PEDS and Brigance Screens: New Tools for Detecting Developmental-Behavioral Problems of Young Children in Iceland

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Early Intervention Benefits: Rationale For Screening

- Family interest in participation
- Better outcomes for participants:
  - Higher graduation rates, reduced teen pregnancy, higher employment rates, decreased criminality and violent crime
- $30,000 to >$100,000 benefit to society (1992 $$s)
- For every 1$ spent on EI, society saves 17$

Early Detection Rates: Big Problems!!

16% - 18% of children have developmental-behavioral difficulties and need special services

only about 30% are detected by their health care provider before school entrance

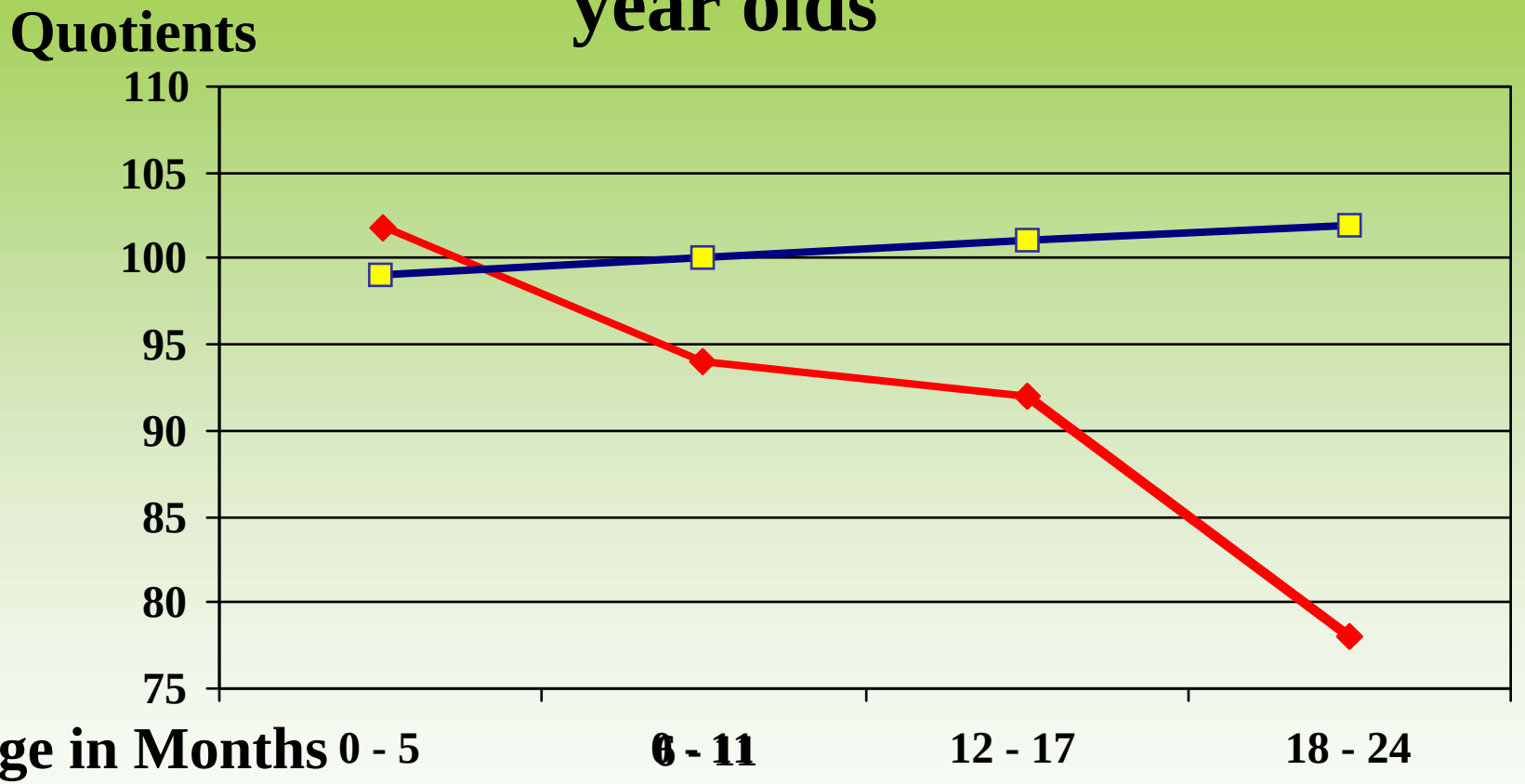
only 2% - 3% are enrolled in early intervention

Enrolment rates should be closer to 8% in the 0 - 4 age range

Even more compelling reasons

Failure to intervene early has grave consequences!

Developmental Status by parent's verbal behavior and positive perceptions* in 0 - 2 year olds



** Talks at meals, helps child learn new things, reads aloud, able to soothe, enjoys child, perceives child as interested in conversing*

Early Detection Rates: Big Problems!!

only about 30% are detected by their health care provider before school entrance

only 1/4th of those with significant problems are enrolled in early intervention programs

Early detection is vastly improved when good tools are used!

Detection rates *WITH* QUALITY Screening Tests

- 70% to 80% of children with developmental disabilities correctly identified
  Squires et al, *JDBP*. 1996;17:420 - 427

- 80% to 90% of children with mental health problems correctly identified
  Sturner, *JDBP* . 1991; 12: 51-64

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Detection/Enrollment Successes *WITH* Screening Tests

- 2% enrollment in EI increased to 12% --commensurate with prevalence

  ABCD Project, Commonwealth Fund

- 70% increased in ASD dx in ages 0 - 3

  Minnesota Dept of Education, Pediatrics, 2004

- 244% increase in referrals to EI

  Pediatrics, 2007

Parents' Evaluation of Developmental Status (PEDS)

Research Questions

- Are parents' concerns correct?
- Can information from parents help professionals in early detection?
- If so, what kinds of information are most helpful?

Sample questions to parents that don’t work well

Do you think he has any problems…..?

Do you have any worries about her development?

First Question

Please tell me any concerns about your child's learning, development, and behavior.

Additional Questions

Do you have concerns about how your child:

2… .is talking or making speech sounds?

3… . understands what you say?

4…uses his or her hands and fingers to do things?

5…uses his or her arms and legs?

6…behaves?

7…gets along with others?

8…is learning to do things for himself/herself?

9….is learning preschool or school skills?

10. Do you have any other concerns?

Research Process

1. Parents' concerns elicited and then categorized into various developmental domains

2. Children given a range of developmental and behavioral tests

3. Types of concerns compared to test results

ACCURACY: ACROSS AGE RANGES

AGE	SENSITIVITY		SPECIFICITY	
	N	%	N	%
0 - 1 1/2 yrs	3/4	75	66/82	80
1 1/2 - 3 yrs	27/34	79	117/149	79
3 - 4 1/2 yrs	26/35	74	118/165	72
4 1/2 - 8 yrs	42/57	74	172/245	70
TOTAL	98/130	75	473/641	74

Can parents' concerns help with early detection?

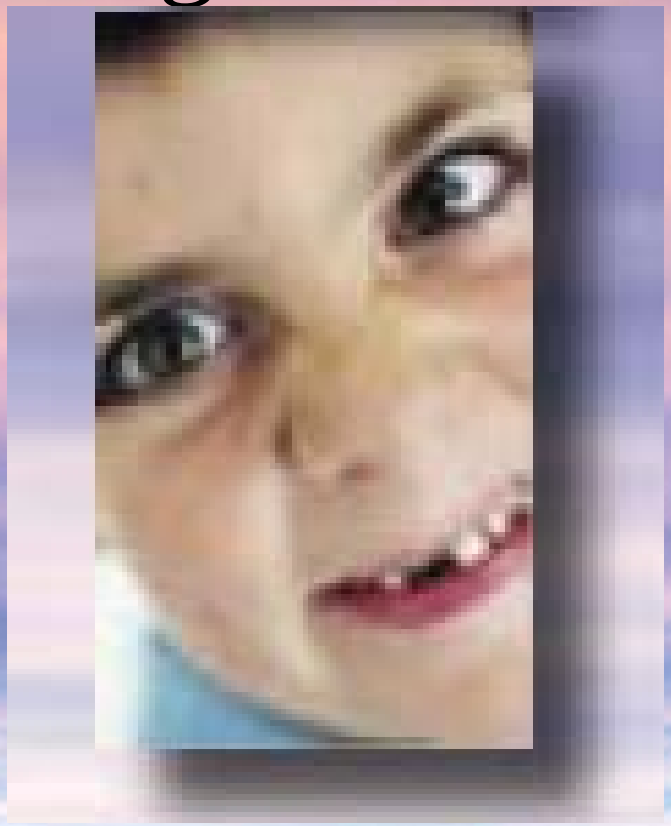
YES!!

- Accuracy as good as much longer measures requiring hands-on administration
- Certain concerns at certain ages closely predict developmental/behavioral problems
- Some concerns don't predict problems and require parent education
- Over-referrals, i.e., false-positives, tend to be children with below average development and psychosocial risk factors

Do Parental Characteristics Affect Their Concerns?

- Almost all parents' derive concerns by comparing their children to others
- No differences in accuracy on the basis of parents' level of education or parenting experience
- Educated parents, especially dads, 21 times as likely to raise concerns ***spontaneously***.
- Children whose parents discussed concerns were 40 times more likely to be enrolled in special education

Practice Examples: Jeremy age 3



PEDS RESPONSE FORM

Child's Name Jeremy Rogers Parent's Name Mary Rogers

Child's Birthday 2/24/89 Child's Age 5 Today's Date 11/3/94

1. Please list any concerns about your child's learning, development, and behavior.

I feel he is very hiper. has a hard time to comprehend.

2. Do you have any concerns about how your child talks and makes speech sounds?

Circle one: No (Yes) A little COMMENTS:

His speech is not ver clear/cannot pronounce some of his words

3. Do you have any concerns about how your child understands what you say?

Circle one: No Yes (A little) COMMENTS:

Need to ask him Quest. several times

ny concerns about how your

Yes A little COMMENTS:

10. Please list any other concerns.

Yes. His Hiperness.

PEDS Score Form

Child's Name_____ Birthday_____

Find appropriate column for the child's age. Place a checkmark in the appropriate box to show each concern on the PEDS Response form. See Brief Scoring Guide for details on categorizing concerns. Shaded boxes are predictive concerns. Unshaded boxes are non-predictive concerns.

Child's Age:	0–3 mos.	4–5 mos.	6–11 mos.	12–14 mos.	15–17 mos.	18–23 mos.	2 yrs.	3 yrs	4–4½ yrs	4½–6 yrs.	6–7 yrs.	7–8 yrs.
Global/Cognitive												
Expressive Language and Articulation								✓				
Receptive Language								✓				
Fine-Motor												
Gross Motor												
Behavior								✓				
Social-emotional												
Self-help												
School												
Other												

Speech not clear

Hard time comprehending

Hyperactive

Count the number of checks in the small shaded boxes and place the total in the large shaded box below.

								2				

If the number shown in the large shaded box is 2 or more, follow Path A on PEDS Interpretation Form. If the number shown is exactly 1, follow Path B. If the number shown is 0, count the number of small unshaded boxes and place the total in the large unshaded box below.

								1				

If the number shown in the large unshaded box is 1 or more, follow Path C. If the number 0 is shown, consider Path D if relevant. Otherwise, follow Path E.

Child's Name Roger J Birthday 8/8/03

PEDS Interpretation Form

Path A: Two or more predictive concerns? Yes? → Two or more concerns about self-help, social, school, or receptive language skills?
- Yes? → Refer for audiological and speech-language testing. Use professional judgment to decide if referrals are also needed for social work, occupational/physical therapy, mental health services, etc.
- No? → Refer for intellectual and educational evaluations. Use professional judgment to decide if speech-language, audiological, or other evaluations are also needed.

Path B: One predictive concern? Yes? → Health concerns only?
- Yes? → Screen for health/sensory problems, consider second-stage developmental screen.
  - If screen is passed, counsel in areas of concern and watch vigilantly
  - If screen is failed, refer for testing in area(s) of difficulty.
- No? → Administer second-stage developmental screen.

Path C: Nonpredictive concerns? Yes? → Counsel in areas of difficulty and follow up in several weeks. → If unsuccessful, screen for emotional/ behavioral problems and refer as indicated. Otherwise refer for parent training, behavioral intervention, etc.

Path D: Parental difficulties communicating? Yes? → Foreign language a barrier?
- No? → Use a second screen that directly elicits children's skills or refer for screening elsewhere.
- Yes? → Use foreign language versions, send PEDS home in preparation for a second visit; seek a translator, or refer for screening elsewhere.

Path E: No concerns? Yes? → Elicit concerns at next checkpoint. → No? → Use PEDS between checkpoints (e.g. sick- or return-visit).

Specific Decisions

0–3 mos. diarrhea, no fever, suggested formula change.

4–5 mos. intermittent diarrhea, switched to soy

6–11 mos. extensive crying at bed-time gave mo info re: "Ferberizing"

12–14 mos. head-banging, gave mo info from Schmitt's Patient Education

15–17 mos. still head-banging, pacing referred for in-home behavior tx

18–23 mos. frequent tantrums but head banging decreased, cont beh tx

2 yrs. Path A: hearing, lead, vision screened and OK, referred to EI for M-CHAT and developmental assessment

3 yrs.

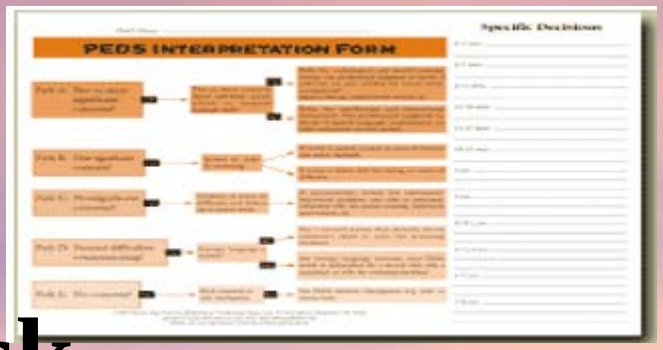
4–4½ yrs.

4½–6 yrs.

6–7 yrs.

7–8 yrs.

Jeremy's PEDS results
Path A: High Risk



- <u>Path A</u>: High risk of developmental disabilities. Refer for evaluations through EI/public schools.
- Results suggest the type(s) of evaluations needed (*in Jeremy's case: Both psychoeducational AND language evals)*
- Use clinical judgment about what other kinds of services may be needed (e.g., social work, mental health, parent training, audiology, etc.)

Jeremy: What happened next

- Referred to EI for evaluations
- Qualified (25% to 40% delays in multiple domains)
- Note: no dx needed…yet
- Enrolled in EI
- EI facilitated transition to public school special services and diagnostic evaluations
- Mom queried about income, job training, mental, and need for more supportive services… and followed through with social work offer

PEDS: Evidence-Based Decision Support for the Developmental/-Behavioral Tasks of Health Supervision Visits

- PATH A: referral
- PATH B/D: developmental/behavioral screening
  - observation/monitoring/quality preschool
- PATH C: behavioral guidance and patient education
- PATH E: reassurance

PEDS, by eliciting concerns in advance:

- **Reduces “doorknob concerns”-- the "grenades of the day"**
- **Focuses visits and facilitates patient flow**

PEDS Research Findings

Alerts parents that db issues are a part of well-care and better focuses visit on issues of importance to families

Increases positive parenting practices

Makes it easier to give difficult news

Increases attendance at well-visits

Other PEDS Research Findings

Creates a “teachable moment”

Enhances parents’ sense of collaboration/satisfaction with providers

Teaches parents to think about their child's development like professionals do

Increases professionals' satisfaction with care

When More Information is Needed

The BRIGANCE® Screens: hands-on assessment of children's skills

Curriculum Associates®, Inc.

Brigance Screens

For children 0 – 8 years

1 form per each year of age

Takes 10 – 15 minutes of professional time

Hands-on administration

Blocks, crayons, etc. provided

Samples all developmental domains, with increasing emphasis on better predictors of school success: language and academics

Brigance Two Year Old Screen

ITEM DESCRIPTIONS

- **Builds tower with blocks**
- **Visual Motor skills (**Imitates drawn line, scribbles with crayon, stays mostly on the paper)
- **Points to 10 body parts** (eye, mouth, nose, feet)
- **Names 8 pictures** (airplane, car, apple, etc.)
- **Points to kinds of people in pictures** (man, girl)
- **Answers questions about the functions of objects (**e.g., how do you use a stove?)
- **Gross-Motor Skills (**Walks sideways, backward, swings arms)
- **Verbal Fluency rating (**Two word combinations, intelligibility rating)

Brigance Screens

Other features

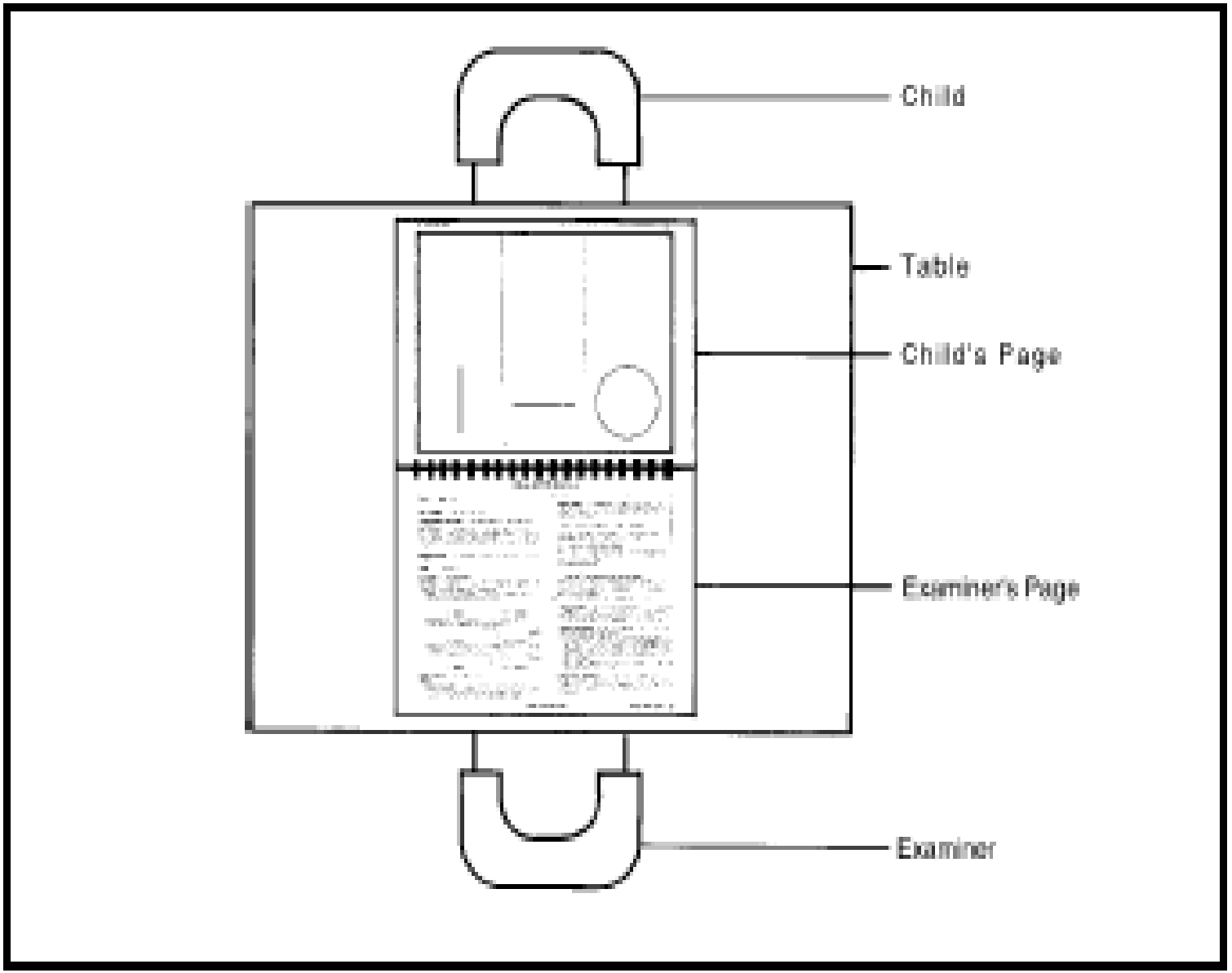
- Strong predictive validity
- Has instructional videos
- Separate cutoffs for children at psychosocial risk/advanced
- Test forms in triplicate
- Separate growth indicators for program evaluation, progress monitoring, and outcome assessment
- Produces a wide range of scores

BRIGANCE®

PRESCHOOL SCREEN

by Albert H. Brigance

CURRICULUM ASSOCIATES®, Inc.


Child
Table
Child's Page
Examiner's Page
Examiner

7B Number Concepts

Skill: Demonstrates number concepts.
1. two 2. three 3. five

Data Sheet: Four-Year-Old Child.

Assessment Method: Child performance.

Materials: Ten blocks, or a set of ten other objects.

Discontinue: Your discretion, or after the child fails two consecutive skills.

Time: Your discretion, or ten seconds per skill.

Accuracy: Give credit for each correct response. See *Criteria*.

Criteria: In addition to your own professional judgment, the comments accompanying each skill in the *Directions* will guide you in evaluating.

Point Value: 3 points for each skill.

Notes:
1. Possible Observations: As the child responds, you may wish to observe and make note of the following:
   a. *Physical Conditions:* Does the child have a physical condition that makes him/her unable to perform the skills?
   b. *Use of Eyes:* Do the child's eyes tend to follow the task appropriately?
   c. *Handedness:* Does the child consistently use the same hand for performing, or does he/she change from one hand to the other?
   d. *Attention to Task:* Does the child consistently attend to your requests, or does he/she have difficulty attending for reasons such as a short attention span or distractions?
   e. *Interest Level:* Does the child volunteer additional number concepts or show interest in number concepts?
   f. *Confidence Level:* Does the child appear relaxed, or is he/she anxious about performing?
   g. *Assurance of Response:* Does the child respond automatically or hesitantly?
2. Links Number with Quantity: Does the child appear to understand that each number represents a quantity? The child may demonstrate this awareness by using his/her fingers to count.

Directions
This assessment is made by asking the child to respond to "give me two, three, give me five." Pause after each request for the child's response. If the child does not respond, repeat the request.

If helpful, give encouragement.

Skill 1: Gives two.

Place ten blocks, or a set of ten other objects, in front of the child. Extend your hand, and

Say: **Give me two blocks. Give me just two.**

After the child gives two blocks, pause to see if he/she plans to give another. Give credit if the child gives only two blocks. Return the blocks to the table.

Skill 2: Gives three.

Extend your hand, and

Say: **Give me three blocks. Give me three.**

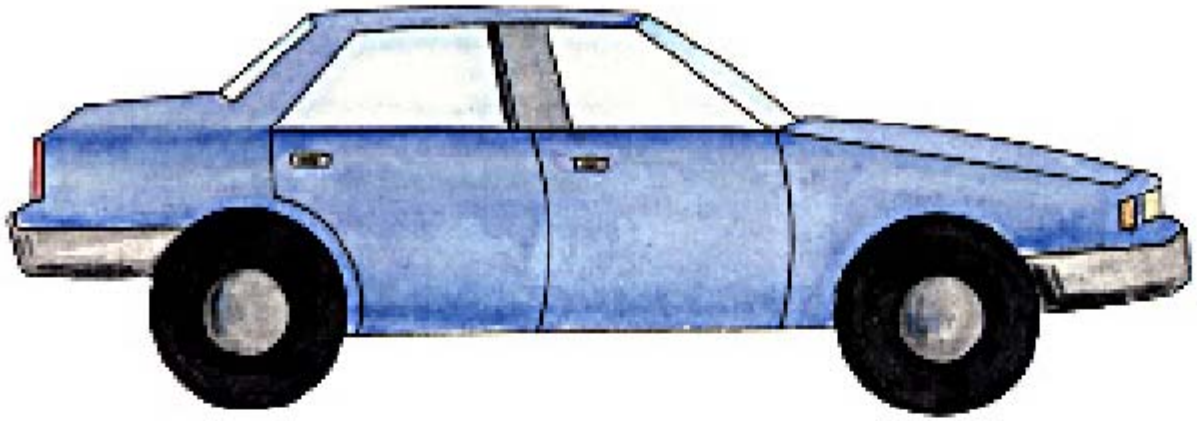
After the child gives three blocks, pause to see if he/she plans to give another. Give credit if the child gives only three blocks. Return the blocks to the table.

Skill 3: Gives five.

Extend your hands, and

Say: **Give me five blocks. Give me five.**

After the child gives five blocks, pause to see if he/she plans to give another. Give credit if the child gives only five blocks.



Three-Year-Old Child Data Sheet for the *BRIGANCE® Preschool Screen*

3Y

A. Child Data

Child's Name: Calvin Baldwin
Parents/Guardian: Carl and Karen Baldwin
Address: 982 Haines Street

	Year	Month	Day
Date of Screening	97	9	12
Birth date	94	7	7
Age	3	2	5

School/Program: Ballard School
Teacher: Leslie Feingold
Examiner: Ben Faust

B. Basic Screening Assessments — C. Scoring

Page	Assessment Number	Skill *(Circle the skill for each correct response. Make notes as appropriate.)*	Number of Correct Responses	Point Value	Child's Score
2	1A	Personal Data Response: orally gives (1) first name (2) last name (3) age	3 x	2 points each	6 /6
3	2A	Identifies Body Parts: Points to or touches (1) ears (2) head (3) legs (4) arms (5) fingers 6. thumbs (7) toes (8) neck 9. stomach	7 x	1 point each	7 /9
4	3A	Gross-Motor Skills: (1) Stands on one foot one second. (2) Walks tiptoe three steps. 3. Walks forward heel-and-toe three steps.	2 x	3 points each	6 /9
5	4A	Identifies Objects: Points to picture of (1) stove 2. coat (3) car	2 x	3 points each	6 /9
6	5A	Repeats Sentences: Repeats sentences of (1) three syllables (2) four syllables 3. five syllables	2 x	3 points each	6 /9
7	6A	Visual Motor Skills: Copies (1) ○ (2) — (3) |	3 x	3 points each	9 /9
8	7A	Number Concepts: Demonstrates by giving (1) one (2) one more 3. two	2 x	3 points each	6 /9
9	8A	Builds Tower with Blocks: Builds a tower with (1) 3 blocks (2) 4 blocks (3) 5 blocks (4) 6 blocks (5) 7 blocks	5 x	2 points each	10 /10
10	9A	Matches Colors: Matches (1) red (2) blue (3) green (4) yellow (5) orange	5 x	2 points each	10 /10
11	10A	Picture Vocabulary: Names (1) tree (2) bird (3) apple (4) pencil (5) sock	5 x	2 points each	10 /10
12	11A	Plural *s* and *-ing*: Adds (1) plural *s* (2) *-ing* to verbs	2 x	5 points each	10 /10

D. Observations

1. Handedness: Right ✓ Left ____ Uncertain ____
2. Grasps pencil with: Fist ✓ Fingers ____
3. Hearing appeared to be normal: *(See Functional Hearing and Vision)* Yes ✓ No ____ Uncertain ____
4. Vision appeared to be normal: *(See Functional Hearing and Vision)* Yes ✓ No ____ Uncertain ____
5. Record other observations below or on another sheet.
   Cooperated and enjoyed talking.

Total Score = 86 /100

E. Summary *(Complete only if child is screened with a group.)*

Compared to other children included in this screening:

1. this child scored	Lower ____	Average ✓	Higher ____
2. this child's age is	Younger ____	Average ✓	Older ____
3. the teacher rates this child	Lower ✓	Average ____	Higher ____
4. the examiner rates this child	Lower ____	Average ✓	Higher ____

F. Recommendations

Within normal limits. No further assessment needed at this time.

*Curriculum Associates, Inc. *Preschool Screen*

Normative Scores

Tables generated for total and factor scores including:

- Quotients
- Age-equivalents
- Adjustments for psychosocial risk in presence of recent intervention
- Growth Indicators
- Percentiles

SUBJECTS: Families

SAMPLE	US CENSUS
3.3% Spanish-speaking	2.8% Spanish-speaking
13.4 completed grades	13.5 completed grades
18% < high school	16.6% < high school
68% white	71.5% white
13.7% African American	12.8% African American
13.3% Hispanic	11.5% Hispanic
4.6 Other ethnicities	4.5 Other ethnicities

Reliability

- Internal consistency = .94 - .97
- Test-retest reliability = .98 - .99
- Inter-rater reliability = .98 - .99
- Parent interview and examiner scores within 1 point

Validity

- 2 factors, verbal and nonverbal, accounted for 63% of variance
- Like diagnostic subtests correlated highly with like factors (.46 - .91)
- Total diagnostic measures correlated highly with total Screens scores (.66 – .88).

Criterion-related Validity: Accuracy

- Plot of Screens scores against the presence or absence of developmental delay/diagnoses revealed:
- Specificity (detection of normal development) = 85% to 86%
- Sensitivity (detection of delays) = 76% to 77%

Successful Screening Implementation Requires:

- Encouraging providers to test themselves

- Training Staff and encouraging their input into streamlining the workflow

Screening requires knowledge of referral resources

- ✓ **Social work services**
- ✓ **Early intervention**
- ✓ **Public school contacts**
- ✓ **Parent training programs**

Screening leads to parent education (and thus lots of practice organization)

e.g.,

My daughter is 6 mos. old and she only rolls over on her own a couple times at one time then doesn't do it for another few weeks....should I be concerned?

CONCLUSION: I

The quality of care, practice work flow, parent and provider satisfaction are enhanced when quality tools are used

CONCLUSION: II

Accurate tools are superior to informal measures.

While clinical judgment is an important adjunct, it is best used in the process of deciding on needed referrals and parenting information

And, by using these tools before a visit, professionals can enter an encounter ready to focus on critical issues


the
end