



Photo Credit: Banung Ou, RTI International

Assessment Validity & Reliability

Adapting Early Grade Reading Assessments
for Children with Disabilities and Ensuring
Valid & Reliable Instruments.

Jennifer Ryan
Research Education Analyst, RTI International

CIES 2023

USAID All Children Reading-Cambodia (ACR): Program Background

- Early Grade Reading (EGR) Program implemented in Khmer language in Kampong Thom and Kampot provinces
- Focused on EGR in preschool through Grade 2.
- RTI received additional funding from USAID under the All Children Learning award to expand the integration of inclusive education principles into the existing EGR programming.
- Developed and piloted an Early Grade Reading Assessment (EGRA) for learners with hearing and vision disabilities to evaluate program efforts



Photo Credit: Banung Ou, RTI International

EGRA for Students who are Blind/Low Vision:

- Follow concepts of standard EGRA, use an existing one, if possible
- Involve local disability experts in adaptation workshop to help catch any unexpected issues that may arise and to ensure the assessment is appropriate
- Large print for low vision learners, Braille for students learning in Braille
- Remove references to visual imagery in reading passages
- Consider extended time for timed subtasks, especially passage reading, as that is becoming more standard in traditional EGRA

EGRA for Students who are Deaf or Hard of Hearing:

- Consider the underlying concepts of an EGRA and include subtasks accordingly (language acquisition before literacy acquisition)
- Involve local disability experts in adaptation workshop to help catch any unexpected issues that may arise and to ensure the assessment is appropriate
- Ensure assessors are fluent in the form of sign-language students use
- Timed fluency scores do not translate well, consider a graded fluency item assessing a child's confidence with signing

Field Test and Pilot Test Everything!



Photo Credit: Banung Ou, RTI International

- A field test can inform you of major issues with instructions, subtasks, or items before it is too late to change.
- Pilot testing is incredibly important when adapting a new assessment to ensure the assessment is reliable and valid.
- Complicated psychometric analysis is not necessary, just standard averages and frequencies, and Cronbach's Alpha analysis to test the assessment.

Limitations:

We can't truly test validity

- Typically, with an assessment so different from standard EGRA, we would need to run concurrent validity tests during piloting. Students who are blind or deaf cannot take a typical EGRA to compare, and typical students usually cannot sign or read Braille.

Population for sampling is small

- Sample sizes for screened/identified populations are very low, and usually found in special schools or classrooms.

Test-Retest is Best Practice

- It would be best practice during pilot testing to run test-retest to ensure the assessment behaves similarly for the same student at both timepoints.

What we Expect to See:

These are the standard for EGRA internal consistency:

- High Correlation among all literacy subtasks (slightly lower for language-only subtasks, such as vocabulary or listening comprehension)
- High Cronbach's Alpha coefficient in test of internal consistency.

Cronbach's Alpha for Braille/ Large Text EGRA

Braille Only: Alpha=0.95

	Item-Test Correlation	Item-Rest Correlation
Listening		
Comprehension	0.78	0.71
Letter Identification	0.94	0.91
Familiar Words	0.92	0.91
Oral Reading	0.91	0.89
Reading		
Comprehension	0.89	0.84
Vowels	0.91	0.87
Consonants	0.95	0.92

Braille & Large Text: Alpha=0.92

	Item-Test Correlation	Item-Rest Correlation
Listening		
Comprehension	0.59	0.48
Letter Identification	0.90	0.86
Familiar Words	0.88	0.85
Oral Reading	0.86	0.81
Reading		
Comprehension	0.85	0.77
Vowels	0.87	0.81
Consonants	0.88	0.82

Cronbach's Alpha for Sign Language EGRA

- Poor Correlation Between Percentage Scores for Subtasks
- Alpha=0.70

	Item-Test Correlation	Item-Rest Correlation
(Signed) Story Comprehension	0.53	0.38
Letter Identification	0.83	0.77
Familiar Words	0.54	0.32
Sign Vocabulary	0.31	0.10
Vowel Identification	0.80	0.56
Consonant Identification	0.84	0.65

Go Back to the Basics

- EGRA was built around measuring the foundational skills that students need to be able to read and understand text.
- When adapting for new contexts and languages, the subtasks largely can remain the same- simply contextualized for the region and language.
- EGRA for children who are deaf or hard of hearing is more complicated, as early literacy skills will need a larger emphasis on early communication skills.



Photo Credit: Banung Ou, RTI International

Good Example: Kenya Tusome SNE Assessment

Okay Correlation Between Percentage Scores for Subtasks
 $\text{Alpha}=0.80$

	Item-Test Correlation	Item-Rest Correlation
(Signed) Story Comprehension	0.74	0.57
Letter Identification	0.56	0.38
Familiar Words	0.78	0.67
Finger Spelling	0.85	0.71
Demonstrations	0.79	0.63

Key Takeaways

- Field testing & Pilot testing allows for improved assessments
- Ensuring your instrument has strong internal consistency can yield more reliable and valid data for evaluating programs
- Adapting an EGRA for students who use Braille or large text should align very closely with traditional EGRA adaptation.
- Adapting EGRA for students who use sign language should focus on language-first principles when assessing literacy.
- Inclusion of local disability experts/advocates should happen early and often, for best results.

Questions and Discussion