

Technical Report 3: Evaluating S-IGDI Measures: Iterative Decision-Making in the Development Process

Assessment of preschool Spanish-English bilingual children is at a crossroads, where previous efforts to simply translate existing measures designed for English speaking students intersect with new efforts to investigate how Spanish early literacy develops, and thus inform the development of new and improved Spanish early literacy assessment tools. As the field of early childhood education makes a shift toward this new path, it is important not only to examine the developmental progression of Spanish early literacy and the best methods to assess such skill, but also to critically evaluate the new measures that are created against defined standards of quality.

Designing Spanish Early Literacy and Language Tasks

As described in Technical Reports 1 and 2, specific attention must be devoted to appropriate design of Spanish early literacy measures across a series of variables including: best practices in interacting with Spanish-English bilinguals (SEB); linguistic differences between native and secondary languages, cultural influences that may contribute to student responses, functional representation of the target skill as manifested in the native language (Spanish), and scaling and psychometric analysis of Spanish early literacy performance.

The Spanish Individual Growth and Development Indicators (S-IGDIs) are one set of measures that have been designed with specific attention to these variables (see Tech Reports 1 and 2 for a detailed description of the methodology used to create S-IGDIs). S-IGDIs are the first of their kind, produced by a team of researchers who have approached each design decision point with the fundamental understanding that Spanish early literacy is different and complementary to English language acquisition for SEB preschool students living in the United States.

With these elements featured in the design of S-IGDIs, we turn our attention to creating and defending the arguments and intended interpretations and uses of S-IGDIs to support validity. That is, just as a robust design process is used to create the S-IGDI measures, we must also define criteria for success in use of the measures in real-world and research settings. We cannot make claims about the intended use and interpretation of a

given assessment tool if we cannot demonstrate its utility in the intended population (Kane, 2013).

Understanding Validity

The conceptualization of validity has evolved over the past decade, moving away from the idea that validity is obtained by a test or established through static factors, and toward the understanding that demonstrating validity is a fluid and dynamic process (Kane, 2013). Specifically, Michael Kane and others have argued that validity is best understood as a matter of degree, demonstrated in an argument through a two-step process: laying out the claims for the interpretation/use argument and then empirically and qualitatively evaluating those claims (Kane, 2013).

To formalize our validation process, this manuscript provides our claims for intended uses and interpretations of S-IGDIs, and provide evidence to contribute to the evaluation of those claims.

Claim 1. *S-IGDIs* represent an underlying construct of Spanish early literacy and language development as a parallel but different developmental progression to that of English. Further, *S-IGDIs* are indicators of the specified constructs, and therefore performance is intended to only be generalized to the domains of Spanish early language and literacy. We posit that inferences are directional, that is, end-users can only make interpretations of *S-IGDI* score as indicators of the underlying construct.

Claim 2. *S-IGDI* items are manifestations of the constructs of interest by representing the unique characteristics of Spanish early literacy and language development including culturally relevant target, dialectical responses from the four major regionally represented Spanish speaking group in United States classrooms. We argue that individual items in each task need to demonstrate functionality with each dialectical group as well as provide sound empirical evidence for their psychometric strength, thus providing construct-relevant stimuli and meaningful scores for interpretation and use by end-users.

Claim 3. *S-IGDI* tasks will be standardized and demonstrate utility with end-users to support meaningful score interpretation, fidelity of implementation and usefulness. We argue that teachers and practitioners must interact with the *S-IGDI* task in a way that allows them to easily understand what the scores represent and how to interpret those scores into meaningful information that can inform best practice.

These three primary claims have guided our work in demonstrating evidence through two years of development and validation studies. To support these claims we have summarized our work in Year 1 field studies here, but it should be noted that the studies presented here are in complement to technical reports 1 and 2 that provide additional evidence for the constructs of interest and the item level characteristics that contributed to each item's design.

Measures

As described in Technical Report 2, the initial pool of 23 S-IGDI measures was reduced to 11 promising measures. Here we briefly review these 11 tasks by each domain they represent.

Oral language. We created five measures that access the domain of using words to communicate ideas and thoughts to others (Dunst, Trivette, Masiello, Roper, & Robyak, 2008; Morgan & Meier, 2008). It also includes expressive language, or the use of words to express meaning and receptive language: the ability to listen, process, and understand the meaning of spoken words.

Picture Naming/Denominación de los Dibujos. This task requires children to name images of common and culturally-relevant objects, animals, foods, etc. Thus, this task evaluates children's ability to produce spoken vocabulary words. To administer the task, the child is shown each card in succession and asked "¿Qué es?" (What is this?). If an image has more than one name due to dialectical differences, all possible correct answers are listed on the back of the card.

Expressive Verbs/Verbos (Expresivo). This task involves production of a verb that describes the action being portrayed in a picture. Each card contains one image and the examiner asks the child "¿Qué está pasando?" (What is happening?) Tasks containing verbs were supported in the literature due to verbs' salience in Spanish language acquisition (Peña et al., 2003). While attempts were made to select images portraying one clear action, multiple possible responses are included for cards whose images solicit multiple verbs.

Receptive Verbs/Verbos Receptivos. Receptive Verbs/Verbos (*Receptivo*) presents children with two or three images per card. Each image portrays an action. Children must use their receptive language skills to match the action said by the administrator to the

correct image. This task differs from *Receptivos* only in the content of the images: in *Receptivos*, all images are nouns.

Storybook/ ¡Vamos a la tienda! This assessment is situated within a storybook format with all assessment questions centered on the context of a trip to the grocery store. Pictures were taken at a local Latino market to gather images of familiar food items in a setting that is familiar to SEB students. Manipulatives attached to the storybook with Velcro enhance interaction during this assessment and are designed to encourage active engagement in the assessment process.

Functions/Funciones. For this task, items provide images of household objects, toys, and everyday nouns and children are asked to identify their function. Ability to describe an object's function was hypothesized to be especially important in this context considering that children acquiring Spanish may learn verbs before nouns (Peña et al., 2003). When displaying each item, the administrator names the image for the child and then asks "¿Para qué sirve?" (What is this object used for?). When an object has multiple functions, or when there are multiple verbs used to describe the same function (i.e., un carro sirve para conducir o manejar), all potential verbs or purposes are and accepted as correct responses. **Phonological awareness.** We reduced our initial pool to four promising measures of phonological awareness, or the meta-linguistic ability to understand that spoken words are comprised of small sound units; to detect, discriminate between, and manipulate these structural components; and to perform these skills independent of word meaning (Durgunoglu, Nagy & Hancin-Bhatt, 1993; Branum-Martin, Mehta et al., 2006; Cardenas-Hagan, Carlson & Pollard-Durodola, 2007; Kuo & Anderson, 2010; Gorman & Gillam, 2003; Anthony et al., 2011; Cisero & Royer, 1995).

First Sounds/Primeros Sonidos. First Sounds/Primeros Sonidos items require detection of and discrimination between the initial sounds of words independent of word meaning. For this task, the administrator names each object on the card and then provides the beginning sound of one object, the target sound. Children must point to the image corresponding to this target sound.

Blending/Mezclar. Blending/*Mezclar* is a task involving phonemic awareness understanding. Children listen to two sounds, or phonemes, separately spoken (i.e., bo/ca), then combine them to form a single word (i.e., boca). This allows children to associate

individual sounds that when said together create a new word. When giving the task, the administrator says one sound (i.e., par), pauses, then makes the other sound (i.e., aguas). The child must respond by saying the answer. No picture cards are used in this measure.

Rhyming/Rimar. Rhyming/*Rimar* requires the ability to discriminate between the endings of words independent of word meaning. For this task, children are required to match the ending sound of a target word to the word that rhymes when presented with either two or three word choices. To give this task, the administrator points to and names the target image in pairs with each of the word choices and asks the child “¿Cuáles son las dos palabras que riman?” (Which words rhyme?).

What word is left?/¿Qué palabra queda? In *What word is left?/¿Qué palabra queda?*, children first hear a word or sound. Then, part of the word or sound is omitted (i.e. elision). This task allows children to identify sound structure. The administrator says the entire word, (i.e., sandía), then takes away part of the word (san) and asks the child what word remains (día). These items are presented both with and without picture scaffolding. For the first half of the task the items are provided on picture cards and involve answers that are real words in the Spanish language. The second half of these items are presented verbally without pictures, as child responses are simply pieces of Spanish words that cannot be imaged on a card. For pictured items, the child can respond by pointing to the picture that corresponds with the answer or by saying the answer; for non-pictured items, the child must respond expressively.

Alphabet Knowledge. During the S-IGDI design process we developed two measures of alphabet knowledge, or the knowledge about the names, sounds, and symbolic representation of the 27(29) letters of the alphabet (McBride-Chang, 1999; Davison & Brea-Spahn, 2012).

Letter Naming/Denominación de las Letras (Receptivo). Letter Naming/*Denominación de las Letras (Receptivo)* requires children to use their receptive language understanding to point to the correct letter (out of 3 letters) when the administrator says the target letter name. Such a task measures children’s ability to distinguish between and know the names of the written letters of the alphabet.

Sound Identification/Identificación de los Sonidos. Sound Identification/*Identificación de los Sonidos* requires children to correctly identify the target

letter once the administrator makes the target letter sound. The child responds to each item by pointing to the correct letter on a card that includes the target letter and two distractor letters.

Method

To evaluate the claims about the 11 promising *S-IGDI* tasks, we collected data from two empirical studies and collected qualitative surveys. These sources of evidence include expert reviews and empirical and qualitative analyses. To appropriately evaluate these sources, we did not weight any one source of information as priority. Instead, we reviewed each *S-IGDI* task through an iterative process where all team members discussed the merit and challenges of developing each measure further in the context of its performance against the evidence for the claim. Measures with weak evidence were eliminated, measures with strong evidence were selected for further development. In this way, each selected measure was comprehensively evaluated within the interpretation/use argument.

Expert Review

To determine the extent to which the *S-IGDI* tasks directly aligned with existing constructs of Spanish early language and literacy, responding to Claim 1, we turned to a panel of experts in the field to review each task. This process is a common and an important source of evidence of alignment to support the inference from the sample of items in a given task to the universe of generalization.

Leading experts in the field, including university researchers of Spanish language and literacy, bilingualism, and linguistics were included. Each expert was provided with an online survey that provided example images of the stimulus material for each task and specific questions about the extent to which the task meaningfully (or not) contributes to Spanish early language and literacy. Each expert was instructed to complete a survey and provide detailed feedback about the tasks.

Empirical Review

Empirical analyses provide evidence to support Claim 1 and Claim 2 by demonstrating how each item meaningfully contributes to each task using item level statistics. The 11 *S-IGDI* tasks were calibrated using Rasch modeling, a single parameter Item Response Theory model. The Rasch model was used to evaluate item functioning via its representation of the underlying ability continuum – given the construct map describing

task features that illustrate lower or higher levels of ability (see Technical Report 2). The Rasch model provides methods to examine item fit to determine if the items for each task were meaningfully contributing to the model and thus the overall measure, and similar indices for persons to determine how students are differentiated by ability in a way that is consistent with the underlying ability continuum.

The Rasch model allowed the research team to examine item-total correlations, item ability level, fit within the single-parameter model, and p-values. These statistics were analyzed to flag items that demonstrated low item total correlations ($<.2$) or erratic response patterns as analyzed by examining average responses by high ability students and low ability students. Descriptive statistics were also examined to explore the range and distribution of performance, average student ability and score variability, and item difficulty and discrimination.

Finally, to contribute to Claim 3 we have examined fidelity of implementation protocols during data collection periods to determine the degree to which the *S-IGDIs* have been implemented with fidelity.

Qualitative Pragmatic and Practical Review

To support Claim 3, we have shifted toward an argument that focuses on interpretations and uses of the tools, rather than the mechanisms within the tool. As a completed product, it is important that *S-IGDIs* provide meaningful information to end-users in a format that is accessible and meaningful. We interpret an accessible and meaningful interaction to include tools that feature pragmatic and practical utility through features of General Outcome Measurement (Vaughn & Fuchs, 2003). For GOM features we reported on the length of time needed to administer each task, satisfaction with the testing materials and meaningfulness of score interpretation, evidence in the literature of a relation to long-term outcomes (such as later reading success) and the percent of zero scores (i.e. floor effects) in a given task. While GOM criteria generally include other criteria in the literature, such as sensitivity to growth over time, we did not include these at this point in our review process because of the lack of data to evaluate against such criteria (Deno, 1991).

Results

Expert reviews

Expert reviews were gathered from four leading researchers in early childhood bilingualism, linguistics, measurement and language acquisition. Experts Carol Hammer, Lisa Lopez, Doris Luft-Baker, and Elizabeth Peña, each completed the surveys previously described. Experts are randomly noted as 1-4. Results are presented in Tables 1-3 and summarized by domain.

Oral Language. Functions/*Funciones*, Picture Naming/*Denominación de los Dibujos*, Receptive Verbs/*Verbos (Receptivo)*, Expressive Verbs/*Verbos (Expresivo)*, and Storybook/*¡Vamos a la Tienda!* were evaluated. Results from experts suggested that all five tasks offered promise in future development. However, given the overlap in content between the Receptive Verbs/*Verbos (Receptivo)*, Expressive Verbs/*Verbos (Expresivo)*, two experts suggested we consider consolidating or selecting one task to move forward to reduce redundancies.

Phonological Awareness. First Sounds/*Primero Sonidos* and Rhyming/*Rimar* were evaluated in expert reviews. At the time of the reviews the remaining phonological measures, Blending/*Mezclar* and What word is left?/*¿Qué palabra queda?* were not yet ready for review. As a result they were not reviewed by the expert team.

Results indicated that First Sounds/*Primero Sonidos* was favored by expert reviewers. Specifically reviewers noted that because Rhyming/*Rimar* is not as salient in the Spanish language it may not be an accurate representation of the construct of Spanish early language and literacy.

Alphabet Knowledge. Letter Naming/*Identificación de Letras* and Sound Identification/*Identificación de Sonidos* were reviewed by the team of experts. Results suggested that both tasks demonstrated strong alignment with the constructs, and experts suggested both be considered for further development.

Table 1. *Oral Language*

| Measure | Reviewer | Resulting Comments |
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| Functions/ Funciones | 1 | <ul style="list-style-type: none"> • This task appears too general and possibly too distant from constructs taught in bilingual U.S. classrooms • This task needs improved attention to correct responses such that the administrator must have clear guidelines on how verb tenses should be accepted when interacting to solicit a response from the child. • This task needs additional clarification on the critical features of the scoring including: <ul style="list-style-type: none"> ○ Is the verb the most important part of the response? ○ Does the context contribute meaningful score information to the response? • This task must devote particular attention to the syntactical structure of the prompt to solicit particular form in student responses. • Some items have drafted responses that are not necessarily functions. For example, the target “bandaid” currently allows “dolor” (pain/injury) to be accepted response, however, the actual function is to cover the injury (para darte dolor or para curar). • This reviewer’s general impression was with modification, this task contributes meaningful information to the constructs of Spanish early language and literacy and should be considered for further development. |
| | 2 | <ul style="list-style-type: none"> • This reviewer was concerned about the overlapping items between this measure and expressive verbs. More specifically, the images/items that appear in this task should not appear in other tasks. • This task requires specific guidelines about correct and incorrect responses (i.e., which verb tenses are accepted as correct?). This reviewer suggested providing the examiner with a list of the correct answers that match the verb forms the child is more likely to use; at this point, the infinitive form of each verb appears on the backs of cards and this presentation may be misleading for administrators. • Some images should be revised (i.e., the angle of the stove image) or changed (i.e., the tortilla press, which may present a cultural advantage for Mexican children) • This task seems potentially redundant given the presence of an expressive verbs task. For example, if a child does not know certain verbs on this task, he/she will miss items containing those verbs on the expressive verbs task. • This reviewer’s general opinion was that, with revisions, this task could move forward. |
| | 3 | <ul style="list-style-type: none"> • Some items in this task may be too culturally-specific (i.e., tortilla press) • This task may not be as important as other oral language measures. For example, this reviewer viewed a task like definitional vocabulary as potentially more important than having children identify functions. • This task was perceived as restrictive. |

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| | | <ul style="list-style-type: none"> • This reviewer provided several item-level edits and suggestions, including: <ul style="list-style-type: none"> ○ Include a picture of the wooden utensil Puerto Ricans use to make tostones ○ The “leash” item may be confusing or unfair for children who do not have a dog. ○ Children may say “go somewhere” for the “drive” item, as they get in the car to go somewhere and they are not the ones to do the actual driving. ○ Overall, the prompt could be “¿Cuál es su función?”, which may be easier for children to understand. • Administrators must be sure to always state the object’s name for the child before asking its function • As the task stands, children may be penalized for not knowing the function of unfamiliar objects. • This reviewer was concerned about the relevance of this task and how much previous experience would influence responses. Overall, this reviewer was unsure of whether or not this measure should move forward. |
| | 4 | <ul style="list-style-type: none"> • This task is an appropriate vocabulary measure that stretches children’s thinking skills. • This task should clarify the exact wording of correct and incorrect responses given the influence of dialectical region or what children may hear adults saying. • This reviewer provided several item-level suggestions, including: <ul style="list-style-type: none"> ○ The leash may be confused for a belt. This item also may put children without pets at a disadvantage. ○ Do not use “vestir(se)” as the answer for the “gorro/gorra” item, as this verb is used with clothes, and hats are more of an accessory. ○ Replace the “cuchillo” item with a different piece of silverware in case children have seen someone using a knife to hurt someone else ○ Many items should include additional correct responses • This task should consider a revised prompt for the first test item: “Aquí hay más ejemplos. Dime para qué sirve el objeto que ves.” • Overall, this reviewer thought the task should move forward. |
| Receptive Verbs/ Verbos (Receptivo) | 1 | <ul style="list-style-type: none"> • This reviewer liked this measure • The samples in this task verbally present the answers to children in the present progressive tense, but actual test items have infinitive forms of verbs on the backs of cards. This discontinuity could pose confusion for administrators who do not know Spanish as well. • This reviewer offered additional responses for a few items, suggesting that careful attention must be paid to the verbs presented to the children. |
| | 2 | <ul style="list-style-type: none"> • The sample items in this task may be too difficult, which could limit children’s ability to continue through the task. Sample items should be easier and clearer in order to make certain the child understands the expectations of the task and is not discontinued because the child was unfamiliar |

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| | | <p>with the sample words.</p> <ul style="list-style-type: none"> • This reviewer was concerned about the practice effect that could emerge by using the same images across measures. In general, expressive tasks should come first so that children cannot learn from the receptive tasks. • This task should consider items with three choices to better differentiate between child abilities. • Overall, this reviewer thought that both receptive and expressive versions of this verb task are unnecessary. It was advised to choose either receptive <i>or</i> expressive, as these abilities are highly related. |
| | 3 | <ul style="list-style-type: none"> • This task should provide clearer expectations for which verb conjugations are required for a response to be counted as correct. • Skiing and fishing (two of the targets) may be geographically irrelevant • This reviewer thought this measure’s focus on verbs was appropriate • This reviewer thought that this measure should move forward, as it measures an important early literacy skill. |
| | 4 | <ul style="list-style-type: none"> • This reviewer offered wording suggestions to improve the prompts. These suggestions include: <ul style="list-style-type: none"> ○ “Vamos a ver algunos dibujos de personas haciendo cosas. Despues quiero que encuentres el dibujo que representa la palabra que te diga.” ○ For error correction in the sample items, delete “Estuviste cerca” ○ “Señala el dibujo de una persona ...” OR “¿Qué persona está ...?” • This reviewer also provided corrections to several of the target verbs, many of which should be reflexive verbs. • This task is a good measure of children's knowledge of action words. • A verb task can be difficult to design in Spanish because several verbs require additional nouns that provide context or reflexive markers. • Based on initial evidence, this measure should move on. |
| Expressive Verbs/ Verbos (Expresivo) | 1 | <ul style="list-style-type: none"> • This task must provide clear expectations for which verb tense the child is required to produce. More specifically, for target verbs that include nouns, must the child provide that noun as well? • This reviewer suggested a few item-level changes to the target verbs. For example, “abrochar”, the target verb for “tying shoes”, more literally translates to “to button”, so it was recommended to accept additional verbs there. • This reviewer believes that this task measures important early literacy skills |
| | 2 | <ul style="list-style-type: none"> • This task must provide clear rules for which verb forms are considered correct or incorrect. Similarly, this task must specify whether children must state the whole verb phrase for items that include a noun with the verb, or if just the target verb is an acceptable correct response. • This task could consider a conceptual scoring approach in which English verbs could be accepted for |

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| | | <p>partial credit</p> <ul style="list-style-type: none"> • The sample items of this task should provide a response for the child that most closely mimics what is expected of them. For example, the sample items provide a full-sentence response, but in the test items, only a one-word response is required from the child (i.e., the target verb in any conjugated form). Consistency is necessary. • The sample items should be easier so that the child understands how to complete the task. A child’s inability to pass the sample items should be based on low skill level, not on difficult verbs. • The backs of the cards should perhaps include acceptable conjugated forms of each correct verb, rather than just the infinitive form. • This reviewer suggested creating follow-up prompts for children who label the object in the picture rather than stating the action that involves that object. Additionally, some of the images are unclear. |
| 3 | | <ul style="list-style-type: none"> • This task should provide more guidance on the correct versus incorrect response, including information about accepted verb tenses, requirements for verb/noun phrases, etc. • Many of these images are repeats from other measures, which may introduce practice effects or confuse children • The cultural relevance of this task was unclear to this reviewer. However, this reviewer recognized the focus on verbs in Spanish as important. • This task should consider more specific prompts for each item. For example, instead of “¿Qué está pasando?”, try saying “¿Qué está haciendo el hombre/la mujer/el niño?” • This reviewer pointed out several items which may pose difficulty for children from various backgrounds. For example, “manejar” may be difficult for children whose families rely on public transportation, and “esquiar” may be difficult for children who live in Florida or other warm places where skiing is an uncommon activity. • This reviewer’s overall opinion was that ,with revisions, this measure should move forward |
| 4 | | <ul style="list-style-type: none"> • This reviewer provided several wording corrections and item-level revisions, including: <ul style="list-style-type: none"> ○ For the prompt on the first test item: “Ahora dime lo que está pasando en los dibujos” or “Ahora dime la que están haciendo las siguientes personas” ○ For the item with the man standing, use “estar de pie” or “estar parado” as the correct response instead of “levantarse” because the image does not specify whether the man just stood up or if he has been standing. ○ Some of the images seem too scary or dramatic (i.e., “caer(se)”, “asustar”) ○ Some items require the reflexive verb form (i.e., “lavar” → “lavarse las manos”) ○ Overall, the card backs should include the present progressive conjugation of each target verb so that examiners are not confused if a child’s response is correct • This task would be more culturally-appropriate if more images of culturally-diverse people were |

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| | | <p>included.</p> <ul style="list-style-type: none"> • This task should consider different scoring procedures based on grammar (i.e., appropriate conjugation) • This reviewer thinks that this measure should move forward. |
| Picture Naming/ Identificación de los Dibujos | 1 | <ul style="list-style-type: none"> • The prompt should perhaps change to accommodate for plural items (i.e., “¿Qué son?”) • This reviewer provided some suggestions for additional responses that better account for various dialects • Overall, this reviewer thought the measure targeted important early literacy skills |
| | 2 | <ul style="list-style-type: none"> • This task should provide administrators with a range of possible answers obtained from previous testing and validation with large numbers of children • Crucial to this task is determining the additional responses that are acceptable given dialectical variations • Consider choosing easier sample items that all children, regardless of regional or dialectical background, will know • This task should consider accepting responses in English in a different kind of scoring scheme. • This reviewer thought that this measure should move forward. |
| | 3 | <ul style="list-style-type: none"> • This task should be more sensitive to dialectical variations and offer multiple correct responses for more items • Some images in this task lack cultural appropriateness, like doll and mountain. Other images/items are too culturally-specific, like tortillas, which Caribbean and South American children may not recognize. • This reviewer suggested using cartoon images to make the measure more child-friendly • It may be appropriate to prompt for more sophisticated or accurate responses in case where children are close to the correct answer. For example, if a child says “rosa” for the “flor” item, it may be beneficial to have a prompt in place to ask the child what type of flower it is. • This task’s scoring rules are perceived as too restrictive. • Overall, this reviewer voted to keep this measure but revise it |
| | 4 | <ul style="list-style-type: none"> • This reviewer offered several suggestions for additional items. Many of these focused on “academic language” (i.e., words that relate to the classroom) and non-nouns. • This task assesses basic vocabulary knowledge. |
| Let’s go to the Store!/ ¡Vamos a la | 1 | <ul style="list-style-type: none"> • The manipulatives with velcro in this measure make it enjoyable • The scenario presented in the storybook will be familiar to a broad range of children • Consider adding a narrative item to the sample items • Consider revising the final question of the story in order to elicit more language from the child. |

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| Tienda! | | <p>Perhaps try “Tell me as many different things from the story as you can”</p> <ul style="list-style-type: none"> • This task should use the word “cuento” instead of “historia” • This reviewer provided item-level grammar corrections to be made. • This task should clearly separate prompts to give the child and text for administrators to say so that administrators do not accidentally give unwarranted prompts • This task will successfully capture naturalistic language. |
| | 2 | <ul style="list-style-type: none"> • Some of the prompts are too easy, need to increase item difficulty, The prompts also sometimes limit what the child has to say because it is pragmatically inappropriate to say more • This task would benefit from better representing other Spanish-speaking cultures in the items aside from Mexican. More specifically, the storyline and images best match Mexican culture, as the store appears to carry Mexican products and pinatas are not common in every Spanish-speaking culture • Although this reviewer like the naturalistic nature of this task, it was unclear onto which early literacy construct this task mapped. • This task would benefit from considering the varying family backgrounds of children who may see this task (i.e., families with only one parent and no siblings, families with no parents, etc.) • Some of the items are quite easy, and other items may not elicit enough language from the children. This reviewer recommends wording expressive questions in a way that elicits at least a complete sentence, as well as creating more difficult items. |
| | 3 | <ul style="list-style-type: none"> • This task should consider all types of Spanish-speaking populations and what kinds of scenarios may be more familiar to urban versus rural children. • Some of the items and images need to be revised so that children have more to talk about. These revisions may (and should) make some items more difficult • The storyline should be more cohesive. It was perceived as inconsistent. • This task is engaging, especially in its use of shopping carts and manipulatives. • Overall, this reviewer really liked this task, but mentioned that it needs to undergo major revisions in order to be a truly good measure. |
| | 4 | <ul style="list-style-type: none"> • This reviewer liked this task overall |

Table 2. *Phonological Awareness*

| Measure | Reviewer | Resulting Comments |
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| Rhyming/ Rimar | 1 | <ul style="list-style-type: none"> The error correction prompt would be more accurate as “casi lo haces” versus “estuvista cerca” Overall, this reviewer thought this measure was worth keeping |
| | 2 | <ul style="list-style-type: none"> This reviewer cautioned against using this task because rhyming is not common in Spanish and may not be relevant to or predictive of reading outcomes for this population. This reviewer did not think this task should move forward. |
| | 3 | <ul style="list-style-type: none"> This task should pay closer attention to the cultural universality of the words chosen as targets. For example, many of the target rhyming words may not be familiar to Puerto Rican and Cuban children. As a result, cognitive load and rhyming ability may become conflated, as these children must hold a new object in memory while being required to rhyme with it. This task should consider a more systematic progression of item difficulty. As it stands, this task randomly moves from two to three choices and back again. |
| | 4 | <ul style="list-style-type: none"> This reviewer thought this was a well-designed task that should move forward |
| First Sounds / Primeros Sonidos | 1 | <ul style="list-style-type: none"> This task should consider offering initial syllables as target sounds rather than initial phonemes given the salience of the syllable as a unit in Spanish. This reviewer worried about a potential floor effect, in that children may not be able to complete the measure |
| | 2 | <ul style="list-style-type: none"> This task seems to apply to English rules more than Spanish rules, which is common to many phonological awareness tests in Spanish, but not necessarily appropriate. <ul style="list-style-type: none"> More specifically, English uses onset-rime patterns, but Spanish does not. Spanish is a syllabic language. This reviewer recommended using only one-syllable words as targets if planning to continue using phonemes as targets. Otherwise, children may attend to the syllable units rather than the phonemes in multi-syllabic words. This task should avoid foils that have the target sound in them, at least in the early items until the child habituates to the task instructions This task should avoid blended sounds as targets (i.e., flauta with /fl/ as the target). |
| | 3 | No feedback provided. |
| | 4 | No feedback provided. |

Table 3. *Alphabet Knowledge*

| Measure | Reviewer | Resulting Comments |
|--|----------|--|
| Letter Naming (Receptive)/ Identificación de las Letras (Receptivo) | 1 | No feedback provided. |
| | 2 | <ul style="list-style-type: none"> This reviewer wondered why a receptive naming task was chosen over an expressive naming task. Overall, this reviewer thought that this task seemed fine and should move forward. |
| | 3 | No feedback provided. |
| | 4 | No feedback provided. |
| Sound Identification / Identificación de los Sonidos | 1 | No feedback provided. |
| | 2 | <ul style="list-style-type: none"> This task may be difficult for children to complete and may introduce a floor effect This task should avoid foils that have the same place of articulation as the target sound, as sounds with similar places of articulation will be more difficult for children to differentiate |
| | 3 | <ul style="list-style-type: none"> Several letters make different sounds based on dialectical variation, so this task should consider the error that could be introduced by making a letter sound that a child may deem incorrect or unfamiliar Lack of consistency in sound pronunciation across administrators could pose severe issues for this task's validity |
| | 4 | No feedback provided. |

Empirical Reviews

Descriptive statistics and Rasch calibrations for each scale are provided in Table 4 and Figures 1-22.

Table 4. Field Study Descriptive Results for 11 *S-IGDI* tasks

| Domain | Task | Mean (Raw score) | Rasch Mean (person score) | SD | Max | Min | Person Reliability | %of non- responses (zero scores) |
|---------------------------|---|------------------------|------------------------------------|-----|-----|-----|-----------------------|---|
| Phonological Awareness | What Word is Left? /¿Qué palabra queda? | 10.2 | 1.126 | 3.5 | 14 | 3 | .72 | 54% |
| | Blending/ Mezclar | 22.2 | 1.448 | 6.9 | 29 | 2 | .83 | 55% |
| | Rhyming/Rimar | 10.8 | .224 | 4.4 | 25 | 1 | .76 | 35% |
| | <i>First Sounds</i> / Primeros Sonidos | 11.5 | .455 | 3.3 | 19 | 4 | .65 | 24% |
| Oral Language | <i>Storybook</i> Let's go to the store! /¿Vamos a la tienda! | 20.1 | .519 | 8.9 | 37 | 1 | .83 | <1% |
| | <i>Picture Naming</i> / Identificación de los Dibujos | 12.7 | 1.445 | 4.1 | 19 | 1 | .79 | 13% |
| | <i>Expressive Verbs</i> / Verbos (Expresivo) | 12 | .824 | 3.6 | 19 | 2 | .78 | 33% |
| | Functions/ Funciones | 12.1 | .669 | 3.7 | 19 | 1 | .77 | 27% |
| | Receptive Verbs/ Verbos (Receptivo) | 17 | 2.616 | 2.8 | 19 | 2 | .35 | 17% |

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| Domain | Task | Mean (Raw score) | Rasch Mean (person score) | SD | Max | Min | Person Reliability | %of non- responses (zero scores) |
|-----------------------|--|------------------------|------------------------------------|-----|-----|-----|-----------------------|---|
| Alphabet Knowledge | <i>Sound Identification/ Identificación de los Sonidos</i> | 10.8 | .292 | 4.2 | 19 | 1 | .76 | 29% |
| | <i>Letter Identification/ Identificación de las Letras (Receptivo)</i> | 11.5 | .468 | 3.9 | 20 | 2 | .74 | 17% |

Figure 1. *Phonological Awareness: ¿Qué palabra queda?/What word is left? Item Map*

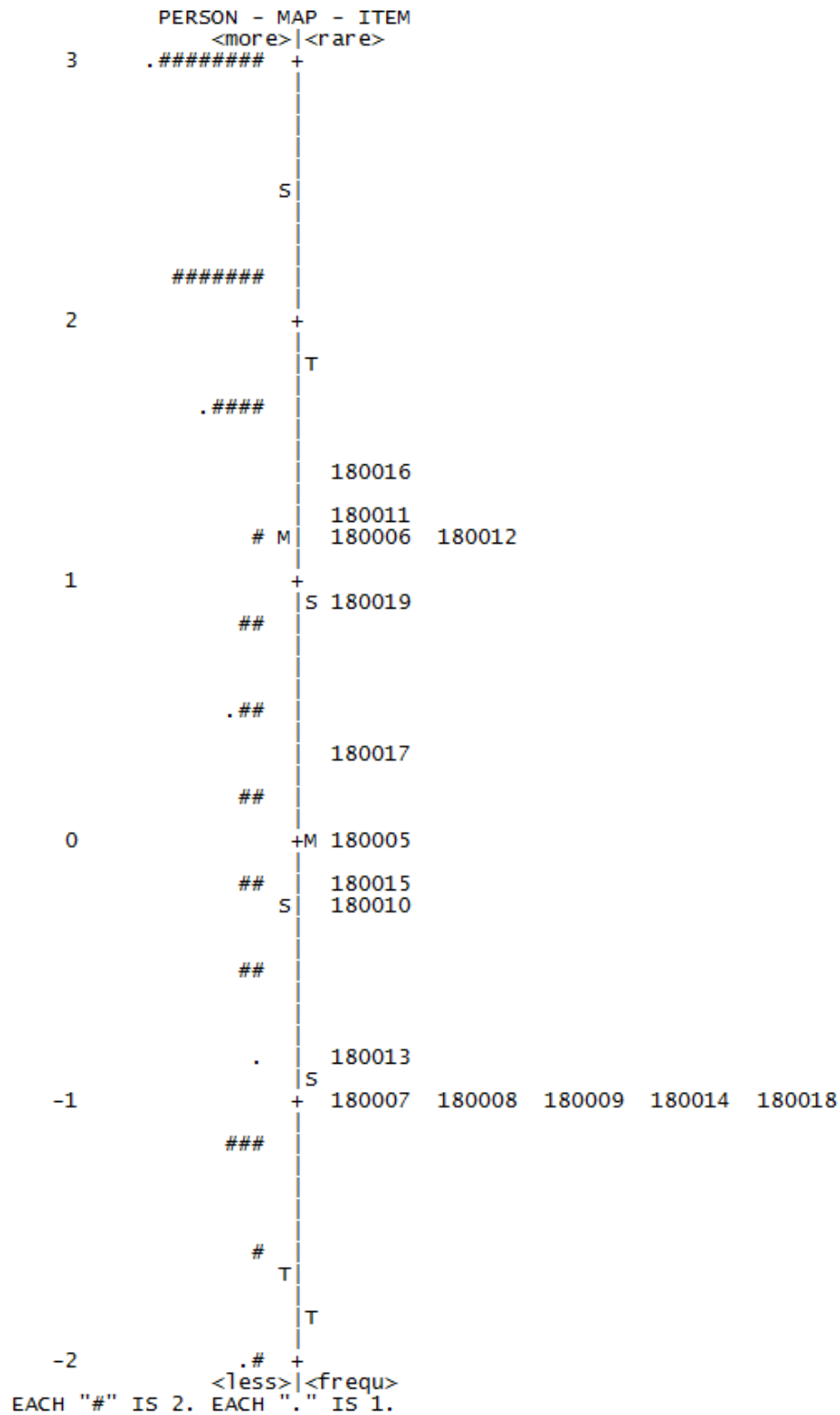


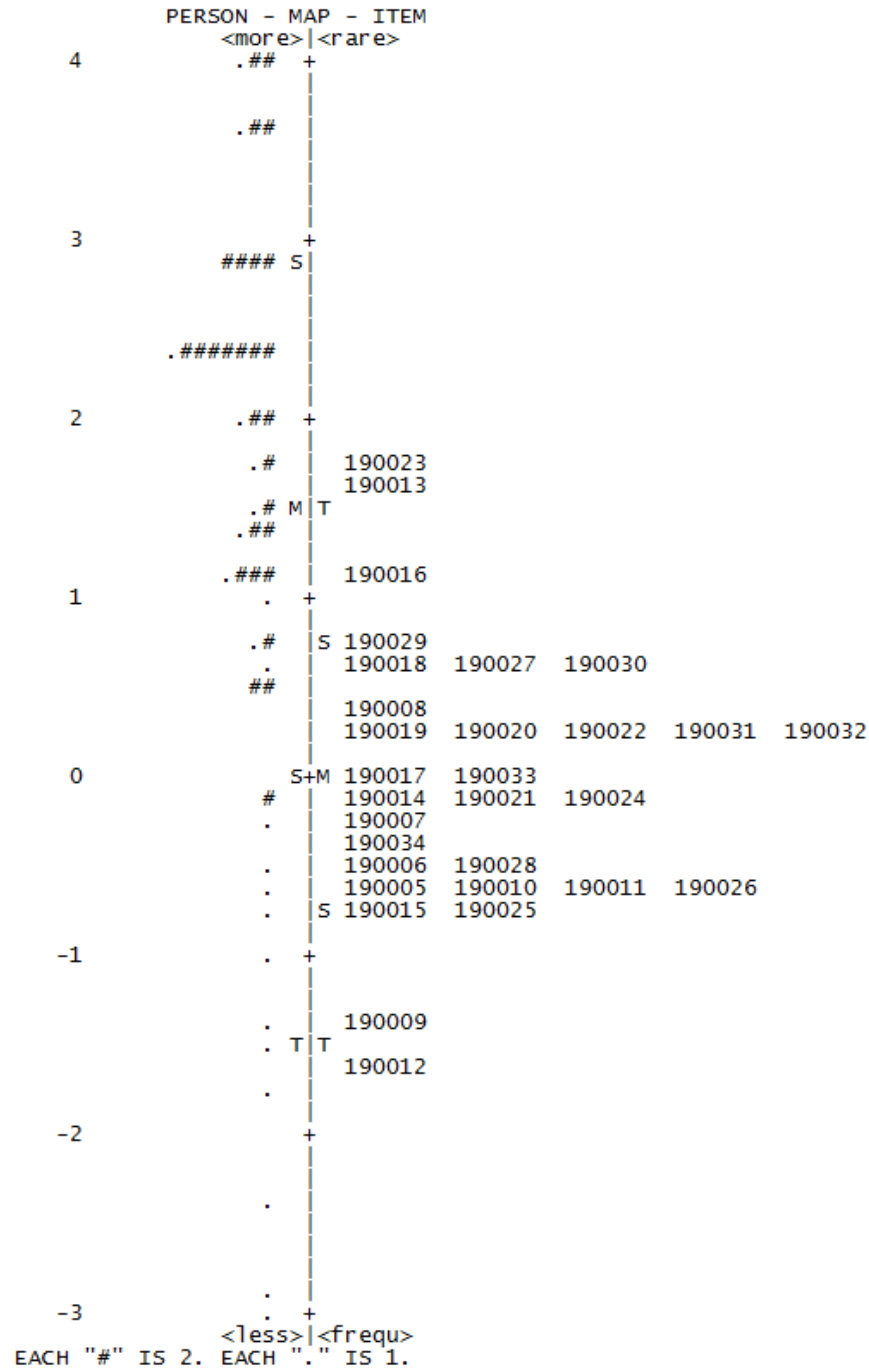
Figure 2. *Phonological Awareness: ¿Qué palabra queda?/What word is left? Item Calibration Table*

TABLE 14.1 Calibration for ELISION RESPONSES ZOU805WS.TXT Sep 11 19:11 2013
 INPUT: 75 PERSON 15 ITEM REPORTED: 75 PERSON 15 ITEM 2 CATS WINSTEPS 3.72.2
 PERSON: REAL SEP.: 1.73 REL.: .75 ... ITEM: REAL SEP.: 2.47 REL.: .86

ITEM STATISTICS: ENTRY ORDER

| ENTRY NUMBER | TOTAL SCORE | TOTAL COUNT | MEASURE | MODEL S. E. | INFIT MNSQ | ZSTD | OUTFIT MNSQ | ZSTD | PTBISERL-CORR. | -EX-EXP. | EXACT OBS% | MATCH EXP% | P-VALUE | ITEM |
|--------------|-------------|-------------|---------|-------------|------------|------|-------------|------|----------------|----------|------------|------------|---------|--------|
| 1 | 51 | 75 | .041 | .316 | 1.19 | 1.2 | 1.12 | .5 | .44 | .54 | 79.1 | 78.5 | .68 | 180005 |
| 2 | 39 | 75 | 1.138 | .294 | 1.04 | .3 | 1.12 | .6 | .47 | .51 | 71.6 | 75.5 | .52 | 180006 |
| 3 | 60 | 75 | -.974 | .365 | 1.06 | .4 | 1.30 | .7 | .46 | .52 | 85.1 | 84.0 | .80 | 180007 |
| 4 | 60 | 75 | -.974 | .365 | .55 | -2.7 | .30 | -1.9 | .76 | .52 | 94.0 | 84.0 | .80 | 180008 |
| 5 | 60 | 75 | -.974 | .365 | .86 | -.7 | .55 | -.9 | .60 | .52 | 85.1 | 84.0 | .80 | 180009 |
| 6 | 54 | 75 | -.267 | .327 | .87 | -.7 | .80 | -.5 | .61 | .54 | 83.6 | 79.9 | .72 | 180010 |
| 7 | 38 | 75 | 1.224 | .294 | 1.09 | .7 | 1.12 | .6 | .44 | .51 | 73.1 | 75.2 | .51 | 180011 |
| 8 | 39 | 75 | 1.138 | .294 | .68 | -2.5 | .61 | -2.2 | .68 | .51 | 86.6 | 75.5 | .52 | 180012 |
| 9 | 59 | 75 | -.844 | .356 | .95 | -.2 | .65 | -.7 | .57 | .52 | 80.6 | 83.2 | .79 | 180013 |
| 10 | 60 | 75 | -.974 | .365 | .81 | -1.0 | .46 | -1.2 | .64 | .52 | 85.1 | 84.0 | .80 | 180014 |
| 11 | 53 | 75 | -.162 | .323 | .75 | -1.6 | .60 | -1.4 | .68 | .54 | 85.1 | 79.3 | .71 | 180015 |
| 12 | 36 | 75 | 1.395 | .293 | 1.28 | 1.9 | 1.67 | 2.7 | .32 | .50 | 70.1 | 74.8 | .48 | 180016 |
| 13 | 48 | 75 | .332 | .308 | .95 | -.3 | .95 | -.1 | .57 | .54 | 80.6 | 77.4 | .64 | 180017 |
| 14 | 60 | 75 | -.974 | .365 | 1.15 | .8 | 1.40 | .9 | .45 | .52 | 79.1 | 84.0 | .80 | 180018 |
| 15 | 42 | 75 | .876 | .297 | 1.53 | 3.1 | 1.76 | 3.1 | .26 | .52 | 61.2 | 76.0 | .56 | 180019 |
| MEAN | 50.6 | 75.0 | .000 | .328 | .98 | -.1 | .96 | .0 | | | 80.0 | 79.7 | | |
| S. D. | 9.1 | .0 | .912 | .030 | .24 | 1.5 | .43 | 1.5 | | | 7.9 | 3.7 | | |

Figure 3. *Phonological Awareness: Mezclar/Blending Item Map*



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Figure 4. *Phonological Awareness: Mezclar/Blending Item Calibration Table*

TABLE 14.1 Calibration for BLENDING RESPONSES ZOU241WS.TXT Sep 11 19:09 2013
 INPUT: 78 PERSON 30 ITEM REPORTED: 78 PERSON 30 ITEM 2 CATS WINSTEPS 3.72.2

PERSON: REAL SEP.: 2.08 REL.: .81 ... ITEM: REAL SEP.: 1.83 REL.: .77

ITEM STATISTICS: ENTRY ORDER

| ENTRY NUMBER | TOTAL SCORE | TOTAL COUNT | MEASURE | MODEL S. E. | INFIT MNSQ | ZSTD | OUTFIT MNSQ | ZSTD | PTBISERL-CORR. | -EX. EXP. | EXACT OBS% | MATCH EXP% | P-VALUE | ITEM |
|--------------|-------------|-------------|---------|-------------|------------|------|-------------|------|----------------|-----------|------------|------------|---------|--------|
| 1 | 64 | 78 | -.583 | .367 | 1.67 | 2.5 | 2.53 | 2.6 | .20 | .55 | 73.6 | 86.3 | .82 | 190005 |
| 2 | 63 | 78 | -.452 | .357 | .89 | -.4 | .59 | -1.0 | .62 | .55 | 81.9 | 85.5 | .81 | 190006 |
| 3 | 61 | 78 | -.210 | .340 | .91 | -.4 | .84 | -.3 | .61 | .55 | 83.3 | 83.9 | .78 | 190007 |
| 4 | 56 | 78 | .315 | .310 | 1.06 | .4 | .90 | -.3 | .51 | .54 | 76.4 | 80.0 | .72 | 190008 |
| 5 | 69 | 78 | -1.387 | .442 | 1.17 | .6 | 2.19 | 1.6 | .37 | .53 | 91.7 | 90.7 | .88 | 190009 |
| 6 | 64 | 78 | -.583 | .367 | 1.16 | .7 | 1.72 | 1.5 | .44 | .55 | 87.5 | 86.3 | .82 | 190010 |
| 7 | 64 | 78 | -.583 | .367 | 1.17 | .8 | 1.02 | .2 | .46 | .55 | 81.9 | 86.3 | .82 | 190011 |
| 8 | 70 | 78 | -1.592 | .466 | 1.14 | .5 | .68 | -.2 | .48 | .52 | 91.7 | 91.7 | .90 | 190012 |
| 9 | 40 | 78 | 1.632 | .274 | 1.25 | 2.1 | 1.39 | 1.5 | .33 | .47 | 62.5 | 72.2 | .51 | 190013 |
| 10 | 60 | 78 | -.096 | .333 | 1.19 | 1.0 | 1.29 | .9 | .44 | .55 | 79.2 | 83.1 | .77 | 190014 |
| 11 | 65 | 78 | -.722 | .378 | .92 | -.2 | .59 | -.9 | .62 | .55 | 87.5 | 87.1 | .83 | 190015 |
| 12 | 47 | 78 | 1.094 | .282 | 1.07 | .6 | .98 | .0 | .46 | .50 | 70.8 | 73.8 | .60 | 190016 |
| 13 | 59 | 78 | .012 | .327 | 1.11 | .6 | 1.05 | .3 | .49 | .55 | 80.6 | 82.4 | .76 | 190017 |
| 14 | 52 | 78 | .680 | .295 | .97 | -.2 | 1.10 | .5 | .54 | .53 | 83.3 | 76.9 | .67 | 190018 |
| 15 | 57 | 78 | .218 | .315 | .85 | -.8 | .76 | -.8 | .63 | .54 | 83.3 | 80.8 | .73 | 190019 |
| 16 | 57 | 78 | .218 | .315 | .87 | -.7 | .71 | -1.0 | .62 | .54 | 80.6 | 80.8 | .73 | 190020 |
| 17 | 60 | 78 | -.096 | .333 | .76 | -1.3 | .55 | -1.5 | .69 | .55 | 87.5 | 83.1 | .77 | 190021 |
| 18 | 57 | 78 | .218 | .315 | .94 | -.3 | .90 | -.3 | .58 | .54 | 83.3 | 80.8 | .73 | 190022 |
| 19 | 39 | 78 | 1.707 | .274 | 1.17 | 1.4 | 1.79 | 2.6 | .36 | .46 | 61.1 | 72.1 | .50 | 190023 |
| 20 | 60 | 78 | -.096 | .333 | .80 | -1.0 | .68 | -.9 | .66 | .55 | 87.5 | 83.1 | .77 | 190024 |
| 21 | 65 | 78 | -.722 | .378 | .56 | -2.1 | .31 | -1.9 | .80 | .55 | 93.1 | 87.1 | .83 | 190025 |
| 22 | 64 | 78 | -.583 | .367 | .95 | -.1 | .65 | -.8 | .59 | .55 | 87.5 | 86.3 | .82 | 190026 |
| 23 | 53 | 78 | .592 | .298 | 1.16 | 1.1 | 1.22 | .9 | .45 | .53 | 72.2 | 77.6 | .68 | 190027 |
| 24 | 63 | 78 | -.452 | .357 | .75 | -1.2 | .50 | -1.3 | .70 | .55 | 90.3 | 85.5 | .81 | 190028 |
| 25 | 51 | 78 | .766 | .292 | .85 | -1.1 | .71 | -1.3 | .60 | .52 | 76.4 | 76.2 | .65 | 190029 |
| 26 | 53 | 78 | .592 | .298 | .87 | -.8 | .80 | -.8 | .61 | .53 | 80.6 | 77.6 | .68 | 190030 |
| 27 | 57 | 78 | .218 | .315 | .99 | .0 | 1.31 | 1.1 | .55 | .54 | 83.3 | 80.8 | .73 | 190031 |
| 28 | 57 | 78 | .218 | .315 | .82 | -1.0 | .68 | -1.1 | .65 | .54 | 86.1 | 80.8 | .73 | 190032 |
| 29 | 59 | 78 | .012 | .327 | .95 | -.2 | .72 | -.9 | .58 | .55 | 83.3 | 82.4 | .76 | 190033 |
| 30 | 62 | 78 | -.328 | .348 | 1.07 | .4 | 1.45 | 1.1 | .51 | .55 | 83.3 | 84.7 | .79 | 190034 |
| MEAN | 58.3 | 78.0 | .000 | .336 | 1.00 | .0 | 1.02 | .0 | | | 81.7 | 82.2 | | |
| S. D. | 7.2 | .0 | .737 | .043 | .20 | 1.0 | .50 | 1.2 | | | 7.6 | 4.8 | | |

Figure 5. *Phonological Awareness: Rimar/Rhyming Item Map*

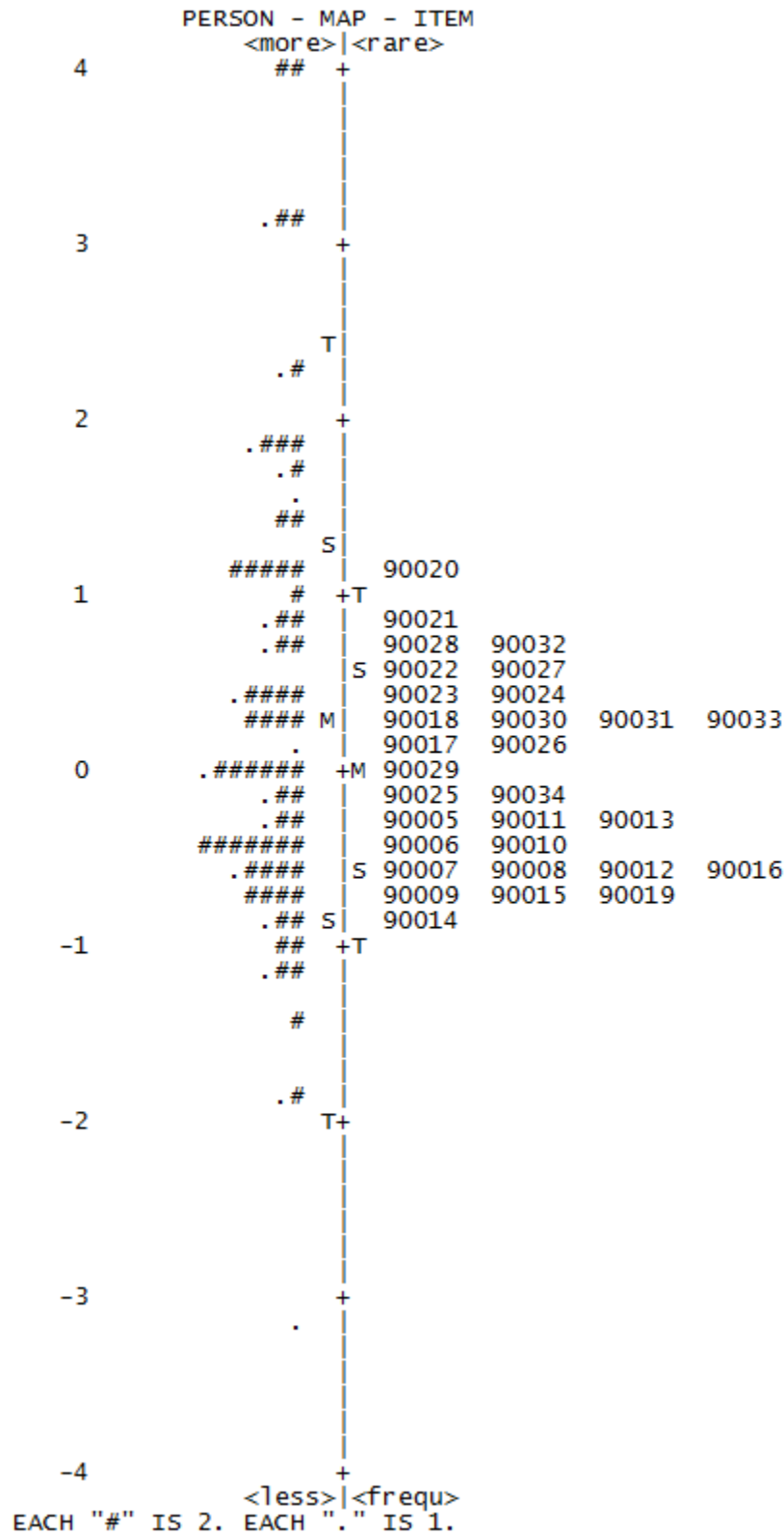


Figure 6. *Phonological Awareness: Mezclar/Blending Item Calibration Table*

TABLE 14.1 Concurrent Calibration for Rhyming ZOU990W5.TXT Aug 6 14:19 2013
 INPUT: 141 PERSON 30 ITEM REPORTED: 141 PERSON 30 ITEM 2 CATS WINSTEPS 3.72.2

PERSON: REAL SEP.: 1.81 REL.: .77 ... ITEM: REAL SEP.: 1.93 REL.: .79

ITEM STATISTICS: ENTRY ORDER

| ENTRY NUMBER | TOTAL SCORE | TOTAL COUNT | MEASURE | MODEL S.E. | INFIT | | OUTFIT | | PTBISERL-EX | | EXACT MATCH | | ITEM |
|--------------|-------------|-------------|---------|------------|-------|------|--------|------|-------------|------|-------------|------|-------|
| | | | | | MNSQ | ZSTD | MNSQ | ZSTD | CORR. | EXP. | OBS% | EXP% | |
| 1 | 62 | 99 | -.251 | .230 | 1.01 | .1 | 1.00 | .0 | .33 | .32 | 67.7 | 69.0 | 90005 |
| 2 | 66 | 99 | -.467 | .235 | .87 | -1.4 | .75 | -1.4 | .46 | .31 | 72.9 | 70.2 | 90006 |
| 3 | 67 | 99 | -.522 | .236 | 1.08 | .8 | 1.00 | .1 | .25 | .30 | 67.7 | 70.6 | 90007 |
| 4 | 67 | 99 | -.522 | .236 | .84 | -1.8 | .72 | -1.5 | .44 | .30 | 74.0 | 70.6 | 90008 |
| 5 | 70 | 99 | -.692 | .241 | 1.14 | 1.4 | 1.13 | .6 | .19 | .29 | 66.7 | 72.1 | 90009 |
| 6 | 37 | 99 | 1.072 | .240 | .81 | -1.8 | .76 | -1.6 | .57 | .38 | 80.2 | 73.2 | 90020 |
| 7 | 41 | 99 | .848 | .234 | 1.06 | .7 | 1.00 | .1 | .33 | .38 | 69.8 | 71.5 | 90021 |
| 8 | 46 | 99 | .580 | .229 | 1.31 | 3.1 | 1.53 | 3.6 | .12 | .37 | 55.2 | 70.0 | 90022 |
| 9 | 50 | 99 | .371 | .228 | 1.18 | 1.9 | 1.29 | 2.1 | .20 | .36 | 60.4 | 69.0 | 90023 |
| 10 | 49 | 99 | .423 | .228 | 1.04 | .5 | 1.04 | .3 | .34 | .36 | 69.8 | 69.2 | 90024 |
| 11 | 56 | 88 | -.375 | .254 | .92 | -.8 | .80 | -.9 | .44 | .40 | 77.4 | 70.8 | 90010 |
| 12 | 54 | 88 | -.247 | .252 | .87 | -1.4 | .74 | -1.4 | .52 | .41 | 73.8 | 70.7 | 90011 |
| 13 | 58 | 88 | -.506 | .257 | .82 | -1.8 | .74 | -1.2 | .53 | .39 | 78.6 | 71.2 | 90012 |
| 14 | 54 | 88 | -.247 | .252 | 1.27 | 2.5 | 1.26 | 1.3 | .19 | .41 | 57.1 | 70.7 | 90013 |
| 15 | 64 | 88 | -.917 | .268 | .92 | -.6 | .73 | -1.0 | .44 | .36 | 76.2 | 74.7 | 90014 |
| 16 | 52 | 88 | -.120 | .251 | .96 | -.4 | .91 | -.4 | .43 | .42 | 71.4 | 70.8 | 90025 |
| 17 | 47 | 88 | .194 | .251 | .84 | -1.6 | .80 | -1.2 | .54 | .43 | 79.8 | 71.6 | 90026 |
| 18 | 40 | 88 | .640 | .255 | .76 | -2.2 | .70 | -1.9 | .61 | .45 | 83.3 | 73.3 | 90027 |
| 19 | 38 | 88 | .772 | .258 | .97 | -.2 | .90 | -.5 | .47 | .45 | 76.2 | 73.9 | 90028 |
| 20 | 49 | 88 | .068 | .251 | .99 | .0 | .97 | -.1 | .40 | .43 | 73.8 | 71.2 | 90029 |
| 21 | 64 | 98 | -.727 | .230 | .99 | .0 | .98 | -.1 | .29 | .26 | 71.1 | 68.9 | 90015 |
| 22 | 61 | 98 | -.571 | .226 | .97 | -.3 | .93 | -.5 | .29 | .27 | 68.0 | 67.5 | 90016 |
| 23 | 48 | 98 | .073 | .222 | 1.08 | 1.0 | 1.07 | .7 | .23 | .29 | 62.9 | 66.8 | 90017 |
| 24 | 43 | 98 | .321 | .224 | .98 | -.2 | .99 | .0 | .36 | .30 | 67.0 | 68.2 | 90018 |
| 25 | 63 | 98 | -.674 | .228 | .98 | -.2 | 1.00 | .0 | .28 | .26 | 67.0 | 68.3 | 90019 |
| 26 | 43 | 98 | .321 | .224 | 1.13 | 1.5 | 1.16 | 1.3 | .14 | .30 | 62.9 | 68.2 | 90030 |
| 27 | 43 | 98 | .321 | .224 | 1.11 | 1.3 | 1.41 | 3.1 | .16 | .30 | 62.9 | 68.2 | 90031 |
| 28 | 36 | 98 | .683 | .231 | .88 | -1.3 | .83 | -1.3 | .41 | .30 | 75.3 | 71.6 | 90032 |
| 29 | 44 | 98 | .271 | .224 | 1.11 | 1.3 | 1.14 | 1.2 | .22 | .30 | 63.9 | 67.8 | 90033 |
| 30 | 52 | 98 | -.123 | .222 | 1.00 | .0 | 1.04 | .4 | .24 | .29 | 67.0 | 66.4 | 90034 |
| MEAN | 52.1 | 95.0 | .000 | .238 | 1.00 | .0 | .98 | .0 | | | 70.0 | 70.2 | |
| S. D. | 9.9 | 5.0 | .530 | .013 | .13 | 1.3 | .21 | 1.3 | | | 6.8 | 2.1 | |

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Figure 8. *Phonological Awareness: Primeros Sonidos/First Sounds Item Map*

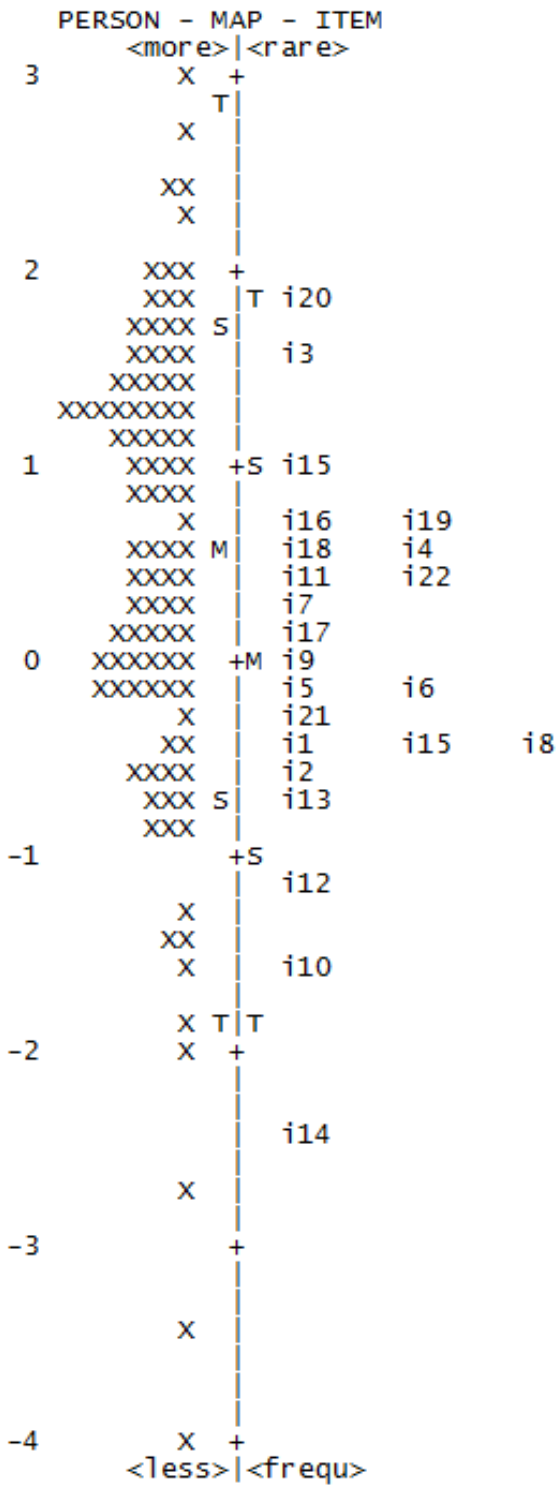
TABLE 14.1 Concurrent Calibration for FIRST SOUN ZOU708WS.TXT Sep 30 18:54 2013
 INPUT: 164 PERSON 30 ITEM REPORTED: 164 PERSON 30 ITEM 2 CATS WINSTEPS 3.72.2

PERSON: REAL SEP.: 1.43 REL.: .67 ... ITEM: REAL SEP.: 2.85 REL.: .89

ITEM STATISTICS: ENTRY ORDER

| ENTRY NUMBER | TOTAL SCORE | TOTAL COUNT | MEASURE | MODEL S. E. | INFIT MNSQ | INFIT ZSTD | OUTFIT MNSQ | OUTFIT ZSTD | PTBISERL-CORR. | -EX EXP. | EXACT OBS% | MATCH EXP% | P-VALUE | ITEM |
|--------------|-------------|-------------|---------|-------------|------------|------------|-------------|-------------|----------------|----------|------------|------------|---------|--------|
| 1 | 69 | 104 | -.395 | .221 | 1.06 | .7 | 1.24 | 1.4 | .12 | .20 | 70.2 | 68.3 | .66 | 100005 |
| 2 | 70 | 105 | -.412 | .220 | .95 | -.6 | .89 | -.6 | .26 | .20 | 68.6 | 68.5 | .67 | 100006 |
| 3 | 55 | 103 | .233 | .213 | 1.03 | .5 | 1.13 | 1.1 | .22 | .24 | 64.1 | 65.5 | .53 | 100007 |
| 4 | 81 | 106 | -.947 | .240 | 1.09 | .8 | 1.10 | .5 | .07 | .17 | 75.5 | 76.8 | .76 | 100008 |
| 5 | 83 | 105 | -1.100 | .251 | 1.00 | .1 | .88 | -.4 | .18 | .16 | 79.0 | 79.3 | .79 | 100009 |
| 6 | 49 | 105 | .550 | .212 | 1.01 | .2 | 1.00 | .0 | .22 | .24 | 67.6 | 66.7 | .47 | 100020 |
| 7 | 45 | 107 | .777 | .213 | .96 | -.5 | .95 | -.4 | .32 | .25 | 72.0 | 68.4 | .42 | 100021 |
| 8 | 27 | 106 | 1.685 | .244 | .89 | -.9 | .84 | -.9 | .38 | .26 | 80.2 | 78.2 | .25 | 100022 |
| 9 | 48 | 107 | .641 | .211 | .85 | -2.1 | .80 | -2.0 | .41 | .25 | 74.8 | 67.4 | .45 | 100023 |
| 10 | 52 | 107 | .464 | .210 | 1.07 | 1.0 | 1.05 | .5 | .13 | .24 | 63.6 | 66.3 | .49 | 100024 |
| 11 | 101 | 127 | -.981 | .234 | 1.07 | .6 | .97 | -.1 | .12 | .20 | 75.4 | 78.5 | .80 | 100010 |
| 12 | 64 | 125 | .561 | .202 | 1.18 | 2.4 | 1.40 | 3.4 | .13 | .28 | 60.7 | 67.2 | .51 | 100011 |
| 13 | 100 | 126 | -.973 | .234 | .92 | -.6 | .72 | -1.2 | .31 | .20 | 76.9 | 78.3 | .79 | 100012 |
| 14 | 88 | 125 | -.461 | .211 | 1.13 | 1.5 | 1.24 | 1.4 | .09 | .24 | 68.1 | 70.5 | .70 | 100013 |
| 15 | 73 | 116 | -.129 | .208 | 1.01 | .2 | 1.16 | 1.2 | .24 | .25 | 69.4 | 65.5 | .63 | 100014 |
| 16 | 62 | 122 | .506 | .202 | .96 | -.6 | .94 | -.6 | .36 | .30 | 69.0 | 66.6 | .51 | 100025 |
| 17 | 87 | 125 | -.410 | .210 | 1.01 | .2 | .94 | -.3 | .25 | .24 | 70.3 | 69.7 | .70 | 100026 |
| 18 | 82 | 126 | -.151 | .204 | .89 | -1.7 | .81 | -1.5 | .36 | .24 | 66.7 | 66.6 | .65 | 100027 |
| 19 | 95 | 127 | -.663 | .219 | 1.02 | .2 | .96 | -.2 | .17 | .21 | 74.6 | 73.7 | .75 | 100028 |
| 20 | 57 | 127 | .907 | .206 | .93 | -.8 | .91 | -.8 | .36 | .31 | 76.3 | 69.3 | .45 | 100029 |
| 21 | 60 | 91 | -.235 | .242 | .93 | -.8 | .90 | -.7 | .31 | .24 | 76.8 | 65.7 | .66 | 100015 |
| 22 | 63 | 88 | -.609 | .253 | .92 | -.8 | .81 | -1.0 | .32 | .23 | 72.0 | 70.6 | .72 | 100016 |
| 23 | 58 | 92 | -.094 | .238 | 1.03 | .4 | .97 | -.1 | .23 | .27 | 58.3 | 65.0 | .63 | 100017 |
| 24 | 47 | 90 | .446 | .239 | .88 | -1.5 | .83 | -1.6 | .42 | .31 | 72.0 | 66.6 | .52 | 100018 |
| 25 | 76 | 92 | -1.251 | .290 | .93 | -.4 | .78 | -.7 | .27 | .18 | 81.9 | 80.9 | .83 | 100019 |
| 26 | 40 | 87 | .699 | .243 | .88 | -1.4 | .84 | -1.4 | .41 | .33 | 75.6 | 68.1 | .46 | 100030 |
| 27 | 48 | 85 | .149 | .242 | 1.05 | .6 | 1.09 | .8 | .27 | .29 | 64.6 | 65.1 | .56 | 100031 |
| 28 | 54 | 87 | -.137 | .240 | 1.17 | 2.1 | 1.32 | 2.2 | .10 | .26 | 55.4 | 65.0 | .62 | 100032 |
| 29 | 32 | 84 | 1.005 | .253 | 1.10 | .9 | 1.09 | .7 | .23 | .33 | 63.8 | 71.1 | .38 | 100033 |
| 30 | 49 | 89 | .324 | .240 | 1.08 | 1.0 | 1.03 | .3 | .21 | .30 | 59.3 | 66.3 | .55 | 100034 |
| MEAN | 63.8 | 106.2 | .000 | .228 | 1.00 | .0 | .99 | .0 | | | 70.1 | 69.9 | | |
| S. D. | 19.2 | 15.0 | .704 | .020 | .09 | 1.0 | .17 | 1.2 | | | 6.7 | 4.9 | | |

Figure 9. Oral Language: ¡Vamos a la tienda!/Let's go to the store! Storybook
Item Map



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Figure 10. Oral Language: ¡Vamos a la tienda!/Let's go to the store! Storybook
Item Calibration Table

TABLE 14.1 Calibration for STORYBOOK ZOU452WS.TXT Sep 13 10:32 2013
INPUT: 97 PERSON 23 ITEM REPORTED: 97 PERSON 23 ITEM 63 CATS WINSTEPS 3.72.2
PERSON: REAL SEP.: 2.06 REL.: .81 ... ITEM: REAL SEP.: 3.81 REL.: .94

ITEM STATISTICS: ENTRY ORDER

| ENTRY NUMBER | TOTAL SCORE | TOTAL COUNT | MEASURE | MODEL S. E. | INFIT MNSQ | ZSTD | OUTFIT MNSQ | ZSTD | PTBISERL-CORR. | -EX-EXP. | EXACT OBS% | MATCH EXP% | P-VALUE | ITEM | G |
|--------------|-------------|-------------|---------|-------------|------------|------|-------------|------|----------------|----------|------------|------------|---------|------|---|
| 1 | 105 | 75 | -.455 | .205 | 1.06 | .5 | 1.08 | .5 | .45 | .45 | 56.0 | 61.8 | 1.40 | i1 | 0 |
| 2 | 112 | 77 | -.580 | .208 | .80 | -1.3 | .77 | -1.4 | .61 | .46 | 71.4 | 63.5 | 1.45 | i2 | 0 |
| 3 | 47 | 74 | 1.557 | .168 | 1.17 | 1.2 | .97 | .0 | .36 | .41 | 48.6 | 53.0 | .64 | i3 | 0 |
| 4 | 34 | 62 | .625 | .283 | 1.16 | 1.4 | 1.24 | 1.5 | .18 | .36 | 59.7 | 69.3 | .55 | i4 | 0 |
| 5 | 118 | 92 | -.177 | .176 | 1.54 | 3.5 | 1.68 | 3.8 | .12 | .46 | 48.9 | 59.0 | 1.28 | i5 | 0 |
| 6 | 53 | 79 | -.096 | .259 | 1.04 | .4 | 1.06 | .4 | .33 | .30 | 69.6 | 71.3 | .67 | i6 | 0 |
| 7 | 98 | 90 | .252 | .196 | .99 | .0 | .98 | -.1 | .48 | .47 | 59.6 | 63.1 | 1.09 | i7 | 0 |
| 8 | 124 | 92 | -.406 | .183 | .74 | -2.1 | .72 | -1.9 | .66 | .50 | 72.5 | 61.2 | 1.35 | i8 | 0 |
| 9 | 112 | 93 | -.023 | .175 | .95 | -.3 | .91 | -.6 | .55 | .51 | 57.6 | 58.3 | 1.20 | i9 | 0 |
| 10 | 76 | 91 | -1.527 | .325 | .88 | -.5 | .93 | -.1 | .43 | .39 | 86.7 | 86.2 | .84 | i10 | 0 |
| 11 | 98 | 90 | .402 | .175 | 1.43 | 3.0 | 1.68 | 4.1 | .20 | .44 | 47.8 | 55.8 | 1.09 | i11 | 0 |
| 12 | 68 | 84 | -1.131 | .308 | 1.07 | .4 | 1.13 | .5 | .21 | .34 | 81.9 | 83.1 | .81 | i12 | 0 |
| 13 | 125 | 84 | -.649 | .197 | .86 | -.8 | .71 | -1.3 | .62 | .54 | 72.3 | 66.1 | 1.49 | i13 | 0 |
| 14 | 81 | 87 | -2.494 | .448 | .77 | -.6 | .36 | -1.1 | .45 | .24 | 94.3 | 93.2 | .93 | i14 | 0 |
| 15 | 50 | 69 | -.492 | .305 | 1.05 | .4 | .98 | .0 | .34 | .40 | 73.9 | 77.8 | .72 | i15 | 0 |
| 16 | 59 | 70 | 1.065 | .187 | .99 | .0 | .91 | -.5 | .51 | .49 | 55.7 | 54.0 | .84 | i15 | 0 |
| 17 | 79 | 82 | .768 | .202 | .81 | -1.4 | .79 | -1.4 | .55 | .43 | 67.1 | 63.6 | .96 | i16 | 0 |
| 18 | 96 | 78 | .171 | .181 | .82 | -1.3 | .76 | -1.4 | .64 | .52 | 56.4 | 56.8 | 1.23 | i17 | 0 |
| 19 | 79 | 77 | .625 | .196 | .95 | -.3 | .95 | -.3 | .43 | .44 | 63.6 | 57.9 | 1.03 | i18 | 0 |
| 20 | 83 | 84 | .662 | .208 | .92 | -.5 | .91 | -.6 | .49 | .43 | 70.2 | 66.2 | .99 | i19 | 0 |
| 21 | 33 | 76 | 1.850 | .177 | 1.16 | 1.0 | 1.23 | .6 | .33 | .39 | 58.7 | 62.0 | .43 | i20 | 0 |
| 22 | 113 | 87 | -.331 | .194 | .83 | -1.3 | .84 | -1.1 | .59 | .46 | 71.3 | 61.7 | 1.30 | i21 | 0 |
| 23 | 88 | 78 | .387 | .195 | .93 | -.5 | .92 | -.6 | .48 | .39 | 60.3 | 58.2 | 1.13 | i22 | 0 |
| MEAN | 84.0 | 81.3 | .000 | .224 | 1.00 | .0 | .98 | .0 | | | 65.4 | 65.4 | | | |
| S. D. | 27.5 | 8.2 | .945 | .066 | .19 | 1.3 | .28 | 1.5 | | | 11.7 | 10.3 | | | |

Figure 11. *Oral Language: Identificación de los Dibujos/Picture Naming*
Item Calibration Table

| PERSON | MAP | ITEM |
|--------|------------------|-----------------|
| 6 | XXXXXXXXXX + | <more> <rare> |
| | | 110034 |
| 5 | XXX + | |
| | T | |
| | XX | |
| 4 | XXXXXX + | 110014 |
| | XXX | |
| | T | |
| | XX | |
| 3 | XXXXXXXXXX S+ | 110005 |
| | XXXXXXXXXX | |
| | XXXXXXXXXX | |
| | XXXXXXXXXX | |
| 2 | XXXXXXXXXXXXXX + | 110032 |
| | XXXXXXXXXX | |
| | XXXXXXXXXXXXXX | |
| | XXXXXXXXXX | |
| | M | 110021 |
| | XXXXXXXXXXXXXX | 110028 |
| | XXXXXXXXXXXXXX | 110033 |
| 1 | XXX + | |
| | XXXXXXXXXXXXXX | |
| | XXXX | 110007 |
| | XXXXXXXXXX | 110009 |
| | XXXXXXXXXX | 110011 |
| | XXXXXXXXXX | 110023 |
| | XXXXXXXXXX | 110008 |
| | XXXXXXXXXX | 110029 |
| 0 | XX +M | 110030 |
| | S | 110031 |
| | XXXX | 110015 |
| | XX | 110019 |
| | XXXX | 110020 |
| | XXXX | 110026 |
| | X | |
| -1 | XXXX + | 110006 |
| | XX | 110016 |
| | | 110024 |
| | | 110022 |
| | | 110013 |
| | XX T | 110017 |
| | X | 110025 |
| | S | 110027 |
| | X | 110018 |
| -2 | X + | 110012 |
| | | |
| | X | |
| -3 | + + | |
| | | |
| | X | |
| | T | |
| -4 | + + | 110010 |
| | | |
| -5 | X + | |
| | <less> <frequ> | |

Figure 12. Oral Language: Identificación de los Dibujos/Picture Naming

Item Calibration Table

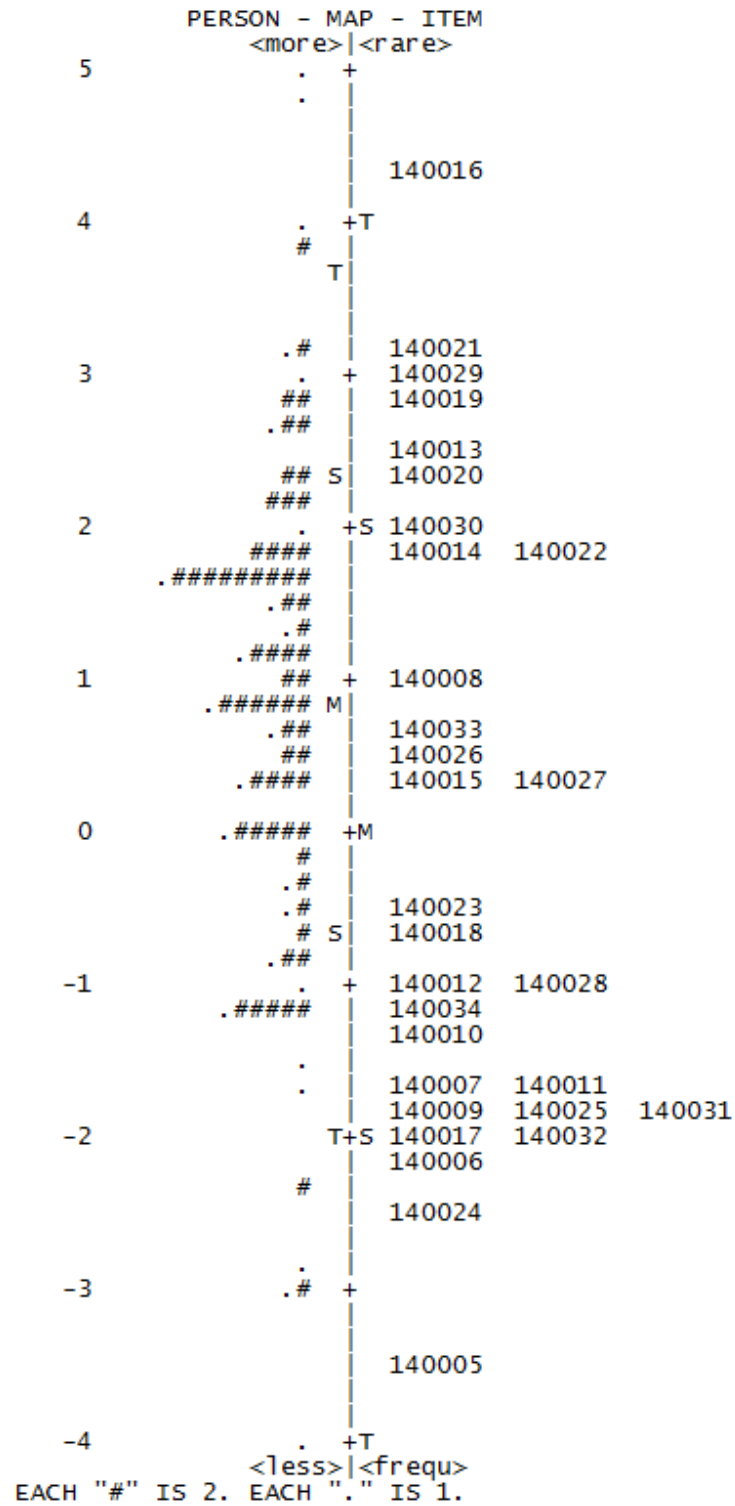
TABLE 14.1 Concurrent Calibration for PICTURE NA ZOU537WS.TXT Sep 30 19:26 2013
 INPUT: 156 PERSON 30 ITEM REPORTED: 156 PERSON 30 ITEM 2 CATS WINSTEPS 3.72.2

PERSON: REAL SEP.: 1.50 REL.: .69 ... ITEM: REAL SEP.: 4.48 REL.: .95

ITEM STATISTICS: ENTRY ORDER

| ENTRY NUMBER | TOTAL SCORE | TOTAL COUNT | MEASURE | MODEL S. E. | INFIT MNSQ | INFIT ZSTD | OUTFIT MNSQ | OUTFIT ZSTD | PTBISERL-CORR. | -EX EXP. | EXACT OBS% | MATCH EXP% | ITEM |
|--------------|-------------|-------------|---------|-------------|------------|------------|-------------|-------------|----------------|----------|------------|------------|--------|
| 1 | 27 | 99 | 2.945 | .270 | 1.01 | .1 | 1.10 | .4 | .28 | .32 | 81.3 | 79.4 | 110005 |
| 2 | 86 | 99 | -1.055 | .347 | .96 | -.1 | .57 | -.7 | .45 | .37 | 87.5 | 88.6 | 110006 |
| 3 | 63 | 97 | .659 | .253 | 1.18 | 1.5 | 1.63 | 2.1 | .32 | .39 | 72.3 | 75.2 | 110007 |
| 4 | 58 | 81 | .102 | .300 | 1.28 | 1.7 | 1.20 | .6 | .28 | .45 | 73.4 | 79.7 | 110008 |
| 5 | 62 | 91 | .427 | .269 | .79 | -1.7 | .62 | -1.3 | .53 | .40 | 78.7 | 77.1 | 110009 |
| 6 | 103 | 104 | -4.283 | 1.026 | 1.10 | .4 | 9.90 | 3.6 | -.08 | .12 | 99.0 | 99.0 | 110010 |
| 7 | 67 | 98 | .448 | .257 | .96 | -.3 | .89 | -.3 | .41 | .39 | 77.1 | 77.0 | 110011 |
| 8 | 91 | 98 | -1.934 | .436 | 1.49 | 1.5 | 2.14 | 1.4 | -.02 | .30 | 91.7 | 93.0 | 110012 |
| 9 | 94 | 105 | -1.452 | .360 | .96 | -.1 | 1.46 | .9 | .32 | .32 | 91.3 | 90.2 | 110013 |
| 10 | 17 | 101 | 3.808 | .319 | 1.02 | .2 | .87 | -.1 | .32 | .30 | 84.8 | 86.8 | 110014 |
| 11 | 70 | 90 | -.152 | .300 | .78 | -1.4 | .68 | -.9 | .48 | .36 | 87.8 | 81.0 | 110015 |
| 12 | 81 | 94 | -.922 | .353 | .77 | -1.0 | .44 | -1.2 | .52 | .36 | 89.5 | 87.7 | 110016 |
| 13 | 81 | 90 | -1.378 | .412 | 1.37 | 1.2 | 2.08 | 1.4 | .13 | .34 | 86.6 | 91.1 | 110017 |
| 14 | 89 | 97 | -1.790 | .429 | 1.12 | .5 | .77 | -.1 | .27 | .34 | 89.9 | 92.2 | 110018 |
| 15 | 71 | 87 | -.480 | .326 | 1.11 | .6 | 1.32 | .8 | .25 | .36 | 83.8 | 84.0 | 110019 |
| 16 | 72 | 88 | -.380 | .322 | .98 | .0 | 1.26 | .7 | .36 | .33 | 83.8 | 83.5 | 110020 |
| 17 | 38 | 72 | 1.450 | .290 | .78 | -1.9 | .65 | -1.3 | .52 | .36 | 78.8 | 72.8 | 110021 |
| 18 | 75 | 87 | -1.128 | .370 | .92 | -.3 | .72 | -.3 | .40 | .39 | 91.3 | 88.0 | 110022 |
| 19 | 65 | 91 | .302 | .282 | .94 | -.3 | .87 | -.4 | .42 | .38 | 79.5 | 78.2 | 110023 |
| 20 | 78 | 90 | -.936 | .356 | 1.02 | .2 | .90 | .0 | .30 | .33 | 86.7 | 87.3 | 110024 |
| 21 | 89 | 97 | -1.667 | .421 | 1.00 | .1 | .66 | -.2 | .35 | .34 | 91.3 | 92.1 | 110025 |
| 22 | 79 | 94 | -.599 | .333 | .85 | -.7 | .65 | -.5 | .50 | .41 | 87.6 | 85.8 | 110026 |
| 23 | 84 | 91 | -1.691 | .444 | .85 | -.4 | 1.54 | .9 | .33 | .32 | 93.0 | 92.7 | 110027 |
| 24 | 46 | 73 | 1.244 | .294 | 1.07 | .5 | .99 | .1 | .40 | .42 | 71.0 | 75.3 | 110028 |
| 25 | 65 | 87 | .128 | .301 | 1.07 | .5 | .80 | -.4 | .39 | .46 | 79.3 | 80.9 | 110029 |
| 26 | 68 | 88 | -.053 | .308 | .92 | -.4 | .90 | -.1 | .48 | .45 | 84.3 | 82.3 | 110030 |
| 27 | 75 | 97 | .018 | .293 | .96 | -.2 | .85 | -.2 | .43 | .43 | 83.7 | 82.3 | 110031 |
| 28 | 36 | 74 | 1.831 | .296 | .84 | -1.2 | .68 | -1.0 | .58 | .49 | 78.6 | 75.8 | 110032 |
| 29 | 53 | 86 | 1.193 | .276 | .93 | -.5 | 1.39 | 1.3 | .53 | .46 | 77.8 | 76.4 | 110033 |
| 30 | 8 | 80 | 5.342 | .503 | .90 | -.2 | 1.02 | .3 | .29 | .31 | 93.5 | 93.5 | 110034 |
| MEAN | 66.4 | 90.9 | .000 | .358 | 1.00 | -.1 | 1.32 | .2 | | | 84.5 | 84.3 | |
| S. D. | 22.5 | 8.4 | 1.834 | .139 | .17 | .9 | 1.65 | 1.1 | | | 6.7 | 6.7 | |

Figure 13. Oral Language: Verbos (Expresivo)/Expressive Verbs Item Map



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Figure 14. *Oral Language: Verbos (Expresivo)/Expressive Verbs Item Calibration Table*

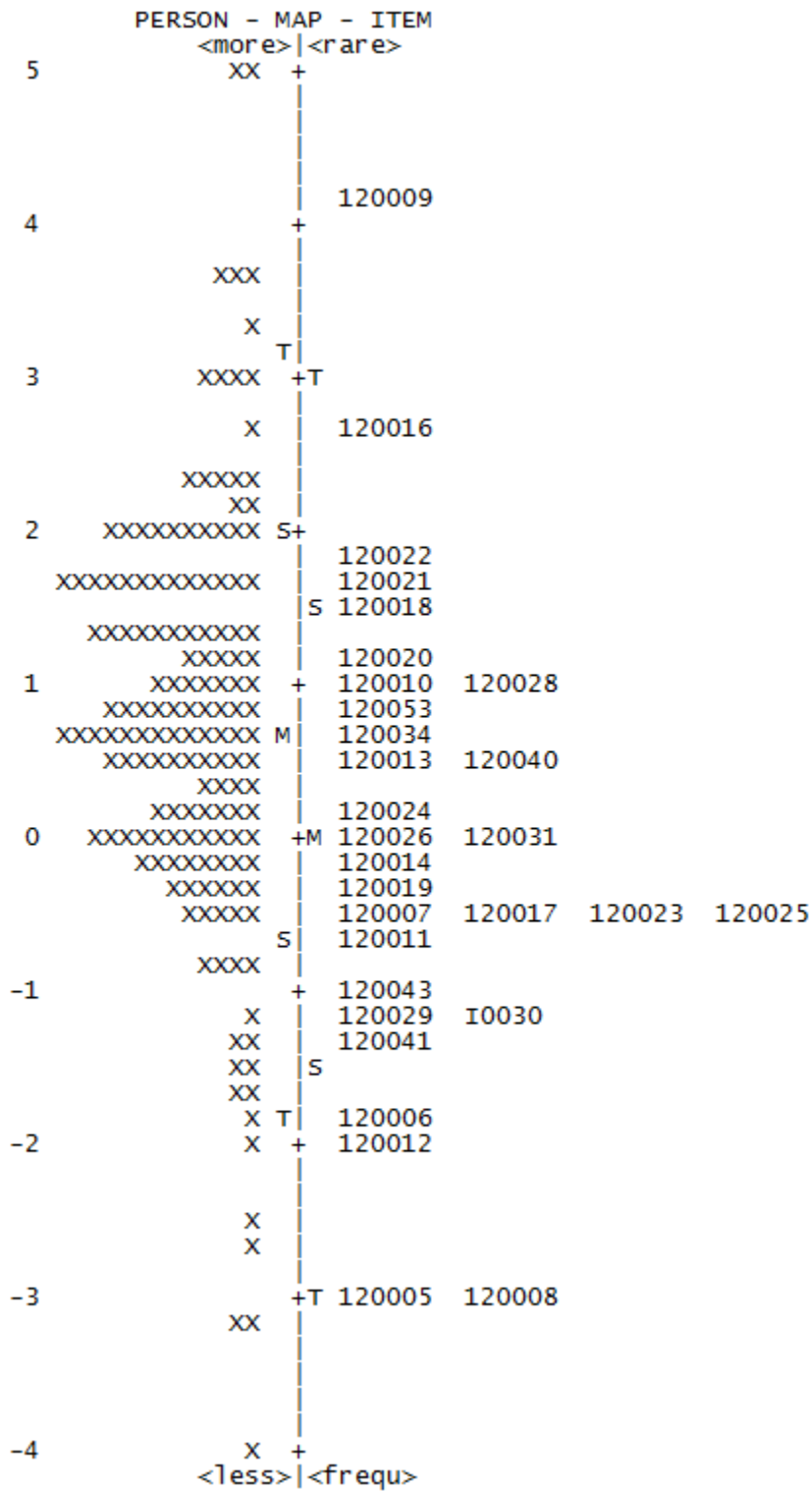
TABLE 14.1 Concurrent Calibration for EXPRESSIVE ZOU913WS.TXT Sep 30 19:17 2013
 INPUT: 155 PERSON 30 ITEM REPORTED: 155 PERSON 30 ITEM 2 CATS WINSTEPS 3.72.2

 PERSON: REAL SEP.: 1.80 REL.: .76 ... ITEM: REAL SEP.: 6.09 REL.: .97

ITEM STATISTICS: ENTRY ORDER

| ENTRY NUMBER | TOTAL SCORE | TOTAL COUNT | MEASURE | MODEL S. E. | INFIT MNSQ | INFIT ZSTD | OUTFIT MNSQ | OUTFIT ZSTD | PTBISERL-CORR. | EX-EXP. | EXACT OBS% | MATCH EXP% | ITEM |
|--------------|-------------|-------------|---------|-------------|------------|------------|-------------|-------------|----------------|---------|------------|------------|--------|
| 1 | 98 | 101 | -3.512 | .613 | 1.11 | .4 | .68 | .0 | .18 | .20 | 97.0 | 97.0 | 140005 |
| 2 | 92 | 101 | -2.172 | .384 | .83 | -.6 | .85 | .0 | .35 | .29 | 94.1 | 91.6 | 140006 |
| 3 | 88 | 101 | -1.662 | .333 | 1.14 | .7 | 1.07 | .3 | .18 | .33 | 86.1 | 88.3 | 140007 |
| 4 | 48 | 101 | 1.018 | .231 | 1.02 | .2 | 1.13 | .7 | .24 | .34 | 75.2 | 71.8 | 140008 |
| 5 | 90 | 101 | -1.899 | .355 | .76 | -1.0 | .34 | -1.4 | .51 | .31 | 90.1 | 90.0 | 140009 |
| 6 | 85 | 101 | -1.354 | .309 | 1.10 | .6 | 1.05 | .3 | .25 | .34 | 84.2 | 85.8 | 140010 |
| 7 | 88 | 101 | -1.662 | .333 | .85 | -.7 | .95 | .1 | .39 | .33 | 90.1 | 88.3 | 140011 |
| 8 | 80 | 101 | -.921 | .281 | .85 | -.9 | .71 | -.8 | .48 | .36 | 85.1 | 82.6 | 140012 |
| 9 | 23 | 101 | 2.491 | .268 | 1.11 | .8 | 1.57 | 1.5 | .17 | .27 | 75.2 | 80.6 | 140013 |
| 10 | 34 | 101 | 1.789 | .241 | 1.02 | .2 | 1.08 | .4 | .26 | .31 | 74.3 | 74.1 | 140014 |
| 11 | 68 | 112 | .303 | .233 | 1.30 | 2.5 | 1.79 | 3.1 | .23 | .45 | 67.6 | 75.8 | 140015 |
| 12 | 7 | 112 | 4.386 | .418 | .85 | -.4 | .80 | -.1 | .24 | .19 | 94.6 | 93.8 | 140016 |
| 13 | 98 | 112 | -1.927 | .346 | 1.00 | .1 | .55 | -.7 | .47 | .44 | 88.3 | 90.4 | 140017 |
| 14 | 83 | 112 | -.604 | .263 | .96 | -.3 | .95 | -.1 | .51 | .47 | 84.7 | 82.1 | 140018 |
| 15 | 22 | 112 | 2.814 | .268 | 1.24 | 1.6 | 1.45 | 1.0 | .17 | .29 | 79.3 | 82.6 | 140019 |
| 16 | 29 | 112 | 2.355 | .246 | .94 | -.5 | 1.03 | .2 | .33 | .33 | 80.2 | 78.5 | 140020 |
| 17 | 18 | 112 | 3.121 | .287 | .96 | -.2 | .86 | -.1 | .28 | .27 | 84.7 | 85.4 | 140021 |
| 18 | 37 | 112 | 1.899 | .233 | .78 | -2.3 | .89 | -.3 | .43 | .36 | 83.8 | 74.5 | 140022 |
| 19 | 81 | 112 | -.469 | .257 | .79 | -1.5 | .65 | -1.3 | .60 | .47 | 86.5 | 81.1 | 140023 |
| 20 | 102 | 112 | -2.476 | .399 | .86 | -.4 | .68 | -.3 | .47 | .41 | 93.7 | 92.7 | 140024 |
| 21 | 81 | 93 | -1.911 | .363 | 1.01 | .1 | .58 | -.7 | .43 | .37 | 89.0 | 89.5 | 140025 |
| 22 | 51 | 93 | .470 | .246 | .93 | -.6 | .85 | -.8 | .36 | .34 | 75.8 | 72.8 | 140026 |
| 23 | 52 | 93 | .410 | .247 | 1.25 | 2.1 | 1.41 | 2.0 | .26 | .34 | 63.7 | 73.0 | 140027 |
| 24 | 73 | 93 | -1.063 | .297 | .73 | -1.8 | .54 | -1.5 | .62 | .38 | 87.9 | 82.4 | 140028 |
| 25 | 14 | 93 | 3.026 | .325 | 1.04 | .3 | .86 | -.1 | .22 | .16 | 85.7 | 86.2 | 140029 |
| 26 | 27 | 93 | 1.952 | .262 | 1.17 | 1.4 | 1.81 | 2.2 | -.03 | .24 | 71.4 | 76.0 | 140030 |
| 27 | 81 | 93 | -1.911 | .363 | .80 | -.8 | .55 | -.8 | .51 | .37 | 91.2 | 89.5 | 140031 |
| 28 | 82 | 93 | -2.048 | .377 | 1.09 | .4 | 2.59 | 2.1 | .32 | .37 | 90.1 | 90.4 | 140032 |
| 29 | 47 | 93 | .710 | .245 | 1.09 | .8 | 1.06 | .4 | .35 | .33 | 70.3 | 72.3 | 140033 |
| 30 | 74 | 93 | -1.153 | .302 | .79 | -1.3 | .66 | -.9 | .53 | .38 | 86.8 | 83.0 | 140034 |
| MEAN | 61.8 | 102.0 | .000 | .311 | .98 | .0 | 1.00 | .1 | | | 83.6 | 83.4 | |
| S. D. | 28.9 | 7.8 | 2.031 | .078 | .16 | 1.1 | .46 | 1.1 | | | 8.4 | 7.1 | |

Figure 15. Oral Language: Funciones/Functions Item Map



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Figure 16. Oral Language: Funciones/Functions Item Calibration Table

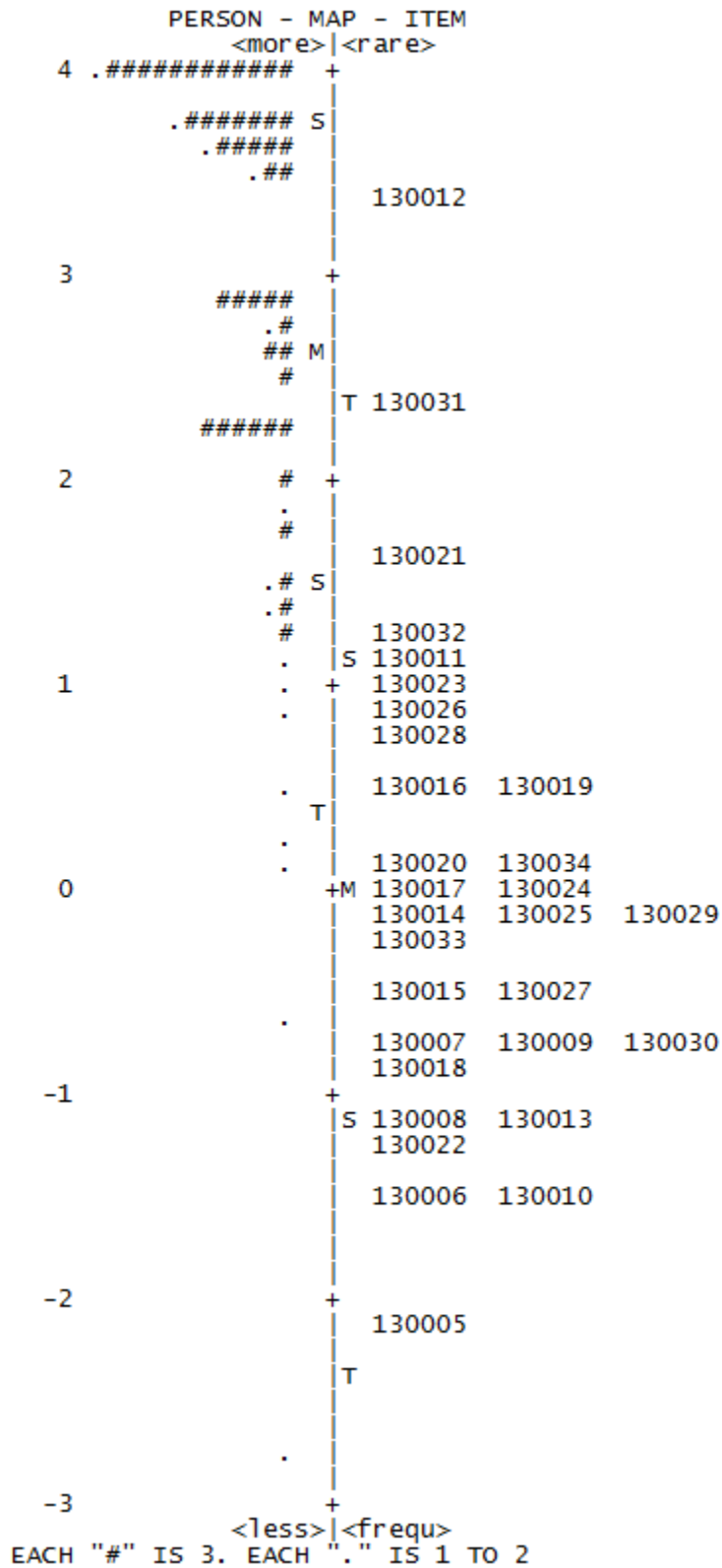
TABLE 14.1 Concurrent Calibration for Functions ZOU542WS.TXT Aug 6 14:27 2013
 INPUT: 156 PERSON 30 ITEM REPORTED: 156 PERSON 30 ITEM 2 CATS WINSTEPS 3.72.2

PERSON: REAL SEP.: 1.87 REL.: .78 ... ITEM: REAL SEP.: 5.01 REL.: .96

ITEM STATISTICS: ENTRY ORDER

| ENTRY NUMBER | TOTAL SCORE | TOTAL COUNT | MEASURE | MODEL S. E. | INFIT | | OUTFIT | | PTBISERL-EX | | EXACT OBS% | MATCH EXP% | ITEM |
|--------------|-------------|-------------|---------|-------------|-------|------|--------|------|-------------|------|------------|------------|--------|
| | | | | | MNSQ | ZSTD | MNSQ | ZSTD | CORR. | EXP. | | | |
| 1 | 85 | 91 | -3.074 | .492 | .92 | -.1 | .79 | -.1 | .39 | .33 | 93.3 | 94.4 | 120005 |
| 2 | 77 | 91 | -1.823 | .330 | .71 | -1.4 | .54 | -1.3 | .54 | .34 | 90.0 | 87.1 | 120006 |
| 3 | 59 | 91 | -.434 | .245 | 1.08 | .8 | 1.14 | .8 | .29 | .31 | 70.0 | 72.4 | 120007 |
| 4 | 85 | 91 | -3.074 | .492 | 1.19 | .6 | .91 | .1 | .27 | .33 | 93.3 | 94.4 | 120008 |
| 5 | 3 | 91 | 4.173 | .603 | 1.00 | .2 | .82 | .0 | .13 | .10 | 96.7 | 96.7 | 120009 |
| 6 | 32 | 91 | 1.062 | .240 | 1.35 | 3.4 | 1.48 | 2.2 | .16 | .24 | 63.3 | 70.1 | 120010 |
| 7 | 64 | 91 | -.749 | .257 | 1.03 | .3 | 1.14 | .7 | .29 | .32 | 77.8 | 76.3 | 120011 |
| 8 | 78 | 91 | -1.936 | .341 | .87 | -.5 | .64 | -.9 | .40 | .34 | 88.9 | 88.0 | 120012 |
| 9 | 41 | 91 | .564 | .232 | .98 | -.2 | .96 | -.2 | .29 | .27 | 62.2 | 66.5 | 120013 |
| 10 | 54 | 91 | -.143 | .238 | 1.09 | 1.0 | 1.31 | 1.9 | .19 | .30 | 66.7 | 69.5 | 120014 |
| 11 | 25 | 117 | 2.599 | .259 | 1.01 | .1 | .77 | -.5 | .36 | .33 | 80.7 | 82.0 | 120016 |
| 12 | 85 | 117 | -.453 | .241 | .85 | -1.2 | .76 | -1.0 | .51 | .41 | 81.6 | 78.6 | 120017 |
| 13 | 45 | 117 | 1.494 | .220 | .90 | -1.0 | .87 | -.6 | .45 | .38 | 76.3 | 72.3 | 120018 |
| 14 | 84 | 117 | -.396 | .239 | .87 | -1.1 | .70 | -1.4 | .53 | .41 | 82.5 | 78.0 | 120019 |
| 15 | 53 | 117 | 1.117 | .215 | 1.24 | 2.6 | 1.25 | 1.4 | .24 | .39 | 54.4 | 71.0 | 120020 |
| 16 | 40 | 117 | 1.741 | .225 | 1.11 | 1.1 | 1.17 | .8 | .28 | .37 | 72.8 | 73.9 | 120021 |
| 17 | 39 | 117 | 1.791 | .226 | 1.03 | .4 | 1.31 | 1.3 | .28 | .37 | 77.2 | 74.3 | 120022 |
| 18 | 85 | 117 | -.453 | .241 | 1.08 | .7 | 1.07 | .4 | .36 | .41 | 78.1 | 78.6 | 120023 |
| 19 | 74 | 117 | .133 | .223 | .98 | -.1 | 1.02 | .2 | .41 | .41 | 74.6 | 73.4 | 120024 |
| 20 | 86 | 117 | -.512 | .244 | 1.19 | 1.5 | 1.21 | .9 | .26 | .41 | 75.4 | 79.1 | 120025 |
| 21 | 68 | 104 | .061 | .235 | .93 | -.7 | .79 | -1.1 | .37 | .36 | 71.6 | 73.2 | 120026 |
| 22 | 84 | 104 | -.964 | .280 | 1.10 | .6 | 1.69 | 1.9 | .30 | .34 | 82.4 | 83.1 | 120043 |
| 23 | 51 | 104 | .946 | .225 | .93 | -.8 | .88 | -.7 | .39 | .36 | 71.6 | 70.5 | 120028 |
| 24 | 86 | 104 | -1.127 | .290 | 1.15 | .9 | .90 | -.2 | .28 | .33 | 79.4 | 84.6 | 120029 |
| 25 | 52 | 104 | .895 | .225 | .87 | -1.4 | .88 | -.7 | .39 | .36 | 78.4 | 70.4 | 120053 |
| 26 | 70 | 104 | -.051 | .238 | .86 | -1.3 | .76 | -1.2 | .44 | .36 | 78.4 | 74.0 | 120031 |
| 27 | 88 | 104 | -1.303 | .304 | .94 | -.3 | .74 | -.6 | .40 | .33 | 89.2 | 86.1 | 120041 |
| 28 | 59 | 104 | .539 | .227 | 1.03 | .3 | 1.00 | .1 | .33 | .36 | 67.6 | 70.7 | 120040 |
| 29 | 58 | 104 | .590 | .227 | .73 | -3.3 | .71 | -1.9 | .49 | .36 | 82.4 | 70.7 | 120034 |
| 30 | 87 | 104 | -1.213 | .297 | .85 | -.8 | .62 | -1.0 | .46 | .33 | 86.3 | 85.3 | I0030 |
| MEAN | 63.2 | 104.0 | .000 | .278 | 1.00 | .0 | .96 | .0 | | | 78.1 | 78.2 | |
| S. D. | 21.7 | 10.6 | 1.534 | .091 | .14 | 1.3 | .27 | 1.1 | | | 9.7 | 8.1 | |

Figure 17. Oral Language: Verbos (Receptivo)/Receptive Verbs Item Map



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Figure 18. Oral Language: Verbos (Receptivo)/Receptive Verbs Item Calibration Table

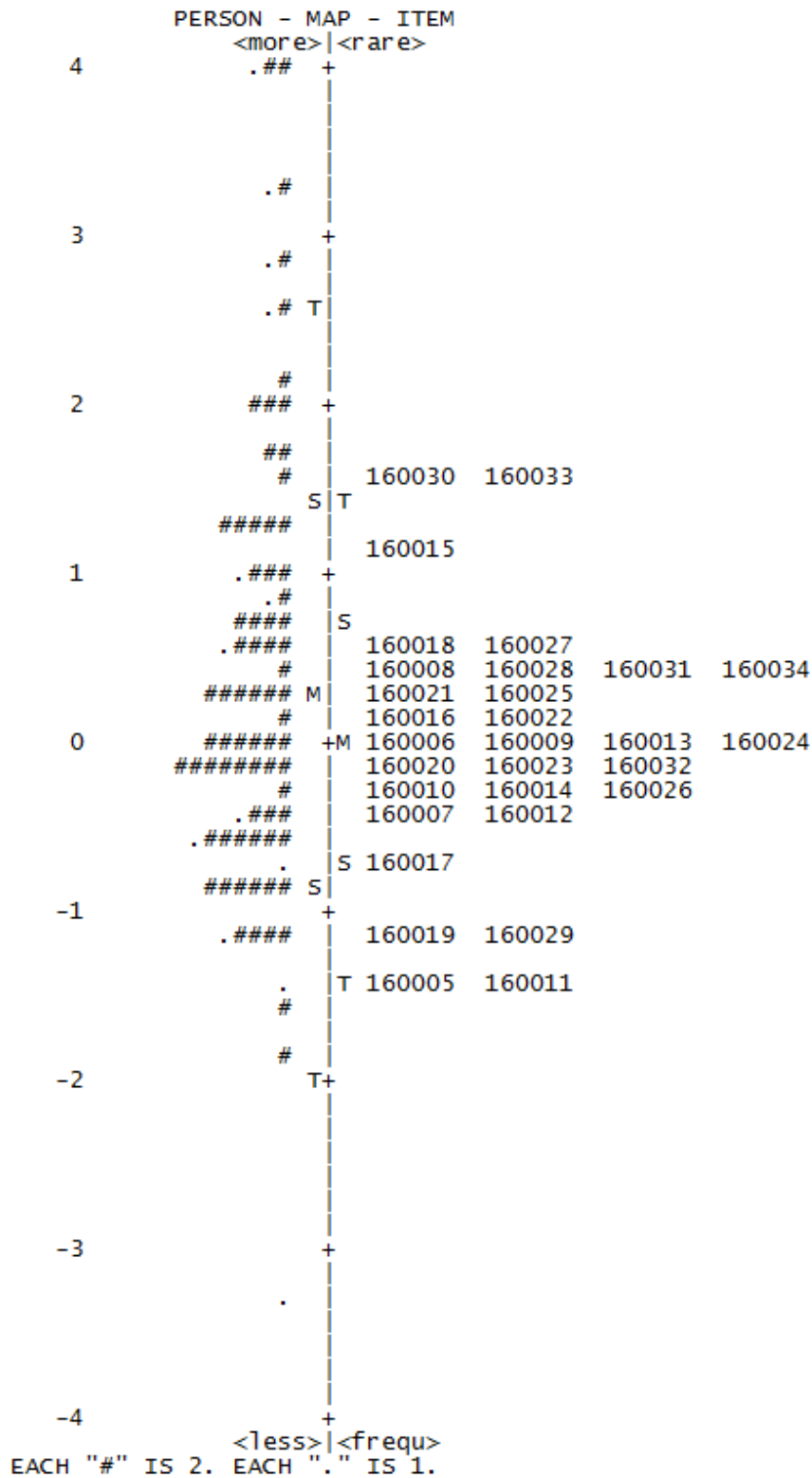
TABLE 14.1 Concurrent Calibration for RECEPTIVE ZOU566WS.TXTE Aug 13 13:46 2013
 INPUT: 161 PERSON 30 ITEM REPORTED: 161 PERSON 30 ITEM 2 CATS WINSTEPS 3.72.2

PERSON: REAL SEP.: .46 REL.: .18 ... ITEM: REAL SEP.: 2.11 REL.: .82

ITEM STATISTICS: ENTRY ORDER

| ENTRY NUMBER | TOTAL SCORE | TOTAL COUNT | MEASURE | MODEL S. E. | INFIT MNSQ | INFIT ZSTD | OUTFIT MNSQ | OUTFIT ZSTD | PTBISERL-CORR. | -EX-EXP. | EXACT OBS% | MATCH EXP% | ITEM |
|--------------|-------------|-------------|---------|-------------|------------|------------|-------------|-------------|----------------|----------|------------|------------|--------|
| 1 | 108 | 110 | -2.064 | .821 | 1.59 | 1.0 | .58 | .1 | .13 | .37 | 96.6 | 98.1 | 130005 |
| 2 | 107 | 110 | -1.512 | .675 | 1.62 | 1.1 | 2.25 | 1.2 | .04 | .39 | 95.5 | 97.2 | 130006 |
| 3 | 105 | 110 | -.811 | .525 | 1.02 | .2 | .53 | -.5 | .38 | .40 | 95.5 | 95.2 | 130007 |
| 4 | 106 | 110 | -1.118 | .585 | .71 | -.5 | .25 | -1.0 | .61 | .39 | 96.6 | 96.2 | 130008 |
| 5 | 105 | 110 | -.811 | .525 | .98 | .1 | .38 | -.8 | .44 | .40 | 95.5 | 95.2 | 130009 |
| 6 | 107 | 110 | -1.512 | .675 | .86 | -.1 | .25 | -.7 | .49 | .39 | 97.8 | 97.2 | 130010 |
| 7 | 91 | 110 | 1.148 | .294 | 1.04 | .3 | .96 | -.1 | .36 | .37 | 80.9 | 82.3 | 130011 |
| 8 | 56 | 110 | 3.332 | .237 | 1.22 | 2.6 | 1.50 | 1.9 | .12 | .27 | 57.3 | 68.4 | 130012 |
| 9 | 106 | 110 | -1.118 | .585 | .93 | .0 | .76 | .0 | .45 | .39 | 96.6 | 96.2 | 130013 |
| 10 | 102 | 110 | -.155 | .421 | .95 | -.1 | 1.10 | .4 | .44 | .40 | 93.3 | 92.2 | 130014 |
| 11 | 89 | 93 | -.517 | .534 | .95 | .0 | .71 | -.2 | .05 | .07 | 93.8 | 93.8 | 130015 |
| 12 | 84 | 93 | .468 | .382 | 1.26 | 1.1 | 1.66 | 1.5 | -.01 | .09 | 84.6 | 86.3 | 130016 |
| 13 | 87 | 93 | -.042 | .449 | .85 | -.4 | .49 | -1.0 | .17 | .08 | 90.8 | 90.8 | 130017 |
| 14 | 90 | 93 | -.840 | .607 | 1.10 | .4 | .93 | .2 | -.02 | .06 | 95.4 | 95.4 | 130018 |
| 15 | 84 | 93 | .468 | .382 | 1.24 | 1.0 | 1.47 | 1.2 | .02 | .09 | 84.6 | 86.3 | 130019 |
| 16 | 86 | 93 | .147 | .421 | 1.11 | .5 | 1.28 | .7 | -.01 | .09 | 89.2 | 89.2 | 130020 |
| 17 | 73 | 93 | 1.652 | .293 | .95 | -.3 | .90 | -.5 | .07 | .10 | 75.4 | 73.9 | 130021 |
| 18 | 91 | 93 | -1.282 | .731 | .88 | .0 | .34 | -.5 | .18 | .05 | 96.9 | 96.9 | 130022 |
| 19 | 80 | 93 | .974 | .334 | .81 | -1.0 | .62 | -1.4 | .24 | .10 | 86.2 | 81.0 | 130023 |
| 20 | 87 | 93 | -.042 | .449 | 1.05 | .3 | .81 | -.2 | .04 | .08 | 90.8 | 90.8 | 130024 |
| 21 | 101 | 110 | -.143 | .394 | 1.07 | .3 | .72 | -.5 | .33 | .38 | 89.9 | 91.1 | 130025 |
| 22 | 92 | 110 | .881 | .297 | 1.00 | .1 | .99 | .1 | .39 | .37 | 83.1 | 82.7 | 130026 |
| 23 | 103 | 110 | -.491 | .442 | .71 | -.9 | .29 | -1.5 | .60 | .37 | 94.4 | 93.1 | 130027 |
| 24 | 94 | 110 | .697 | .310 | .87 | -.6 | .96 | .0 | .47 | .38 | 87.6 | 84.6 | 130028 |
| 25 | 101 | 110 | -.143 | .394 | .90 | -.3 | .59 | -.8 | .46 | .38 | 89.9 | 91.1 | 130029 |
| 26 | 104 | 110 | -.701 | .475 | .87 | -.2 | .79 | -.1 | .44 | .37 | 94.4 | 94.1 | 130030 |
| 27 | 69 | 110 | 2.415 | .238 | 1.03 | .4 | 1.04 | .3 | .30 | .34 | 69.7 | 69.6 | 130031 |
| 28 | 87 | 110 | 1.283 | .273 | 1.15 | 1.1 | 1.27 | 1.2 | .25 | .37 | 75.3 | 78.5 | 130032 |
| 29 | 102 | 110 | -.307 | .416 | .82 | -.5 | .38 | -1.3 | .56 | .38 | 93.3 | 92.1 | 130033 |
| 30 | 99 | 110 | .141 | .361 | .97 | .0 | .76 | -.5 | .42 | .38 | 87.6 | 89.1 | 130034 |
| MEAN | 93.2 | 104.3 | .000 | .451 | 1.02 | .2 | .85 | -.1 | | | 88.6 | 89.0 | |
| S.D. | 12.5 | 8.0 | 1.176 | .147 | .21 | .7 | .45 | .9 | | | 9.1 | 8.0 | |

Figure 19. Alphabet Knowledge: Identificación de los Sonidos/Sound Identification Item Map



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Figure 20. *Alphabet Knowledge: Identificación de los Sonidos/Sound Identification Item Calibration Table*

TABLE 14.1 Concurrent Calibration for SOUND ID R ZOU662WS.TXT Sep 30 19:02 2013
 INPUT: 159 PERSON 30 ITEM REPORTED: 159 PERSON 30 ITEM 2 CATS WINSTEPS 3.72.2

PERSON: REAL SEP.: 1.77 REL.: .76 ... ITEM: REAL SEP.: 2.82 REL.: .89

ITEM STATISTICS: ENTRY ORDER

| ENTRY NUMBER | TOTAL SCORE | TOTAL COUNT | MEASURE | MODEL S. E. | INFIT MNSQ | INFIT ZSTD | OUTFIT MNSQ | OUTFIT ZSTD | PTBISERL CORR. | -EX EXP. | EXACT OBS% | MATCH EXP% | ITEM |
|--------------|-------------|-------------|---------|-------------|------------|------------|-------------|-------------|----------------|----------|------------|------------|--------|
| 1 | 81 | 99 | -1.395 | .280 | 1.00 | .0 | .75 | -.7 | .32 | .24 | 81.1 | 81.8 | 160005 |
| 2 | 58 | 99 | .010 | .231 | 1.14 | 1.6 | 1.23 | 1.3 | .23 | .35 | 62.1 | 68.8 | 160006 |
| 3 | 66 | 99 | -.427 | .237 | .96 | -.5 | .81 | -.9 | .36 | .32 | 68.4 | 70.3 | 160007 |
| 4 | 50 | 99 | .437 | .232 | 1.19 | 2.0 | 1.26 | 1.6 | .22 | .38 | 62.1 | 70.1 | 160008 |
| 5 | 59 | 99 | -.044 | .232 | .86 | -1.7 | .76 | -1.5 | .44 | .35 | 75.8 | 68.8 | 160009 |
| 6 | 61 | 99 | -.152 | .233 | 1.04 | .5 | 1.03 | .2 | .25 | .34 | 71.6 | 68.9 | 160020 |
| 7 | 53 | 99 | .276 | .231 | 1.20 | 2.2 | 1.18 | 1.1 | .28 | .37 | 57.9 | 69.3 | 160021 |
| 8 | 55 | 99 | .170 | .231 | 1.28 | 3.0 | 1.35 | 2.0 | .18 | .36 | 55.8 | 69.1 | 160022 |
| 9 | 61 | 99 | -.152 | .233 | .99 | -.1 | .88 | -.6 | .38 | .34 | 67.4 | 68.9 | 160023 |
| 10 | 57 | 99 | .063 | .231 | .75 | -3.3 | .65 | -2.4 | .48 | .36 | 78.9 | 68.9 | 160024 |
| 11 | 65 | 113 | -.223 | .212 | 1.34 | 4.0 | 1.68 | 4.4 | .02 | .33 | 61.8 | 67.9 | 160010 |
| 12 | 89 | 113 | -1.432 | .248 | .90 | -.8 | .80 | -.8 | .36 | .26 | 80.9 | 79.3 | 160011 |
| 13 | 69 | 113 | -.404 | .214 | 1.07 | .9 | .99 | .0 | .27 | .32 | 60.9 | 68.6 | 160012 |
| 14 | 59 | 113 | .045 | .211 | .90 | -1.3 | .87 | -1.0 | .44 | .35 | 71.8 | 67.6 | 160013 |
| 15 | 67 | 113 | -.313 | .213 | .87 | -1.8 | .83 | -1.2 | .47 | .33 | 78.2 | 68.3 | 160014 |
| 16 | 55 | 113 | .223 | .212 | .86 | -1.8 | .83 | -1.4 | .49 | .35 | 80.0 | 68.4 | 160025 |
| 17 | 65 | 113 | -.223 | .212 | .88 | -1.6 | .82 | -1.4 | .45 | .33 | 74.5 | 67.9 | 160026 |
| 18 | 48 | 113 | .542 | .216 | .91 | -1.0 | .87 | -.9 | .44 | .36 | 75.5 | 70.2 | 160027 |
| 19 | 51 | 113 | .404 | .214 | 1.14 | 1.7 | 1.16 | 1.3 | .22 | .36 | 64.5 | 69.4 | 160028 |
| 20 | 85 | 113 | -1.198 | .236 | 1.10 | .9 | .97 | -.1 | .22 | .28 | 71.8 | 76.1 | 160029 |
| 21 | 37 | 101 | 1.142 | .240 | 1.10 | .9 | 1.11 | .7 | .31 | .41 | 71.4 | 73.8 | 160015 |
| 22 | 55 | 101 | .178 | .228 | .94 | -.6 | .88 | -.8 | .45 | .39 | 68.4 | 69.6 | 160016 |
| 23 | 72 | 101 | -.748 | .244 | .87 | -1.2 | .73 | -1.2 | .46 | .33 | 74.5 | 74.5 | 160017 |
| 24 | 48 | 101 | .542 | .229 | 1.01 | .1 | 1.09 | .7 | .40 | .40 | 70.4 | 70.0 | 160018 |
| 25 | 78 | 101 | -1.127 | .260 | 1.08 | .6 | 1.14 | .6 | .24 | .31 | 75.5 | 78.0 | 160019 |
| 26 | 30 | 101 | 1.567 | .254 | 1.14 | 1.1 | 1.39 | 1.7 | .26 | .40 | 76.5 | 77.4 | 160030 |
| 27 | 50 | 101 | .437 | .228 | .84 | -1.8 | .79 | -1.6 | .53 | .40 | 71.4 | 69.8 | 160031 |
| 28 | 61 | 101 | -.136 | .230 | .86 | -1.6 | .78 | -1.4 | .49 | .37 | 76.5 | 70.2 | 160032 |
| 29 | 31 | 101 | 1.503 | .252 | 1.18 | 1.4 | 1.25 | 1.2 | .27 | .40 | 71.4 | 76.9 | 160033 |
| 30 | 50 | 101 | .437 | .228 | .74 | -3.1 | .65 | -2.9 | .62 | .40 | 81.6 | 69.8 | 160034 |
| MEAN | 58.9 | 104.3 | .000 | .232 | 1.00 | .0 | .99 | -.1 | | | 71.3 | 71.3 | |
| S. D. | 13.7 | 6.2 | .717 | .016 | .15 | 1.7 | .24 | 1.5 | | | 7.0 | 3.9 | |

Figure 21. *Alphabet Knowledge: Identificación de las Letras (Receptivo)/Receptive Letter Naming Item Map*

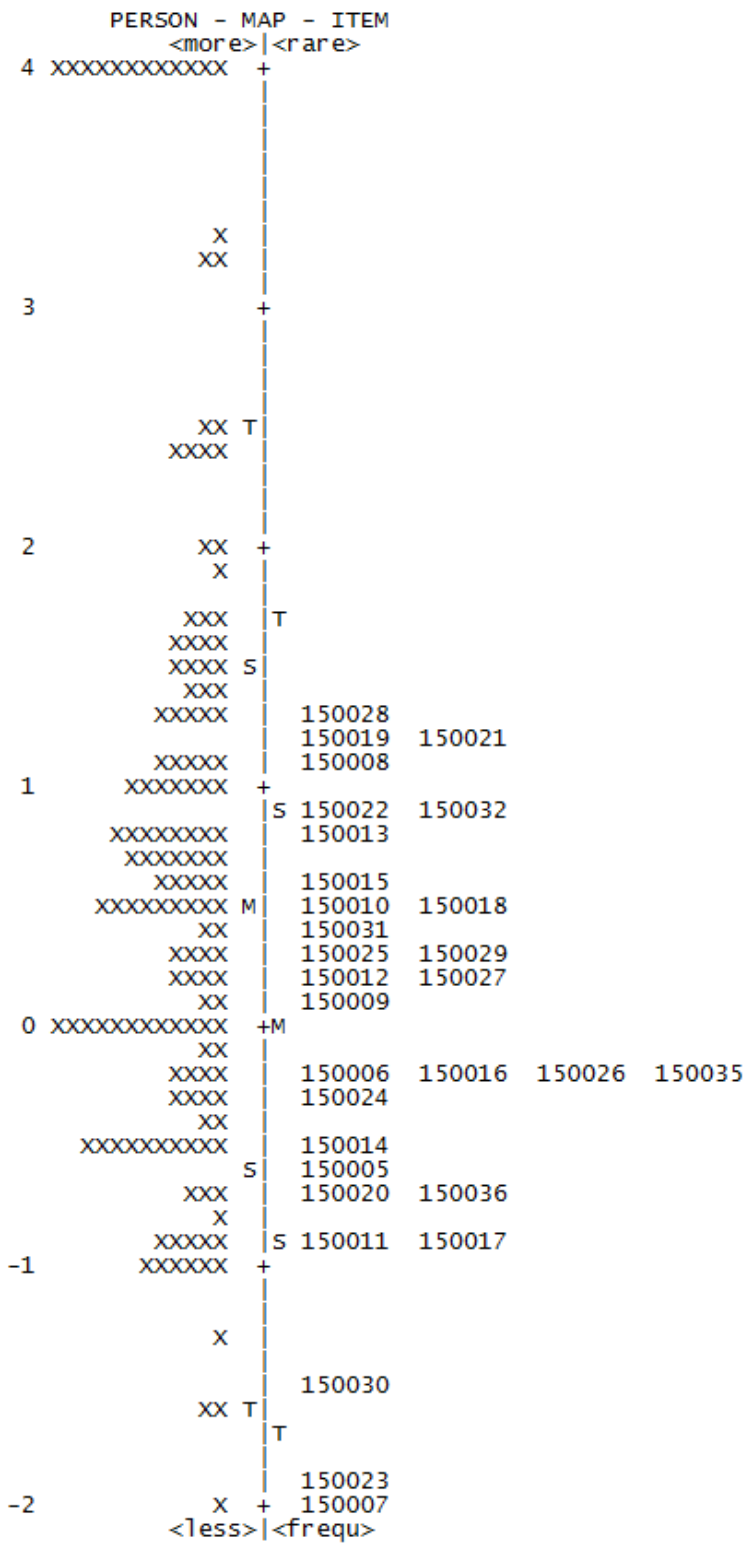


Figure 22. *Alphabet Knowledge: Identificación de las Letras (Receptivo)/Receptive Letter Naming Item Calibration Table*

TABLE 14.1 Concurrent Calibration for LETTER NAM ZOU898WS.TXT Sep 30 19:06 2013
 INPUT: 149 PERSON 30 ITEM REPORTED: 149 PERSON 30 ITEM 2 CATS WINSTEPS 3.72.2

 PERSON: REAL SEP.: 1.63 REL.: .73 ... ITEM: REAL SEP.: 3.24 REL.: .91

ITEM STATISTICS: ENTRY ORDER

| ENTRY NUMBER | TOTAL SCORE | TOTAL COUNT | MEASURE | MODEL S.E. | INFIT MNSQ | ZSTD | OUTFIT MNSQ | ZSTD | PTBISERL-CORR. | -EX EXP. | EXACT OBS% | MATCH EXP% | ITEM |
|--------------|-------------|-------------|---------|------------|------------|------|-------------|------|----------------|----------|------------|------------|--------|
| 1 | 69 | 98 | -.608 | .243 | .94 | -.6 | .81 | -1.0 | .30 | .28 | 71.7 | 71.7 | 150005 |
| 2 | 62 | 98 | -.206 | .233 | .85 | -1.8 | .78 | -1.5 | .48 | .31 | 72.8 | 68.2 | 150006 |
| 3 | 89 | 100 | -1.997 | .335 | .79 | -.9 | .48 | -1.3 | .40 | .19 | 88.3 | 88.3 | 150007 |
| 4 | 39 | 102 | 1.115 | .238 | 1.07 | .7 | 1.13 | .9 | .27 | .35 | 67.7 | 72.6 | 150008 |
| 5 | 55 | 97 | .138 | .230 | 1.15 | 1.8 | 1.30 | 2.1 | .22 | .33 | 59.8 | 67.7 | 150009 |
| 6 | 48 | 98 | .515 | .230 | .82 | -2.1 | .76 | -2.0 | .50 | .35 | 79.6 | 68.4 | 150010 |
| 7 | 76 | 101 | -.879 | .250 | .99 | .0 | .83 | -.7 | .25 | .26 | 70.5 | 75.4 | 150011 |
| 8 | 53 | 98 | .245 | .228 | .83 | -2.2 | .78 | -1.8 | .46 | .34 | 78.5 | 67.4 | 150012 |
| 9 | 42 | 97 | .816 | .235 | 1.05 | .5 | 1.03 | .3 | .31 | .36 | 68.5 | 70.2 | 150013 |
| 10 | 68 | 100 | -.482 | .236 | 1.14 | 1.5 | 1.53 | 2.7 | .14 | .30 | 66.3 | 70.5 | 150014 |
| 11 | 49 | 94 | .626 | .236 | .86 | -1.6 | .87 | -1.0 | .47 | .35 | 78.2 | 67.4 | 150015 |
| 12 | 67 | 97 | -.239 | .243 | .96 | -.4 | .91 | -.5 | .39 | .30 | 74.2 | 71.1 | 150016 |
| 13 | 77 | 97 | -.903 | .272 | .82 | -1.3 | .76 | -.9 | .44 | .27 | 85.4 | 78.3 | 150017 |
| 14 | 53 | 98 | .546 | .231 | .94 | -.7 | .88 | -1.0 | .43 | .35 | 67.8 | 67.1 | 150018 |
| 15 | 40 | 94 | 1.181 | .244 | 1.03 | .4 | 1.00 | .1 | .28 | .38 | 68.6 | 70.1 | 150019 |
| 16 | 74 | 96 | -.699 | .263 | 1.05 | .4 | 1.04 | .2 | .18 | .26 | 77.3 | 76.2 | 150020 |
| 17 | 40 | 94 | 1.206 | .244 | .99 | -.1 | 1.09 | .7 | .40 | .37 | 74.4 | 70.0 | 150021 |
| 18 | 45 | 94 | .906 | .238 | 1.19 | 2.1 | 1.30 | 2.3 | .18 | .36 | 58.1 | 67.7 | 150022 |
| 19 | 87 | 96 | -1.922 | .364 | .95 | -.1 | .94 | .0 | .24 | .18 | 89.8 | 89.8 | 150023 |
| 20 | 66 | 94 | -.304 | .247 | 1.14 | 1.3 | 1.26 | 1.5 | .18 | .28 | 65.1 | 71.1 | 150024 |
| 21 | 60 | 102 | .269 | .231 | 1.17 | 2.0 | 1.18 | 1.4 | .17 | .35 | 60.9 | 68.0 | 150025 |
| 22 | 65 | 97 | -.213 | .243 | .99 | -.1 | 1.02 | .2 | .32 | .34 | 68.2 | 70.5 | 150026 |
| 23 | 58 | 98 | .220 | .236 | .93 | -.8 | .88 | -.8 | .40 | .37 | 70.8 | 68.7 | 150027 |
| 24 | 40 | 102 | 1.349 | .245 | 1.16 | 1.4 | 1.20 | 1.2 | .24 | .39 | 69.6 | 73.1 | 150028 |
| 25 | 59 | 102 | .288 | .229 | 1.04 | .5 | 1.00 | .0 | .35 | .36 | 65.6 | 67.9 | 150029 |
| 26 | 87 | 102 | -1.457 | .299 | .79 | -1.2 | .53 | -1.6 | .44 | .24 | 83.7 | 84.0 | 150030 |
| 27 | 53 | 96 | .414 | .238 | .97 | -.4 | .91 | -.6 | .47 | .39 | 66.7 | 68.0 | 150031 |
| 28 | 47 | 99 | .897 | .238 | .96 | -.4 | 1.02 | .2 | .40 | .38 | 73.0 | 69.1 | 150032 |
| 29 | 63 | 96 | -.155 | .242 | 1.02 | .3 | 1.08 | .5 | .38 | .34 | 70.5 | 70.3 | 150035 |
| 30 | 73 | 98 | -.667 | .256 | 1.24 | 1.9 | 1.59 | 2.4 | .10 | .31 | 65.2 | 74.4 | 150036 |
| MEAN | 60.1 | 97.8 | .000 | .250 | 1.00 | .0 | 1.00 | .1 | | | 71.9 | 72.1 | |
| S.D. | 14.5 | 2.6 | .872 | .030 | .12 | 1.2 | .25 | 1.3 | | | 7.8 | 5.8 | |

Qualitative Pragmatic and Practical Review

To evaluate the qualitative pragmatic and practical contributions to Claim 3, including GOM features, *S-IGDIs* tasks were evaluated against five criteria: time to administer the task/brevity; reports of ease of use by end-users and satisfaction; teacher evaluation of score meaningfulness; evidence for relation with long-term academic outcomes, and cost effectiveness. The *Storybook/Vamos a tienda!* was not evaluated against the pragmatic and practical criteria because at the time of review it was still under development.

Table 4: *Oral Language tasks*

| Task | Picture Naming | Expressive Verbs | Receptive Verbs | Functions | Storybook |
|--|---|--------------------------------------|--|--------------------------------------|--|
| Time to administer task/ brevity (minutes) | <2 | <2 | <2 | >2 (3-5 minutes) | >2 (8-10 minutes) |
| Teacher satisfaction & ease of use | 29% somewhat 71% very much | 43% somewhat 57% very much | 14% somewhat 71% very much | 57% somewhat 43% very much | N/A |
| Score meaningfulness | 71% somewhat, 29% very much | 57% somewhat 29% very much | 71% somewhat 29% very much | 57% somewhat, 43% very much | N/A |
| Utility in relation to long-term academic outcomes | McConnell et al., 2010; Miller et al., 2006; Proctor et al., 2006 | Pena, Bedore & Rappazzo, 2003 | Hammer et al., 2007 (for receptive picture naming) | Pena, Bedore & Rappazzo, 2003 | Miller et al. (2006) support contextualized interactions |
| Cost effectiveness | Yes Card format/ printing costs only | Yes Card format/ printing costs only | Yes Card format/ printing costs only | Yes Card format/ printing costs only | Yes Storybook format/ printing costs only |

Table 5: *Phonological Awareness tasks*

| Task | Rhyming | Blending | Elision | First Sounds |
|---|---|---|---|--|
| Time to administer task/ brevity | <2 | <2 | <2 | <2 |
| Teacher satisfaction & ease of use | 33% somewhat 67% very much | 33% somewhat 67% very much | 33% somewhat 67% very much | 33% somewhat 67% very much |
| Meaningfulness of scores | 67% somewhat 33% very much | 33% somewhat 67% very much | 33% somewhat 67% very much | 0% somewhat 100% very much |
| Utility in relation to long-term academic goals | Carrillo, 1994; Dickinson et al., 2004; Lopez & Greenfield, 2004; Tabors et al., 2003 | Anthony et al., 2011; Durgonoglu et al., 1993 | Anthony et al., 2011; Cardenas-Hagan et al., 2007; Dickinson et al., 2004; Gorman & Gillam (2003) say this skill may not be appropriate for | Durgonoglu et al., 1993; Lopez & Greenfield, 2004; Tabors et al., 2003 |

| | | | | |
|--------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|
| | | | preschool populations | |
| Cost effectiveness | Yes Card format/ printing costs only | Yes Card format/ printing costs only | Yes Card format/ printing costs only | Yes Card format/ printing costs only |

Table 6: *Alphabet Knowledge tasks*

| Task | Receptive Letter Naming | Sound Identification |
|--|--|---|
| Time to administer task/ brevity (minutes) | <2 | <2 |
| Teacher satisfaction & ease of use | 50% somewhat 50% very much | 46% somewhat 54% very much |
| Score meaningfulness | 36% somewhat 57% very much | 36% somewhat 64% very much |
| Utility in relation to long-term academic outcomes | Dickinson et al., 2004; Lopez & Greenfield, 2004; McBride-Chang, 1999; Tabors et al., 2003 | Anthony et al., 2011; Dickinson et al., 2004; Gorman & Gillam, 2003 |
| Cost effectiveness | Yes Card format/ printing costs only | Yes Card format/ printing costs only |

Discussion

This technical report presented the iterative process used to refine and evaluate the *S-IGDI* tasks within Kane’s model of validity (2013). Three primary claims were presented to contribute to the interpretive argument, offering evidence to support or challenge the validity of the measures. To evaluate the evidence provided to support the 3 claims, result were provided in three forms: expert review, empirical review and pragmatic and practical review. For each claim, evidence was collected and summarized to provide recommendations for further development of *S-IGDI* tasks.

To examine the evidence in context it is important to examine the information provided within the expert review, empirical analyses, and pragmatic review for each task. To aid in this interpretation it is important to consider how the Rasch model, utilized here, transforms raw scores. The Rasch scale only uses valid response patterns to model performance. As such all complete sets of non-responses (all items in a task responded to as don’t know, no response, or incorrect) were not included. As such, the number of

individuals who responded with this pattern are reported in the percentage of non-responses/zero scores column.

For each task, students interacted with items and a raw score was reported. Raw score descriptives are reported in the Mean Raw Score, SD, Max and Min columns. However, each raw score was scaled and calibrated on the Rasch score, allowing for non-linear transformation of performance independent of the sample. As such, the Mean Rasch score, or average ability of the students who interacted with the items is reported for each task in the Rasch Mean (person score) column. In the Rasch model, the mean item difficulty is located 0, with the entire Rasch scale ranging from approximately -4 to +4. As such, when the person ability (Rasch mean person score) is greater than the mean item difficulty(0) it indicates the items require less ability for the students tested, and when the person ability is less than 0, it indicates the items require more ability for the students tested.

Finally, the Rasch model also lets us estimate the degree to which we can reliably estimate a person's ability in the person reliability statistic. The greater the value, the more reliability is present in the estimate of each individual student's ability level using the given task.

Phonological Awareness

Results indicated in the domain of phonological awareness, one measure demonstrated the most validity evidence. While all tasks demonstrated adequate distributions of raw scores, two tasks were eliminated immediately because of the percentage of non-responses, feedback from experts and lack of applicability in the pragmatic and practical model. For *Elision/ What word is left?/ ¿Que Palabra Queda?* and *Blending/Mexclar*, over half of the students tested were unable to move beyond the sample items, received a score of zero or did not respond to any of the items. For these measures, these results indicate the tasks would not be useful within an RTI model in early childhood SEB classrooms, as teachers would not be able to make instructional decisions for over half of the students in their academic environment. In addition, while the Rasch Mean person score indicated the items were fairly easy for those students who were able to interact with the task, it appears that the sub-set of the sample that were able to respond to these tasks represents higher-than average performance, potentially at a Tier 1 level. Further, the Rasch model achieved high levels of reliability for those students who were able to interact

with the tasks (.72 and .83 respectively). As such, these measures may offer the most evidence for validity within a progress monitoring model for students who are receiving enrichment interventions, but do not offer utility in the RTI screening model.

The third phonological awareness task, *Rhyming/Rimar*, produced adequate raw score distributions. In addition, the *Rhyming/Rimar* Rasch Mean (person score) was .224, suggesting the items were distributed near student abilities. These data indicate the items were not particularly too difficult or too easy for the sample (see Appendix B, measure map 3 for a visual depiction of this match). Further, the Rasch model achieved high levels of reliability for those students who were able to interact with the task. However, as experts noted, *Rhyming/Rimar* is the phonological awareness task least aligned with our construct definition, as the concept of rhyming is not as salient in Spanish as it is in English. Further, in Spanish rhyming features a different structure, such that the end-rhyme is not as defined and allows for loose relations with complement words. For example, *rata* (mouse) and *taza* (cup) are accepted rhymes in Spanish because the end vowel sound is the same, however in English, they would not be accepted as traditional rhymes because the last phoneme (*ta* and *za*) are different. This contrast in structure and style of rhyme may reduce the social validity of a rhyming task with English speaking or bilingual teachers who teach SEB students in U.S. pre-k classrooms, as noted in their response to the meaningfulness of the task in Table 5. Finally, it is difficult to find photographable images that have rhyme complements and represent words and concepts accessible to 4 and 5 year old children.

The final phonological awareness task, *First Sounds/Primeros Sonidos* was selected for continued development. The distribution of raw scores for this task was adequate and the Rasch Mean (person score) was .386 suggesting the items were distributed near student abilities. However, Rasch model person reliability was weakest of all the phonological awareness measures. Upon further inspect of item level statistics, it was determined that poorly functioning items were contributing to the poor person reliability. As a result, we hypothesized that when poorly functioning items were removed or revised, person reliability would increase. Experts also noted that the format of *First Sounds/Primeros Sonidos* easily lends itself to conceptually align with both English and Spanish constructs of early literacy, such that the Spanish version of this task emphasizes the role of the syllable in Spanish language, while the English complement (in IGDIs 2.0)

emphasizes the phoneme. Further, 100% of teachers found the task to be meaningful and 67% found it to be very easy to use. As a result, *First Sounds/Primeros Sonidos* was selected as the task with the most robust evidence to support the three primary claims.

Oral Language

In the oral language domain, five tasks were considered. First, the team determined of the verbs task which demonstrated the most evidence for validity. Results from calibrations indicated that *Expressive Verbs/Verbos Expresivo* and *Receptive Verbs/Verbos Receptivo* produced robust raw score distributions, however, the *Receptive Verbs/Verbos Receptivo* task included items that were very easy relative to the average ability of the students who interacted with the items (Rasch Mean person score was 2.61), and as a result, the model was unable to reliably estimate person scores because most students had abilities that were significantly beyond the difficulties of the items presented in this task. Experts also agreed that it seemed redundant to pursue development of both tasks and encourage selection of either an expressive or receptive task. Given that the *Receptive Verbs/Verbos Receptivo* task was very easy, and the *Expressive Verbs/Verbos Expresivo* task was functioning well, we hypothesized that scaling the two tasks together might create an ideal continuum of performance represented in expressive and receptive measures. However, when the expressive and receptive data were collapsed and calibrated, the model was a poor fit indicating that there is an underlying trait of oral language that contributes to *Expressive Verbs/Verbos Expresivo* differently than *Receptive Verbs/Verbos Receptivo*. As a result, we determined *Expressive Verbs/Verbos Expresivo* was the measure with the most evidence to contribute to the three primary claims, and therefore we removed *Receptive Verbs/Verbos Receptivo* from further analyses.

Expressive Verbs/Verbos Expresivo was created as an *S-IGDI* measure because it aligns with our understanding of the construct, such that SEB students more readily interact in daily language using verbs in Spanish, rather than nouns. Often the noun is implied within the structure of the verb in Spanish, potentially causing verbs to be more accessible to young SEB children than nouns. Experts agreed that verbs may be a more salient approach to examining oral language for SEB students. As a result of this reasoning in complement to the empirical analysis, *Expressive Verbs/Verbos Expresivo* demonstrated

the most evidence for the three primary claims, leading to candidacy for further development and analysis.

The second task considered, *Functions/Funciones*, produced adequate raw score distributions and Rasch ability statistics. However, practically, *Functions/Funciones* was taxing to score. End-user reports were least confident in the meaningfulness and ease of use of this task, with only 43% of the sample reporting “very much”. Because students rarely produced one or two word phrase responses to the questions “what is this for/¿Para qué sirve?” and instead provided sentences and narratives, data collectors were required to review responses and select out sections that were relevant to correct and incorrect answers. After administration with 200 students, it became clear that the scoring would be difficult to obtain at a large scale, potentially with administrators that may or may not be fluent in Spanish. As a result, these implications indicated that the interpretations of responses would be difficult at best and compromised the validity of the task. For this reason, *Functions/Funciones* was not included in the pool of *S-IGDI* tasks for further development.

The third oral language task reviewed was *Picture Naming/ Identificación de los Dibujos*. *Picture Naming/ Identificación de los Dibujos* demonstrated an adequate raw score distribution and reliably estimated person ability (.79). In addition, while *Picture Naming/ Identificación de los Dibujos* items were relatively easy for the sample of students who interacted with the items, we reasoned our item writing process would easily allow for the creation of items that required less ability. Further, very few students were unable to respond to this task (13%). Experts and end-users supported the use of this task, but were very cognizant of the need for regional representation in response patterns within future studies. As a result, *Picture Naming/ Identificación de los Dibujos* moved forward for further development.

The final oral language task, *Storybook-Let’s go to the store!/¡Vamos a la Tienda!* is the only *S-IGDI* measure that uses a contextualized interaction to assess performance in the oral language domain. *Storybook-Let’s go to the store!/¡Vamos a la Tienda!* is a relatively lengthy measure by General Outcome Measure standards (it takes approximately 15 minutes to administer and score), however it captures a contextualized interactions, which research indicates may be more salient for SEB students (Peña, Bedore & Rappazzo, 2003).

Raw scores for *Storybook-Let's go to the store!;/Vamos a la Tienda!* were adequately distributed and Rasch statistics suggest it is able to reliably produce person ability scores (.83) and while the mean Rasch score (person score) was .519 indicating the items were easier for this particular sample, it does not appear that this impacted person reliability significantly (see Appendix B, measure map 5 for a visual depiction of this match). As a result, *Storybook-Let's go to the store!;/Vamos a la Tienda!* demonstrated robust evidence for validity and was therefore considered for further development and use in Year 2 studies.

It is important to note however, that with two existing measures of oral language we determined that the use of *Storybook-Let's go to the store!;/Vamos a la Tienda!* would be supplementary, that is the domain would be able to stand alone without the measure, however if end-users are interested in a contextualized measure and can manage the extended assessment time, it will be available for use.

Alphabet Knowledge

In the domain of alphabet knowledge, two tasks were considered, *Sound Identification/Identificación de los Sonidos* and *Letter Identification/Identificación de Letras*. Both tasks performed equally well in terms of raw score distributions and Rasch statistics. Teachers and end-users experienced similar levels of satisfaction and ease of use (50-64%). However, experts noted some concerns regarding item development and presentation. One expert requested further clarification in the reasoning for selecting the receptive letter identification task for development over the receptive task (see Technical Report for further information). In addition, both reviewers noted that Spanish letters and sounds are pronounced differently by region, which may make standardization difficult. This point was well received and the research team considered this variable in evaluating the validity evidence. As a result, we determined since each task contributed equivalent evidence and provided a unique lens into the development of Spanish alphabet knowledge, both would move forward for further development and use in Year 2 studies.

In sum, across the three primary claims, results indicated *Picture Naming/Identificación de los Dibujos*, *Expressive Verbs/Verbos Expresivo*, and *Storybook-Let's go to the store!;/Vamos a la Tienda* were the strongest candidates for the oral language domain, *First Sounds/Primero Sonidos* was the strongest candidates for the phonological awareness

domain and *Sound Identification/Identificación de los Sonidos* and *Letter Identification/Identificación de Letras* were the strongest candidates for alphabet knowledge. All six measures were moved on for further development and validation studies described in Technical Report 4.