CRED**i**

Caregiver-Reported Early Development Instruments

USER GUIDE

October 31, 2023

The **Caregiver Reported Early Development Instruments (CREDI)** was designed to serve as a population-level measure of early childhood development (ECD) for children from birth to age three. As the name suggests, the CREDI exclusively relies on caregiver reports, and thus primarily focuses on milestones and behaviors that are easy for caregivers to understand, observe, and describe.

We strongly encourage teams to keep the following 5 principles in mind when using the CREDI:

> 1. The CREDI is an open-source tool developed for the global community. You do not need permission to use the CREDI, and there are no fees or royalties involved.

> 2. The CREDI has been tested in more than 15 high-, middle- and low-income countries, and is designed to be culturally and linguistically neutral. Adjustments of the tool to local contexts should not be necessary. You should contact the CREDI research team before making adaptations.

> 3. There are two versions of the CREDI: A Short Form, which has exactly 20 questions for each child (depending on age), and a more detailed Long Form which has up to 100 questions per child (depending on age and ability). For large-scale surveys and monitoring efforts, we recommend the use of the Short Form. For research and evaluation projects, the Long Form will provide more domain-specific detail.

> 4. The CREDI Short Form creates a summary score for children's overall developmental status. The Long Form creates domain-specific developmental scores as well as overall developmental status.

> 5. The CREDI was designed as a population-level developmental assessment, and was not designed as an individual screening tool to detect early developmental delays or disorders.

This **User Guide** was developed to briefly review the aims of the CREDI and the steps necessary for planning a study that uses the CREDI. We recommend that users review this document in full before deciding whether and how to use the CREDI in their particular study. Other materials to further support the CREDI's use are available on our website.

Sincerely,

The CREDI Team

Growing evidence has confirmed the importance of investing in **early childhood development (ECD)** for enhancing the economic, health, and educational status of individuals, communities, and nations (Heckman, 2006; Nores & Barnett, 2010; Shonkoff, 2010). Previous research studies have used well-validated direct assessments of children's functioning (e.g., the Bayley Scales of Infant and Toddler Development, the Malawi Developmental Assessment Tool) to evaluate local intervention effectiveness in this age group. In addition, a number of developmental screeners (e.g., the Denver Developmental Screening Test) have been used to identify early symptoms of developmental disability and delay in clinical settings. At the same time, the cost, time, and training necessary for reliable implementation of these **individual-level assessments** preclude their use for examining large numbers of children within population-representative samples. Furthermore, the cross-cultural comparability of these tools remains relatively untested.

Several measures of children's ECD status have been developed recently for large-scale use, including the Early Childhood Development Index from UNICEF's Multiple Indicator Cluster Survey (MICS), Save the Children's International Development and Early Learning Assessment (IDELA), and the Inter-American Development Bank's Regional Project on Child Development Indicators (PRIDI). As of 2015, however, no measures of population-level ECD had been validated specifically for children ages 0 to 3, making cross-national comparisons of developmental status and progress for the youngest – and potentially most vulnerable – children impossible. **The primary aim of the Caregiver-Reported Early Development Instruments (CREDI) was to address this gap by providing the first population-level measure of ECD for children from birth to age three.** In doing so, we provide a tool that allows for the quantification of children's skills and needs across countries with the ultimate objective of making more informed decisions regarding ECD policies and resource allocation. We also hope the CREDI tool will be a useful instrument to monitor progress in achieving global goals congruent with the post-2015 international development agenda.

From birth to age three, children's brains are developing more rapidly than in any other developmental stage, building between 700 and 1,000 neural connections per second (Harvard Center on the Developing Child, 2007). The CREDI is designed to capture five inter-related domains of ECD that have been shown to develop most rapidly within the 0 to 3 age range, and also to be integral in predicting later life success (See Figure 1).

Figure 1. CREDI domains

First, the CREDI measures children's **motor** development, or their ability to use fine and gross movements to explore and engage with their environments. Second, the CREDI captures children's **language** development, or their ability to communicate their needs and desires, and understand what others are saying to them. Third, the CREDI measures children's **cognitive** development, including their ability to pay attention, remember information, perceive and discriminate between objects and people in their environment, solve problems, and acquire basic knowledge. Fourth, the CREDI considers children's **social-emotional** development, including their ability to control their behaviors and emotions, understand their feelings, and get along well with others. Finally, the CREDI Long Form also captures early symptoms of children's **mental health**, including the absence of behaviors related to aggression, anxiety, and distress.[1]

There are several important considerations that distinguish the CREDI's conceptual framework from those used in previous measures:

First, in addition to the basic motor, language, and cognitive skills that have been the traditional foci of individual ECD assessments and screeners, we also consider an **additional set of**

---

[1] Although the CREDI Long Form includes items related to mental health, the CREDI team does not currently advocate for any particular scoring or reporting method for these items. Users should refer to Appendix D of the CREDI Data Management & Scoring Manual for more details.

developmental competencies that prior evidence has linked with later schooling and adult success (Blair & Razza, 2007; Caspi, Moffit, Newman, & Silva, 1996; Diamond, 2013; Moffit et al., 2010). In particular, our cognitive and social-emotional domains include items related to children's early *regulatory skills and executive function*, including their ability to focus and sustain attention, delay gratification, avoid impulsive reactions, and sooth themselves. In addition, our social-emotional domain emphasizes children's *social and emotional competencies* such as getting along with peers, engaging in play, labelling and understanding emotions, theory of mind, and empathy. Finally, we also focus on emerging *mental health symptoms*, including potential signs of anxiety, withdrawal, aggression, or emotional lability.

Second, unlike previous developmental screeners that attempt to identify children with severe delays or disabilities, the CREDI is designed to represent developmental milestones and behaviors across a **normal range**. In drawing this distinction, we also make explicit the goal of population-level ECD interventions to improve the lives of *all* children, rather than focusing solely on those with developmental delays (See Figure 2). In line with this goal, the CREDI does not provide cut-offs to identify developmental delays or to distinguish between developmentally off-track children and developmentally on-track children. Users interested in these sorts of cut-offs will need to develop them on their own.

Figure 2. Conceptual distinctions between developmental screeners (left) & the CREDI (right)
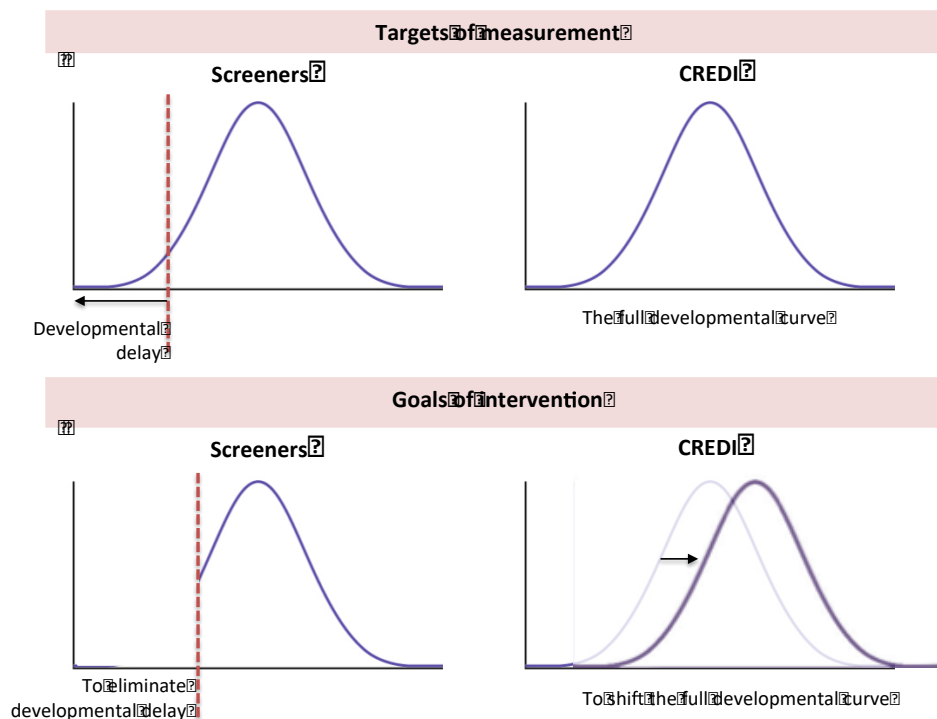
As noted above, the primary aim of the CREDI is to serve as a population-level measure of ECD for children from birth to age three. The specific goals of the CREDI are to:

1. capture the five domains of ECD outlined above for children ages 0 to <3 years,
2. be clear and simple enough to be reportable by primary caregivers and implemented broadly with minimal training (at low cost),
3. be culturally neutral in ideology and content to allow for cross-context comparison, and
4. be psychometrically valid and reliable.

The CREDI includes two different products – or **Forms** – which are summarized below and detailed throughout the rest of this document. Teams should use this information to decide whether the CREDI is appropriate for them, as well as which Form to use.

SHORT FORM

- **Purpose**: Measurement of population-level ECD status
- **Potential Setting/Use**: Nationally-representative household surveys and other global monitoring efforts (e.g., government surveys, the Multiple Indicator Cluster Surveys, the Demographic Health Surveys)
- **Length & Format**: 20 items per age band (0-5mo, 6-11mo, 12-17mo, 18-23mo, 24-29mo, & 30-35mo)
- **Administration Time**: <5 minutes
- **Scoring**: Continuous score of overall ECD status
- **Considerations**: As a population-level measure, the Short Form is *not* intended as a measure of individual children (e.g., as a screener) or specific development within a particular domain (e.g., cognitive). It is also *not* designed to have sensitivity/specificity for detecting intervention efficacy.

LONG FORM

- **Purpose**: Measurement of ECD status, overall and by domain
- **Potential Setting/Use**: Large-scale evaluations of established intervention programs
- **Length & Format**: 117 items total, administered with an age-related start rule and an ability-related stop rule
- **Administration Time**: ~15 minutes
- **Scoring**: Continuous score of overall ECD status and domain-specific development
- **Considerations**: The Long Form provides greater detail than the Short Form, but still lacks the ability to provide information about individual children. As such, we recommend using it alongside more precise, direct-assessment measures whenever possible.

ITEM FORMAT AND ADMINISTRATION

A. RESPONSE SCALE

All items on the CREDI are administered directly to the primary caregiver of the target child using a yes/no response scale. (If caregivers are unsure of their response, they may also choose to respond by saying Don't Know.)

B. ITEM WORDING

Children's **milestones** are assessed using items beginning with the phrase "Can the child…", whereas children's **behaviors** are assessed using items beginning with the phrase "Does the child…" Behavioral items also include **frequency anchors** within the wording of the items, which allow for a more fine-grained understanding of the frequency with which the identified behavior occurs that can be calibrated to reflect developmental norms. Frequency anchors are important for the behavioral items given that behaviors and traits that are non-discrete are typically measured using Likert-like scales (e.g., Never/Sometimes/Often/Always), rather than dichotomously (e.g., yes/no). This strategy allows us to distinguish, for example, between a child who *occasionally* acts aggressively with objects (a developmentally normative behavior for young children) versus a child who *frequently* acts aggressively (which may be a cause for concern, even at a young age). Frequency anchors are "built in" to the CREDI and users do not need to change the items or their response scale to ensure their use.

C. EXAMPLES

Simple examples are included in the CREDI items whenever possible to concretize skills and behaviors in ways that are comparable across cultures. In particular, items asking caregivers about their children's use of words include examples of words such as "mama" and "ball," and items asking caregivers about their children's manipulation of small objects include examples of objects such as "stones" or "sticks." Although most examples are intended to function equally well across cultures, local teams should consult with the CREDI developers to adapt or amend these examples, as needed, to facilitate interpretation, local relevance, and/or comparability with the original intent of the item. If, for example, the word for "ball" in another language is linguistically complex (e.g., includes multiple syllables), difficult to say, or culturally inappropriate, the local team might decide to replace this word with a more appropriate example matching the intent of the item. (See section below on *Adaptation & Translation* for details of this process.)

D. ILLUSTRATIONS

In addition to written examples, the CREDI also includes illustrations for items in the motor domain to help caregivers to visualize the skill being assessed (see, for example, Figure 3). These illustrations are designed to be shown to every caregiver after reading the corresponding item text. Illustrations are included in a separate document available on our website that should be printed for in-person interviews. Items that include illustrations are marked on the CREDI Short and Long Forms with a small image of the illustration. To ensure consistency of implementation and comparability, no additional information, examples, or demonstrations beyond what has been provided with the CREDI should be administered to the caregivers.

"Can the child pick up a small object (e.g., a small toy or stone) with just his/her thumb and a finger?"

Figure 3. Example illustration for motor item

E. ADMINISTRATION RULES

The Short and Long Forms share some – but not all – items in common. They also follow different administration strategies (i.e., start/stop rules).

The **Short Form** includes six sets of 20 items that are administered to children based on their age band. Children within a given age band (e.g., 0-5 months) are all administered the same 20 items.

The **Long Form** includes a total of 108 items that are ordered by difficulty (from easiest to most difficult). Individual children receive answers for a different subset of these items depending on their age and ability level. Specifically, children are assigned to start the Long Form at different points depending on their age band. The Long Form assessment then ends after the caregiver responds "no" or "don't know" to 5 items in a row. Items that are not scored should be left blank.

More information on these administration rules is available in the *CREDI Assessor Manual.*

F. MODE OF ADMINISTRATION

The Short Form and the Long Form can both be administered in different ways. To date, two primary modes of administration have been used: in-person interviews and written surveys. Using the **in-person interview**, the assessor asks each CREDI item out loud to the caregiver, who then responds verbally by saying Yes, No, or Don't Know. This verbal response is then recorded by the assessor either on the printed paper Short and Long Forms provided on the CREDI website, or through some other study-specific mode of data collection (e.g., a programed tablet app). The in-person interview mode of administration is appropriate in contexts in which caregivers' literacy rates and/or access to the internet are low.

The **written survey** option, on the other hand, allows caregiver sto respond directly to each CREDI item at their own pace by completing a paper or online survey on their own. The CREDI does not currently offer teams with official paper or online survey materials, although teams are welcomed to generate their own. For example, teams can modify the Short and Long Forms provided on the CREDI website (which are intended for an interview format given their inclusion of instructions for assessors) to be used directly by caregivers. When doing so, users should be sure to always include the following information:

- A place to record participant ID number, date, child age and date of birth, and any other study-specific information
- The instruction prompts listed in the *CREDI Policies and Procedures* section of the Assessor Manual
- Each CREDI item listed exactly as it is stated on the Short and Long Forms
- Visible images of the illustrations for relevant CREDI items
- Clear places to mark Yes, No, and Don't Know responses

Users should choose the mode of administration that best suits their needs and resources. Initial evidence from the United States suggests that the interview and written modes of administration provide data that are relatively comparable, although additional testing may be needed within a given context to confirm that this is true. Teams have also reported successfully implementing the CREDI by phone during and after the COVID pandemic, though noted that the downside of doing so was that the caregivers were unable to view relevant illustrations.

For more information on various modes of administration used by previous CREDI users, please see the *Research* page of our website.

For more information on how to set up appropriate electronic data capture systems, see our *Data Management and Scoring Manual.*

RESOURCES & MANUALS

A key characteristic of the CREDI is that it is an **open source** tool. The CREDI forms and their supporting documentation are freely available for researchers, agencies, and practitioners interested in measuring ECD at the population level via the **CREDI website** (see *For More Information* section, below, for link). **Individuals and agencies do not need permission to use the CREDI.** The CREDI should be considered as a "living and breathing" set of items and products that will receive continual improvement and updating. As such, users of the CREDI should closely monitor the website to find updates and new materials.

Below we provide a brief description of all CREDI resources and materials:

- **CREDI Long Form**: Includes all CREDI Long Form items. The Long Form is formatted to be printed and used directly in the field as a response form to record participant answers.

- **CREDI Short Form**: Includes all CREDI Short Form items, broken down into six age groups. The Short Form is formatted to be printed and used directly in the field as a response form to record participant answers.

- **CREDI Illustrations**: Includes the illustrations designed to accompany a subset of CREDI items (see *Illustrations* section, above). The Illustrations document is formatted to be printed and used in the field as a visual aide to show participants what the behaviors described in particular items look like in practice. It should be printed on durable paper and/or laminated so that it can be used for multiple administrations.

- **CREDI Item Guides**: Describes the origins and intentions behind each CREDI item. The Item Guides are intended to be used as a tool for adaptation and translation (see *Adaption & Translation* section, below), and are not needed for actual administration of items to caregivers.

- **CREDI Assessor Manual**: Overviews the protocols for administering the CREDI. The Assessor Manual is intended to be used to train data collectors (assessors) prior to their use of the CREDI in the field.

- **CREDI Data Capture Materials**: Templates to assist in electronic data capture and data entry for paper-based assessments. Instructions for using these materials are detailed in the CREDI Data Management and Scoring Manual.

- **CREDI Data Management and Scoring Manual**: Overviews procedures for setting up electronic data capture systems, as well as data entry, management, cleaning, scoring, and interpretation. This Manual is intended to be used by teams' data managers for data capture, processing, and interpretation. For example, it includes details regarding the differences between the raw scores and z-scores produced by the CREDI Scoring App.

Please note that all materials for the CREDI are made available in English. Over time, we are continuing to provide additional materials in other languages. If your team takes the time to translate materials, please share them with us so we might make them available to others. Similarly, if you have feedback on the CREDI, please contact us (see *For More Information* section, below, for contact information).

ADAPTATION & TRANSLATION

A. ADAPTATION

As is noted above, the CREDI is designed to be "culturally neutral" in that it should only reference developmental skills and behaviors that are universally relevant and important for children within the 0 to 3 age range. Furthermore, the objects and ideas used as examples in the CREDI are designed to be available regardless of culture, socioeconomic status, or urbanicity. Extensive piloting and field testing using cognitive interviews with caregivers has been conducted to ensure that each item is clear and consistently understood across diverse cultural and linguistic contexts. As a result, CREDI items should *not* require **adaptation** within a specific context in order to provide a useful picture of children's ECD status. Adaptation of the CREDI items would in fact impact their comparability, and is therefore *not recommended*. However, individual research teams or agencies are encouraged to supplement the core set of CREDI items with additional items or measures that have been shown to function well in their particular settings. Such supplementation can provide more detailed information regarding specific needs and strengths in a given setting.

One exception to this rule of maintaining exact comparability across settings is in the examples used to clarify an item. As is noted above in the *Item Format* section, examples are often included in an item to make the item more concrete and easily understood by a caregiver. Certain items may require the use of different examples than what is suggested in the English (core) version of the CREDI. Some questions, for example, provide examples of simple words such as "ball" that a child may say before he/she is able to say more complex words. If the word "ball" is linguistically complex (e.g., contains multiple syllables), difficult to say, or culturally inappropriate in a particular language/setting, the local team should replace this word with a more appropriate example word.

Before amending an item, teams should consult the CREDI website to identify whether other users have already adapted the CREDI for their local setting. Teams should also consult with the CREDI developers (see *Contact Information*, below) before making substantive changes. Furthermore, all adaptations should be made with a careful eye to the original intent of each item. The **CREDI Item Guide** provides detailed information on the intent of each CREDI item and should be consulted closely to ensure that the original item's meaning is retained.

B. TRANSLATION

Although cultural adaptation is not required, appropriate **translation** of the CREDI is critical to its interpretability and comparability as a population-level measure. Users should consult the CREDI website to see whether an existing translation has already been developed for their language/setting of interest. If not, we recommend that all individual items and prompts are translated *and* back-translated by different native speakers of the particular dialect used within

the target population. Differences between back-translated and original items must be reviewed and resolved by local experts prior to implementation. Translations should be made such that a caregiver with minimal formal education can understand the items easily. In other words, colloquial (commonly-used) wording should be used instead of formal or academic language. Likewise, literal translation is *not* necessary when translating the CREDI. Rather, teams should use "meaningful translation" techniques that allow for the meaning or intent of an item to be reflected in a translation. Once again, teams should refer closely to the **CREDI Item Guide** documents, which provide a detailed description of the meaning and intent behind each item.

As the CREDI is designed to be an open source tool, we encourage teams to keep detailed records of translation difficulties to help us to refine items' wording over time, and to communicate openly with the CREDI core team about translation questions and issues. We also hope that teams who have completed translation of the CREDI will share these versions with the broader ECD community using the CREDI website.

TRAINING

Specific protocols for training data collectors (**assessors**) to use the CREDI should be developed by teams based on their aims, needs, study designs, and contexts. In general, it is recommended that assessors receive at least one day of training on the CREDI. This training should cover the following topics:

- Introduce (or review) research best practices (e.g., confidentiality, privacy, informed consent, participant comfort, ethics, referrals, etc.)
- Provide an overview of CREDI background information, conceptual framework, purpose & aims, item format, and frequently asked questions (see above)
- Provide an in-depth overview of the **Assessor Manual**
- Discuss each item on the **CREDI Short Form** and/or **CREDI Long Form** to ensure clarity and to check translation quality
- Practice administration of CREDI using mock interviews with other assessors or actual caregivers
- Review any study-specific protocols necessary for supporting CREDI administration (e.g., where to pick up and return materials, how to identify participants, etc.)

SUMMARY OF STEPS TO USE THE CREDI

In summary, below are the basic steps needed to set up a study using the CREDI:

- **Step 1**: Review information in this document and frequently asked questions on the CREDI website to decide if the CREDI is the right tool for your purposes. In particular, decide whether the Short Form or the Long Form may be a better fit for you.

- **Step 2**: Review all resources and materials for the CREDI and understand how they are used.

- **Step 3**: Review the CREDI website to see whether anyone has used the CREDI in your context. If not, follow the above instructions and use the relevant Item Guide to support adaptation and translation to your local context. When finished, share your materials with the CREDI team to benefit others in your area.

- **Step 4**: If you are using electronic data collection, review the Data Management and Scoring Manual to ensure that you have programmed your data capture system appropriately. As useful, you may rely on existing data capture materials (e.g., templates for Survey CTO, Kobo, ONA) provided on the CREDI website.

- **Step 5:** Train assessors to use the CREDI based on the above guidance and the Assessor Manual.

- **Step 6**: Collect data based on guidance in the Assessor Manual and your study-specific protocols.

- **Step 7**: Enter, process, score, and interpret your data using the Data Management and Scoring Manual.

- **Step 8**: Share your results with the CREDI team and others.

FOR MORE INFORMATION

A. WEBSITE

https://credi.gse.harvard.edu/

B. ACADEMIC VALIDATION PAPERS

McCoy, D. C., Waldman, M., Team, C. F., & Fink, G. (2018). Measuring early childhood development at a global scale: evidence from the Caregiver-Reported early development instruments. *Early Childhood Research Quarterly, 45*, 58-68.

Waldman, M., McCoy, D. C., Seiden, J., Cuartas, J., CREDI Field Team, & Fink, G. (2021). Validation of motor, cognitive, language, and socio-emotional subscales using the Caregiver Reported Early Development Instruments: An application of multidimensional item factor analysis. *International Journal of Behavioral Development, 23*(1), 1–10.

For additional research using the CREDI, see our website.

C. CONTACT INFORMATION

Dana Charles McCoy, PhD
Associate Professor
Harvard Graduate School of Education
dana_mccoy@gse.harvard.edu

Günther Fink, PhD
Head of Research Unit
Swiss Tropical and Public Health Institute
Associate Professor
University of Basel
guenther.fink@swisstph.ch