

Using the Battelle 3 Developmental Inventory in the Assessment of Young Children With Autism Spectrum Disorder

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Relevant Disclosures

Co-author of:

Comprehensive Executive Functioning Inventory
Autism Spectrum Rating Scales
Rating Scale of Impairment
Cognitive Assessment System –Second Edition
Handbook of Executive Functioning
Handbook of Intelligence and Achievement Testing

Compensated Speaker by Riverside

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DKF gW Seme.



Sam obtained his Ph.D. in School Psychology from the University of Utah and is licensed as a Psychologist and Certified School Psychologist in the State of Utah. He is also board certified as a Pediatric Neuropsychologist and listed in the Council for the National Register of Health Service Providers in Psychology. He is a Fellow of the American Psychological Association and the National Academy of Neuropsychology. Sam is an Adjunct Assistant Professor in the Department of Psychiatry at the University of Utah School of Medicine. He has authored, co-edited, or co-authored over 50 clinical and trade publications, three dozen chapters, nearly three dozen peer-reviewed scientific articles, and eight psychological and neuropsychological tests. He is in development for a behavioral assessment tool to evaluate DMDD, a new interactive test for ASD, and is editing a clinical volume about DMDD. Sam is the Editor in Chief of the *Journal of Attention Disorders*. Since 1980, he has served as the Clinical Director of the Neurology, Learning, and Behavior Center in Salt Lake City, Utah.

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Presentation Objectives

1. This session will help participants develop an appreciation and insight to formulate an assessment battery to determine IDEA and ADA eligibility for young children with ASD as well as complete a comprehensive assessment of a young child with suspected ASD.
2. Participants will acquire knowledge needed to understand the role the Battelle Developmental Inventory 3 can serve in a school-based or community assessment of young children with ASD.
3. This session will help participants gather data, make diagnoses, determine eligibility and formulate educational goals for young children presenting with ASD and accompanying developmental delays.

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NASP Domains

- *Domain 1: Data-Based Decision Making*
- *Domain 4: Mental and Behavior Health Services and Interventions*
- *Domain 9: Research and Evidence-Based Practice*

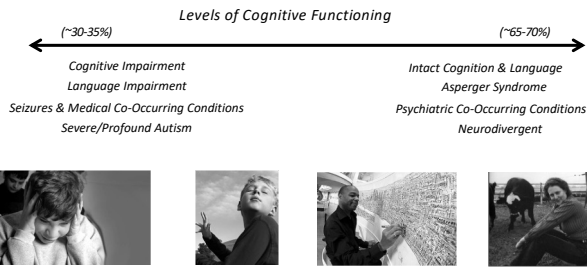
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Broadening the Spectrum

- Eleven meta-analyses published between 1966 and 2021.
- 27,723 total subjects from around the world.
- Five psychosocial dimensions: emotion recognition, theory of mind, cognitive flexibility, planning and inhibition.
- For all 5 dimensions group differences between normal and those with ASD have declined since 2000.
- This is generally attributed to differences in diagnostic criteria, assessment practices and community awareness.

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The Autism Spectrum by Cognition & Language



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Current Statistics on Autism (CDC)

IN THE GENERAL POPULATION:

- 1 in 44 8-year-old children are identified with ASD
- Male-Female Ratio:
 - 4 times higher in boys
- Median Age of Diagnosis: 4-5 years
 - Much later for disadvantaged populations
- When ASD can be reliably diagnosed:
 - 18-24 months when diagnosed by experienced clinicians
- Co-Occurring Intellectual Disability:
 - 35% with ID

GENETIC LIABILITY:

- ASD in Subsequent Biological Siblings: 1 in 5 (~20% risk)
- Broader Autism Phenotype ("shadow symptoms"): 1 in 5 Siblings
- Non-ASD developmental delays: 1 in 10 Siblings

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Autism in Females

- Females often misdiagnosed or missed to diagnosis
- Females may present with stronger social skills (Kreiser & White, 2014):
 - Intact symbolic and imaginary play
 - Larger emotional vocabulary
 - Greater awareness and desire for social interaction
 - Ability to mimic others in social situations
 - May develop one or two close friends
- Restricted interests tend to be related to people/animals rather than inanimate objects (Lai & Baron-Cohen, 2015)
- Research points to a "protective effect" in females (Satterstrom et al., 2020)
- "Camouflaging Effect": Females are more likely to use coping strategies to hide ASD behaviors – likely due to social pressures (Hull et al., 2017)
- Higher rates of internalizing disorders (anxiety, depression, eating disorders)

Females on the Autism Spectrum

Behaviour
Less prone to act out physically or aggressively
Intense focus on a particular subject, often involving animals or classic literature
Appears anxious when there are changes in routine
Obsesses human behaviour, learning to mask difficulties
Practices rituals that appear to have no function
May play with dolls or toys well beyond the typical age for these items
Tendency toward perfectionism in certain aspects of her life
High risk of having episodes of eating disorders and self-medication
Stimming behaviors, such as hand flapping, rocking, or spinning can appear much milder. They can also be internalised/thoughts instead of external behaviours.

Communication
More aware of the need for social interaction
May have an exceptional vocabulary
Tends to mimic rather than providing natural responses
May use add inflection
Appears to have difficulty dealing with unexpected verbal responses
May have greater efforts to social (scripting) phrases to themselves
Appears excessively shy or avoids interacting with others or making the first move socially
Can be quite controlling in play
Seems uncomfortable during conversation. Can struggle with eye contact
Often "mothered" by others in primary school but bullied in high school
May play appropriately with toys and engage in pretend play or may focus on organizing objects or toys
Often shows empathy and compassion but may be confused by non-verbal social signals
Usually holds it together well while out and explodes at home

Social
Usually from only one or two close friends at school
May have difficulty fitting in due to clothing and hairstyle choices
May have difficulty fitting in due to drawing attention to themselves
Appears excessively shy or avoids interacting with others or making the first move socially
Can be quite controlling in play
Seems uncomfortable during conversation. Can struggle with eye contact
Often "mothered" by others in primary school but bullied in high school
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Females on the Autism Spectrum

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Less prone to act out physically or aggressively
Intense focus on a particular subject, often involving animals or classic literature

Appears anxious when there are changes in routine

Observes human behaviour, learning to mask difficulties

Practices rituals that appear to have no function

May play with dolls or toys well beyond the typical age for these items

Tendency toward perfectionism in certain aspects of her life

High risk of having episodes of eating disorders and self-medication

Communication

More aware of the need for social interaction

May have an exceptional vocabulary

Tends to mimic rather than providing natural responses

May converse in predictable, "scripted" ways

Seems to struggle with non-verbal aspects of communication, such as body language and tone of voice

May use odd inflection

Appears to have difficulty dealing with unexpected verbal responses

More able to follow social actions through observation

Social

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Stimming behaviors, such as hand flapping, rocking, or spinning can appear much milder. They can also be internalised/thoughts instead of external behaviours

May apologise and appease when they make a social error

Often more socially aware and driven

May often present with many of these traits, just like females can present with the more male type traits. It is called a female presentation because it is more commonly seen amongst females on the autism spectrum



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Usually has only one or two close friends at school

May have difficulty fitting in due to clothing and hairstyle choices

Appears excessively shy or avoids interacting with others or making the first move socially

Can be quite controlling in play

Seems uncomfortable during conversation. Can struggle with eye contact

Often "mothered" by others in primary school but bullied in high school

May play appropriately with toys and engage in pretend play or may focus on organizing objects or toys

Often shows empathy and compassion but may be confused by non-verbal social signals

Usually holds it together well while out and explodes at home

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Racial & Ethnic Disparities

www.cdc.gov/ncbddd/autism/addm

- Prevalence rates are FINALLY identical for non-Hispanic white, non-Hispanic black, and Asian/Pacific Islander children but continue to be LOWER for Hispanic children
- 47% of Black children and 36% of Hispanic children are more likely to have Intellectual Disability with ASD compared to 27% of White children
- Black children with ASD are less likely to have a first evaluation by age 3 than White children



Which children were more likely to be identified with ASD?



Boys were 4 times more likely to be identified with ASD than girls.
White children were still more likely to be identified with ASD than black or Hispanic children. Black children were more likely to be identified with ASD than Hispanic children. However, these differences were smaller when compared with estimates from previous years.

1.1x MORE LIKELY among white vs black children

1.2x MORE LIKELY among white vs Hispanic children

1.1x MORE LIKELY among black vs Hispanic children

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Development of Play Skills in Autism

- Sensory-Exploratory Play – Pro-longed in ASD
 - Mouthing/dropping/manipulating objects
- Cause-and-Effect Play – Perseverative in ASD
 - Push-button & musical toys
- Functional Play – Impaired (e.g., lining up; visual peering; fixation on parts)
 - Using a toy for intended purpose (e.g., “driving” a car; “talking” on a phone; building with blocks; feeding a baby)
- Symbolic & Imaginary Play – delayed/prolonged (females) or absent in ASD
 - Using a toy for a novel purpose (e.g., using a block as a phone)
 - Using miniature figurines as agents (e.g., “mommy” feeding the baby)

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Use of Biomarkers to Detect Autism

SCIENTIFIC REPORTS

Article · OPEN · Published: 01 May 2018

EEG Analytics for Early Detection of Autism Spectrum Disorder: A data-driven approach

William J. Shaw¹, Neil Scientific Reports 8, Art

February 20, 2018

GEN News Highlights

Blood/Urine Biomarker Tests Developed for Autism Spectrum Disorders

LETTER

Attention to eyes is present but in decline in 2–6-month-old infants later diagnosed with autism

Wenwen Zhou^{1,2,3} & Isaac Kohane^{1,2,3}

Science News from research organizations

Predicting autism: Study links infant brain connections to diagnoses at age two

Date: June 7, 2017

Source: University of North Carolina Health Care System

Summary: In previous studies, researchers linked infant brain anatomy differences to autism diagnoses at age two. Now they show differences in functional connections between brain regions at 6 months to predict autism at age two.

Research · Open Access

Identification of an age-dependent biomarker signature in children and adolescents with autism spectrum disorders

Jordan M. Ramsey, Paul C. Groot, Jordine AC Brook, Jeffrey C. Coleman, Nandini Nimmacher, Barbara Franke, Hassan Rahmoune, Jan K. Buitelaar, and Sabine Bahn

Neuroscience 2017 4:27

https://doi.org/10.1038/201620354.02

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ASD Biologic/Genetic Identification

- Early detection for ASD is crucial for patients and their quality of life
- Data help researchers seek out commonalities, causes, and interventions.
- Behavioral tests limited to only diagnosing ASD will eventually be pushed out of the market in favor of tools (questionnaires and face to face measures) generating a profile of strengths and weaknesses to target in treatment.
- Profiles of strengths and vulnerabilities inform intervention programs, and areas of strength are used to build upon areas of weakness
- Measures that can identify these profiles can also track progress

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Infant Eye Tracking Studies



Autism: A New Frontier
Latest Research

Patterns of Eye Gaze at monthly intervals

Birth through 36 months – data collected over 11 visits (2, 3, 4, 5, 6, 9, 12, 15, 18, 24, 36m)

Creating Growth Charts of Social Visual Engagement

Jones & Klin, 2013

Typically Developing Infant in Lab

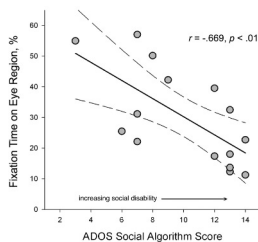
Jones & Klin, 2013

Neurodevelopmental Assessment & Consulting Services

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Predictors of Outcome

Jones, Carr, & Klin (2008; Arch Gen Psychiatry)



Less fixation time on eyes predicts more severe social disability.

Neurodevelopmental Assessment & Consulting Services

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Key Assumption:

Children with ASD master a series of early social and related developmental tasks in a reliable sequence, corresponding to that seen in typically developing children.

But they are delayed, often requiring direct instruction to acquire a range of skill and behaviors others develop through experience alone.

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Key Assumptions

Sensory motor differences precede the unfolding of cognitive and adaptive deficits, as well as behavioral features of ASD across a six-to-twenty-four-month old interval.

The less severely affected group with ASD demonstrate later symptom onset in the second year of life with initial differences in the social communication domain.

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What are some measurable abnormalities of development that might demonstrate themselves in characteristic patterns of social and communicative behavior?

1. The ability to attribute mental states to one's self and others.
2. The ability to display an emotional reaction appropriate to another person's mental state (joint attention of emotion).
3. The ability to plan and attend to relevant details in the environment.

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What are some measurable abnormalities of development that might demonstrate themselves in characteristic patterns of social and communicative behavior ?

4. The ability to understand the communicative content of gaze.
5. The ability to work cooperatively with others (share joint attention of behavior).
6. The ability to understand, comprehend, analyze, synthesize, evaluate and differentiate in particular, social information in his environment.

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Diagnostic Evaluations for Autism are Comprehensive!

- Screeners for Risk and Need for Evaluation
- Developmental History
- Assessment of Developmental or Cognitive Skills
- Speech, Language, & Communication Assessment
- Adaptive Behavior Assessment
- Assessment of Autism Symptomatology
- Assessment of Executive Functioning
- Assessment of Emotional/Behavioral Regulation Skills

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Assessing Autism Symptomatology

Screeners

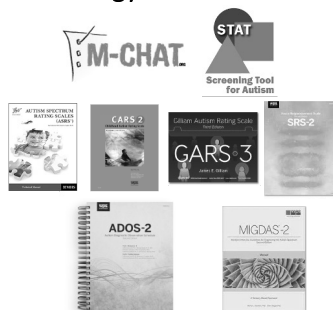
- Identifying risk factors for ASD
- Detecting red flags that require further evaluation

Ratings

- Parent report / School Report
- Rating Scales/Questionnaires

Direct Assessment

- Direct observation of child with/without structure
- Probe language, social, play skills
- Observe atypical/stereotypical behaviors



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Autism Diagnostic Observation Schedule, Second Edition (ADOS-2)

5 Modules based on age and language level

- **Toddler Module:** Between 12 and 30 months with no phrase speech
- **Module 1:** 31 months + with no phrase speech
- **Module 2:** 31 months + with phrase speech
- **Module 3:** Verbally fluent children & young adolescents
- **Module 4:** Verbally fluent older adolescents & adults

Items Coded on 4-point severity scale

- 0 = symptom not present
 - 3 = symptom severe/atypical
- Diagnostic Algorithm for Modules 1-4:
- Autism
 - Autism Spectrum
 - Non Autism Spectrum



ADOS-2
www.wpspublish.com
Lord et al., 2012

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Clinician Best Estimate (CBE)

- Most grants currently follow best-practices of using a CBE by 1 or 2 experienced clinicians that incorporates data from a variety of assessment sources (e.g., developmental history, ADOS-2, ADI-R, ASRS, cognitive findings, etc.)
- CBE typically trumps any single measure's algorithm/cut-offs, although some studies may still require minimum cut-offs
- No single measure diagnoses autism. Clinicians diagnose autism.

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Developed in 1973 at the Battelle Memorial Institute Columbus Laboratories by Jean Newborg.

Project was initiated by the U.S. Department of Education to provide a uniform measure of developmental progress and to evaluate effectiveness of federally funded Early Childhood Education Programs

Currently, practitioners across all 50 states use the BDI for special services eligibility. Sixteen states use the BDI as a preferred state assessment and anchor tool

Type	Private Nonprofit Charitable Trust
Industry	National Security, Healthcare, Environment
Founded	Columbus, Ohio (1929)
Headquarters	Columbus, Ohio, USA
Key people	Lewis Von Thauer, President and CEO
Services	Research & Development, Engineering Services
Revenue	US\$6.2 billion ⁽¹⁾
Number of employees	3,200 (+29,500 from national labs)
Website	www.battelle.org

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Battelle Developmental Inventory 3

The new Battelle Developmental Inventory (BDI 3) is a comprehensive assessment that measures 6 areas of developmental milestones including:

- Social Emotional (Personal-Social)
- Communication
- Adaptive
- Motor
- Cognitive
- Battelle Early Academic Survey

Battelle 3 is the only assessment on the market that measures these domains from birth to 7 years 11 months. It is the most comprehensive assessment on the market for early childhood and is widely used by early childhood evaluators.

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Standardization and Norms of BDI-3

2500 children completed the Adaptive, Cognitive, Communication, Motor and Social-Emotional domains from 20 age groups with 100 children in each group

Special Group Studies were performed for BDI 3 Standardization

- Autism
- Cognitive Delay
- Motor Delay
- Premature Birth
- Speech and Language Delay
- Broad Developmental Delay

1000 children completed the Spanish Developmental Battery assessment in 20 age groups.

1000 children completed the Battelle Early Academic Survey assessment in 9 age groups.

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BDI-3 Domains and Subdomains

Social-Emotional Domain

- Adult Interaction
- Peer Interaction
- Self-Concept and Social Role

Adaptive Domain

- Self Care
- Personal Responsibility

Motor Domain

- Gross
- Fine
- Perceptual

Communication Domain

- Receptive
- Expressive

Cognitive Domain


- Attention and Memory
- Reasoning and Academic Skills
- Perception and Concepts

Battelle Early Academic Survey

- Literacy
- Mathematics

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Domain	Subdomains
Communication Domain	<ul style="list-style-type: none"> Receptive Expressive Articulation (items included to assess ability to produce specific sounds)
Cognitive Domain	<ul style="list-style-type: none"> Attention and Memory Reasoning and Academic Skills Perception and Concepts
Motor Domain	<ul style="list-style-type: none"> Gross Fine Perceptual
Social Emotional Domain	<ul style="list-style-type: none"> Adult Interaction Peer Interaction Self Concept and Social Role
Adaptive Domain	<ul style="list-style-type: none"> Self Care Personal Responsibility

Testing Time:
5-10 minutes per subtest
Estimate 1 hour for full battery

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The BDI-3 Developmental Screening Test

- Allows you to quickly screen and evaluate early developmental milestones to identify children at risk for developmental delays or disabilities.
- Requires no more than 30 minutes for a full administration.
- Consists of a subset of test items from each of the 5 BDI-3 domains.
- Requires only 1 Easel book.
- Quickly screen for school readiness.

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BDI-3 Key Features

- Comprehensive measurement of all developmental areas
- Conceptualization of *developmental milestones*
- Age range of birth through 7 years, 11 months
- Complete assessment and screening test
- Flexible administration options
- Multiple point scoring
- Easy to score
- Norm, curriculum, and criterion reference base


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Broad Applications and Purposes of the BDI-3

Identify the developmental strengths and opportunities for learning of typically developing infants and children.	Identify the developmental strengths and opportunities for learning of children with disabilities in infant intervention, preschool, kindergarten and primary education programs.	Assessing children as part of a comprehensive evaluation considered to be "at risk" in any developmental area such as ASD.
General screening of preschool and kindergarten children.	Monitoring child progress.	Assessing and developing IEP's and Treatment Plans.

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engaging manipulatives

Student response booklet

Easel Book for each Domain

picture can't be displayed.

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BEAS Domains and Subdomains

Testing time: 45-40 minutes

Literacy <ul style="list-style-type: none"> Print Concepts Rhyming Phonological Awareness Phonics and Word Recognition Listening Comprehension Fluency
Mathematics <ul style="list-style-type: none"> Numbers Counting and Sets Geometry Measurement and Data Operations and Algebraic Thinking

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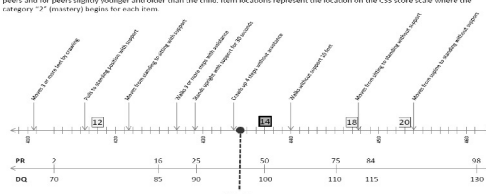
Density/Subdomains	KS	SE	PR	JAI	CSA	CSG	SPIN-13	2-Range	T-Range	NES
Active	61	63	13		496	490	490	-1.13	29	26
Self-Care	32	8	25	38	503	496	500	-0.67	43	36
Personal Responsibility	32	17	25	38	503	496	500	-0.67	43	36
Self-Concept	54	63			408	399	417	-2.47	25	15
Adult Interaction	0	3	<1	0	280	255	305	3.00	20	<1
Self-Concept	0	3	<1	0	280	255	305	3.00	20	<1
Self-Concept and Self-Role	45	5	5	33	453	447	499	-0.67	37	33
Communication	61	63	13		496	490	490	-1.13	29	26
Expressive Communication	0	5	5	28	488	479	577	-1.67	33	15
Expressive Communication	0	5	5	28	488	479	577	-1.67	33	15
Motor	54	63	3		408	399	417	-2.47	25	15
Motor	3	3	<1	0	280	255	305	3.00	20	<1
Fine Motor	0	2	<1	<14	411	442	460	-2.67	23	<1
Perceptual Motor	61	63	13		496	490	501	-1.13	39	26
Cognition	61	63	25		496	490	490	-1.13	29	26
Attention and Memory	0	5	5	28	488	479	577	-1.67	33	15
Perceptual and Academic Skills	0	3	<1	0	280	255	305	3.00	20	<1
Perceptual and Cognitive	0	3	<1	0	280	255	305	3.00	20	<1
BDI-2 Total	52	8	25	38	509	496	500	-0.67	43	36

The CSS scale is centered so that a score of 500 on each subdomain represents the developmental level of a typical 36-month-old.

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Skill Mastery Report

This type of report can show which skills a child has mastered. It can also overlay normative information for the child's same-age peers and for peers slightly younger and older than the child. Item locations represent the location on the CSS score scale where the category "2" (mastery) begins for each item.



Lucy, Age 14 months

PR = 39
DQ = 96

● **Lucy's Change-Sensitive (CSS) Score.** This describes Lucy's location on the developmental continuum of Gross Motor milestones. Skills to the left of Lucy's location will be relatively easy for her; skills to the right of her location will be difficult.

Median CSS for Lucy's same-age peers. The pink box describes the median (middle) location on the CSS scale for all of the 14-month-old children in the nursing sample.

Domain/Subdomain/Area	Raw Score	Scaled Score	Standard Score	Percentile Rank	<25thile	25th-49thile	>=50thile
Literacy			100				
Print Concepts	8	8		25		x	
Phonological Awareness		5		5			x
Syllables	6				x		
Onset-Rime	7					x	
Phoneme Identification	8						x
Phoneme Blending and Segmenting	4				x		
Phoneme Manipulation	3					x	
Phonics And Word Recognition		5		5			x
Letter Identification	8				x		
Letter-Sound Correspondence	7					x	
Early Decoding	5						x
Sight Words	2					x	
Nonsense Words	3						x
Long Vowel Patterns	8						x
Inflectional Endings	7				x		
Listening Comprehension		8		25			
Fluency	7	5		5			x

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Starting Point



text in

PR

1

Starting Point - 2 years, 6 months through 3 years, 11 months

Oct-07 to Oct-08

Materials

None

Behavior

The child explores his or her environment safely and independently.

Interview

Observation

Observe the child to determine whether he or she moves independently around the home, requiring only occasional attention or redirection from adults outside.

Questions

Does the child:

- 1 move independently around the environment independently, without assistance from adults? How often? How long? How many times can he locate his own bed at night?
- For his**
- 2 move much autonomously or autonomously than the child requires to begin exploring his sensory features of play? For example, how often does the child begin to be interested or withdrawn from an auditory stimulation and how the child's capacity to focus on strength comes from a small object taken away?

Adaptive

Scoring

None is awarded if the child is not able to walk or to move independently. None is awarded if safety and not independent movement, therefore, children are not in the process for not walking at that time. This includes children who are unable because they are withdrawn or unable to walk.

PR 1

Adaptive

Form 1

Child explores his or her environment safely and independently

1	Requires only an occasional attention and redirection
2	Requires moderate attention or redirection
3	Requires almost constant attention or redirection

PR 1

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PG 1	Starting Point - 6 months through 11 months	Milefalls None
Behavior: The child responds positively to physical contact and tactile stimulation.		
Observation:		
<p>Observe the child when he or she is seated, sitting, on floor and when adult sits down or assumes the child with physical contact. When observing the child responses to the adult it is best to question when seated or if the behavior is observed and/or elicited upon or after the responses when a parent adult holds, strokes, tickles, pinches, or pokes the child.</p> <p>If the child is seated, observe how he or she responds when a parent adult holds, strokes, tickles, pinches, and/or pokes the child.</p> <p>When the child is seated, observe how he or she responds when the parent adult sits down or picks the child up.</p> <p>When the child is seated, observe how he or she reacts to the adult when the adult reaches out to touch the child's arm, hand, or face.</p> <p>When the child is seated, observe how he or she reacts to the adult when the adult reaches out to touch the child's arm, hand, or face.</p>		
Interview:		
<p>Questions:</p> <ul style="list-style-type: none"> • What did you do to elicit or observe the child when he/she is seated? • How long did the child respond? • How often does the child respond to you? • When the child is seated or sitting, what happens if you hold the child up for your observation or tickle him or her, and tick the child? • How often does the child respond to you? 		
Scoring		
Points	Child responds positively to physical contact and tactile stimulation.	
2	None to little or none at time.	
1	Somewhat	
0	Rarely or never (often or less at time).	

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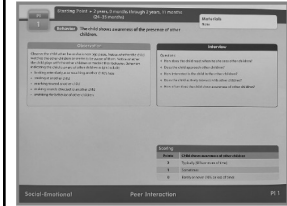
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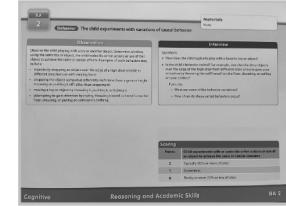
Using the BDI-3 as Part of an ASD Assessment Focused on ASD Behaviors

30+ items on the BDI-3 complete have been aligned with the DSM-5 criteria for ASD

Example: **Persistent deficits in social communication and social interaction**
→ Cross validate ASRS (i.e., smile appropriately? look at others when interacting with them?)



Example: **Restricted, Repetitive Patterns of Behavior, interests and/or activities**
→ Cross validate ASRS (i.e., play with toys appropriately?)



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BDI-3 Scoring & Reporting

- BDI-3 scoring can be completed through the web-based **Riverside Score** system - a secure, web-based environment where examiners can easily enter raw scores, assessment data, and test session observations.

- [BDI-3 Developmental Complete Sample Report](#)



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Mobile data solution (BDI-3 MDS)

Administer the BDI-3 on-the-go using a compatible Windows Device or tablet.

Use it with any combination of the complete test, screening test or BEAS

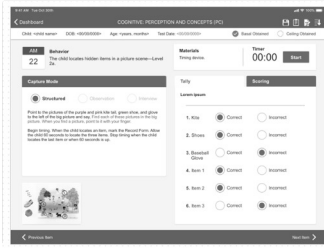
Timer capability

In-the-moment scoring

Combines examiner test easel instructions and examiner test record forms

Reduce human error with basal and ceiling indicators

Can also use offline & sync back to Riverside Score once internet connection is available



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Conclusions

- Our focus in ASD definition, diagnosis and treatment is shifting to a disorder of primarily social functioning.
- ASD is a lifespan condition.
- The identification of ASD is shifting to a technology driven assessment of critical biological variables (e.g. eye gaze)
- Children with ASD demonstrate measurable abnormalities in development that can be reliably and validly measured to design individualized treatment.
- The Battelle 3 offers a viable means to assess key developmental areas as part of a comprehensive evaluation for young children with ASD.

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