

Web-CDI

A Technical Manual

VM 5/3/2023

Web-CDI is an online version of the MacArthur-Bates Communicative Development Inventories (CDIs). The system is supported by the CDI Advisory Board and is housed at Stanford University. All of the data stored in Web-CDI are de-identified. No information about individual respondents' identities are stored in the database, including child date of birth. In exchange for using Web-CDI, users are strongly encouraged to share the de-identified data with an open database of CDI instruments in many different languages, Wordbank. By collecting data using Web-CDI, you are contributing to our ongoing efforts to create large databases of CDIs from many families learning many different languages. You can read more about Wordbank here: <http://wordbank.stanford.edu>.

The English long forms (American/Canadian English WG and WS), Mexican Spanish long forms (WG and WS), English CDI III, and English/Mexican Spanish CDI-CAT are distributed through Brookes Publishing Company and require an access code that can be purchased at <https://brookespublishing.com/product/cdi>. We understand that some users will not be able to share their data. Users who have purchased an access code will be asked to determine whether they want to share their data with Wordbank.

More information about the English CDI suite of instruments can be found in the MacArthur-Bates User's Guide and Technical Manual, 3rd Edition (Marchman, Dale, and Fenson, 2023), also available from Brookes Publishing Company. See deMayo et al. (2021) *Language Development Research* for more information about Web-CDI; See Kachergis et al. (2022) *Journal of Speech, Language & Hearing Research* for more information about CDI-CAT.

(a) Add Instruments. In the Add Instruments dialog, you must indicate which Web-CDI instruments you would like to have available to you. Some of the instruments (e.g., American/Canadian English long forms) require an authentication code that must be purchased from Brookes Publishing Co; Other instruments are available to you free of charge. Click on the instruments that you wish to use.

Select the instruments you want to use

☐ Dutch Long
☐ English (American/Canadian) CAT
☐ English (American/Canadian) Long
☐ English (American) Short
☐ French (French) CAT

☐ Hebrew Long
☐ Korean Long
☐ Spanish (Argentinian) Long
☐ Spanish (Mexican) CAT

☐ Spanish (Mexican) Long
☐ Spanish (Mexican) Short

Save

(b) Create a new study. Once you have selected the instruments, you can create a new study. Indicate the name of the study and then use the dropdown menu to indicate the instrument that is associated with that study. Each study can be associated with only 1 instrument.

Tip: In some cases, you might be administering multiple instruments to a single participant, for example, a child might receive the American English Words & Gestures form when they are 15 months, but then a Words & Sentences form when they are 24 months. Each of those administrations are housed within Web-CDI in different studies. However, you can track your participants across studies when you download the data because each child is given a unique ID that you determine. It is recommended that your study names include the name of the instrument for ease of tracking, e.g., MystudyWG and MystudyWS.

Note on data sharing options: While we encourage all users to make their data available for sharing, users of chargeable instruments, e.g., the English (American) long forms, but you can, if you wish, opt out of sharing your data at the study level. This means that all of the administrations in this study would NOT be available for broader sharing with Wordbank. In this case, you can also opt out of collecting the required demographic information

Add new study

Study Name*

MyStudyWG

Instrument*

English (American) WG

☒ Share opt out
For chargeable instruments you may opt out of sharing the study data.

☐ Demographic opt out
For chargeable instruments you may opt out of collecting demographic data if you opt out of sharing the study data.

There are several other choices in the New Study dialog:

- Age range:** The default age range for the selected instrument will be automatically populated (e.g., 8 to 18 months for the American English Words & Gestures form). When a participant completes the date of birth, the child's age will automatically populate in the age field. If the child is outside of the age window set for that instrument, the respondent will not be allowed to continue. Adjust the slider to allow participants to complete your instrument who are outside the default age range.

Tip: If you know that your participants will be near the edges of the default age ranges, go ahead and broaden the range, e.g., change the upper end of the W&G age range to 20 months, even though most of your participants may fall within the default age range. This ensures that all of your respondents will be allowed to complete the CDI without getting an error.

- Demographic: The default demographic option requires respondents to complete all of the demographic questions prior to completing the CDI. Other options are available which ask some questions at the beginning and some after the CDI is completed. Please contact the Web-CDI team if you think that you might want to hear more about these options.
- Days before expiration: This option allows you to set the number of days that the links are active. The clock starts when you create the link. The default time is 14 days, which allows the respondent to complete the link in a reasonable time after it is created. If the link has expired, the respondent will get an error message to contact the researcher. We have found that 14 days is the optimum time limit for most use-cases.

Tip: Remember that the clock starts when you create the link in the participant interface (described below), so it is best to add a participant and create the link just prior to the point when you will be sending the link to the respondent.

- Measurement units: Choose pounds/ounces vs. grams depending on your data collection context. Note that all participants within a single study must use the same measurement units.
- Minimum time to complete: This is the amount of time that a respondent must spend when completing the CDI. Note that in order to submit the CDI, the respondent must click on every page and must do so in at least the allotted time. They will not get the submit button at the end of the form until that time has elapsed. By setting the default at 6 minutes, which is very short for completing the long forms, we can discourage people from racing through the form and later exclude responses that are completed in an unreasonably short period of time. See discussion of this issue in deMayo et al. (2021).

Tip: If you are using the short forms, you should change this option to a smaller number, e.g., 2 minutes.

- Opening dialog box: Anything that you put in this box will be presented to the respondents when they first click on the link. This box could be used for a consent form/waiver of documentation. For example, when seeing the opening dialog box, the respondent must click past this document to continue. By doing so, the respondent consents to participate, but has waived the option of receiving the documentation of their consent. How you use this box will depend on your particular situation and what your particular IRB requires. If your participants must consent to complete the CDI within Web-CDI, then you can use this box to place your consent form and to obtain consent. However, if you are receiving consent for completion of the CDI through a consent form completed at some other time (e.g., when they come into your laboratory), then you can leave this box blank.

Tip: Because this box is the first that the respondent sees when click on the link, you can be creative about what you put in this box. That is, you could choose to use this box to put a cute picture, a reminder of the payment, your contact information etc.

- Prefill data for longitudinal participants: This option allows you to populate responses from the demographic questionnaire across administrations for the same participant (based on ID). In all cases, it is recommended that respondents be asked to review their responses from one administration to the other. This is especially important for children who might be exposed to another language at home or who might be receiving services.

Tip: Note that for all administrations, respondents are required to re-enter who is filling out the form and child date of birth (to compute age). Child date of birth is never stored in the database and therefore, cannot be populated from previous administrations.

- Amazon gift cards: Enter information here regarding making payments to respondents with Amazon gift cards.
- Anonymous data collection: Use this option to indicate information necessary for collecting data through social media sites.
- Show graph? After respondents complete the CDI, they are shown a graph of their results and some statements regarding the words that they selected. Use this option to toggle off this graph.
- Redirect options: This section asks you to provide information when you are linking Web-CDI to other systems like RedCap, Lookit, etc. Please contact the Web-CDI team if you are interested in receiving more detailed information about these options.
- End message: On the final splash page, respondents see the graph (above) and this standard message. You have the option to add to this message or replace it altogether.

Click save to save your Study options. You may return to “Update Study” to change all of the options except the instrument. Choose your study in the drop down menu to see the participants in your study.

(c) Add participants: Click on “Add participants” to open the Participants dialog box. There are multiple options for adding participants. The most typical use-case is to type in the list of participants in the New Subject IDs box, e.g., 1111, 1112, 1113, etc. These IDs must be all numeric (i.e., no alpha). If you enter an ID twice, the system will assume that it is the same individual and will assign multiple administrations to that ID.

Tip: You can also add additional administrations for a given ID by using the “Re-Administer Participant” dialog box. Select the participant that you want and then click on the dialog box. A new administration of that ID number will appear in your participant listing.

You can also autogenerate a list of IDs (e.g., if you are running several participants at a site on the same day, such as a Children’s Museum). You can also upload from a csv, or use a single-reusable link. The single-reusable link is designed to be used with external platforms, e.g, Facebook. Please contact the Web-CDI team for more information about using single-reusable links.

Tip: When you enter IDs into Web-CDI, these should be meaningful to you as it is the only way for you to track your participants within Web-CDI. You can also add additional information in the Local Lab ID column that does not have any constraints in the field type (e.g., can contain alphanumeric characters).

The resulting list of participants contains the administration number (e.g., 1st admin, 2nd admin, etc), the link that you send to respondents, local lab ID (if used), and other information about when the link was created, when it was last modified, and when it will expire. The Xs indicated that the background form or the CDI itself have not yet been completed by the respondent. You can use the information about when the link was last modified to track whether

a respondent has opened the link and started completing the CDI form. When the CDIs have been completed by the respondents, the Xs will change to check marks. You may need to refresh your page to see the check marks.

A checkmark under the “Scored” column indicates that the scores have been computed by the system and are ready for download.

<input type="checkbox"/>	1111	None	26	link	✓	✓	✓	4/27/2023, 5:09:00 PM	4/22/2023, 8:23:00 AM	4/13/2023, 5:09:00 PM
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Tip: Use the “Participant has opted out of broader sharing” to indicate that an individual participant has not given consent for data to be shared with Wordbank. In many cases, an individual participant may opt in for study participation, but may opt out of sharing, even though your study, in general, has opted in for sharing. You can indicate this by clicking on this option, but must do so for every administration. This information will not propagate if a new administration is added with the same subject ID.

Re-administer Participants							Download Selected Data -		Delete Selected Data			
<input type="checkbox"/>	Subject id ▲	Local lab id	Administration number	Link	Scored	Completed	Completed Background Info (PI)	Expiration date	Last modified	Creation date	Participant opted out of broader sharing	Action
<input type="checkbox"/>	1111	None	1	link	X	X	X	5/17/2023, 1:33:00 PM	5/3/2023, 1:33:00 PM	5/3/2023, 1:33:00 PM	None	
<input type="checkbox"/>	1111	None	2	link	X	X	X	5/17/2023, 1:33:00 PM	5/3/2023, 1:33:00 PM	5/3/2023, 1:33:00 PM	None	
<input type="checkbox"/>	1112	None	1	link	X	X	X	5/17/2023, 1:33:00 PM	5/3/2023, 1:33:00 PM	5/3/2023, 1:33:00 PM	None	
<input type="checkbox"/>	1113	None	1	link	X	X	X	5/17/2023, 1:33:00 PM	5/3/2023, 1:33:00 PM	5/3/2023, 1:33:00 PM	None	
<div><div><div></div><div>1</div><div></div></div></div> <div>Show All</div>												

(c) Downloading data. After your respondents have completed their CDIs, you have several options for how to download their responses and scores.

- **Download data (csv format):** This option will download all of the respondents in your database. The csv output will first have all of the basic metadata, the demographic responses, and then all of the responses for each item. Lastly, the summary scores and corresponding percentiles (by sex and for both sexes combined) will be provided.

Tip: If the child’s age in months is within the age window of the norming sample (e.g., 8-18 months for Words & Gestures, 16-30 months for Words & Sentences), the benchmark age will be the child’s chronological age as indicated by the date of birth and date of test when the CDI was completed. However, if the child is outside the age range of the norming data, e.g., older than 30 months, the benchmark age will reflect the appropriate age in the norming data.

- **Download data with adjusted benchmarks (csv format):** If a caregiver indicated that a child was born prior to their due date, the percentile scores will be based on an adjusted benchmark age. For example, a 21-month old child who was born 4 weeks early would have a benchmark age of 21 months, but an adjusted benchmark age of 20 months after correcting for degree of prematurity.
- **Download Summary data (csv format):** This option is the same as Download data but will not provide individual item responses.

- Use the *Download Selected Data* option to download data for only certain participants. You must click the box to the left of the participant ID to activate this option. The Download Selected Data option gives two additional outputs:
 - The *Clinical Report* gives scores and percentiles for selected administrations in a friendly report format that is appropriate to share with the families or other professionals. This report is currently available for the English and Spanish long forms.
 - The *Selected Links* option just downloads the links for the selected participants. This is useful for selecting individual in a csv format for sending out emails to participants.

3. Respondent Interface

Sending out links: Copy and paste the links for each participant into an email. When the participant clicks on the link, they will first see the opening dialog box (if used), and then some basic instructions and the demographic questions. Note that the ages listed at the top of the form are the ages that you selected in the Study dialog box. See the example emails to respondents at the end of this document.

What the respondent sees: The general instructions ask respondents to complete the CDI when they have some time alone and give the respondent a general idea of how long it will take to complete the form. The respondent can leave and return to the link as many times as they wish as long as the link has not expired.

The respondent must complete the Child's DOB field and the age of the child (from today) will be automatically populated (in whole months). The remaining demographic questions ask about the child sex, birth order, race and ethnicity, exposure to other languages, caregiver education, family income, and some basic health information. If a respondent clicks on yes to these questions, the question opens up so that the respondent can provide additional information as appropriate.

Tip: As indicated above, if you have chosen the option to populate these responses across administrations, please ask the respondents to double-check their previous responses as they might have changed. This is especially important for questions about health history, caregiver perceptions of developmental delay, and exposure to another language.

Instructions: ▾

Due date : May 17, 2023
1:33 PM

Next

MacArthur-Bates Communicative Development Inventory

For 16- to 30-month-old children

Instructions for completing the language inventory

- Try to complete the inventory when you have at least 30 quiet minutes, without interruptions. An example might be when your child is sleeping.
- You do not have to complete the inventory in one sitting. If you are interrupted, it is ok to put it down and come back to it when you have more time.
- Feel free to ask others (e.g. other family members, nanny, child care providers) to help you fill out this form.
- Please read all of the instructions on the inventory carefully, and make sure you complete all of the sections.

For more information about the MB-CDI, [click here](#).

Thank you! We appreciate your time and effort!

Background Information

Basic Information

Who is filling in the form?*

Mother

Child DOB*

07/28/2021

To protect your privacy, we never store your child's date of birth, we only record age in months.

Age (in months)*

21

This field will update when you enter or change your child's DOB.

[Your child should be between 16 to 30 months of age.](#)

Once the respondent has completed the background demographic questions, the pictured instructions appear.

Tip: It is **strongly** recommended that these instructions are reviewed for the respondents (whenever possible) prior to them receiving the link to the CDI. While these instructions are intended to stand on their own, the information in these instructions is more likely to be effective and utilized by the respondents if the instructions are familiar to them prior to completing the forms. That is, by the time the respondents see these picture instructions, they should be “old information.” It is also **strongly** recommended that any individual who is interfacing with the respondents be familiar with the instructions so that they can answer any questions that might arise. Sample emails to respondents are posted at the end of these instructions.

Instructions: ▾

- This form can be filled any time before the due date.
- It can also be saved at any time and resumed later by using the same link ([create bookmark](#)).
- After the form is submitted, it cannot be altered.
- The form also cannot be altered after the due date.
- Please use the navigation buttons below. Do not use the 'back' and 'forward' buttons on your browser.
- You can use the tab button and arrows keys to quickly navigate and answer questions.

Due date : May 17, 2023
2:09 PM

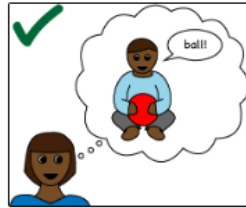
[Show waiver of documentation](#)
Reach out to the Web-CDI Team!

[Save](#)

[Go back to Background Info](#)

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In this section, you will be asked about words that your child "understands and says." Your child "understands and says" a word on the list if they know what the word means AND they say it by themselves. Here are some examples. This assessment is for children of many ages. Your child may not be able to understand or say a lot of the words on the form. That is perfectly fine!



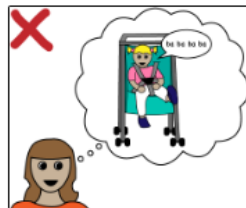
DO check the box if:

Your child says the word when trying to name an object or describe something that happened. You think s/he has a meaning for that word.



It's fine if your child can't say the whole word or says it his/her own "special" way. If you use another word in your family (e.g., Nana for Grandma), that is ok too!

DO check the box.



DON'T check the box if your child is just stringing sounds together. This is not a real word that means something.



DON'T ask your child to repeat the words on the list. This doesn't count!

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[Save](#)

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Next, the sections of the CDI appear, typically one section per screen. For example, the first section of the vocabulary checklist on the Words & Sentences form is Sound Effects, followed by Vehicles, etc. When the respondent clicks on a response, a mark appears and the response changes color.

Instructions: ▾

- This form can be filled any time before the due date.
- It can also be saved at any time and resumed later by using the same link ([create bookmark](#)).
- After the form is submitted, it cannot be altered.
- The form also cannot be altered after the due date.
- Please use the navigation buttons below. Do not use the "back" and "forward" buttons on your browser.
- You can use the tab button and arrows keys to quickly navigate and answer questions.

Due date : May 17, 2023
2:09 PM

[Show waiver of documentation](#)
[Reach out to the Web-CDI Team!](#)

[Save](#)

[Go back to Background Info](#)

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PART 1: Words Children Use

A: Vocabulary Checklist

Children understand many more words than they say. We are particularly interested in the words your child both understands and SAYS. Please go through the list and mark the words you have heard your child SAY on their own. If your child uses a different pronunciation of a word (for example, "raffe" instead of "giraffe" or "sketti" for "spaghetti") or says a different word that has a similar meaning as the word listed here (e.g., "nana" for "grandma"), go ahead and mark it. Remember that this is a "catalogue" of all the words that are used by many different children. Don't worry if your child only says a few of these right now.

[Hide/Show Instructions: ▲](#)

1. Sound Effects And Animal Sounds

☐ baa baa

☐ choo choo

☐ cockadoodledoo

☐ grrr

☐ meow

☐ moo

☐ ouch

☐ quack quack

☐ uh oh

☐ vroom

☐ woof woof

☐ yum yum

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[Next Page >>](#)

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[Save](#)

[Go back to Background Info](#)

Don't forget to save your progress whenever you can!

There is a page indicator that shows the respondent how many pages are in the form and that indicates their progress.

Tip: Note that there is no requirement to click on any item on the form, only that the respondent navigate to each page in at least the minimum time set in the Study dialog. Recall that the respondent will not see the "submit" button until they have reached the last page and have exceeded the minimum time allotted.

After hitting the submit button, the respondent is asked to confirm, as no changes can be made to the form after the form is submitted.

The respondent is then shown the splash page and a graphic summary of their responses. This graph is intended to provide a fun summary of their responses, but does not provide any clinically-relevant information. You may toggle off the presentation of this graph in the Study dialog. You may also modify or add to the splash page. Respondents have the option to save their graph as a pdf for printing or saving electronically (for displaying on the refrigerator, sharing with others, or putting in the child's baby book or other records).

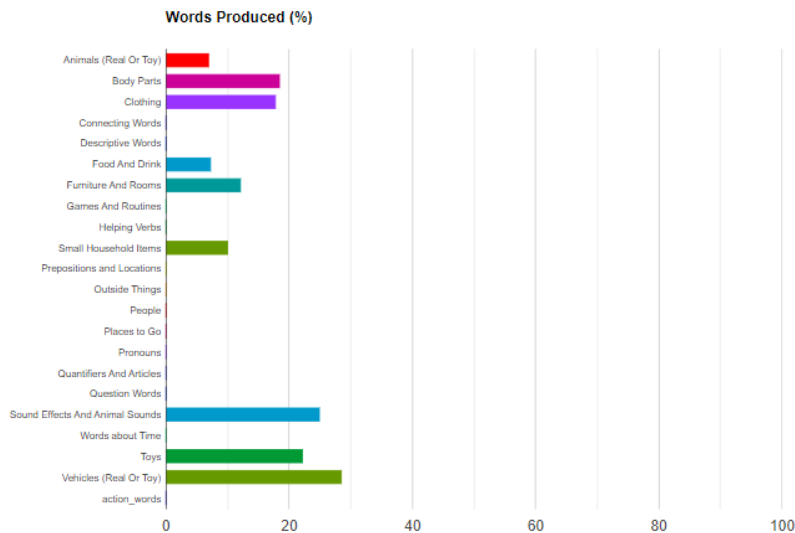


Thank you!

Thank you for taking the time to complete the MacArthur-Bates Communicative Development Inventory (CDI). With the help of parents and caregivers like you, we are working to learn more about the way that children's language develops, and how that development varies across individual children and cultures. Remember that the CDI lists many different words that are used by many different children. Don't worry if your child only knows a few of them right now. Below are some insights into your child's developing vocabulary, based on our research. This summary is not a clinical evaluation. If you have any concerns about your child's development, we recommend that you talk with your child's physician. If you enjoyed our assessment, you can learn more about the CDI [here](#). We appreciate your contribution!

My child says 38 words.

The hardest word my child says is "oven".



Sample emails to participants

Words & Gestures:

Dear Caregiver,

Thank you for your interest in our _____ study!

As we discussed, the next step is for you to complete our language questionnaire. Please complete the questionnaire when you have **at least 20-30 for long forms; 5-10 minutes for short forms** of free time, for example, when your child is sleeping. Don't worry if you need to take a break! You can come back to it as often as you like, but please complete the form by _____ (date).

This questionnaire asks you to mark the words that you think your child "understands" or "understands and says." There are many words listed on the form and your child may know only a few of them right now. That is perfectly fine! The form also asks you about some gestures and activities that your child may be able to do now.

As we discussed, click on "understands" if you think your child has a meaning for that word, but doesn't say the word. Click on "understands and says" if your child says that word on their own and knows something about what it means. Remember that "child like" pronunciations are ok!! And so are special words that you use in your family (e.g., "nana" instead of "grandma").

Please feel free to email or call us if you have any questions at _____.

Click on the link below to begin!!

INSERT LINK

Querido Padre,

¡Muchas gracias por su interés en participar en nuestro estudio de _____!

Como hemos discutido antes, su próximo paso va ser completar un cuestionario de idiomas. Por favor complete el cuestionario cuando tenga por lo menos **20-30 minutos for long forms; 5-10 minutos for short forms** de tiempo libre. Por ejemplo, cuando su hijo(a) esté durmiendo. ¡No se preocupe si tiene que tomar un descanso! Usted puede regresar al cuestionario a menudo como guste, pero por favor complete la forma antes del _____ (date).

Este cuestionario le va pedir marcar las palabras que usted piense que "entiende" o "entiende y dice" su hijo(a). Hay muchas palabras en la forma y posiblemente su hijo(a) solamente sabe

algunas ahorita. ¡Eso está perfectamente bien! La forma también va preguntar sobre gestos y actividades que su hijo(a) posiblemente puede hacer ahorita.

Como hemos discutido, por favor solamente marque “entiende” si usted piensa que su hijo(a) entiende lo que significa la palabra pero no lo dice. Marque “entiende y dice” solamente si su hijo(a) dice esa palabra y sabe lo que significa. ¡Recuerdase que "pronunciaciones de niño" están bien! Y también palabras especiales que utilice su familia (por ejemplo "banana" en lugar de “plátano”).

Por favor mándenos un correo electrónico o llámenos si tiene alguna pregunta a _____.

¡Haga clic al enlace por debajo!

[INSERT LINK]

Words & Sentences:

Dear Caregiver,

Thank you for your interest in our _____ study!

As we discussed, the next step is for you to complete our language questionnaire. Please complete the questionnaire when you have about **at least 20-30 minutes for long forms; 5-10 minutes for short forms** of free time, for example, when your child is sleeping. Don't worry if you need to take a break! You can come back to it as often as you like, but please complete the form by _____ (date).

This questionnaire asks you to mark the words that you think your child "understands and says." There are many words listed on the form and your child may know only a few of them right now. That is perfectly fine! The form also asks you about the kinds of sentences your child might be saying.

As we discussed, mark the bubble if your child says that word on their own and knows something about what it means. Remember that "child like" pronunciations are ok!! And so are special words that you use in your family (e.g., "nana" instead of "grandma").

Please feel free to email or call us if you have any questions at _____.

Click on the link below to begin!!

INSERT LINK

Querido Padre,

¡Muchas gracias por su interés en participar en nuestro estudio de _____!

Como hemos discutido antes, su próximo paso va ser completar un cuestionario de idiomas. Por favor complete el cuestionario cuando tenga por lo menos **20-30 minutos for long forms; 5-10 minutos for short forms** de tiempo libre. Por ejemplo, cuando su hijo(a) esté durmiendo. ¡No se preocupe si tiene que tomar un descanso! Ud. puede regresar al cuestionario a menudo como guste, pero **por favor complete la forma antes del _____ (date).**

Este cuestionario le va pedir marcar las palabras que Ud. piense que "entiende y dice" su hijo(a). Hay muchas palabras en la forma y posiblemente su hijo(a) solamente sabe algunas ahorita. ¡Eso está perfectamente bien! La forma también va preguntar sobre frases que su hijo(a) posiblemente está diciendo ahorita.

Como hemos discutido, por favor solamente marque la burbuja si su hijo(a) dice esa palabra o sabe lo que significa. ¡Recuérdase que "pronunciaciones de niño" están bien! Y también palabras especiales que utilice su familia (por ejemplo "banana" en lugar de "plátano").

Por favor mándenos un correo electrónico o llámenos si tiene alguna pregunta a _____.

¡Haga clic al enlace por debajo!

[INSERT LINK]