HOW MUCH L1 READING IS ENOUGH FOR TRANSFER TO L2 READING?
CROSS-COUNTRY COMPARISON OF THRESHOLDS IN MULTILINGUAL READING

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Motivation

• Most students learning to read in LMIC’s worldwide learn to read in multilingual contexts
  – Either two or more language from the start
  – Learn to read in a language that is not their mother tongue
  – Learn to read in mother tongue and transition later

• A child will not learn to read a language they do not use and understand (Alidou et al., 2006; Benson, 2003; UNESCO, 2012, Evans & Acosta, 2021; Nag et al. 2018 etc.)

• L1 reading and L2 oral language skills are the strongest predictors of L2 reading (Cummins, 1981; August & Shanahan, 2006; Koda, 2008)

• Yet, we do not know empirically how much L1 is needed for L2 reading to begin successfully
Objective

• Provide a cross-country comparison of thresholds for transition from L1 to L2 reading in 6 language pairs across 6 regions in India and Ethiopia
Background: Ethiopia

- Ethiopia is a multilingual country with about 90 languages spanning 4 language families and multiple scripts (Ethnologue, 2020)
- Current policy is Bilingual, with Mother Tongue followed by English
- Introduction of English as a subject in Grade 1, and as a Medium of Instruction in grades 5, 7, or 9
- Developing new Education Roadmap, and new Three Language Policy
- When should English literacy instruction be introduced?
Background: India

- India is a multilingual country with 122 major languages, 26 of them used as mediums of education

- Three Language Formula
  - All children required to learn 3 languages (MT, Hindi, English) by end of secondary school
  - Order of acquisition depends on region and school type
Theoretical Framework

• Basic reading comprehension is a product of both
  – Decoding skills (fluency)
  – Oral language comprehension (Hoover & Tunmer, 2020)

• Across languages and scripts (Florit & Cain, 2011; Megherbi et al., 2006; Joshi et al., 2012)

• Across mother tongues and later acquired languages (Lervåg & Aukrust, 2010; Verhoeven & van Leeuwe, 2011)
Theoretical Framework: Reading across scripts (Verhoeven & Perfetti, 2017)

Phonological Unit
- Phonemes
- Syllables
- Syllables with phonemes
- Syllables with morphemes

Writing System
- Alphabetic (letters)
- Syllabic (kana)
- Alphasyllabic (akshara/fidel)
- Morphosyllabic (characters)

Examples
- cat
- niña
- אבא
- たこ
- 海 橋
Orthographies

• Ethiopia:
  – L1 Amharic: fidel script (alphasyllabic)
  – L1 Afaan Oromo, Berta, Wolayttatto: Roman alphabet (alphabetic)
  – L2 English

• India:
  – L1 Kannada, Telugu: akshara script (alphasyllabic)
  – L2 English
Theoretical Framework: Biliteracy Transfer

Local Language Oral Language → Local Language Orthographic/Phonologic Knowledge → Local Lang Decoding → English/L2 Oral Language

English/L2 Oral Language → English/L2 Orthographic/Phonologic Knowledge → English Decoding
Research questions

• Is there a structural break in the relationship between the decoding in the MT and in English?

• Is there a structural break in the relationship between L2 oral language and L2 decoding?
Analytical Method

- General principle: Test if there is a difference in relationship between MT decoding and English decoding outcomes below and above a given threshold.

- One common test is Chow (1960) test, which assumes we know where the structural break occurs.

- Use linear multivariate regression analysis that includes a dummy variable for children above and below a potential threshold value:

\[ DEC_{English} = \alpha + \beta_1 DEC_{MT} + \beta_2 D + \beta_3 (D \times DEC_{MT}) + \beta_4 X + \varepsilon \]

where D=1 if \( DEC_{MT} > \) threshold and D=0 if \( DEC_{MT} < \) threshold

- Use F-test to determine whether there is a structural break in the relationship between the two decoding variables (i.e. see if hypothesis i.e., \( \beta_3 = 0 \) can be rejected).
Analytical Method

English Decoding Score

Change in intercept = $\beta_2$

Slope = $\beta_1 + \beta_3$
→ $\beta_3$ is change in slope relative to observations with $D=0$

$DEC_{English} = \alpha + \beta_1 DEC_{MT} + \beta_2 D + \beta_3 (D * DEC_{MT}) + \varepsilon$

where $D=1$ if ($DEC_{MT}$ > threshold) and $D=0$ if ($DEC_{MT}$ < threshold)

Mother Tongue Decoding Score
Results from India
(Nakamura, de Hoop, and Holla, 2018)
Results from Ethiopia (USAID READ M&E, 2020)
Discussion

• In all language pairs, there is a significant point of transfer readiness

• The point is reliant:
  – On nature of the two scripts in questions
  – The degree of exposure the child has to both languages
## Skill-Based Transitioning Curricular and Design Implications

<table>
<thead>
<tr>
<th></th>
<th>Pre-School/Kindergarten</th>
<th>Lower elementary</th>
<th>Mid- upper elementary</th>
<th>Upper-elementary (and/or beyond)</th>
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</thead>
<tbody>
<tr>
<td>L1 oral</td>
<td>From the beginning</td>
<td></td>
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<tr>
<td>L1 decoding</td>
<td>Soon after L1 oral is introduced</td>
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</tr>
<tr>
<td>L2 basic oral</td>
<td>After L1 oral</td>
<td></td>
<td>Introduce after L2 oral</td>
<td>After decoding thresholds is reached</td>
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<tr>
<td>L2 basic literacy instruction</td>
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<tr>
<td>L2 academic vocab/subject knowledge</td>
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<td>After L2 oral language and reading comp is strong</td>
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<td>L2 Medium of instruction</td>
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<td>After L2 oral language and reading comp is strong</td>
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<tr>
<td>L3 as a subject</td>
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<td>After transition to L2 as medium of instruction</td>
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</tbody>
</table>

**Language status and political will**

**Resources (teacher, material) to teach each language**

**Teachers trained to teach that language as a foreign language subject**
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THANK YOU