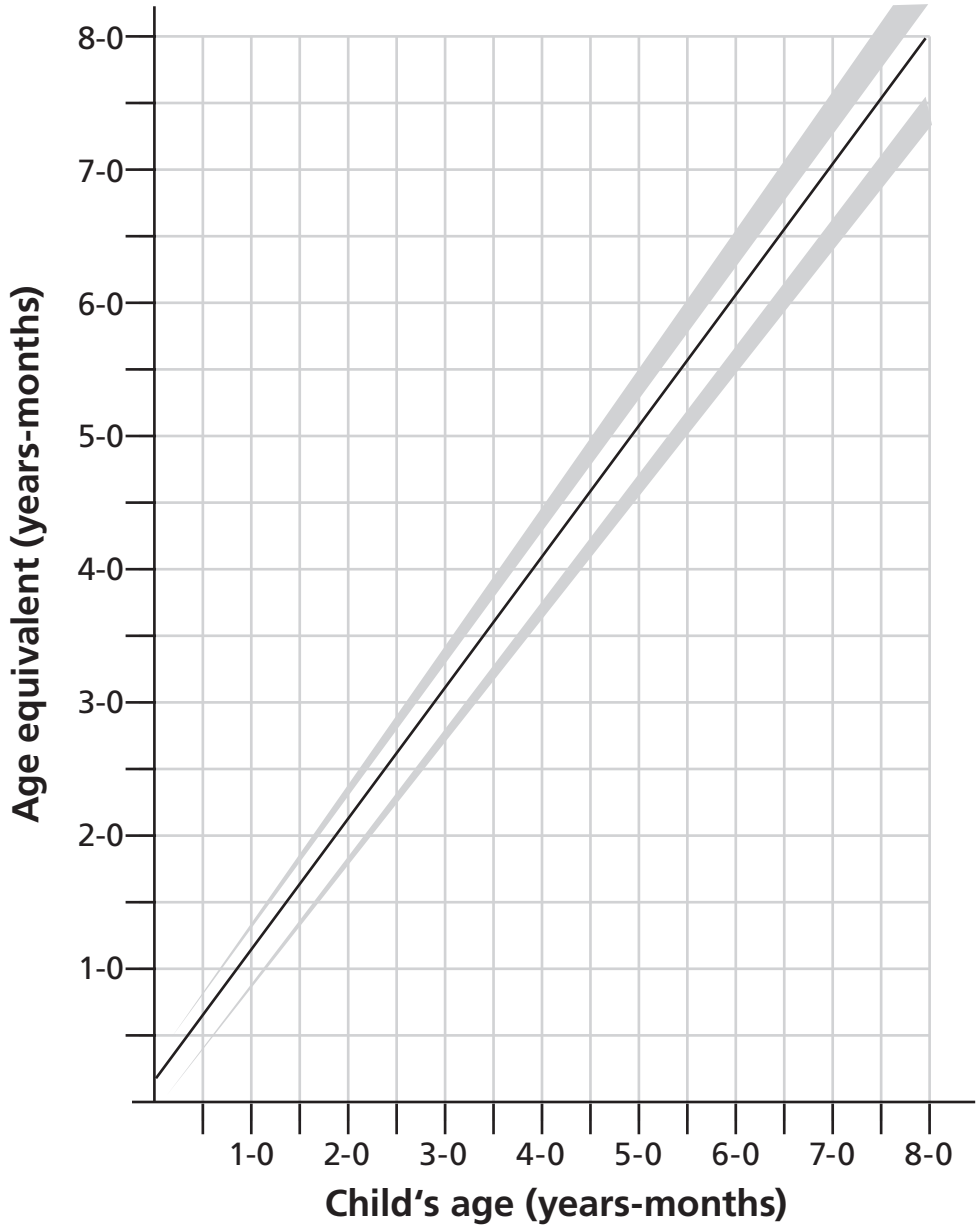
Composite Score	Percentile
101	53
102	55
103	58
104	60
105	63
106	66
107	68
108	71
109	73
110	75
111	77
112	79
113	81
114	82
115	84
116	86
117	87
118	89
119	90
120	91
121	92
122	93
123	94
124	94
125	95
126	96
127	96
128	97

Composite Score	Percentile
129	97
130	98
131	98
132	98
133	99
134	99
135	99
136	99
137	99
138	99
139	>99
140	>99
141	>99
142	>99
143	>99
144	>99
145	>99
146	>99
147	>99
148	>99
149	>99
150	>99

Charting Progress with Age Equivalents

For information about using age equivalent scores (AEs) to monitor progress, see page 50 in Chapter 6. Use a copy of the graph on the next page to chart a child's age equivalent scores.

H: Charting Progress with Age Equivalents



Sample Completed *Data Sheets*

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BRIGANCE® Screen III Infant (birth–11 months) Data Sheet

I 0–11m

A. Child's Name Ruben Emerson
Parent(s)/Caregiver(s) Ramona Emerson
Address 102 Main Street, Centerville, OH
Phone (111) 111-1234

	Year	Month	Day
Date of Screening	2016	1	30
Birth Date	2015	5	2
Age		8	28
Months & Days Premature		1	7
Corrected Age		~~7~~ 8	~~21~~

15 12+1=13

Health Care Provider Dr. Jeffry Golden
School/Program Well Child Center
Teacher —
Examiner Janelle Morris

B. Core Assessments					C. Scoring	
Page	**Domain**	**Directions:** Assessments may be administered in any order. For each assessment, start with the item indicated by the Entry for the child's age. Stop after 3 skills not demonstrated in a row. Give credit for a skill by **circling** the item number. For a skill not demonstrated, **slash through** the item number. Once the child receives credit for 3 skills in a row, give credit for any lower-level skills.			**Number Correct × Point Value for Each**	**Child's Score**
3	Physical Development	**1A Gross Motor Skills** 1. Turns head in both directions 2. Steadies head 3. Rolls partway onto side 4. Has no head lag when pulled to sitting (5) Rolls from back to stomach	(6) Sits briefly unsupported (7) Transfers objects from one hand to the other (8) Sits erect and unsupported (9) Gets up on hands and knees and moves about (or scoots on bottom)	~~10~~ Pulls to standing position ~~11~~ Walks with one hand held ~~12~~ Walks without frequent falling 13. Runs, but not necessarily well 14. Stands on one foot with one hand held	9 × 1	9 /14
6	Physical Development	**2A Fine Motor Skills** 1. Places fist in mouth 2. Glances at hands briefly 3. Plays with hands and fingers 4. Has hands predominantly open (5) Reaches for objects	(6) Exhibits a one-handed visually directed reach (7) Holds bottle (sippy cup) independently (8) Pokes objects, using index finger (9) Uses a neat pincer grasp ~~10~~ Squeaks toy with hand	(11) Puts objects into a container ~~12~~ Takes objects out of a container ~~13~~ Grasps and releases objects easily ~~14~~ Unwraps objects	10 × 1	10 /14
9	Language Development	**3A Receptive Language Skills** 1. Startles to loud noise 2. Notices faces of others 3. Responds with a smile or coo 4. Turns head to find sound (5) Shows understanding of some words (e.g., *bye-bye, mama*)	(6) Holds out or raises arms when parent/caregiver says *Come here* or *Up* (7) Responds to own name (8) Looks at named objects (9) Responds to the word *no* ~~10~~ Responds to simple commands	~~11~~ Waves "bye-bye" ~~12~~ Responds to the word *give* (with gesture) ~~13~~ Gives a block on command (no gesture) 14. Puts a block into a box on command 15. Throws away trash on command	9 × 2	18 /30
12	Language Development	**4A Expressive Language Skills** 1. Makes sounds other than crying 2. Makes varied sounds 3. Coos and gurgles 4. Babbles, making varying consonant sounds	(5) Vocalizes at others (6) "Talks" to objects (7) Says multiple syllables ~~8~~ Shakes head for *no* or points to show preference ~~9~~ Imitates sounds or words	~~10~~ Pretend talks 11. Holds up objects for attention 12. Points to objects for attention 13. Says real words 14. Pretend talks with some real words	7 × 1	7 /14
15	Adaptive: Self-help	**5A Self-help Skills** 1. Sucks well, forming a tight seal around nipple when sucking 2. Brings hands to mouth 3. Opens mouth	4. Refuses excess food (5) Munches or mouths food (6) Holds bottle (sippy cup) independently (7) Feeds self cracker (8) Drinks from cup held by adult	~~9~~ Chews and swallows ~~10~~ Cooperates in dressing ~~11~~ Holds cup with both hands and drinks 12. Assists in dressing	8 × 1	8 /12
17	Adaptive: Social-Emotional	**6A Social and Emotional Skills** 1. Looks attentively at your face 2. Visually follows person 3. Responds with a smile 4. Gets excited when a toy is presented (5) Smiles, coos, or gurgles for attention	(6) Gestures for "up" by holding arms out to be picked up (7) Shows shyness with strangers ~~8~~ Plays peekaboo ~~9~~ Explores the environment ~~10~~ Plays pat-a-cake	11. Gives affection 12. Goes for a toy that is out of reach 13. Shows interest in activities of others 14. Initiates interactions with other children 15. Shows pride in new accomplishments 16. Explores and returns to parent/caregiver	7 × 1	7 /16
					Total Score =	59 / 100

D. Notes/Observations: Hearing and vision appear normal.

E. Next Steps: Within normal limits.
No further assessment needed.

BRIGANCE® Screen III Toddler (12–23 months) Data Sheet

T 12–23m

A. Child's Name Alissa Hunter
Parent(s)/Caregiver(s) Carl and Vivian Hunter
Address 508 Center Street, Mammoth, AZ
Phone (111) 111-4567

	Year	Month	Day
Date of Screening	2016	3	17
Birth Date	2014	10	3
Age	1	5 (12+3=15)	14
Months & Days Premature			
Corrected Age			

Health Care Provider Dr. Maria McDonald
School/Program Center Head Start
Teacher Nancy Krensky
Examiner Antonio Ramirez

B. Core Assessments

C. Scoring

Page	Domain	Directions: Assessments may be administered in any order. For each assessment, start with the item indicated by the Entry for the child's age. Give credit for a skill by **circling** the item number. For a skill not demonstrated (an incorrect response), **slash through** the item number. Once the child receives credit for 3 skills in a row, give credit for any lower-level skills.	Discontinue	Number Correct × Point Value for Each	Child's Score
21	Language Development	**1B Receptive Language Skills—General** (1) Looks at named objects (2) Responds to the word *no* (3) Responds to simple commands (4) Waves "bye-bye" (5) Responds to the word *give* (with gesture) 6 Gives a block on command (no gesture) 7 Puts a block into a box on command 8 Throws away trash on command	Stop after 3 skills not demonstrated in a row.	5 × 1	5 / 8
23	Language Development	**2B Receptive Language Skills—Identifies Parts of the Body** Points to: (1) eyes 2 nose 3 feet 4 hair 5. mouth 6. ears	Stop after 3 incorrect responses in a row.	1 × 2	2 /12
24	Language Development	**3B Receptive Language Skills—Identifies Pictures** Points to: 1 cat 2 dog 3 key 4. car 5. apple 6. airplane	Stop after 3 incorrect responses in a row.	0 × 2	0 /12
27	Language Development	**4B Receptive Language Skills—Knows Sounds Animals Make** Knows sound of: 1 cat 2 dog 3 cow 4 bird	Administer all items.	0 × 2	0 / 8
28	Physical Development	**5B Gross Motor Skills** 1. Sits erect and unsupported 2. Gets up on hands and knees and moves about (or scoots on bottom) 3. Pulls to standing position (4) Walks with one hand held (5) Walks without frequent falling (6) Runs, but not necessarily well (7) Stands on one foot with one hand held 8 Attempts to jump 9. Walks erect with arms swinging 10. Jumps (at least one foot leaves the floor) 11. Runs well	Stop after 3 skills not demonstrated in a row.	7 × 1	7 /11
30	Physical Development	**6B Fine Motor Skills** 1. Uses a neat pincer grasp 2. Squeaks toy with hand 3 Puts objects into a container 4 Takes objects out of a container (5) Grasps and releases objects easily (6) Unwraps objects 7 Deliberately pours/dumps objects from container 8 Imitates scribble	Stop after 3 skills not demonstrated in a row.	7 × 1	7 / 8
32	Language Development	**7B Expressive Language Skills—General** *(If unsuccessful on 7B, items 6, 7, and 8, do not administer 8B or 9B.)* (1) Says multiple syllables (2) Shakes head for *no* or points to show preference (3) Imitates sounds or words (4) Pretend talks (5) Holds up objects for attention 6 Points to objects for attention 7 Says real words 8 Pretend talks with some real words	Stop after 3 skills not demonstrated in a row.	5 × 1	5 / 8
34	Language Development	**8B Expressive Language Skills—Names Objects** *(If unsuccessful on 7B, items 6, 7, and 8, do not administer 8B.)* Names: 1. cup 2. ball 3. spoon 4. book 5. chair 6. block 7. box 8. toy OR Count up to 8 other object words used.	Stop after 3 incorrect responses in a row.	0 × 1	0 / 8
35	Language Development	**9B Expressive Language Skills—Uses Phrases** *(If unsuccessful on 7B, items 6, 7, and 8, do not administer 9B.)* 1. Repeats phrases 2. Uses two or three words in combination	Administer both items.	0 × 1.5	0 / 3
36	Adaptive: Self-help	**10B Self-help Skills** 1. Feeds self cracker 2. Drinks from cup held by adult 3. Chews and swallows (4) Cooperates in dressing (5) Holds cup with both hands and drinks (6) Assists in dressing 7 Holds cup with one hand and drinks 8 Removes shoes 9 Begins to anticipate/communicate toileting needs	Stop after 3 skills not demonstrated in a row.	6 × 1	6 / 9
38	Adaptive: Social-Emotional	**11B Social and Emotional Skills** 1. Plays pat-a-cake 2. Gives affection 3. Goes for a toy that is out of reach (4) Shows interest in activities of others (5) Initiates interactions with other children (6) Shows pride in new accomplishments (7) Explores and returns to parent/caregiver 8 Opens doors or cabinets (9) Imitates another child's actions 10 Watches faces for emotional clues 11 Mimics adult activities 12 Insists upon doing things for himself/herself 13 Likes to perform for others	Stop after 3 skills not demonstrated in a row.	8 × 1	8 /13

Total Score = 40 /100

D. Notes/Observations: Hard to hold her attention.

E. Next Steps: Below cutoff (<49); presence of risk factors. Above at-risk guidelines. Rescreen in six months.

BRIGANCE® Screen III Two-Year-Old Child Data Sheet

2 year-old

A. Child's Name Kate Barry
Parent(s)/Caregiver(s) Mark and Joan Barry
Address 662 Hanscom Ave., Norfolk, CT
Phone (111)333-5678

Date of Screening Year 2016 Month 9 Day 12
Birth Date 2014 7 7
Age 2 2 ~~5~~

Health Care Provider —
School/Program Hancock School
Teacher Rosa Rodriguez
Examiner Steve Jenkins

B. Core Assessments			C. Scoring		
Page	**Domain**	**Directions:** Assessments may be administered in any order. For each assessment, start with the first item and proceed in order. Give credit for a skill by **circling** the item number. For a skill not demonstrated (an incorrect response), **slash through** the item number.	**Discontinue**	**Number Correct × Point Value for Each**	**Child's Score**
42	Language Development	**1C Identifies Parts of the Body** **Points to:** (1) ears (2) head (3) teeth (4) legs (5) fingers (6) arms	Stop after 3 incorrect responses in a row.	6 × 1.5	9 / 9
43	Language Development	**2C Identifies Pictures by Naming** (1) cat (2) dog (3) key (4) apple (5) car (6) cup	Stop after 3 incorrect responses in a row.	6 × 2	12 /12
44	Language Development	**3C Knows Uses of Objects** **Knows use of:** (1) car (2) bed ~~3.~~ chair	Administer all items.	2 × 4	8 /12
45	Academic/ Cognitive	**4C Repeats Sentences** **Repeats sentence of:** (1) three syllables ~~2.~~ four syllables	Stop after incorrect responses for both *a* and *b* for a single item.	1 × 3	3 / 6
46	Physical Development	**5C Gross Motor Skills** (1) Jumps off floor with both feet (3) Stands on one foot for one second (2) Walks backward four steps ~~4.~~ Walks on tiptoe three steps	Administer all items.	3 × 2.5	7.5/10
47	Academic/ Cognitive	**6C Understands Concepts of Number and Size** **Understands:** (1) just one (2) one more (3) pair (4) little	Administer all items.	4 × 2	8 / 8
49	Physical Development	**7C Visual Motor Skills** (1) Scribbles with crayon; strokes are not purposeful or well controlled and frequently lose contact with the paper (2) Scribbles with crayon; strokes are purposeful or well controlled so seldom lose contact with the paper ~~3.~~ Draws somewhat recognizable picture that is meaningful to the child, but perhaps not meaningful to adult *(For skills 1–3, give credit for the highest skill demonstrated and for any lower skills.)* ~~4.~~ Holds crayon with fingers, perhaps incorrectly, with hand not fisted ~~5.~~ Uses one hand consistently	Administer all items.	2 × 1.5	3 / 7.5
50	Physical Development	**8C Builds Tower with Blocks** **Builds a tower with:** (1) two blocks (2) three blocks 3. four blocks 4. five blocks 5. six blocks	Stop after 2 attempts.	2 × 2	4 /10
51	Academic/ Cognitive	**9C Matches Colors** (1) red (2) blue (3) green (4) yellow (5) orange	Administer all items.	5 × 1.5	7.5/ 7.5
52	Language Development	**10C Verbal Fluency and Articulation** (1) Uses two-word phrases in which words relate in combination (3) At least 50% of speech is intelligible (2) Uses three-word phrases in which words relate in combination	Administer all items.	3 × 6	18/18
				Total Score =	80 /100

D. Notes/Observations: She was confident and at ease. Appears right handed.

E. Next Steps: Above giftedness cutoff (>76). Refer for further assessment for possible giftedness.

BRIGANCE® Screen III Three-Year-Old Child Data Sheet

3 year-old

A. Child's Name Crystal Moore
Parent(s)/Caregiver(s) Heather Moore
Address 322 Flagstaff Rd., Apt. C

	Year	Month	Day
Date of Screening	2016	9	12
Birth Date	2013	7	7
Age	3	2	5

School/Program Hammond School
Teacher Jake Yarmus
Examiner Sarah Donohue

B. Core Assessments			C. Scoring		
Page	**Domain**	**Directions:** Assessments may be administered in any order. For each assessment, start with the first item and proceed in order. Give credit for a skill by **circling** the item number. (1.) For a skill not demonstrated (an incorrect response), **slash through** the item number. ~~1.~~	**Discontinue**	**Number Correct × Point Value for Each**	**Child's Score**
3	Academic/ Cognitive	**1A Knows Personal Information** Knows: (1) First name (2) Last name ~~3.~~ Age	Administer all items.	2 × 1	2 / 3
4	Language Development	**2A Identifies Colors** Points to: (1) red (2) blue (3) green (4) yellow (5) orange	Stop after 3 incorrect responses in a row.	5 × 2	10 /10
5	Language Development	**3A Identifies Pictures by Naming** Names: (1) boat (2) scissors ~~3.~~ kite (4) wagon ~~5.~~ ladder ~~6.~~ fish	Stop after 3 incorrect responses in a row.	3 × 2	6 /12
6	Language Development	**4A Knows Uses of Objects** Knows use of: (1) book (2) scissors ~~3.~~ stove ~~4.~~ pencil	Administer all items.	2 × 3	6 /12
7	Physical Development	**5A Visual Motor Skills** Draws: (1) a vertical line (2) a horizontal line ~~3.~~ a circle ~~4.~~ plus sign	Stop after 3 skills not demonstrated in a row.	2 × 3	6 /12
9	Academic/ Cognitive	**6A Understands Number Concepts** Understands: (1) two (2) three ~~3.~~ five	Administer all items.	2 × 3	6 / 9
10	Physical Development	**7A Builds Tower with Blocks** Builds a tower with: (1) six blocks (2) seven blocks (3) eight blocks 4. nine blocks 5. ten blocks	Stop after 2 attempts.	3 × 2	6 /10
11	Physical Development	**8A Gross Motor Skills** (1) Stands on one foot for five seconds (2) Stands on other foot for five seconds ~~3.~~ Walks forward heel-to-toe four steps	Administer all items.	2 × 3	6 / 9
13	Language Development	**9A Identifies Parts of the Body** Points to: (1) stomach ~~2.~~ neck (3) back (4) knees (5) thumbs ~~6.~~ fingernails	Stop after 3 incorrect responses in a row.	4 × 1	4 / 6
14	Academic/ Cognitive	**10A Repeats Sentences** Repeats sentence of: (1) four syllables (2) six syllables ~~3.~~ eight syllables	Stop after incorrect responses for both *a* and *b* for a single item.	2 × 3	6 / 9
15	Language Development	**11A Uses Prepositions and Irregular Plural Nouns** Uses: (1) prepositions ~~2.~~ irregular plural nouns	Administer both items.	1 × 4	4 / 8
				Total Score =	62 /100

D. Notes/Observations: Cooperated and enjoyed talking.

E. Next Steps: Within normal limits. No further evaluation needed at this time.

BRIGANCE® Screen III Four-Year-Old Child Data Sheet

4 year-old

A. Child's Name Corey Martin
Parent(s)/Caregiver(s) Alex and Anne Martin
Address 982 Haines Street

	Year	Month	Day
Date of Screening	2016	8	15
Birth Date	2012	2	10
Age	4	6	5

School/Program Ballard School
Teacher Emily Chappell
Examiner Bernard Karcher

B. Core Assessments			C. Scoring		
Page	**Domain**	**Directions:** Assessments may be administered in any order. For each assessment, start with the first item and proceed in order. Give credit for a skill by **circling** the item number. (1.) For a skill not demonstrated (an incorrect response), **slash through** the item number. ~~1.~~	**Discontinue**	**Number Correct × Point Value for Each**	**Child's Score**
19	Academic/ Cognitive	**1B Knows Personal Information** Knows: (1) First name (2) Last name (3) Age ~~4~~. Street address	Stop after 3 incorrect responses in a row.	3 × 2.5	7.5/10
20	Language Development	**2B Names Colors** Names: (1) blue (2) green ~~3~~. yellow (4) red ~~5~~. orange ~~6~~. pink ~~7~~. black 8. purple 9. white 10. brown	Stop after 3 incorrect responses in a row.	3 × 1	3 /10
22	Language Development	**3B Identifies Pictures by Naming** Names: ~~1~~. scissors ~~2~~. duck (3) snake (4) wagon ~~5~~. ladder (6) leaf ~~7~~. owl ~~8~~. nail	Stop after 3 incorrect responses in a row.	3 × 1	3 / 8
23	Academic/ Cognitive: Literacy	**4B Visual Discrimination—Forms and Uppercase Letters** ~~1~~. ○ (2) ▭ (3) ○ (4) ⬡ ~~5~~. > (6) O (7) I ~~8~~. P ~~9~~. [illegible] ~~10~~. X	Stop after 5 incorrect responses in a row.	5 × 1	5 /10
24	Physical Development	**5B Visual Motor Skills** Draws: (1) a circle (2) a plus sign (3) an X ~~4~~. a square ~~5~~. a rectangle	Stop after 3 skills not demonstrated in a row.	3 × 2	6 /10
26	Physical Development	**6B Gross Motor Skills** (1) Walks forward heel-to-toe five steps (2) Hops five hops on preferred foot (3) Hops five hops on other foot (4) Stands on one foot for ten seconds (5) Stands on other foot for ten seconds	Administer all items.	5 × 1	5 / 5
28	Language Development	**7B Names Parts of the Body** Names: (1) stomach ~~2~~. neck (3) back ~~4~~. knees (5) thumbs ~~6~~. fingernails	Stop after 3 incorrect responses in a row.	3 × 2	6 /12
29	Language Development	**8B Follows Verbal Directions** Follows: (1) two-step directions ~~2~~. three-step directions	Stop after 2 incorrect responses for 1 item.	1 × 4	4 / 8
31	Academic/ Cognitive: Mathematics	**9B Counts by Rote** Counts to: (1) (2) (3) (4) (5) ~~6~~ 7 8 9 10	Stop after the first error.	5 × 0.5	2.5/ 5
32	Academic/ Cognitive: Mathematics	**10B Recognizes Quantities** Recognizes and names quantities of: ~~1~~. three ~~2~~. five 3. eight	Stop after 2 incorrect responses.	0 × 4	0 /12
33	Language Development	**11B Verbal Fluency and Articulation** (1) Uses sentences of at least three words (2) At least 90% of speech is intelligible	Administer both items.	2 × 5	10/10
				Total Score =	52 /100

D. Notes/Observations: Vision and hearing appear normal.

E. Next Steps: Below cutoff of <69. Presence of four risk factors. Academic/Cognitive domain score = 15; below at-risk guidelines of <20. Refer for evaluation.

BRIGANCE® Screen III Five-Year-Old Child Data Sheet

5 year-old

A. Child's Name Sofia Ruiz

Parent(s)/Caregiver(s) Claudia and Francisco Ruiz

Address 310 Forest Hills Blvd. Phone (111) 222-1234

	Year	Month	Day
Date of Screening	2016	6	15
Birth Date	2011	1	10
Age	5	5	5

School/Program Vine School

Teacher Mary Pavlik

Examiner Betty Lowe

B. Core Assessments | **C. Scoring**

Page	Domain	Directions: Assessments may be administered in any order. For each assessment, start with the first item and proceed in order. Give credit for a skill by **circling** the item number. (1) For a skill not demonstrated (an incorrect response), **slash through** the item number. 1.	Discontinue	Number Correct × Point Value for Each	Child's Score
38	Academic/ Cognitive	**1C Knows Personal Information** Knows: (1) first name (2) last name (3) age (4) birthday (month and day) (5) telephone number (6) street address	Stop after 3 incorrect responses in a row.	6 × 1.5	9 / 9
40	Language Development	**2C Names Parts of the Body** Names: (1) thumbs (2) fingernails (3) chin (4) chest (5) elbows (6) shoulders	Stop after 3 incorrect responses in a row.	6 × 1	6 / 6
41	Physical Development	**3C Gross Motor Skills** (1) Stands on one foot for ten seconds (2) Stands on other foot for ten seconds (3) Stands on one foot for one second with eyes closed 4. Stands on other foot for one second with eyes closed 5. Walks backward toe-to-heel four steps	Stop after 3 skills not demonstrated in a row.	3 × 1	3 / 5
43	Physical Development	**4C Visual Motor Skills** Draws: (1) an X (2) a square (3) a rectangle (4) a triangle 5. a diamond	Stop after 3 skills not demonstrated in a row.	4 × 1.5	6 / 7.5
45	Physical Development	**5C Prints Personal Information** Prints: (1) first name (2) last name	Administer both items.	2 × 3	6 / 6
47	Academic/ Cognitive: Literacy	**6C Recites Alphabet** (Count each group of letters recited correctly as one correct.) (a b c d e) (f g h i j) (k l m n o) (p q r s t) (u v) w (x y z)	Stop after the first error.	4 × 1	4 / 5
48	Academic/ Cognitive: Mathematics	**7C Sorts Objects (by Size, Color, Shape)** Sorts by: (1) size and color (2) size and shape	Administer both items.	2 × 3	6 / 6
49	Academic/ Cognitive: Mathematics	**8C Counts by Rote** (Count each group of ten numbers recited correctly as one correct.) Counts to: (1 2 3 4 5 6 7 8 9 10) (11 12 13 14 15 16 17 18 19 20) (21 22 23 24 25 26 27 28 29 30)	Stop after the first error.	3 × 3	9 / 9
50	Academic/ Cognitive: Mathematics	**9C Matches Quantities with Numerals** Matches quantity with numeral for: (1) 2 (2) 4 (3) 3 4. 8 5. 6	Stop after 2 incorrect responses in a row.	3 × 2	6 /10
51	Academic/ Cognitive: Mathematics	**10C Determines Total of Two Sets** Counts two groups of objects for a sum up to ten: (1) 1 dot + 2 dots = 3 dots (2) 4 dots + 2 dots = 6 dots (3) 5 stars + 5 stars = 10 stars	Administer all items.	3 × 3	9 / 9
52	Academic/ Cognitive: Literacy	**11C Reads Uppercase Letters** O A X E B S C Z D L R T M P W K F N H I Y G U V J Q	Stop after 3 incorrect responses in a row.	___ × 0.5 OR 22 × 0.5	11 /13
53		**11C Alternate—Reads Lowercase Letters** (o) (s) (x) (c) (z) (m) (p) (w) (e) (a) (i) (k) (y) (r) (t) y n (f) (h) (u) j (g) (l) b (d) q	Stop after 3 incorrect responses in a row.		
		Give credit for only *one* assessment—Reads Uppercase Letters *OR* Reads Lowercase Letters.			
54	Academic/ Cognitive: Literacy	**12C Experience with Books and Text** (1) Knows the front and back of a book (2) Understands that text progresses from left to right (3) Understands that text progresses from top to bottom	Administer all items.	3 × 1.5	4.5/ 4.5
56	Language Development	**13C Verbal Fluency and Articulation** (1) Uses sentences of at least five words (2) At least 90% of speech is intelligible	Administer both items.	2 × 5	10/10

Total Score = 89.5 /100

D. Notes/Observations: _____

E. Next Steps: Above gifted/academically talented cutoff of >88. Refer for enrichment classes.

BRIGANCE® Screen III Kindergarten Data Sheet

K

A. Child's Name Will Zimmer
Parent(s)/Caregiver(s) Pamela Zimmer
Address 4618 Kensington Ave., Raleigh, NC Phone (111) 222-1234

	Year	Month	Day
Date of Screening	2015	11	28
Birth Date	2010	2	17
Age	5	9	11

School/Program Sycamore Park Elementary
Teacher Susan Bowles
Examiner Sonya Min

B. Core Assessments			C. Scoring		
Page	**Domain**	**Directions:** Assessments may be administered in any order. For each assessment, start with the first item and proceed in order. Give credit for a skill by **circling** the item number. (1.) For a skill not demonstrated (an incorrect response), **slash through** the item number. ~~1.~~	**Discontinue**	**Number Correct × Point Value for Each**	**Child's Score**
3	Academic/ Cognitive	**1A Knows Personal Information** **Knows:** (1.) first name (2.) last name (3.) age (4.) birthday (month and day) ~~5.~~ telephone number ~~6.~~ street address	Stop after 3 incorrect responses in a row.	4 × 1.5	6 / 9
5	Language Development	**2A Names Parts of the Body** **Names:** (1.) thumbs ~~2.~~ fingernails (3.) chin (4.) chest ~~5.~~ elbows ~~6.~~ shoulders	Stop after 3 incorrect responses in a row.	3 × 1	3 / 6
6	Physical Development	**3A Gross Motor Skills** (1.) Stands on one foot for ten seconds ~~2.~~ Stands on other foot for ten seconds (3.) Stands on one foot for one second with eyes closed (4.) Stands on other foot for one second with eyes closed ~~5.~~ Walks backward toe-to-heel four steps	Stop after 3 skills not demonstrated in a row.	3 × 1	3 / 5
8	Physical Development	**4A Visual Motor Skills** **Draws:** (1.) an X (2.) a square ~~3.~~ a rectangle (4.) a triangle ~~5.~~ a diamond	Stop after 3 skills not demonstrated in a row.	3 × 1.5	4.5 / 7.5
10	Physical Development	**5A Prints Personal Information** **Prints:** (1.) first name (2.) last name	Administer both items.	2 × 3	6 / 6
12	Academic/ Cognitive: Literacy	**6A Recites Alphabet** (Count each group of letters recited correctly as one correct.) (a b c d e) (f g h i j) (k l m n o) (p q r s t) (u v w x y z)	Stop after the first error.	5 × 1	5 / 5
13	Academic/ Cognitive: Mathematics	**7A Sorts Objects (by Size, Color, Shape)** **Sorts by:** (1.) size and color ~~2.~~ size and shape	Administer both items.	1 × 3	3 / 6
14	Academic/ Cognitive: Mathematics	**8A Counts by Rote** (Count each group of ten numbers recited correctly as one correct.) **Counts to:** (1 2 3 4 5 6 7 8 9 10) (11 12 13 14 15 16 17 18 19 20) (21 22 ~~23~~ 24 25 26 27 28 29 30	Stop after the first error.	2 × 3	6 / 9
15	Academic/ Cognitive: Mathematics	**9A Matches Quantities with Numerals** **Matches quantity with numeral for:** (1.) 2 ~~2.~~ 4 (3.) 3 ~~4.~~ 8 ~~5.~~ 6	Stop after 2 incorrect responses in a row.	2 × 2	4 / 10
16	Academic/ Cognitive: Mathematics	**10A Determines Total of Two Sets** **Counts two groups of objects for a sum up to ten:** (1.) 1 dot + 2 dots = 3 dots (2.) 4 dots + 2 dots = 6 dots ~~3.~~ 5 stars + 5 stars = 10 stars	Administer all items.	2 × 3	6 / 9
17	Academic/ Cognitive: Literacy	**11A Reads Uppercase Letters** (O) (A) ~~X~~ (E) (B) (S) (C) ~~Z~~ (D) (L) ~~R~~ (T) (M) (P) ~~W~~ ~~K~~ (F) (N) ~~H~~ (I) ~~Y~~ ~~G~~ (U) ~~V~~ (J) ~~Q~~	Give credit for only *one* assessment—Reads Uppercase Letters *OR* Reads Lowercase Letters.	Stop after 3 incorrect responses in a row.	16 × 0.5
18		**11A Alternate—Reads Lowercase Letters** o s x c z m p w e a i k y r t v n f h u j g l b d q		Stop after 3 incorrect responses in a row.	OR ___ × 0.5 — 8 / 13
19	Academic/ Cognitive: Literacy	**12A Experience with Books and Text** (1.) Knows the front and back of a book ~~2.~~ Understands that text progresses from left to right ~~3.~~ Understands that text progresses from top to bottom	Administer all items.	1 × 1.5	1.5 / 4.5
21	Language Development	**13A Verbal Fluency and Articulation** (1.) Uses sentences of at least five words (2.) At least 90% of speech is intelligible	Administer both items.	2 × 5	10 / 10
				Total Score =	66 / 100

D. Notes/Observations: _____

E. Next Steps: Below cutoff of <70. (4 risk factors identified) Score on Acad/Cog assessments = 39.5; below at-risk cutoff — Refer for evaluation.

BRIGANCE® Screen III First Grade Data Sheet

1st grade

A. Child's Name Philip Giattino
Parent(s)/Caregiver(s) Russell and Maureen Giattino
Address 4800 Grove Ave. Phone (111) 333-1234

	Year	Month	Day
Date of Screening	2016	9	18
Birth Date	2010	5	2
Age	6	4	16

School/Program Palmetto Elementary
Teacher Brindley Lowe
Examiner Martha Johann

B. Core Assessments			C. Scoring		
Page	**Domain**	**Directions:** Assessments may be administered in any order. For each assessment, start with the first item and proceed in order. Give credit for a skill by **circling** the item number. (1.) For a skill not demonstrated (an incorrect response), **slash through** the item number. 1.	**Discontinue**	**Number Correct × Point Value for Each**	**Child's Score**
26	Academic/ Cognitive	**1B Knows Personal Information** Knows: (1.) Telephone number (2.) Street address (3.) Complete address (4.) Birthday (month and day) 5. Year of birth	Administer all items.	4 × 1.5	6 / 7.5
28	Language Development	**2B Auditory Discrimination** Discriminates beginning sounds: (1.) job—job (*the same*) (2.) go—so (*not the same*) (3.) pig—big (*not the same*) Discriminates ending sounds: (4.) red—red (*the same*) (5.) bus—buzz (*not the same*)	Administer all items.	5 × 1.5	7.5 / 7.5
29	Academic/ Cognitive: Literacy	**3B Visual Discrimination—Lowercase Letters and Words** (1.) o (2.) c (3.) c (4.) b (5.) n (6.) on (7.) men (8.) can (9.) that (10.) was	Stop after 3 incorrect responses in a row.	10 × 1	10 /10
30	Academic/ Cognitive: Literacy	**4B Reads Lowercase Letters** o s x c z m p w e a i k y r t v n f h u j g l b d q	Stop after 3 incorrect responses in a row.	26 × 0.5	13 /13
31	Language Development	**5B Identifies Initial Letters** (1.) mat, men, mud – m (2.) heel, hood, hut – h (3.) date, deck, dog – d	Administer all items.	3 × 3	9 / 9
32	Academic/ Cognitive: Mathematics	**6B Sorts Objects (by Size, Color, Shape)** Sorts by Two Attributes: (1.) Sorts by size and color (2.) Sorts by size and shape Sorts by Three Attributes: (3.) Sorts by size, color, and shape (4.) Sorts by size, color, and shape	Stop after 2 incorrect responses in a row.	4 × 2.5	10 /10
34	Language Development	**7B Listening Vocabulary Comprehension** (1.) hand (2.) duck (3.) fish (4.) brush 5. scissors	Stop after 3 incorrect responses in a row.	4 × 2	8 /10
35	Academic/ Cognitive: Literacy	**8B Word Recognition** (1.) a (2.) go (3.) is (4.) my (5.) run (6.) do (7.) can (8.) down (9.) come (10.) yes (11.) so (12.) of (13.) green (14.) eat (15.) fast (16.) friend (17.) picture 18. both 19. never (20.) long	Stop after 3 incorrect responses in a row.	18 × 0.5	9 /10
36	Physical Development	**9B Prints Personal Information** Prints: (1.) first name (2.) last name	Administer both items.	2 × 2	4 / 4
37	Physical Development	**10B Writes Numerals in Sequence** 1 2 3 4 5 6 7 8 9 10	Stop after the first error.	10 × 0.5	5 / 5
38	Academic/ Cognitive: Mathematics	**11B Adds and Subtracts** (1.) 5 + 1 = 6 (2.) 3 + 4 = 7 (3.) 3 − 2 = 1 (4.) 5 − 2 = 3	Administer all items.	4 × 2	8 / 8
40	Academic/ Cognitive: Mathematics	**12B Solves Word Problems** (1.) (*no*) 2. (*3*) (3.) (*yes*) (4.) (*yes*)	Administer all items.	3 × 1.5	4.5 / 6
				Total Score =	94 /100

D. Notes/Observations: Very sociable – seemed to enjoy screening process.

E. Next Steps: Score is above gifted/academically talented cutoff of >88. Refer for enrichment classes.

NOTES

Standardization Study Sites

To gather the data for the standardization of the *IED III*, many examiners administered the assessments to over 2400 children located at 107 locations across 33 states and one Canadian province. We deeply thank the sites and personnel who assisted in the standardization of the *BRIGANCE® Inventory of Early Development III Standardized* (*IED III Standardized*). Below is a list of participating sites and independent examiners.

Arizona

Chandler
- Mannie Gardson
- Lindsay Hiatt

Paradise Valley
- Phoenix Country Day School

Sanders (Navajo Nation)
- Sanders Elementary School (Sanders Unified School District #18)

California

Alameda
- Janice Kim

Daly City
- Sa Rang Childcare Center

Marysville
- Fusion Schools

Olivehurst
- Fusion Schools

Ridgecrest
- High Desert Leapin' Lizards (Sierra Sands Unified School District)

Riverside
- Sunshine Early Childhood Center (Riverside Unified School District)

Sacramento
- Sacramento City USD-Child Development, Partners for School Readiness

San Francisco
- St. Mary's Chinese Day School

Tarzana
- Nicole Goodson

Yuba City
- Fusion Schools

Colorado

Boulder
- Boulder Community Hospital Breastfeeding Club

Denver
- Children's Corner Learning Center
- Highland Mommies
- Irene Bueno
- Tessa Gardner

Edgewater
- Lightway at Sloans
- Mamie Goodson

Golden
- Lindsay Hiatt

Louisville
- Lindsay Hiatt

Lyons
- Katie Zalzal
- Mamie Goodson

Telluride
- Domes Fernald

Westminster
- Lindsay Hiatt
- Mamie Goodson

Connecticut

Westport
- Children's Community Development Center

Florida

Fort Myers
- Child Care of Southwest Florida
- Lee County Early Childhood Learning Services (School District of Lee County)

Lake City
- Eastside Elementary School (Columbia County Schools)

Miami
- Alliance for Early Care & Education

Naples
- Nicaea Academy

Punta Gorda
- Baker Center Early Education Program (Charlotte County Public Schools)

Georgia

Augusta
- Nicole Goodson

Clarkston
- Partnership for Community Action

Lilburn
- Five Forks Academy

Hawaii

Kahului
- Lihikai Elementary (Maui School District)

Kailua-Kona
- Kealakehe Elementary (Hawaii School District)

Hilo
- Chiefess Kapi'olani Elementary (Hawaii School District)
- Joyland Preschool

Honolulu
- Aliamanu Elementary (Central School District)

Pukalani
- Pukalani Elementary (Maui School District)

Illinois

Allendale
- Mary Goodson

Chicago
- Neil Elementary School (Chicago Public Schools)

Manteno
- Manteno Community Unit School District No. 5

Mt. Zion
- Mamie Goodson
- Mary Goodson

Park Forest
- The Children's House

Indiana

Avon
- Nicole Goodson

Bloomington
- Bloomington Area Birth Services
- Kelly Nelson
- Mary Goodson
- Parents' Day Out

Cedar Lake
- Ruth Linz-Wietecha

Evansville
- Mary Goodson
- Emily Goodson

Fort Wayne
- Emily Goodson

French Lick
- Mary Goodson

Indianapolis
- Nicole Goodson

Jasper
- Mary Goodson
- Emily Goodson

Lowell
- Mary Goodson
- Emily Goodson

Newburgh
- Mary Goodson
- Emily Goodson

West Lafayette
- Purdue Baby Labs

Zionsville
- Mary Goodson

Iowa

Iowa City
- Mary Goodson
- Emily Goodson

Kansas

Kansas City
- Mary Goodson

Kentucky

Lexington
- Nicole Goodson

Louisville
- Leslie Jenkins

Maysville
- Mason County School District

Monticello
- Walker Elementary School (Wayne County Schools)

Louisiana

Alexandria
- Tiny Tots Skool

Lafayette
- St. Mary's Early Learning Center

New Orleans
- Mamie Goodson
- Mary Goodson

Scott
- Sts. Peter and Paul Catholic School

Shreveport
- Learning Rx

Massachusetts

Boston
- BNY Mellon Early Learning Center, Ellis Infant-Toddler Program

Kingston
- Jennifer Gilligan

Lowell
- St. Louis School
- St. Margaret School

Needham
- Isis Parenting

Quincy
- Kai Tan

Michigan

Eagle
- Nicole Goodson

Rockford
- Rockford Preschool Childcare Center (Rockford Public Schools)

Minnesota

St. Louis Park
- Morning Star Women's Health & Birth Center
- Torah Academy

Missouri

Kirksville
- Mary Goodson

Nevada

Las Vegas
- Myrtle Tate Elementary School (Clark County School District)
- Ruby Thomas Elementary School (Clark County School District)
- Ruth Fyfe Elementary School (Clark County School District)

New Hampshire

Amherst
- Sunrise Children's Center (Regional Services & Education Center, Inc.)

New Jersey

Morristown
- Maryann Clementi Jones

Old Bridge
- John Glenn Elementary School (Old Bridge Township Public Schools)

New Mexico

Santa Fe
- Mannie Gardson
- Michelle Berte
- Amberleigh Rodriguez

New York

Albany
- Boys & Girls Club of Albany
- Eagle Point Elementary School (City School District of Albany)
- Thomas O'Brien Academy of Science & Technology (City School District of Albany)

Grand Island
- St. Stephen School

North Carolina

Charlotte
- Mamie Goodson

Shelby
- La Petite Academy

Winston-Salem
- Our Lady of Mercy School

Ohio

Centerville
- Mary Goodson
- Emily Goodson

Cincinnati
- Mary Goodson
- Emily Goodson

Columbus
- Mary Goodson
- Emily Goodson

Madison
- Stepping Stones Child Development Center

Marion
- St. Mary's Elementary School

Oklahoma

Oklahoma City
- Mary Goodson
- Emily Goodson

Tulsa
- Christ the Redeemer Lutheran Preschool

Pennsylvania

Alexandria
- Juniata Valley Elementary School (Juniata Valley School District)

Allison Park
- St. Ursula School

McDonald
- South Fayette Elementary School (South Fayette Township District)

South Carolina

Georgetown
- Miss Ruby's Kids Early Literacy Program

Tennessee

Knoxville
- Early Learning Center for Research and Practice/University of Tennessee-Knoxville

Memphis
- Mary Goodson
- Emily Goodson

Murfreesboro
- Mary Goodson
- Emily Goodson

Nashville
- Lindsay Hiatt

Ooltewah
- Nicole Goodson

Texas

Austin
- St. Luke Infant Care Center

Mt. Pleasant
- Region 8 Education Service Center

Utah

Riverton
- St. Andrew School

Salt Lake City
- J.E. Cosgriff Memorial Catholic School
- Our Lady of Lourdes School

Virginia

Annandale
- St. Michael's School

Big Stone Gap
- Happy Hearts Childcare Center

Washington

Okanogan
- Forest Friends Early Learning Center

Wisconsin

Menomonie
- Morning Star Women's Health & Birth Center

Newfoundland (Canada)
- Corner Brook
- Western Health Center Corner Brook

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