ECEI Technical Report:
A Compendium of Current Infant-Toddler Measures

EARLY CHILDHOOD EDUCATION INSTITUTE
The UNIVERSITY of OKLAHOMA - TULSA

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Infant-Toddler Workgroup Members

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Introduction

The ECEI's Infant-Toddler Workgroup was formed in Spring 2020 to examine measures available to our research group to assess very young children, specifically infants and toddlers. We were especially interested in identifying assessments that were new to us and the field.

The ECEI staff is trained on and use a variety of child assessments in our applied research. However, many of those measures are primarily designed for use with children age 3 and older.

We have found that although we have many child assessments that examine various developmental areas for children over 36 months, there are fewer choices of child assessments designed for use with children younger than 36 months of age. Many of the classrooms at our local partnership schools are designed to serve very young children (from birth to 3); thus there is a noticeable gap in the information we are able to provide.

The intention of the ECEI's Infant-Toddler Workgroup was to seek out and learn more about child assessment measures available for use with children under 36 months of age.

Process

Our initial step was to consult published compendia of child measures, specifically targeting those most recently published. Our hope was that by referencing the most recently available compendia, we could identify measures previously unknown to our research group. We were both encouraged and discouraged to discover this was not the case. The discouragement was centered on the fact that we did not learn of new measures through consulting the most recent compendia; the encouragement was that our research group was using the recommended tools identified in the compendia. Also, these compendia and their methods for reporting and sharing various direct child measures, screeners, surveys, and observation tools allowed us to identify the pieces of information that were most relevant in our search for new measures of infant-toddler development. The identified components inspired us to develop an ECEI Measures Table that included the information our group would find most helpful when seeking a new tool. The Workgroup decided to continue examining resources beyond our initial compendia search.

Members of the Infant-Toddler Workgroup partnered with staff at the Schusterman Library at OU-Tulsa to conduct a thorough search of recently-published articles in the early childhood literature to potentially identify new infant-toddler measures. Our literature search focused on child measures designed for children birth to 3 years of age and included only peer-reviewed articles published within the previous five years (2015-2020). These parameters resulted in 158 articles that our group reviewed more closely. We decided to focus primarily on measures of language, literacy, and pre-math skills for children below age 3 for two reasons: those are the areas of most interest to our program partners, and we knew another group (Phil Fisher and colleagues at the University of Oregon) was cataloging social-emotional measures. However, we did decide to include measures of temperament because, for infant and toddlers, temperamental variables such as attention and engagement are related to early learning. The 158 articles were split by year and assigned to smaller ECEI sub-groups that read abstracts to identify articles that aligned with our goals. If the abstract suggested the article matched our criteria, closer attention was paid to the Method section in order to identify the measures used for the study. Measures identified in the articles were then added to our ECEI Measures Table which was created based on the categories of interest inspired by our earlier compendia search and study. Once our review of all 158 articles was complete, the Workgroup came together again to discuss our findings and highlight measures that could be of particular interest to our larger ECEI research group or our community partnership schools.

Our Workgroup then produced two products:

- A presentation to share our work and selected measures to our ECEI colleagues; and
- A measures table that is a more complete summary of the assessments we identified through the literature review spanning the last five years.

Discovery

Although we searched recent literature, our findings show a continued reliance on measures developed in the early 2000s or earlier. Some measures have had updates or significant revisions since the original publication allowing them to remain current. The following table is organized by most recent revision date.

Table Of Available Measures

Instrument	Publication Dates	Domain	Age Range	Assessment Type	Assessment Delivery	Time to Administer	Language	Use
Developmental Profile 4 (DP-4)	2007, 2020	C, L, SE, M	0-21:11 years	3	P, TA	20-40 minutes	E, S	The DP-4 measures development across five key areas: Physical, Adaptive Behavior, Social-Emotional, Cognitive, and Communication.
Receptive-Expressive Emergent Language Test - Fourth Edition (REEL-4)	2003, 2020	L	0-3 years	3	P	20 minutes	E	The REEL-4 identifies disabilities, conditions, and impairments that may affect language development. It records parental observations of child behavior and consists of two core subtests- Receptive Language and Expressive Language and a supplementary subtest- the Inventory of Vocabulary Words.
Bayley Scales of Infant and Toddler Development - Fourth Edition (Bayley-4)	1969, 1993, 2005, 2019	C, L, SE, M	16 days-3.5 years	1, 3	P, TA, Vir	30-70 minutes	E	The Bayley-4 measures the cognitive, language, motor, social-emotional, and adaptive behavior development in children from 16 days to 42 months of age.
Peabody Picture Vocabulary Test (PPVT-5)	1959, 1981, 1997, 2007, 2018	L	2:6-Adult	1	P, TA	10-15 minutes	E	The PPVT-5 is a norm-referenced and individually-administered measure of receptive vocabulary based on words in Standard American English.
Battelle Developmental Inventory (BDI-3)	2004, 2005, 2016	C, L, SE, M	0-7:11 years	1, 4	P, TA, Vir	5-10 minutes per subtest, 30 minutes for screening test	E	The BDI-3 measures mastery of developmental milestones in the following global domains: Communication, Social-emotional, Adaptive, Motor, and Cognitive, plus an additional two domains specifically designed to measure foundational literacy and mathematics skills in children 3:6 years to 7:11 years.
MacArthur-Bates Communicative Development Inventories (MacArthur Bates CDI)	2006, 2015	L	8-37 months	3	P, TA	20-40 minutes	E, S	The goal of the CDIs is to yield reliable information on the course of language development from children's early signs of comprehension, to their first nonverbal gestural signals, to the expansion of early vocabulary and the beginnings of grammar.
Behavior Rating Inventory of Executive Function - Preschool Version (BRIEF-P)	2015	O	2-5:11 years	3	P	10-15 minutes	E, S	The BRIEF-P is the first standardized scale designed specifically to measure executive function in preschool age children. Scales include Inhibit, Shift, Emotional Control, Working Memory, and Plan/Organize.
Desired Results Developmental Profile-Infant/Toddler (DRDP)	2015	L, SE, M, O	Infants & Toddlers	2	P	N/A	E	The DRDP-IT is a formative assessment instrument developed by the California Department of Education for young children and their families to inform instruction and program development. It is administered in natural settings through teacher observation, family observation, and examples of children's work. The developmental domains assessed are: Approaches to Learning, Self Regulation, Social-Emotional Development, Language and Literacy Development, Cognition- including Math and Science, and Physical Development- Health.

Domains		Assessment Type	Assessment Delivery		Language
C = Cognitive, Problem Solving	M = Motor	1 = Direct Assessment	P = Paper	Vir = Virtual	E = English
L = Language, Communication	O = Other	2 = Observation	TA = Tech Assisted	AS = Auto Scored	S = Spanish
SE = Social, Emotional		3 = Parent/Teacher Report	Vid = Video		O = Other

Instrument	Publication Dates	Domain	Age Range	Assessment Type	Assessment Delivery	Time to Administer	Language	Use
The Early Social Communication Scales (ESCS)	2003, 2013	C, L, SE	8-30 months	1	P, TA	15-25 minutes	E	The ESCS consists of a set of 25 semi-structured eliciting situations. It was developed to encourage interaction between an adult tester and the child; approximately 110 child behaviors were noted as possible occurrences. From videotaped records, behaviors were then coded, and summarized according to a) developmental stage (simple, complex, conventional, or symbolic); b) communicative goal (to achieve social interaction between partners, to achieve joint attention to an entity or event, or to regulate the partner's behavior for assistance or compliance); and c) whether the child initiated the interaction or responded to the tester's bid. Thus, a social-communicative profile resulted which indicated the child's highest levels across the various communicative functions.
Preschool Language Scales (PLS-5)	1992, 2002, 2011	L	0-7:11 years	1	P, Vir	45-60 minutes	E, S	The PLS-5 offers a comprehensive developmental language assessment with items that range from pre-verbal, interaction-based skills to emerging language to early literacy.
New Reynell Developmental Language Scales (NRDLS)	2011	L	2-7:6 years	1	P	30-60 minutes	E, O	The NRDLS is a norm-referenced assessment that measures expressive and receptive language skills in children 2–7 years of age. It contains two scales – Verbal Comprehension and Production. The newest edition has a multi-lingual handbook, which is used to adapt the assessment for DLL children.
The Early Childhood Behavior Questionnaire (ECBQ)	2000, 2009	SE, O	18-36 months	3	P	N/A	E, S, O	The ECBQ has been designed to assess temperament in children between the ages of 18 and 36 months. The full version contains 18 scales and 201 items, the short form has 18 scales and 107 items, and the very short form has three scales and 36 items.
Ages and Stages Questionnaire- Third Edition (ASQ-3)	1995, 1999, 2009	C, L, SE, M	1 month-5.5 years	3	P	10-15 minutes	E, S, O	The ASQ-3 is a developmental screening tool that pinpoints developmental progress in children between the ages of one month to 5 ½ years. It can be completed at home, in a waiting room, during a home visit, or as part of an in-person or phone interview.
Language Use Inventory (LUI)	2009	L	18-47 months	3	AS, P, VIR	20-30 minutes	E, 15 more	The LUI is a parent/caregiver report that consists of 14 subscales that assess communication in a variety of settings and functions including requesting help, sharing focus of attention, asking/commenting about things/people, guiding interactions, sharing humor, talking about language, adapting to another's perspective, building longer sentences/ stories.

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The Infant Behavior Questionnaire (IBQ-R)	1981, 1998, 2008	SE, O	3-12 months	3	P	N/A	E, S, O	The original IBQ was developed by Dr. Rothbart in the early 1980s and first reported in the 1981 Child Development article, "Measurement of Temperament in Infancy" (Rothbart, 1981). This early form of the instrument assessed six domains of infant temperament (Activity Level, Soothability, Fear, Distress to Limitations, Smiling and Laughter, and Duration of Orienting). The items on the IBQ ask parents to rate the frequency of specific temperament-related behaviors observed over the past week (or sometimes two weeks). The refined IBQ-R was developed in 1998 and included added subscales. The short form contains 14 scales and 91 items and the very short form has three scales and 37 items.
Computerized Comprehension Task (CCT)	2003, 2008	L	16 months-up	1	TA	<10 minutes	E, S, O	The CCT requires infants to touch images on a screen in response to auditory prompts from an experimenter and has been found to be successful in testing infants as young as 16 months.
The Rossetti Infant-Toddler Language Scale	2006	L, SE	0-36 months	1, 2, 3	p	Varies	E, S	The Rossetti assesses preverbal and verbal communication and interaction through a series of subtests; Interaction Attachment, Pragmatics, Gestures, Play, Language Comprehension, and Language Expression. Data is collected through either direct assessment, observation, or caregiver report. Parent questionnaire are available in English and Spanish
The Capute Scales: Cognitive Adaptive Test/ Clinical Linguistic and Auditory Milestone Scale	2005	L, C	0-36 months	1	P	6-20 minutes	E	The Capute Scales help differentiate between communicative and cognitive disorders. They are designed to help clinicians determine the presence of atypical development in two streams of cognitive development: visual-motor functioning and expressive and receptive language. The Clinical Linguistic and Auditory Milestone Scale, or CLAMS, is the language battery of the test. The Cognitive Adaptive Test, or CAT, is the visual-motor problem-solving battery. CLAMS relies almost exclusively on parental history in the first 10 months of life and then on a combination of parental history and clinical observation. CAT requires direct observation of a child performing specific tests during the assessment.
Language Environment Analysis (LENA)	2004	L	2-48 months	2	TA, AS	Full day	E, S, O	LENA recording technology captures a full day of language at a time, while the software system automatically analyzes and segments audio data. Flexible uploading and processing via a secure cloud-based service simplifies logistics of working with multiple children and sites and provides secure access from anywhere, 24/7. Data include validated percentiles for adult words, conversational turns (serve-and-return interactions), and child vocalizations.

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Instrument	Publication Dates	Domain	Age Range	Assessment Type	Assessment Delivery	Time to Administer	Language	Use
Two Bags Parent Child Interaction Task (Two Bags)	2003	C, SE	Any	1, 2	P	10 minutes	Any	The Two-Bags Task is an adaptation of the Three-Bags Task, which is a semi-structured parent/child interaction. It involves video taping a structured play session between parent and child which is then coded by trained observers to explore parent and child behaviors and emotions.
Communication and Symbolic Behavior Scales (CSBS)	1993, 2003	L	Verbal ability of 6 months-2 years	3	P	50-75 minutes	E	The CSBS consists of 22 communication and symbolic rating scales grouped into seven categories: Communicative Functions, Gestural Communicative Means, Vocal Communicative Means, Verbal Communicative Means, Reciprocity, Social-Affective Signaling, and Symbolic Behavior.
Bayley Short Form - Research Edition (BSF-R)	2000	C, M	2 years	1	P	N/A	E	The BSF-R is a modified, shortened version of the Bayley Scales of Infant and Toddler Development for use in the Early Childhood Longitudinal Study-Birth Cohort (ECLS-B) Child Assessment Matrix.
Philadelphia Naming Test - (PNT) Long form or Short form	1996	L	Any	1	P	N/A	E	The PNT is a 175-item picture naming test developed in the Language and Aphasia Lab of MRRI for the psycholinguistic exploration of lexical access in nonaphasic and aphasic speakers. The short form consists of 33 items. The PNT forms are freely available online.
Mullen Scales of Early Learning (MSEL)	1981, 1995	C, L, M	0-68 months	1	P	15 minutes (1 year), 25-35 minutes (3 years), 40-60 minutes (5 years)	E	The MSEL is a developmentally-integrated system that assesses language, motor, and perceptual abilities, measures cognitive ability and motor development. It includes five scales: Fine Motor, Gross Motor, Visual Perception, Receptive Language, Expressive Language that are used to assess early intellectual development and school readiness.
Infant Development Inventory (IDI) and Child Development Chart (CDC)	1994	C, L, SE, M, O	0-5 years	3	P, TA	5-10 minutes, 10-20 minutes	E	The IDI is used birth-18 months and the CDC is used 18 months-5 years. The IDI measures Social, Self Help, Gross Motor, Fine Motor, and Language. The CDC measures the same five areas plus Numbers and Letters. These screeners can be purchased directly from the website and used by parents or professionals.
Early Language Milestone Scale (ELM Scale-2)	1983, 1993	L	0-3 years	1	P	15 minutes	E	The ELM Scale-2 consists of 43 items arranged in three divisions: Auditory Expressive (which is further subdivided into Content and Intelligibility), Auditory Receptive, and Visual.
Index of Productive Syntax (IPSyn)	1990	L	2-4 years	2	P, TA	N/A	E	The IPSyn considers structures in four major syntactic categories: Noun Phrase, Verb Phrase, Questions and Negations, and Sentences. In total, 60 grammatical structures are assessed.

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Denver Developmental Screening Test II (DDST-II)	1960, 1990	L, SE, M	0-6 years	1, 3, 4	P	20 minutes	E, S	The DDST-II can be used as a screening tool for children at risk of developmental delay. There are 125 performance-based and parent-reported items in the following four areas of functioning: Fine Motor/Adaptive, Gross Motor, Personal/Social, and Language Skills.
Language Development Survey (LDS)	1989	L	18-35 months	3	P	10 minutes	E	The LDS includes 310 words arranged into 14 semantic categories (e.g., food, animals, people, vehicles). Parents are asked to circle each word the child uses spontaneously. They are also asked to indicate whether their child uses word combinations. If so, they are requested to write down five of their child's longest and best phrases or sentences.
Laboratory Temperament Assessment Battery (Lab-TAB and Lab-TAB-QR)	1984	SE, O	6 months, 12 months, 16-36 months	1, 3	P	N/A	E	The goal in developing Lab-TAB is to make available a standardized instrument for laboratory assessment of early temperament. Lab-TAB comprises a set of 3-5 minute episodes that simulate everyday situations in which one can reliably observe individual differences in the expression of emotion, in approach/avoidance and other instrumental behavior, in activity level, and in regulatory aspects of behavior (or temperament).
The Neonatal Behavioral Assessment Scale (NBAS)	1978	SE, M	0-2 months	1	P	N/A	N/A	The NBAS assesses the newborn's behavioral repertoire with 28 behavioral items, each scored on a nine-point scale. It also includes an assessment of the infant's neurological status on 20 items, each scored on a four-point scale. It is used to examine the effects of prematurity, low birth weight, undernutrition, and a range of pre-and perinatal risk factors, the effects of prenatal substance exposure, environmental toxins, temperament, neonatal behavior in different cultures, prediction studies, and studies of primate behavior. The Scale looks at a wide range of behaviors and is suitable for examining newborns and infants up to 2 months old. By the end of the assessment, the examiner has a behavioral "portrait" of the infant, describing the baby's strengths, adaptive responses, and possible vulnerabilities.
Token Sort, Toy Play, and Lock Box Tasks	N/A	C, O	N/A	1	O	3 minutes each	Any	Performance-based measures of attention involve standardized laboratory tasks that target assessment of children's attention, such as Token Sort (colored tokens are mixed together and the child's task is to sort the tokens by color into separate bins), Toy Play (the child is instructed to sit at a table and play with toys while the experimenter does paperwork), and Lock Box (the child is instructed to open a lock to retrieve a toy using a set of keys that do not open the lock).

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Call to Partner

As noted in the Introduction, the ECEI has a history of using a variety of assessments with young children birth through age 8. The ECEI's assessment staff are experts in administering direct child assessments, classroom observations, and surveys to young children, their families, and their teachers and caregivers. As part of our strategic plan, we have identified expanding and developing measurement tools in early childhood research as a goal to be pursued over the next five years.

Thus, we are interested in partnering with other researchers and agencies to test and modify existing tools or to develop new tools. Research in early childhood requires an expanded set of tools to better disentangle the complexities of development, with a particular need for improved assessments for children under the age of 3. Measurement development and refinement with a focus on cultural relevance and sensitivity are also needed. With strong experience using and interpreting existing tools and an engaged corps of diverse data collection staff, ECEI researchers are poised to contribute to the field's call for improved measures.

If you have similar goals, please contact us. We are eager to partner with like-minded individuals or groups to improve assessments for your children and the programs serving them, especially for the infant-toddler age group.

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Disclaimer

The ECEI's Infant-Toddler Workgroup was formed in Spring 2020 to examine measures available to our research group to assess very young children, specifically infants and toddlers. We were especially interested in identifying assessments that were new to us and the field.

As noted, our purpose was to identify new IT measures, thus this is not intended to be a comprehensive list of all available measures nor imply our endorsement of any assessment.

Reliability and validity are not summarized in this document. Readers are advised to research the psychometric properties of each assessment, especially related to their intended use and target populations. Psychometric properties including reliabiltiy and validity are typically summarized in the technical manual available from publishers.

If an organziation is aware of a measure that it believes should be included in this compendium we'd love to learn about it. Please send it our way.