

BBCS-4: R™ and BSRA™-4: Assessing Concepts for School Readiness

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September 12, 2023



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- 1 | Importance of basic concepts to child development: Language, cognitive, and school readiness
- 2 | Overview of concept development issues
- 3 | BBCS-4 R and BSRA-4 administration and scoring
- 4 | Integrate concept results into a comprehensive assessment battery
- 5 | Q & A

Agenda



Importance of basic concepts
to *language development*,
cognitive functioning, and *school*
readiness...and a definition

A definition of basic concepts

A basic concept in all languages is:

... a word, in its most elementary sense, that is a label for one of the basic colors, comparatives, directions, materials, positions, quantities, relationships, sequences, shapes, sizes, social or emotional states and characteristics, textures, and time. Basic concepts are basic in the sense that they represent the most rudimentary concepts in these specific categorical areas...



Concepts are the 'foundation of intelligence'
Jerome Kagan

Conceptual levels

Basic Concepts: The most rudimentary words used to describe salient aspects of the environment (e.g., *rough, hot, blue, liquid*).

Topical Concepts: Conceptual terms used within broader subject areas (e.g., *desert, marsh, jungle, ocean*).

Over-arching Concepts: More inclusive concepts that span beyond basic and topical concepts (e.g., *environments, patterns, systems*).



The importance of basic concepts

Basic concepts...

are the foundational terms used to describe young children's everyday world (Bracken, 1984; 1998; 2007; 2022).

are important to vocabulary development, especially for young students who are most at risk for school failure (e.g., Shaywitz & Shaywitz, 2005).

are cognitively more complex and functional than common vocabulary terms.



Newman (2006, p. 28), "Low-income preschool children need content-rich instruction...including knowledge of words and the concepts that connect them."

The importance of basic concepts

Basic concepts...

are needed to understand classroom conversations and teacher directions (Boehm, Classon, & Kelly, 1986; Bracken, 1986).

predict reading, mathematics, and other subject areas better than do traditional vocabulary tests (e.g., PPVT) (Larabee, 2007).

are needed to understand administration directions of early childhood tests of intelligence (Bracken, 1986; Flanagan, Alfonso, Kaminer, Rader, 1995; Kaufman, 1978) and achievement (Cummings & Nelson, 1980).



The importance of basic concepts

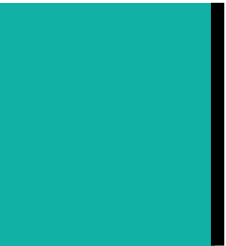
Basic concepts:

are highly relevant educational terms, not simple age-graded words found on common vocabulary tests.

are central to early childhood educational standards across all 50 states (Bracken & Crawford, 2006, 2010).

have been mapped, categorized, and effectively assessed and remediated in an evidence-based methodology (Bracken & Crawford, 2006, 2010; Bracken & Panter, 2010; Panter, 2000; Panter & Bracken, 2009).





Correlates with powerful educational constructs

Basic concepts have powerful correlations with comprehensive tests of:

- *Intelligence, Cognition, Overall Ability*
- *Language, Vocabulary, and Early Educational Skills*
- *Achievement and School Readiness*

Cognitive tasks and cognitive complexity are best predictors of cognitive and academic outcomes!

Correlations with intelligence tests



Stanford-Binet IV

$r = .91$ with the
Stanford- Binet IV
(Howell & Bracken,
1992)



WPPSI-R

$r = .77 - .85$ with the
WPPSI-R (Laughlin,
1995; Panter, 2000)



Differential Abilities Test

$r = .80$ with the
Differential Abilities
Test (McIntosh et al.,
1995)



KABC

$r = .56 - .57$ with the
Kaufman Assessment
Battery for Children
(Bracken, et al., 1991;
Laughlin, 1995
)

Correlations with achievement and school readiness tests



Metropolitan Readiness Test

$r = .67$ to $.81$ with the Metropolitan Readiness Test (Panter, 2002)



Woodcock-Johnson

$r = .65$ with the Woodcock-Johnson Psychoeducational Battery - Achievement (Bracken & Walker, 1997)



K-ABC

$r = .64$ with the Kaufman Assessment Battery for Children: Achievement (Zucker & Riordan, 1990)

WRAT

$r = .50$ to $.60$ with the WRAT (Stern & McCallum, 1988)



WIAT-4

$SRC r = .42$ to $.74$ with the Wechsler Individual Achievement (Bracken, 2023)

Correlations with language and vocabulary tests



Boehm Test of Basic Concepts

$r = .78 \text{ to } .88$ Boehm Test of Basic Concepts (Bracken & Cato, 1986)



PPVT-4

$r = .67 \text{ to } .88$ Peabody Picture Vocabulary Test-4 (Dunn & Dunn, 2006)



PLS-4

$r = .61 \text{ to } .78$ Preschool Language Scale - 4 (Bracken, 2006)

CELF-P

$r = .86 - .91$ CELF-P Receptive; .86 Expressive (Harrington, et al., 2010)



Token Test

$r = .68$ Token Test (Bracken & Cato, 1986)

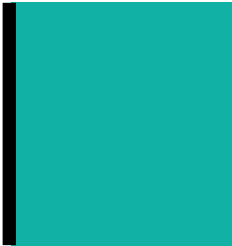
Questioning assumptions about concept acquisition

“All children enter school already knowing important basic concepts.”

Preschool *intelligence test directions* are replete with basic concepts children do not understand (Bracken, 1986; Flanagan, Alfonso, & Kaminer, 1995; Kaufman, 1978).

Early childhood *achievement test directions* are replete with basic concepts children do not comprehend (Cummings & Nelson, 1980).

Young children do not understand basic concepts commonly used in classroom directions and discussions (Boehm, Classon, & Kelly, 1986; Bracken, 1986).



Classroom directions given to a 5-year-old kindergarten student

"All children enter school already knowing important basic concepts."

Concepts and Percent Known by 5-Year-Olds			
"First, open the classroom door. Next, go to the center of the room. Afterward, look carefully before you decide where to sit down. Never sit across from the doorway."			
Open (99%)	Next (59%)	Center (48%)	
Down (88%)	Across (55%)	Never (30%)	
First (60%)	Before (50%)	Afterward (25%)	

Questioning assumptions about concept acquisition

“All children begin school on an equal conceptual footing.”

- Children of poverty know fewer basic concepts than more economically advantaged students.
- ELL/ESL students know far fewer basic concepts (in English) than native English speakers.
- Children with speech/language, hearing, vision, and cognitive disabilities know fewer basic concepts than nondisabled students.

Questioning assumptions about concept acquisition

“Schools systematically teach basic concepts to children in early childhood grades.”

- None of the 50 states' early-childhood educational standards include all or even most basic concepts (Bracken & Crawford, 2006).
- Schools typically do not follow a systematic 'conceptual map' or proven pedagogy for teaching basic concepts (Bracken, 1986, 2006).
- Basic concepts are usually taught with little consideration for the empirically derived scope and sequence of concept development (Bracken, 1986, 2006).

Questioning assumptions about concept acquisition

“Parents and teachers know which concepts children need to master.”

- Research has identified a wide spectrum of basic concepts children need to describe and discuss their world or to follow others' directions.
- Parents often teach only obvious concepts to their children prior to attending school (e.g., colors, numbers, letters).
- Parents and teachers often have misperceptions about the taxonomical nature of concept domains and subdomains (e.g., primary colors, secondary colors, tertiary colors, absolutes).
- Parents often forget to address essential social-emotional concepts that are an important part of school readiness and self-regulation.

Updates to both tests

- Expanded age range of 3:0 through 7:11
- Updated normative data reflect the American Community Survey of the US Census Bureau
- Digital and print editions; standardization data collected in a digital format
- Updated items and artwork to reflect current societal norms and culture
- Includes early Science, Technology, Engineering, Arts, Mathematics (STEAM) concepts
- *School Readiness Composite* now includes the *Self/Social Awareness* subtest – concepts related to self-regulation and emotion
- Updated start points based on the child's age; basal and ceiling rules maintain reasonable administration time (even with 38 new concepts added)

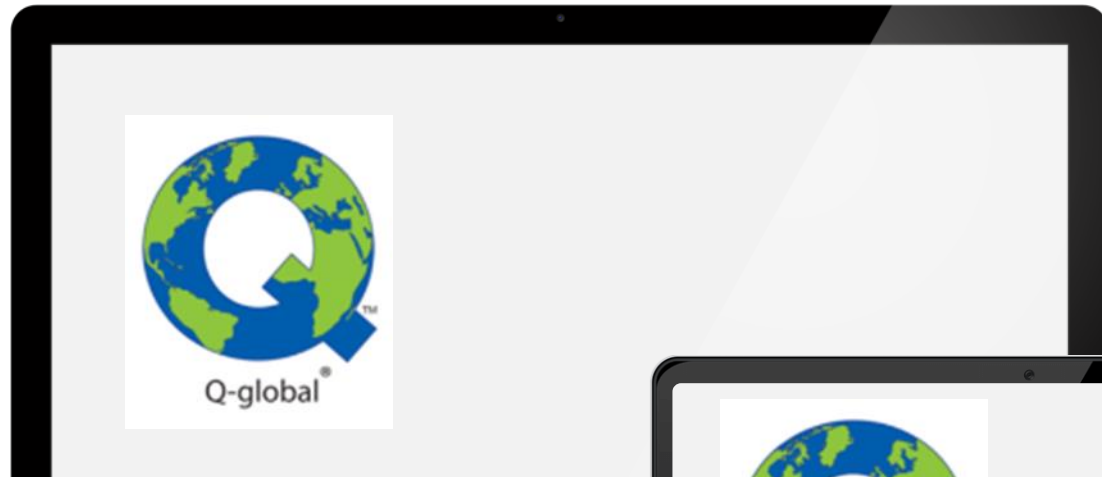


Overview of updates (continued)

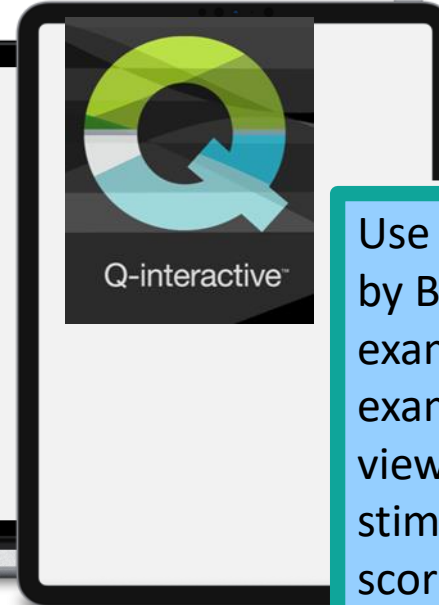
Updates to both tests

- Improved floors and ceilings to assist in identification of children who have developmental delays or who are academically/intellectually gifted
- Identified STEAM concepts; foundational concepts emphasized in science, technology, engineering, arts, and math curricula
- Spanish translation of the *Record Form* and *Concept Development Guide*

BBCS-4:R and BSRA-4 now provide options for digital administration and scoring (in addition to traditional print option)



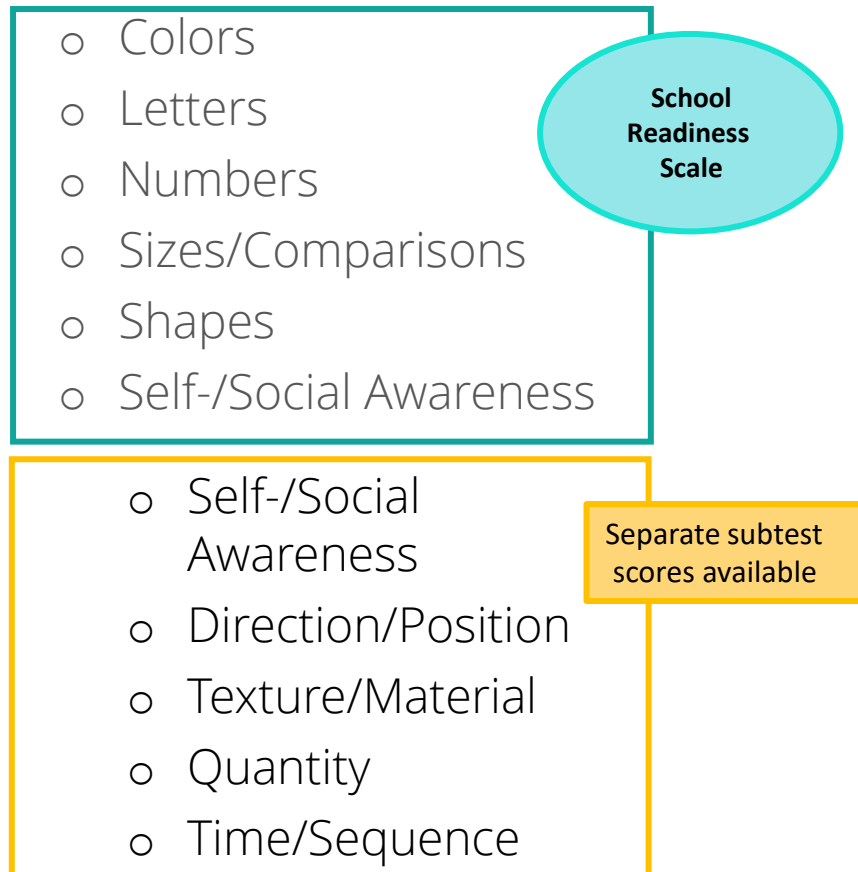
Q-global digital stimulus books can be used for in-person or remote test administration. Scores can be entered in the scoring program to obtain a printed report.



Use two iPads connected by Bluetooth -- one for the examiner, one for the examinee -- to present, view, and respond to test stimuli. Automated scoring follows the examinee's response.

BBCS-4:R

- Assesses comprehension of **320** concepts
- 10 content categories



- **159** concepts associated with early science, technology, engineering, arts, and math curriculum for the K to Grade 2 age group
- Administration time: 20 to 40 minutes
- Composite scores (School Readiness Composite and Receptive Total Composite) provide standard scores, percentile ranks and descriptive classifications
- Individual subtest scores for subtests 6-10 and the School Readiness Composite
 - Scaled scores
 - Percentile ranks
 - Age equivalents
 - Growth scale values
 - Descriptive classifications
 - Percent correct (English or Spanish administration)

BSRA-4



- Assesses comprehension of 134 concepts
- 6 content categories
 - Colors
 - Letters
 - Numbers
 - Sizes/Comparisons
 - Shapes
 - Self/Social Awareness
- 64 concepts associated with early science, technology, engineering, arts, and math (STEAM curricula) for K to Grade 2 age levels
- Administration time: 15 to 20 minutes
- Test score: (SRC Composite)
 - standard score
 - percentile rank
 - age equivalent
 - descriptive classification
- Percent correct by subtest (for English and Spanish administrations)

Examiners: Personnel trained at level A may administer and score the test; however, level B or C staff should review scoring and only level B or C staff may interpret the scores.

Concept Development Guide

Updated version of the *Parent/Teacher Form* (available in English and Spanish)

M = The concept is probably understood in most situations (mastered).

NM = The concept is probably not understood in most situations (not mastered).

Colors

Concept	M	NM
<u>red</u>	☐	☐
<u>blue</u>	☐	☐
<u>green</u>	☐	☐
<u>black</u>	☐	☐
<u>yellow</u>	☐	☐

Numbers/Counting*

Concept	M	NM
<u>number</u>	☐	☐
<u>1</u>	☐	☐
<u>3</u>	☐	☐
<u>4</u>	☐	☐
<u>5</u>	☐	☐

Sizes/Comparisons

Concept	M	NM
<u>big</u>	☐	☐
<u>small</u>	☐	☐
<u>long</u>	☐	☐
<u>deep</u>	☐	☐
<u>tall</u>	☐	☐

Shapes

Concept	M	NM
<u>star</u>	☐	☐
<u>heart</u>	☐	☐
<u>circle</u>	☐	☐
<u>in a line</u>	☐	☐
<u>square</u>	☐	☐

Self-/Social Awareness

Concept	M	NM
<u>crying</u>	☐	☐
<u>laughing</u>	☐	☐
<u>sad</u>	☐	☐
<u>afraid</u>	☐	☐
<u>brothers</u>	☐	☐

Concept Domains, subdomains, examples, and relationship to state standards

01

Early Childhood Educational Standards

Examples of US state standards applicable to the concepts tested on the BBCS-4:R and BSRA-4 , including STEAM concepts

02

Conceptual Domains and Subdomains

Inclusive BBCS-4:R domains and subdomains, example:

Colors: Primary, secondary, tertiary, absolute)

Letters: Upper-, lower-case letter recognition, letter sounds

03

Concept Examples

Under, Over, Between...
First, Second, Third, Next...
Sad, Happy, Tired,..
Solid, Liquid, Gas...
Hot, Cold, Warm...

Virginia State Standards: *Colors*

Sort and classify objects according to one or two attributes (including color)

Identify and explore patterns, e.g., ...red, blue, red, blue

Describe and sort items by their physical properties, e.g., color...

Colors subtest

Subdomains

3 Primary Colors

3 Secondary Colors

- Combination of two primary colors

3 Absolutes (Non-Hues)

Tertiary Colors

- Mixing a primary color with a secondary color

Concept Example

Red, Yellow, Blue

Orange, Green, Purple

White, Black, (Gray)

Violet (Blue + Purple)



Colors subtest

Only a partial view of the item on the left is shown. The example on the right is not an actual test item.

Ohio State Standards: *Letters*

With modeling and support,
recognize the sounds
associated with letters.

With modeling and support,
recognize and name some
upper- and lower-case letters
in addition to those in first
name.

Letters subtest

Pre-Literacy Skills

Recognition

- Upper-case
- Lower-case

BBCS:E*

Naming

- Upper-case
- Lower-case

Letter Sounds

Letter Blend Sounds

Concept Examples

Point to B, L, S

Point to c, f, p

BBCS:E

Name this letter, W, P, R, E

Name this letter, a, e, g, k

What sound does b make?

What sound does ch make?

* BBCS:E was not revised and likely will not become a 4th Edition; although it may continue be used independently



Letters subtest

Show me the... S

Show me the... k

NOTE: Neither of these test items are actual test items on the BBCS-4:R or the BSRA-4.

Georgia State Standards:
Numbers

Counts at least 10 objects using
one-to-one correspondence

Matches numerals to sets
of objects with the same
number, 0–10.

Numbers/Counting subtest

Math Literacy Skills

Place Counting Number Identification

- 0-9
- Double Digits
- Triple Digits

Bracken Basic Concept Scale: Expressive (2006)

Rote Counting Number Naming

- 0-9
- Double Digits
- Triple Digits

Concept Examples

Counting with one-to-one correspondence

Point to the 1, 5, 8, 0

Point to the 22, 58, 95

Point to 138, 395, 783

Bracken Basic Concept Scale: Expressive (2006)

Counting without place value

What is this number? 2, 6, 9

What is this number? 44, 78

What is this number? 234, 783



Numbers/Counting subtest

Show me... three flowers

Show me... 41

NOTE: Neither of these test items are actual test items on the BBCS-4:R or the BSRA-4.

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**Colorado State
Standards:
*Sizes/Comparisons***

Orders objects by size or
length

Compare objects using
attributes of length, weight,
and size (e.g., bigger,
longer, taller, heavier)

Classify, compare, and
contrast objects, events,
and experiences

Sizes/Comparisons subtest

Dimensions and Size Subdomains

Three-Dimensional Size

Two-Dimensional Size

- Vertical
- Horizontal

Comparative Sizes

Concept Examples

Big, Large, Small, Little

Tall, Short

Long, Short

Similar, Same, Different



Sizes/Comparisons subtest

Show me... the little *ball*

**Show me... which one is
lighter than the others**

NOTE: Neither of these test items are actual test items on the BBCS-4:R or the BSRA-4.

Connecticut State Standards: *Shapes*

Identify and describe a variety of 2-dimensional and 3-dimensional shapes with mathematical names (e.g., ball/sphere, box/rectangular prism, can/cylinder) regardless of orientation and size

Sort and classify objects by one attribute into two or more groups (e.g., color, size, shape)

Identify 2-dimensional shapes (starting with familiar shapes such as circle and triangle) in different orientations and sizes

Shapes subtest

Shape Subdomains

Linear (vertical/horizontal)

- Curvilinear Line
- Diagonal Line
- Angular Line

Two-Dimensional Shapes

Three-Dimensional Shapes

Concept Examples

Line, Straight

Curve

Diagonal

Angle

Circle, Square, Triangle

Sphere, Cube, Pyramid



Shapes subtest

Show me... which one is *round*

Show me... which ducks are *in a row*

NOTE: Neither of these test items are actual test items on the BBCS-4:R or the BSRA-4.

Mississippi Standards: *Self-/Social Awareness*

Describe self, using several basic characteristics (e.g., gender, age, hair color, eye color).

With prompting and support, recognize emotions

With guidance and support, identify some similarities and differences in family structure, culture, ability, language, age and gender



Self-/Social Awareness subtest

Personal and Cultural Subdomains

Affective Feelings

Health/Physical

Familial Relationships

Age

Mores

Conceptual Examples

Happy, Sad, Excited

Healthy, Sick, Tired

Mother, Father, Sister

Old, Young

Right, Wrong, Correct

Self-/Social Awareness subtest

Show me...
which person is *anxious*

Show me...
which person is *young*

NOTE: Neither of these test items are actual test items on the BBCS-4:R or the BSRA-4.

Iowa State Standards: ***direction and position***

The child demonstrates understanding of spatial words such as up, down, over, under, top, bottom, inside, outside, in front, and behind.

Direction/Position subtest (i.e., Relational Concepts)

Direction and Position Subdomains

Three-dimensional
Internal/External
Relative Proximity
Self/Other Perspective
Front/Rear
Specific Locations

Concept Examples

Under, Over, Right, Left
Inside, Outside, Around
Near, Far, Beside
My Right, My Left, Your Right
In Front of, Behind
Edge, Corner

Direction/Position subtest

Show me... which child is stepping
into the water?

Show me... which line is horizontal?

Neither of these test items are actual test items on the BBCS-4:R or the BSRA-4.

Montana State Standards:

Textures and Materials

The child may arrange a variety of objects by one or two characteristics, such as shape...or texture.

The child may sort natural objects by size, shape, color, smell, texture, etc. and describe their attributes, such as "These rocks are all round, smooth and red."

Textures/Materials subtest

Environmental Conditions

States of Matter

Textures

Materials

Material Characteristics

Temperatures

Concept Examples

Solid, Liquid, Gas

Rough, Smooth, Sharp

Cloth, Wood, Metal

Wet, Dry, Shiny, Dull

Hot, Cold

Textures/Materials subtest

Show me... which one is *sharp*

show me... which one is *bumpy*

Neither of these test items are actual test items on the BBCS-4:R or the BSRA-4.

Maine State Standards: *Quantity*

Recognizes measurable attributes of objects, such as length, weight and capacity of everyday objects (e.g., long, short, tall, heavy, light, big, small, full, empty)

Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group up to 10.

Quantity subtest

Quantitative Subdomains

Part/Whole Relations

Relative Quantity

Volume

Multiples

Comparatives/Superlatives

Fractions

Math Signs/Symbols

Concept Examples

Whole, Part, Piece

Lots, Few, Some, None

Full, Empty

Pair, Double, Triple, Dozen

More, Less, Most, Least

Half, One-Third

+, -, X

Quantity subtest

**Show me... which person has
the *greatest* number of chickens**

**Show me... which child is taking
another piece of candy**

Neither of these test items are actual test items on the BBCS-4:R or the BSRA-4.

Hawaii State Standards: *Time/Sequence*

State periods of day when
events occur

Use time phrases and tense
selection appropriately
(e.g., today, yesterday,
tomorrow, later)

Time / Sequence subtest

Temporal Subdomains

Mathematical Seriation
Frequency
Natural Occurring Events
Temporal Absolutes
Temporal Order
Speed
Relative Age
Temporal Nuances
Larger Temporal Periods

Concept Examples

First, Second, Third
Once, Twice
Morning, Daytime, Before,
Never, Always
Early, Late, Next, Arriving
Fast, Slow
New, Old, Young, Old
Nearly, Just, Waiting
Days, Weeks, Months, Seasons

Time / Sequence subtest

Show me... where it is *morning*

Show me... where the meal is *over*

Neither of these test items are actual test items on the BBCS-4:R or the BSRA-4.

Administration and Scoring

An easy test to administer

- Receptive format requires no verbal response
- Colorful, stimulating, and developmentally appropriate visual stimuli maintains children's interest and engagement
- Consistent, appearance, style, and response mode throughout the test
- Average administration times
 - 20-40 minutes for BBCS-4: R
 - 15-20 minutes for BSRA-4

Examiners: Personnel trained at level A may administer and score the test; however, level B or C staff should review scoring and only level B or C staff may interpret the scores.

Calculating chronological age

	Year	Month	Day
Date of test	2022 1	8 20	31
Date of birth	2018	9	2
Chronological age	3	11	29

Subtract the child's birth date from the test date

- When borrowing days from months, always borrow 30 days regardless of the month.
- When borrowing months from years, always borrow 12 months.
- Do not round days up or down to the nearest month when calculating age. If the child's current chronological age is calculated as 3 years 11 months 29 days, do not round up to 4 years 0 months.

Trial items

Simple transition from environmental non-test questions to test materials, thus ensuring the child understands task expectations before testing begins.

Trial 1: If I ask you to show me your shoes, where would you point?

Trial 2: Show me your hair.

Trial 3: Now show me the floor.

Trial 4: Show me the ball. (Confirm that the child can identify at least one picture in the four-picture display).

Instructions for administering the trial items are on page 2 of the Record Form.

******Do not skip trial items******

Subtest administration rules

All Subtests

- Begin at the start point based on the child's age.
- Introduce test items by saying, "Show me..."
- Items with four response choices: Circle 1 for correct answers, 0 for incorrect answers, and NR and score as 0 for no response.
- You may repeat the item, if the child:
 - requests a repetition
 - indicates uncertainty about the response
 - does not respond within 10 seconds
- Do not repeat the item if the child responds incorrectly; does not indicate uncertainty about the response; or does not ask you to repeat the item.

Considerations based on child responses

- If a child shows a perseverative pattern of pointing to response options located in only one quadrant on the stimulus page:
 - Point to each response option, one at a time while saying, "Look at this picture, and this one, and this one, and this one. Now, show me...(concept)."
- If a child points to more than one option:
 - Say to the child, "Which one is your answer, show me...(concept)."
- If a child self-corrects:
 - Accept the self-correction and score the item as correct.
- If a child initially responds with the correct response, but then changes to an incorrect response:
 - Accept the child's changed response and score the item as incorrect.

Recording responses and scoring

me which color is . . .

Response		Score	
..	_____ NR	1	0
..	_____ NR	1	0
..	_____ NR	1	0
..	_____ NR	1	0
..	_____ NR	1	0
..	_____ NR	1	0
..	_____ NR	1	0
..	_____ NR	1	0
..	_____ NR	1	0
..	_____ NR	1	0
..	_____ NR	1	0
..	1 2 3 4 NR	1	0
..	1 2 3 4 NR	1	0

Raw Score

Scoring/Recording Responses

- Score 1 if the child responds correctly
- Score 0 if the child responds incorrectly
- Circle NR and 0 if the child does not respond.
- Items 1 – 10, write the alternate color the child selected if incorrect; if correct, just record score.
- Use the four-point response options to note the color (or picture number for items 11 and 12) the child pointed to.

Basal and discontinue rules

Start Point

Age-based start points

Basal Rule

Correct response to 3
consecutive items (All Subtests)

Discontinue Point

3 consecutive 0 scores
on Subtests 1 - 6

4 consecutive 0 scores
on Subtests 7-10

Rules for the SRC subtests (1-6)

START POINTS 
Age-based start points

BASAL
3 consecutive 1 scores

STEAM (Science, Technology, Engineering, Art, Math)
Item numbers underlined for STEAM concepts

DISCONTINUE POINT 
3 consecutive 0 scores

Rules for subtests 7-10

START POINTS 
Age-based start points

BASAL
3 consecutive 1 scores

STEAM (Science, Technology, Engineering, Art, Math)
Item numbers underlined for STEAM concepts

DISCONTINUE POINT 
4 consecutive 0 scores

Scores and descriptive classifications

- Subtest scaled scores
- Composite standard scores
 - School readiness composite
 - Receptive total composite
- Confidence Intervals
- Percentile ranks
- Growth scale values
- Age equivalents
- Descriptive classifications
 - Very delayed
 - Delayed
 - Average
 - Advanced
 - Very Advanced

Score summary									
Subtest	Raw score	Scaled score	Scaled score points +/-	Scaled score confidence interval (% Level)	Percentile rank	Percentile rank confidence interval	Descriptive classification	Growth scale value	Age equivalent
1-6. SRS				to		to			
6. Self-/Social Awareness				to		to			
7. Direction/ Position				to		to			
8. Texture/ Material				to		to			
9. Quantity				to		to			
10. Time/ Sequence				to		to			

Composite	Raw score	Sum of scaled scores	Composite score*	Composite score confidence interval (% Level)	Percentile rank	Percentile rank confidence interval	Descriptive classification
Receptive SRC						to	
Receptive TC						to	

*Receptive SRC based on sum of Subtests 1-10 scaled scores; Receptive SRC based on sum of Subtests 1-6 SRS raw score.

Internal consistency reliability of the BBCS-4:R normative sample by age

Table 14. Internal Consistency Reliability of the BBCS-4:R Normative Sample by Age

Internal consistency reliability										Average r_{xx}
Score	3:0–3:5	3:6–3:11	4:0–4:5	4:6–4:11	5:0–5:5	5:6–5:11	6:0–6:5	6:6–6:11	7:0–7:11	
1–6. SRS	.97	.97	.98	.99	.98	.97	.97	.98	.96	.98
6. Self-/Social Awareness	.90	.93	.96	.95	.93	.95	.90	.96	.88	.93
7. Direction/Position	.97	.97	.98	.98	.97	.96	.97	.97	.94	.97
8. Texture/Material	.91	.93	.94	.95	.94	.91	.90	.90	.92	.92
9. Quantity	.88	.95	.94	.94	.94	.94	.96	.92	.94	.94
10. Time/Sequence	.85	.91	.93	.94	.95	.93	.92	.95	.92	.93
Receptive TC	.97	.99	.99	.99	.99	.98	.99	.99	.98	.99
Receptive SRC	.97	.97	.98	.99	.98	.97	.97	.98	.96	.98

Standard errors of measurement of the BBCS-4 normative sample by age

Standard errors of measurement										Average
Score	3:0–3:5	3:6–3:11	4:0–4:5	4:6–4:11	5:0–5:5	5:6–5:11	6:0–6:5	6:6–6:11	7:0–7:11	r_{xx}
1–6. SRS	0.52	0.52	0.42	0.30	0.42	0.52	0.52	0.42	0.60	0.48
6. Self-/Social Awareness	0.95	0.79	0.60	0.67	0.79	0.67	0.95	0.60	1.04	0.80
7. Direction/Position	0.52	0.52	0.42	0.42	0.52	0.60	0.52	0.52	0.73	0.54
8. Texture/Material	0.90	0.79	0.73	0.67	0.73	0.90	0.95	0.95	0.85	0.84
9. Quantity	1.04	0.67	0.73	0.73	0.73	0.73	0.60	0.85	0.73	0.77
10. Time/Sequence	1.16	0.90	0.79	0.73	0.67	0.79	0.85	0.67	0.85	0.84
Receptive TC	2.60	1.50	1.50	1.50	1.50	2.12	1.50	1.50	2.12	1.80
Receptive SRC	2.60	2.60	2.12	1.50	2.12	2.60	2.60	2.12	3.00	2.40

Internal consistency reliability by special group

Table 15. Internal Consistency Reliability by Special Group

Score	LI		DD		GT		Average r_{xx}
	N	r	N	r	N	r	
1–6. SRS	45	1.0	37	.99	32	.86	.96
6. Self-/Social Awareness	45	.98	37	.90	32	.88	.94
7. Direction/Position	45	.99	37	.94	32	.97	.97
8. Texture/Material	45	.97	37	.94	32	.62	.91
9. Quantity	45	.98	37	.80	32	.83	.91
10. Time/Sequence	45	.97	37	.91	32	.92	.94
Receptive TC	45	1.0	37	.97	32	.95	.96
Receptive SRC	45	1.0	37	.99	32	.86	.96



Using BBCS-4: R as part of an
integrated assessment battery

Examining how other tests



and



align with



Determine detailed information within and across multiple concept categories

More test items across and within categories

- Most intelligence, achievement, and language tests include a random collection of conceptual items. In-depth concept assessment identifies strengths and weaknesses within and across conceptual categories

Identify categories of concepts in which the child needs additional instruction and concepts within categories that need remedial attention.



Determine the child's developmental trajectory

Early stages of acquisition or mastery?

- Comparing similar content across tests provides consistency information about the child's stage of concept acquisition within and across conceptual categories.

Determine whether the child is in an early acquisition stage (superficial understanding) or more advanced stage (understands concepts in multiple contexts).



Determine if the child understands concepts in test directions of other tests in the assessment battery

Test directions can be conceptually too complex!

- It is important to examine performance on other tests in a battery to question whether the tests used age-appropriate concepts in test directions.

Tests that assess similar abilities sometimes produce dissimilar results due in part to the child not fully understanding conceptually complex test directions.

RIOT Assessment Process

Review

Review student's work products, grades, attendance records, medical conditions

Interview

Follow up on Referral with an interview, considering primary and secondary concerns

Observe

Observe the child's classroom and playground dynamics, and interactions with others

Test

Select a battery of tests that addresses the referral questions and answers potential hypotheses and concerns

Referral Question

Consider if the referral suggests poor direction following, confusion, not following classroom discussions

1

Review School Records

Review screenings for vision, hearing, or medical reasons for referral (e.g., Otis Media)

2

3

Interview Appropriate Personnel

Interview school personnel and guardians

Observe Child in Classroom

Observe child's interactions, following directions, questions asked, confusion

4

5

Administer, Score, and Integrate Test Results

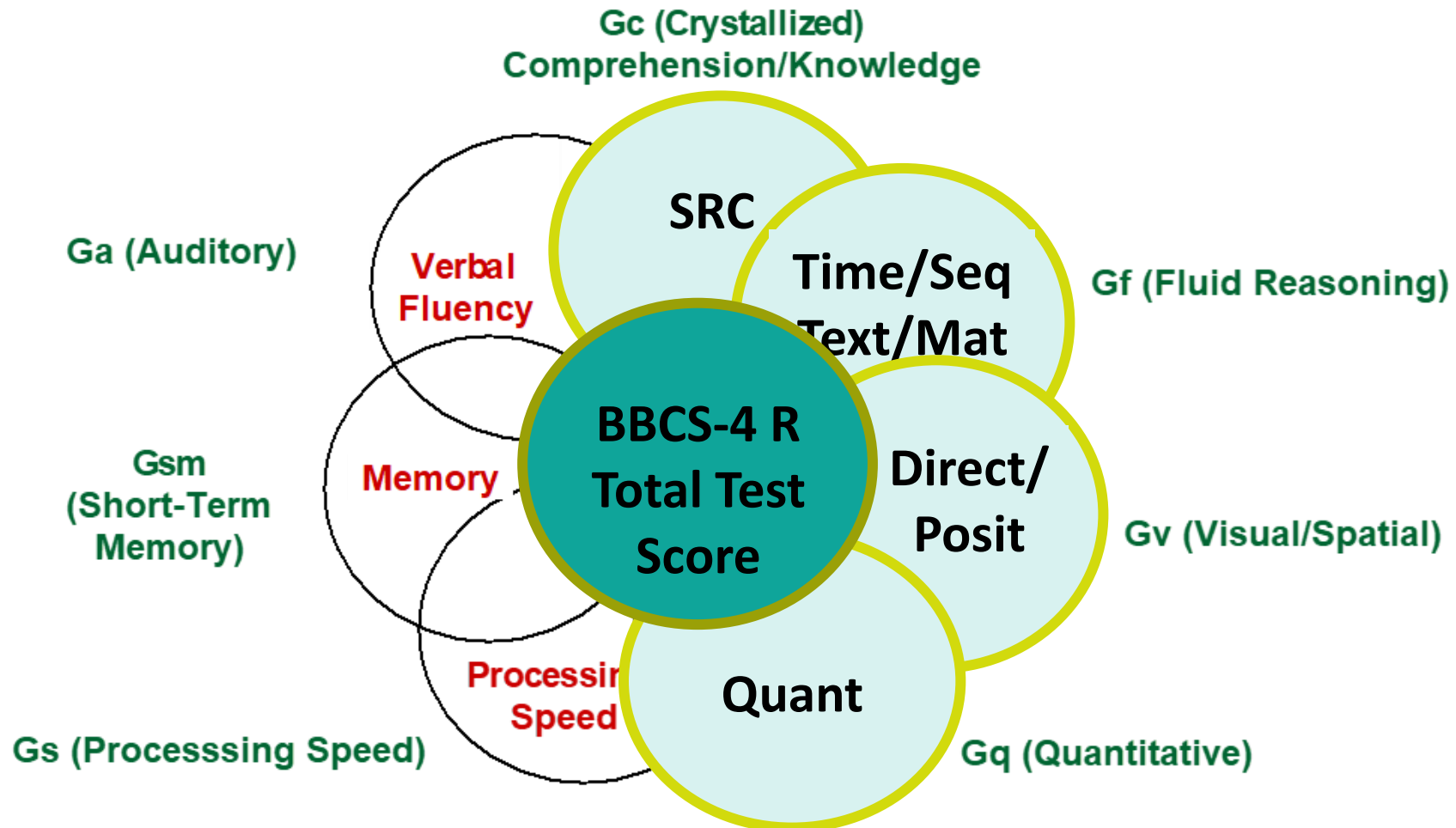
Compare results across tests and identify conceptual strengths and weaknesses

6

Identify Concepts that Need to be Taught

Complete the Concept Development Guide to identify concepts for instruction at home and school

Cross-battery assessment



Concept Remediation and Instruction:

20 Evidence-Based Principles

BBSC and BSRA Examiner's Manuals identify 20 empirically-supported principles for teaching or remediating children's basic concept acquisition, such as:

- Teach positive pole concepts before negative pole concepts; upper case letters before lower case; numerals 1-5 before 6-9; 3D sizes before 2D (*Big/Small* before *Tall/Short*)...
- Identify and emphasize salient features that define the concept
- Use clear conceptual examples and non-examples when teaching concept discrimination
- Encourage over-learning of concepts through repeated use and inclusion in conversation
- Teach related concepts or concept pairs during the same lesson (e.g., *over, under, around, through; up/down, heavy/light, fast/slow*)
- Use "rich language" by combining concepts meaningfully in conversations (e.g., "Someone please bring me the *big, thick, red* book *on* the *corner* of my desk. It's a *heavy* book. Who can carry such a *big, heavy* book?")
- Reinforce generalizations by using increasingly more abstract applications (e.g., *under* the table; *under* your shirt; *under* the water; *under*-appreciated).

Concept Development Guide

Use the updated *Concept Development Guide* to facilitate the transition from testing-to-teaching, deficit-to-remediation, while meaningfully inviting parent involvement!

M = The concept is probably understood in most situations (mastered).

NM = The concept is probably not understood in most situations (not mastered).

Colors

Concept	M	NM
<u>red</u>	☐	☐
<u>blue</u>	☐	☐
<u>green</u>	☐	☐
<u>black</u>	☐	☐
<u>yellow</u>	☐	☐

Numbers/Counting*

Concept	M	NM
<u>number</u>	☐	☐
<u>1</u>	☐	☐
<u>3</u>	☐	☐
<u>4</u>	☐	☐
<u>5</u>	☐	☐

Sizes/Comparisons

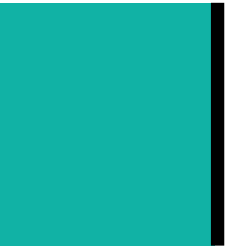
Concept	M	NM
<u>big</u>	☐	☐
<u>small</u>	☐	☐
<u>long</u>	☐	☐
<u>deep</u>	☐	☐
<u>tall</u>	☐	☐

Shapes

Concept	M	NM
<u>star</u>	☐	☐
<u>heart</u>	☐	☐
<u>circle</u>	☐	☐
<u>in a line</u>	☐	☐
<u>square</u>	☐	☐

Self-/Social Awareness

Concept	M	NM
<u>crying</u>	☐	☐
<u>laughing</u>	☐	☐
<u>sad</u>	☐	☐
<u>afraid</u>	☐	☐
<u>brothers</u>	☐	☐

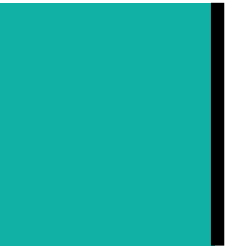


Resources

Early Childhood State Educational Standards:

Bracken, B. A., & Crawford, E. (2010). Basic concepts in early childhood educational standards: A 50-state review. *Journal of Early Childhood Education*, 37, 421-431.

For a complete 50-state review of concepts embedded in early childhood states' standards, cut and paste: <http://faculty.wm.edu/babrac/Standards.xls>



Resources

Assessment Resources:

Alfonso, V. C., Bracken, B. A., & Nagle, R. J. (Eds.) (2020). *Psychoeducational Assessment of Preschool Children – Fifth Edition*. New York: Taylor & Francis.

Bracken, B. A., & Theodore, L. A. (2020). Creating an optimal preschool assessment situation. In V. Alfonso, B. Bracken and R. Nagle (Eds.), *Psychoeducational assessment of preschool children, Fifth Edition*. New York: Routledge: Taylor & Francis Group, pp. 55-76.

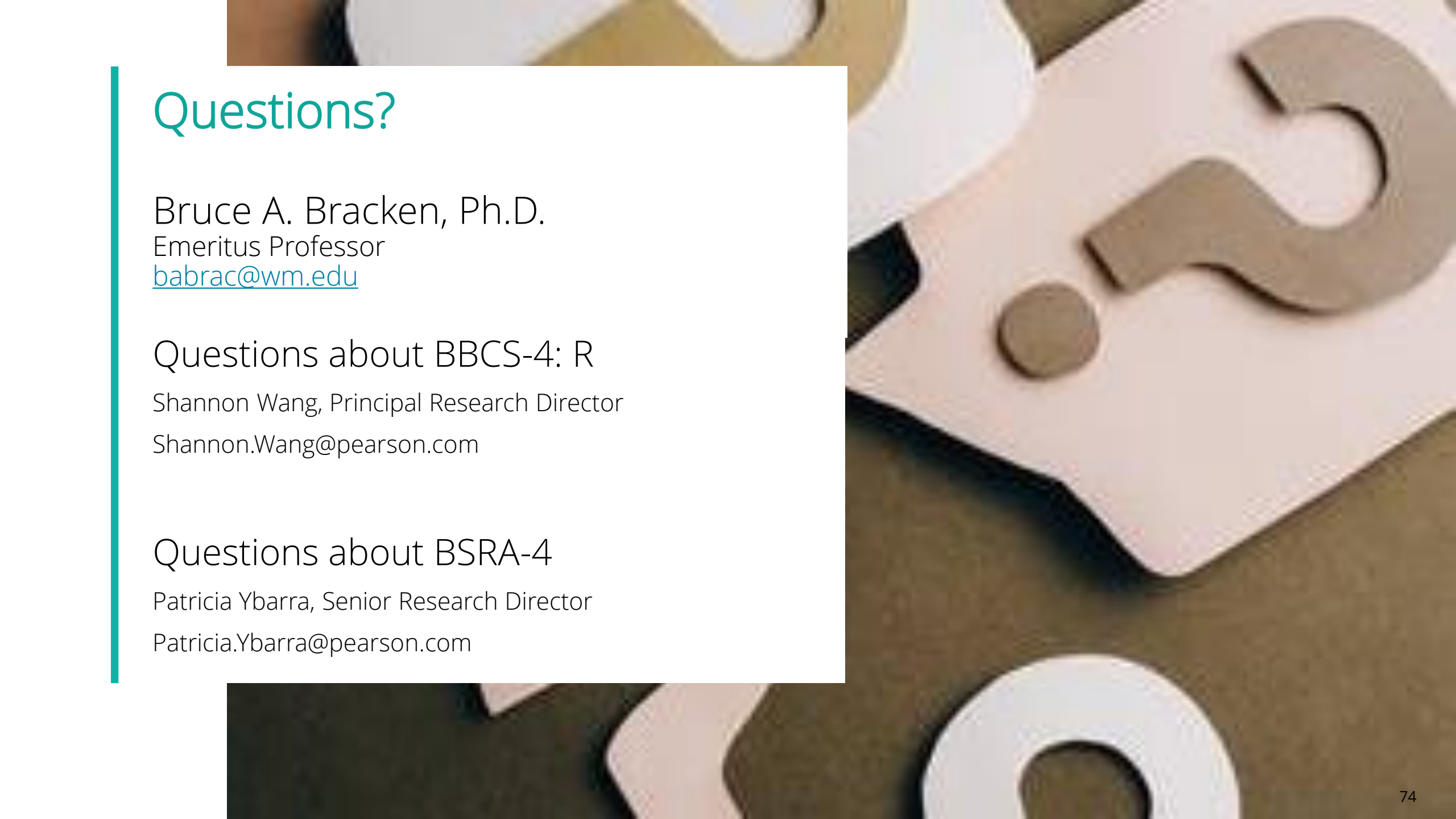
Kim, K. H., Van Tassel-Baska, J., Bracken, B. A., Feng, A., & Stambaugh, T. (2014). Assessing Science Reasoning and Conceptual Understanding in the Primary Grades Using Standardized and Performance-based Assessments. *Journal of Advanced Academics*, 25, 47-66.

Teaching Resources:

Bracken, B. A., & Panter, J. E. (2011). Using the Bracken Basic Concept Scale and the Bracken Concept Development Program for assessing and remediating concept development. *Psychology in the Schools*, 48(5), 465-475.

Bracken, B. A., & Crawford, E. (2010). Basic concepts in early childhood educational standards: A 50-state review. *Journal of Early Childhood Education*, 37, 421-431.

Technical information, comparisons to the BBCS3, and case studies will be posted on [pearsonassessments.com](https://www.pearsonassessments.com) later this fall.



Questions?

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