Benchmarking the precursor skills to Reading Comprehension

Proposal for a Benchmarking by Language Groups Framework (BLGF)

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Global Alliance to Monitor Learning (GAML) - Paris,

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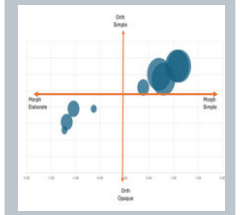
In this presentation

What have we learnt about precursor skills?

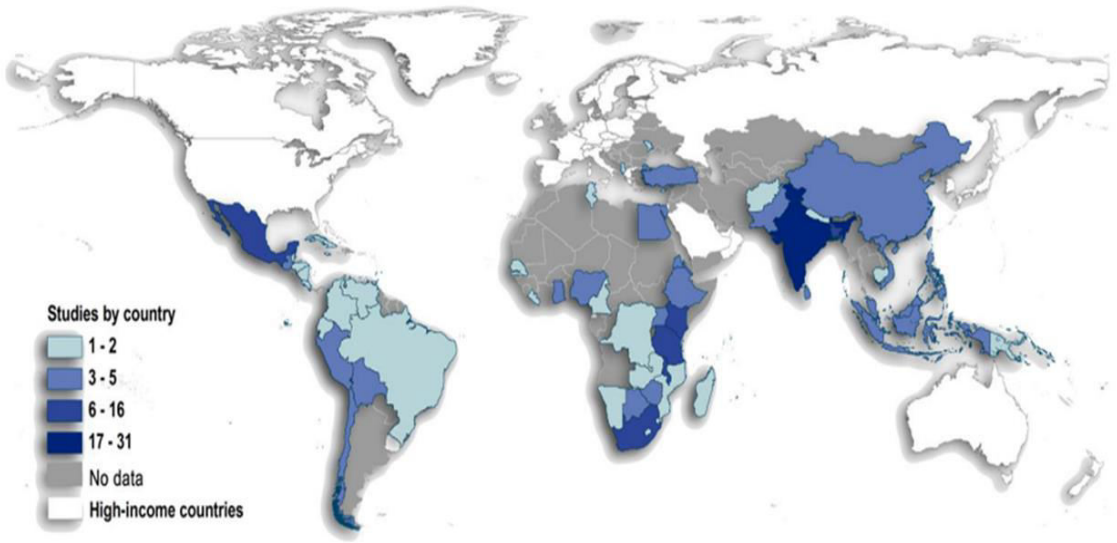
What parameters to consider for a BLGF?

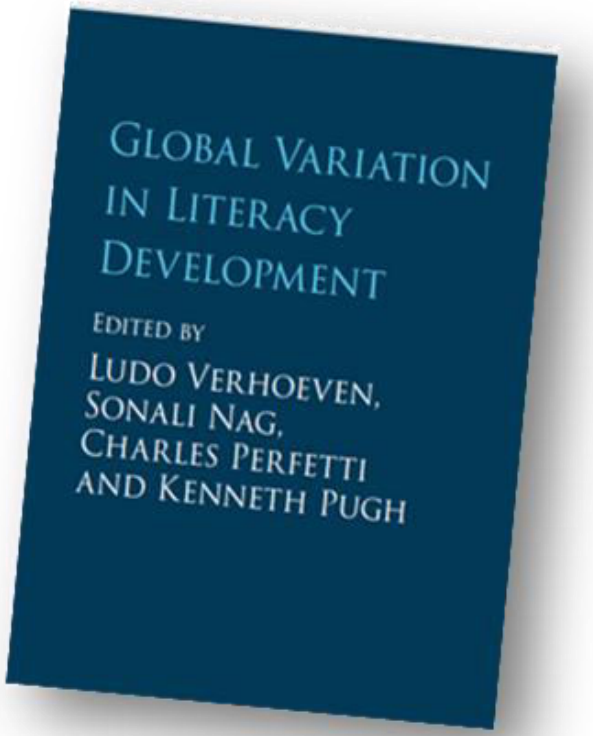


What could a BLGF look like in practice?

What have we learnt about precursor skills?

Expanding evidence base





Precursor skills are defined by the language and the script

Symbols

Sounds

Vocabulary

Sentences

Languages	Dhivehi	Tajik	Setswana	Kannada	Mandarin	Manchu
	[illegible]	[illegible]	tš	[illegible]	对	[illegible]
Simple Features	7	4	5	2	7	9
Connected Parts	3	3	2	1	4	5
Discontinuations	3	2	3	1	3	1
Pixel Count	3371	6353	7398	5738	9051	6967
Perimetric Complexity	8.22	6.77	13.94	9.77	17.49	10.47

TABLE 1a: Words per sentence in conjunctive or disjunctive orthographies.

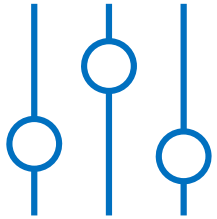
Language	Text
Northern Sotho	*Ka le lengwe la matšatši mosepedi yo a bego a na le tlala. O fihlile motseng wo mongwe a kgopela dijo. Go be go se na yo a bego a na le dijo*
Xitsonga	*Siku rin'wana mufambi loyi a ri na ndlala. U fikile emugangeni. A kombela swakudya, kambe a ku nga ri na loyi*
isiZulu	*Kunesihambi esasilambile kakhulu. Sahamba sicela ukudla emizini yabantu. Abantu abengenakho ukudla*
Gloss	There was a stranger who was very hungry. He came to a village and asked for food. Nobody had any food

TABLE 1b: Words per sentence in conjunctive or disjunctive orthographies.

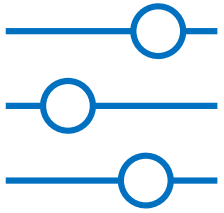
Language	Words in sentence 1	Words in sentence 2	Words in sentence 3	Total words	Words per sentence	Letters per word	Total single-syllable words: V/CV
Northern Sotho	13	8	12	33	11	3.2	21
Tsonga	8	3	10	21	7	4	9

Precursor skills depend on what needs processing

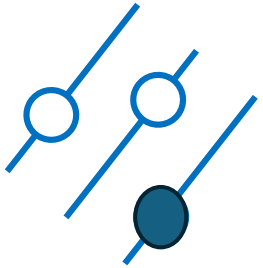
Pace of learning
- Transparency
- Word length



Signature patterns
- Eye movements
- Activations in the brain



Developmental trajectories
- Typical development
- Dyslexia & other disorders



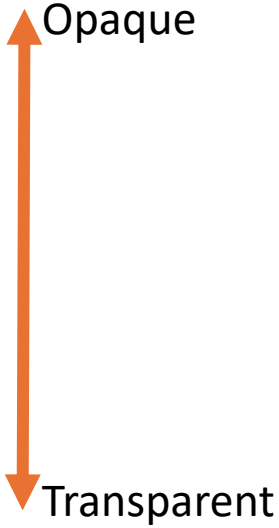
While globally the list of *labels* for precursor skills may appear to be the *same*
there are key differences in specific sub-skills.

The contours of learning are set by the script and language.

A first principle for developing a global benchmarking framework.

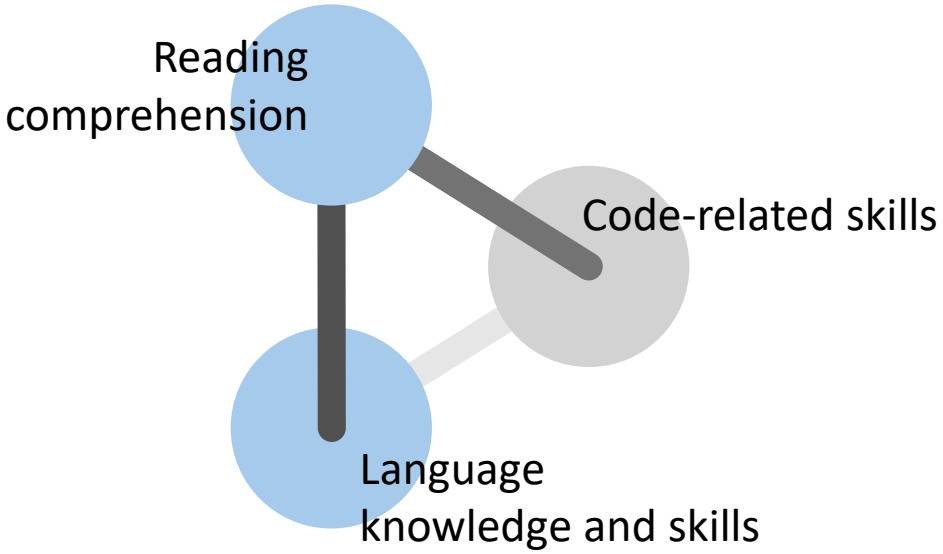
Implications for global benchmarking

Universals driving the framework

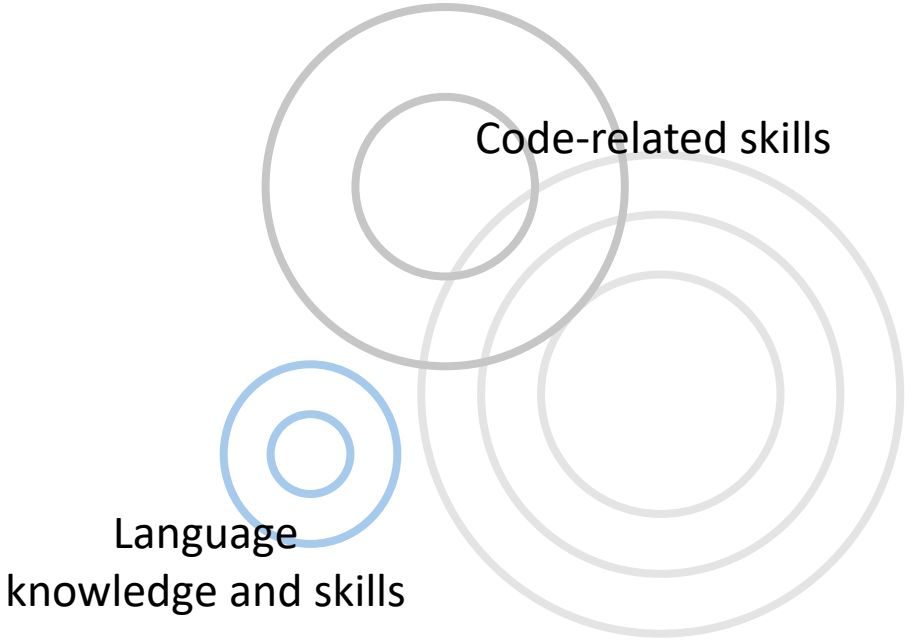


Diversity driving the framework

What else to consider?



What needs benchmarking.

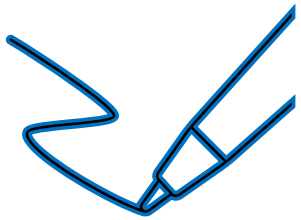


Where is the effort concentrated?

What parameters to consider for a Benchmarking by Language Groups Framework?

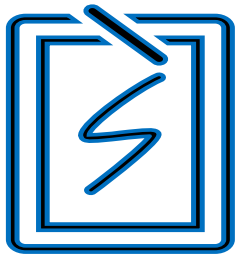
What can we do better?

Acknowledge that pathways to reading proficiency are many

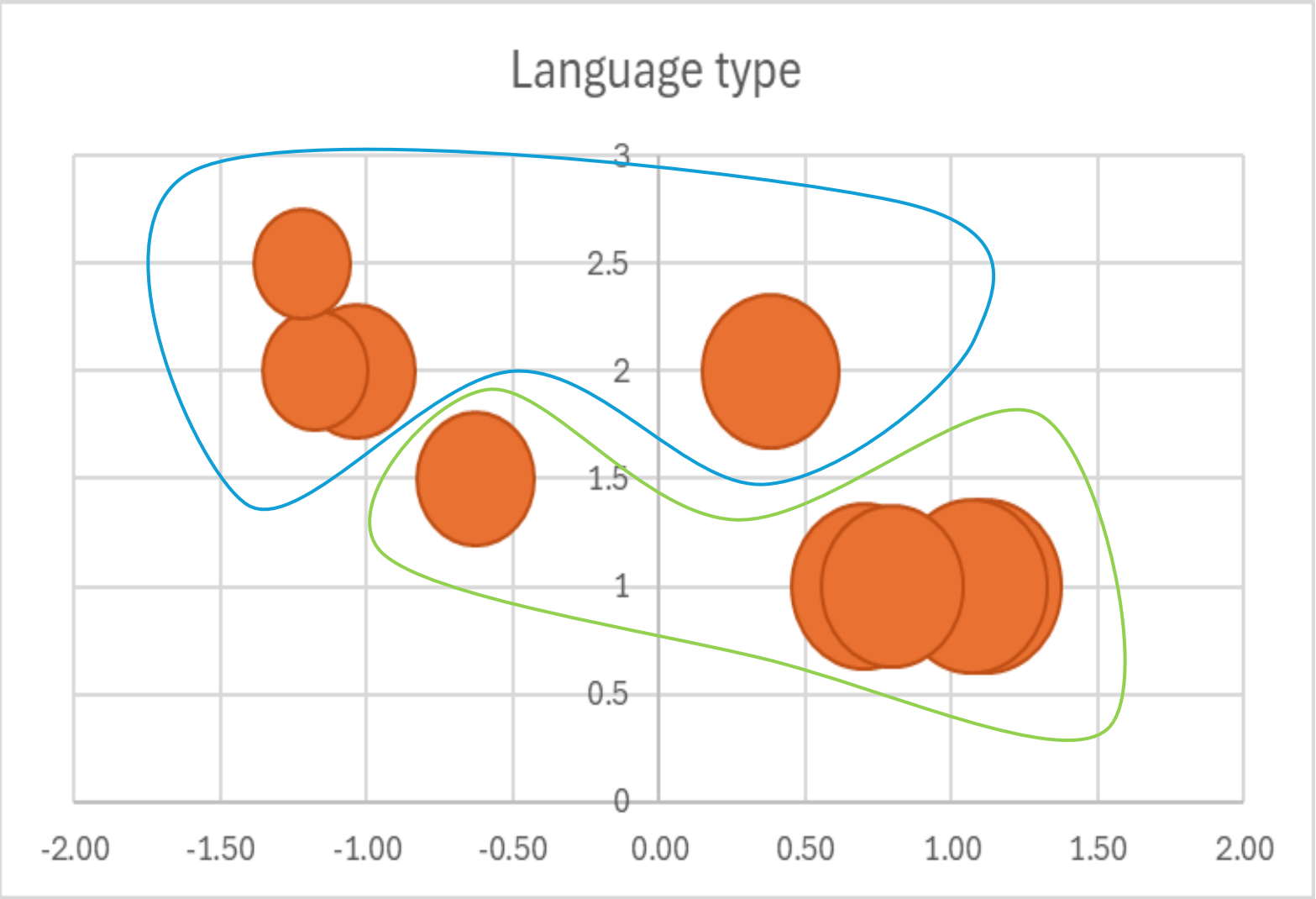


Draw on local evidence bases to meaningfully inform the global

Find consensus on language grouping



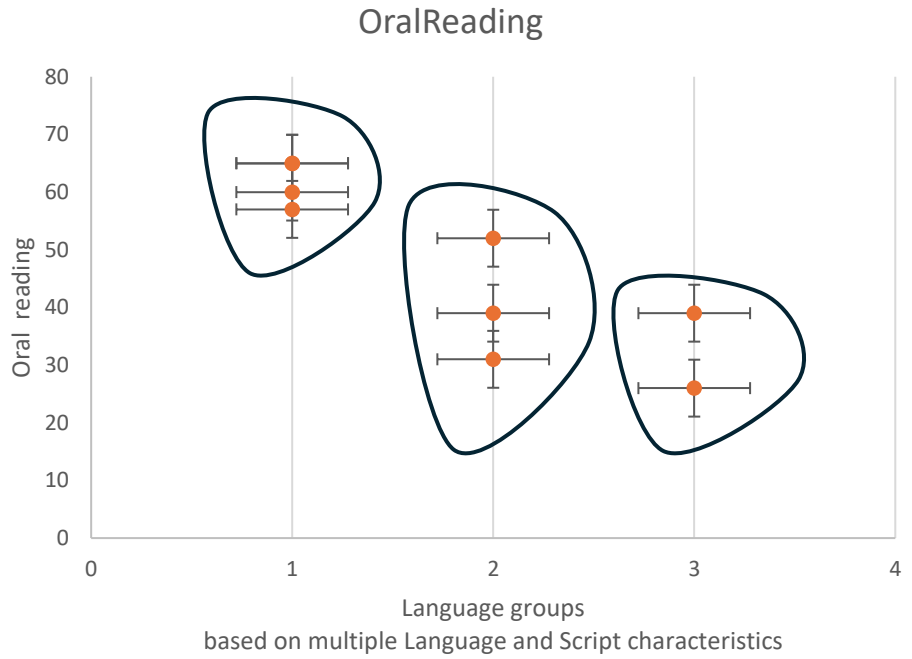
A possible grouping rule: Traditional language families



- Two language families
  - Group 1: Blue
  - Group 2: Green

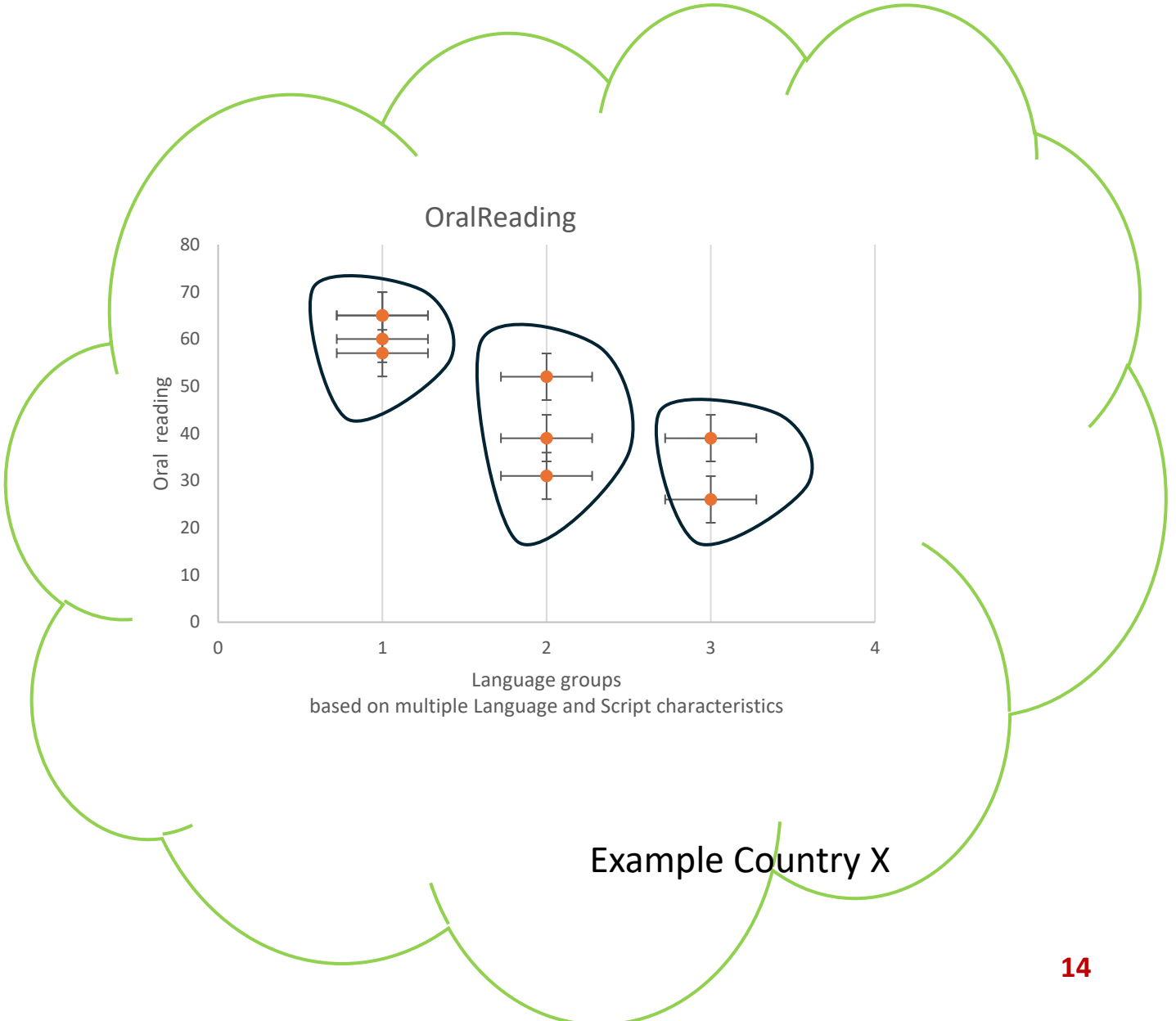
A possible grouping rule:
By language and script characteristics

- Three groups
  - 1: shorter words, more transparent
  - Group 2: longer words, less transparent
  - Group 3: more opaque (symbol-sound, visual confusability,etc)



What could a BLGF look like in practice?

A easy-to-refer look-up system for benchmarks of precursor skills for reading comprehension

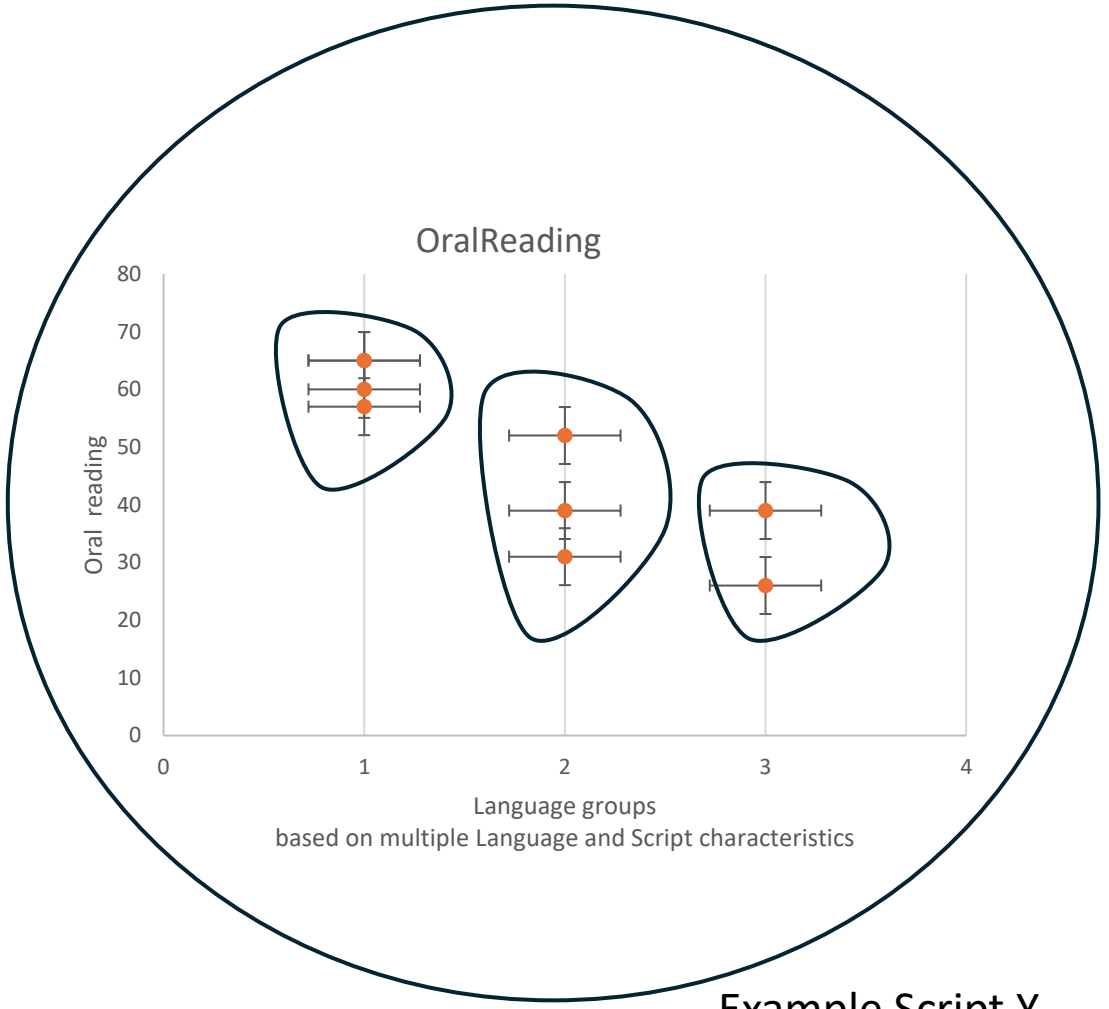


Example 1:

Country-level Benchmark Tables
for all Languages of Instruction offered in the country.

Example Country X

A easy-to-refer look-up system for benchmarks of precursor skills for reading comprehension



Example Script Y

Example 1:

Script-level Benchmark Tables that may be used by any country with a Language of Instruction using the script.

A possible look-up system:

By script

(Excellent advances in the field to inform the effort)

INTERNATIONAL LITERACY ASSOCIATION READING RESEARCH QUARTERLY

Diglossic and Orthographic Features of Reading Comprehension in Standard Arabic: The Primacy of the Spoken Language

Elinor Saiegh-Haddad
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Gonda Multidisciplinary Brain Research Centre, Bar-Ilan University, Ramat Gan, Israel

Rachel Schiff
Faculty of Education, Bar-Ilan University, Ramat Gan, Israel

ABSTRACT

This study investigates the role of diglossic and orthographic features in reading comprehension in Arabic. Specifically, it probes the independent contribution of language, metalinguistic, and decoding skills in the spoken language and in Standard Arabic to reading comprehension in the *abjad* writing system of Arabic. A sample of 112 Palestinian Arabic native-speaking third graders (mean age = 108.31 months) were tested on receptive vocabulary, phonological awareness, morphological awareness, and word decoding independently in the spoken language and in the standard. Listening comprehension and reading comprehension in the standard were also tested, along with cognitive factors. Regression analysis showed that morphological awareness, receptive vocabulary and decoding accuracy and fluency in the spoken language predicted unique variance in reading comprehension in the standard beyond cognitive ability, with morphological awareness emerging as the strongest predictor. Only decoding accuracy in the standard predicted unique variance

Scientific Studies of Reading

ISSN: (Print) (Online) Journal homepage: www.tandfonline.com/journals/hssr20

A Cross-Linguistic, Longitudinal Study of the Foundations of Decoding and Reading Comprehension Ability

Markéta Caravolas, Arne Lervåg, Marína Mikulajová, Sylvia Defior, Gabriela Seidlová-Málková & Charles Hulme

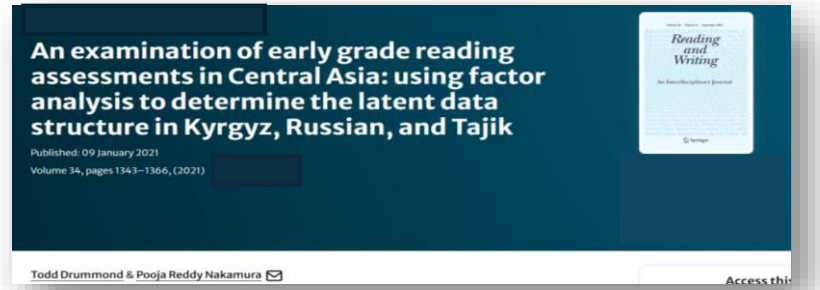
South African Journal of Childhood Education
ISSN: (Online) 2223-7682, (Print) 2223-7674
AOSIS
Page 1 of 14 Original Research

Investigating the comprehension iceberg: Developing empirical benchmarks for early-grade reading in agglutinating African languages

Authors:
Nicholas Spaull
Elizabeth Pretorius
Nompumelelo Mohohlwane

Background: Reading development in agglutinating African languages is a relatively under-researched area. While numerous studies highlight the low comprehension levels among learners reading in African languages in South Africa, little has been done to probe beneath this 'comprehension iceberg' in terms of decoding skills.

Aim: As a tentative step towards benchmarking in African languages, we analyse the sub-

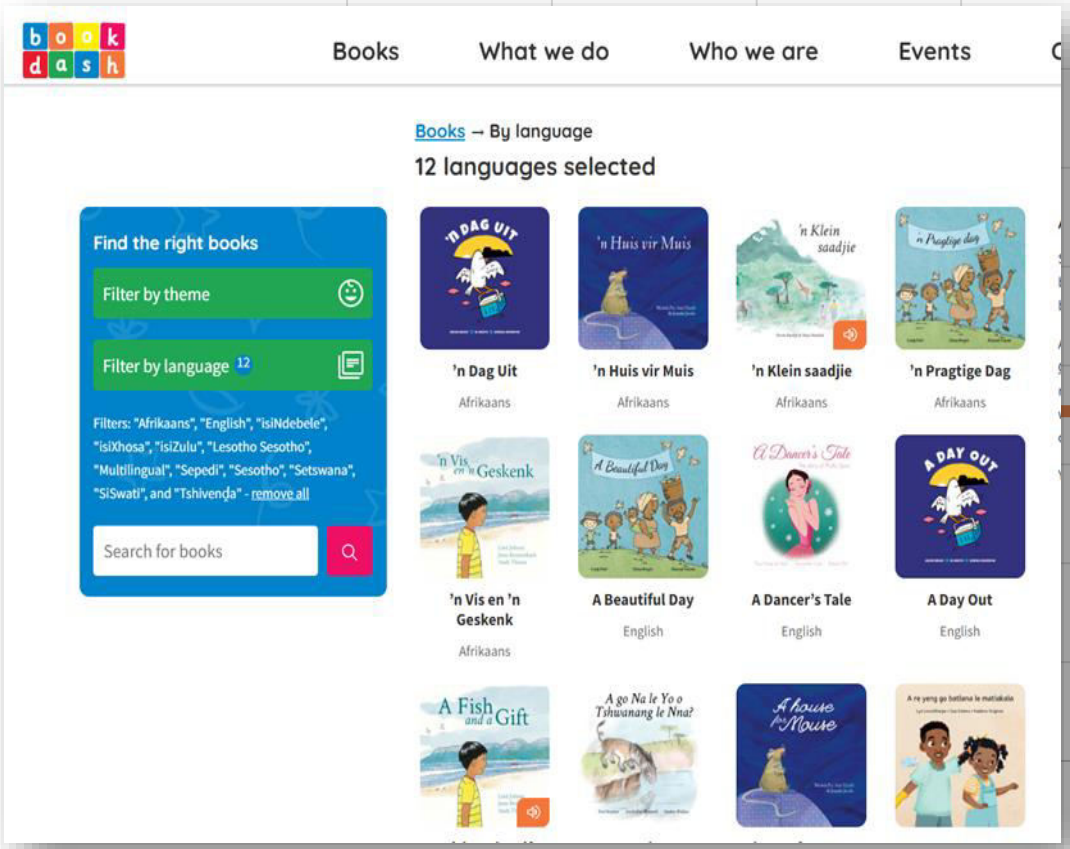


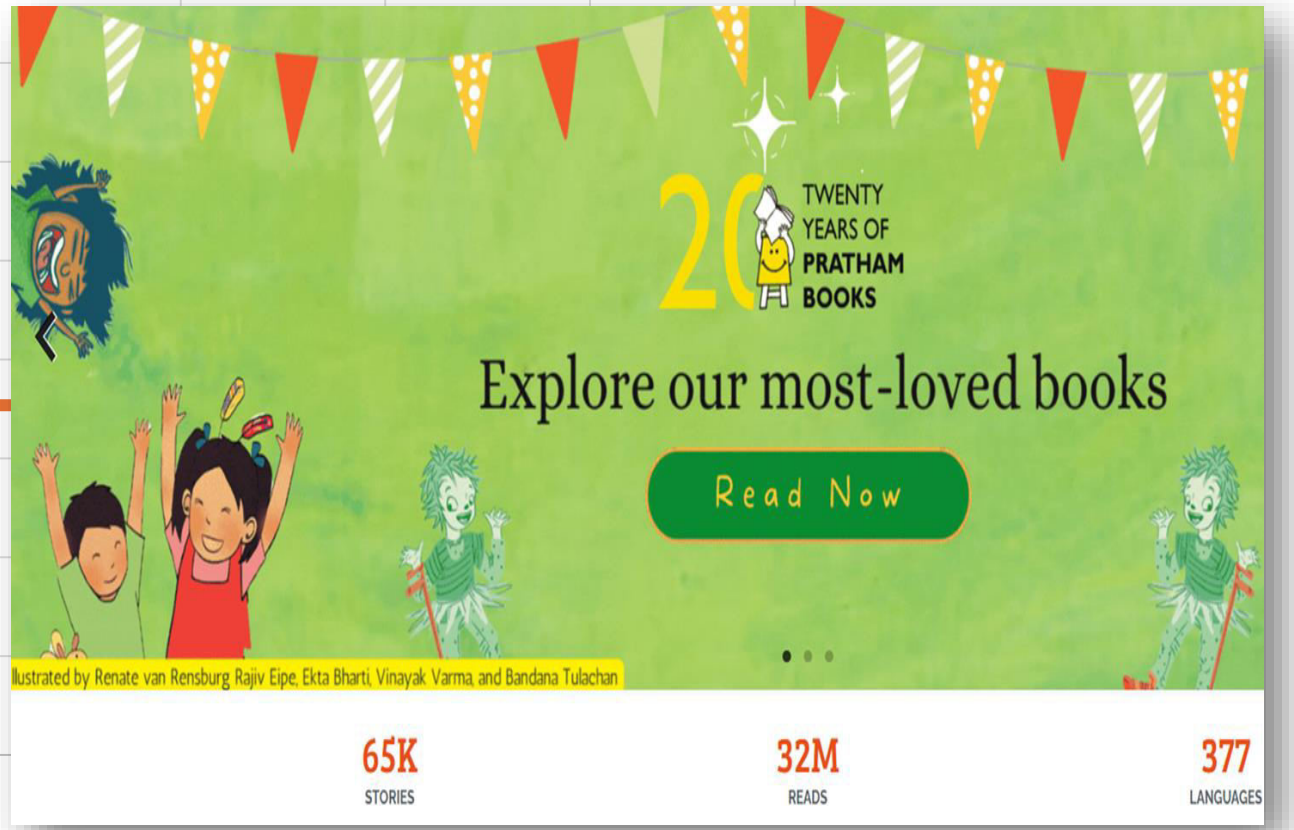
An examination of early grade reading assessments in Central Asia: using factor analysis to determine the latent data structure in Kyrgyz, Russian, and Tajik

Published: 09 January 2021
Volume 34, pages 1343–1366, (2021)

Todd Drummond & Pooja Reddy Nakamura

Orth Simple





0.00

Orth Opaque

Use children's books as corpus to characterize the language (corpus linguistic methods)

Use expert judgement to characterize the language (Delphi method for decision making)

Behavior Research Methods (2023) 55:2853–2884

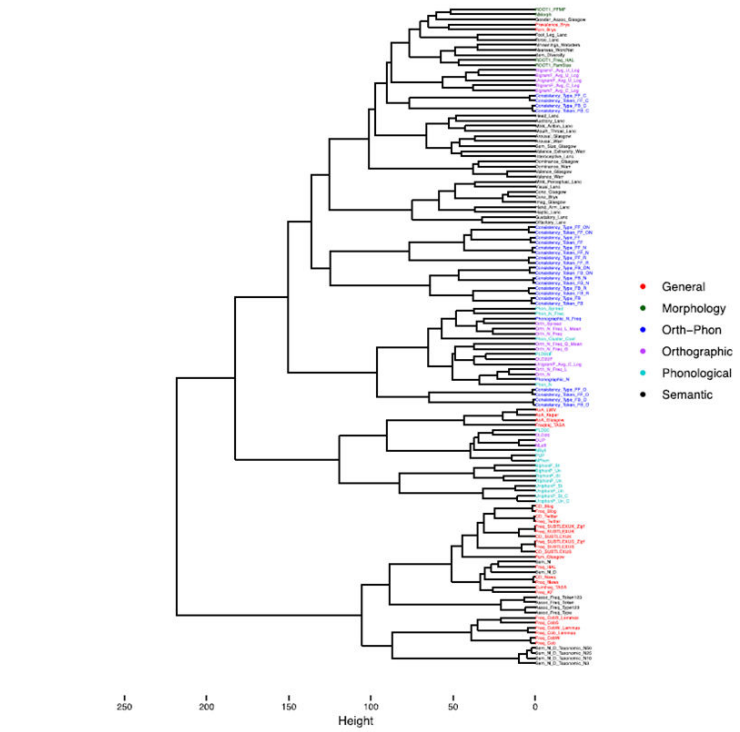
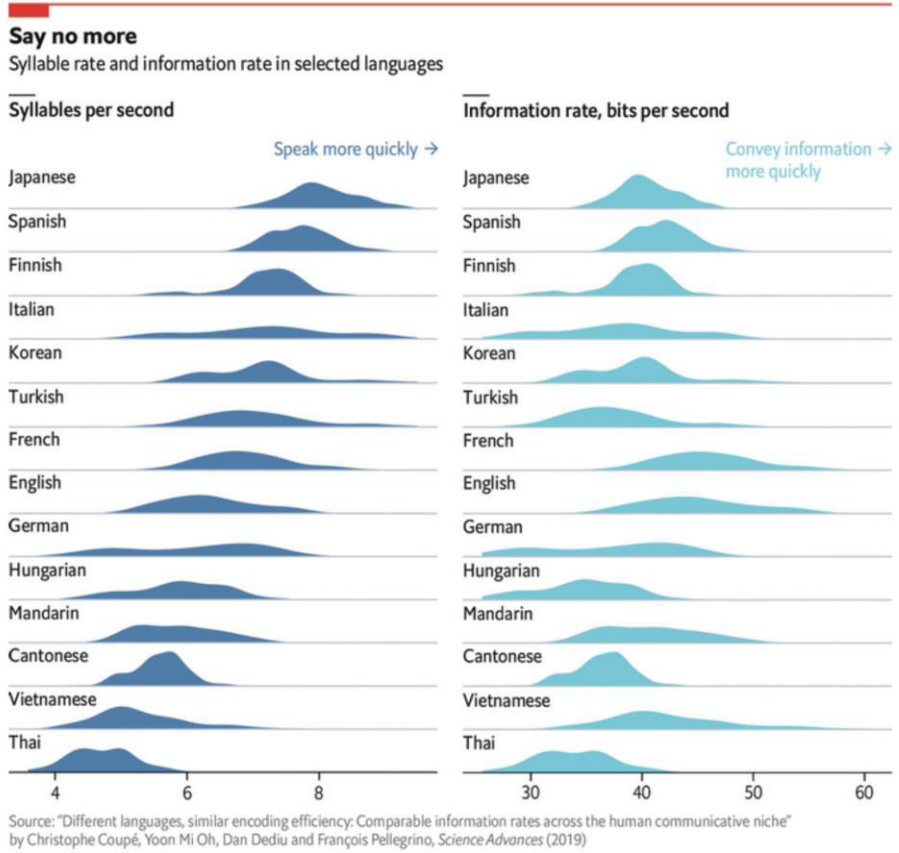


Fig. 4 Hierarchical clustering results using Ward's criterion for 130 variables over 1728 words



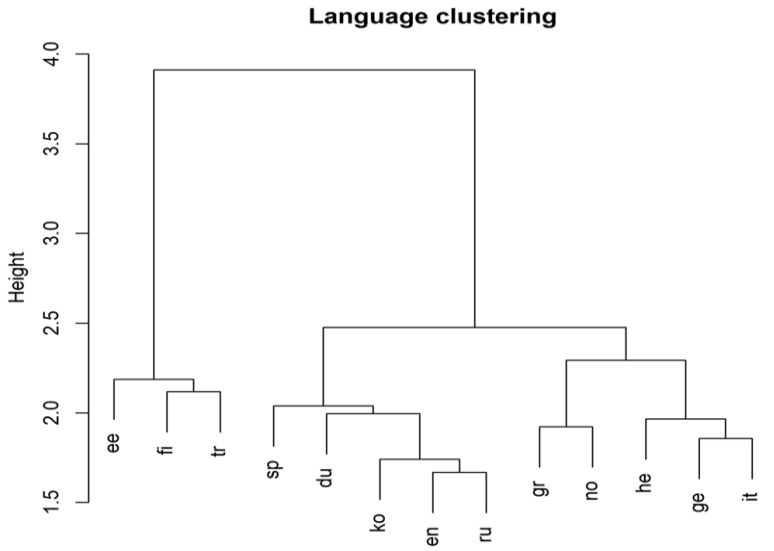
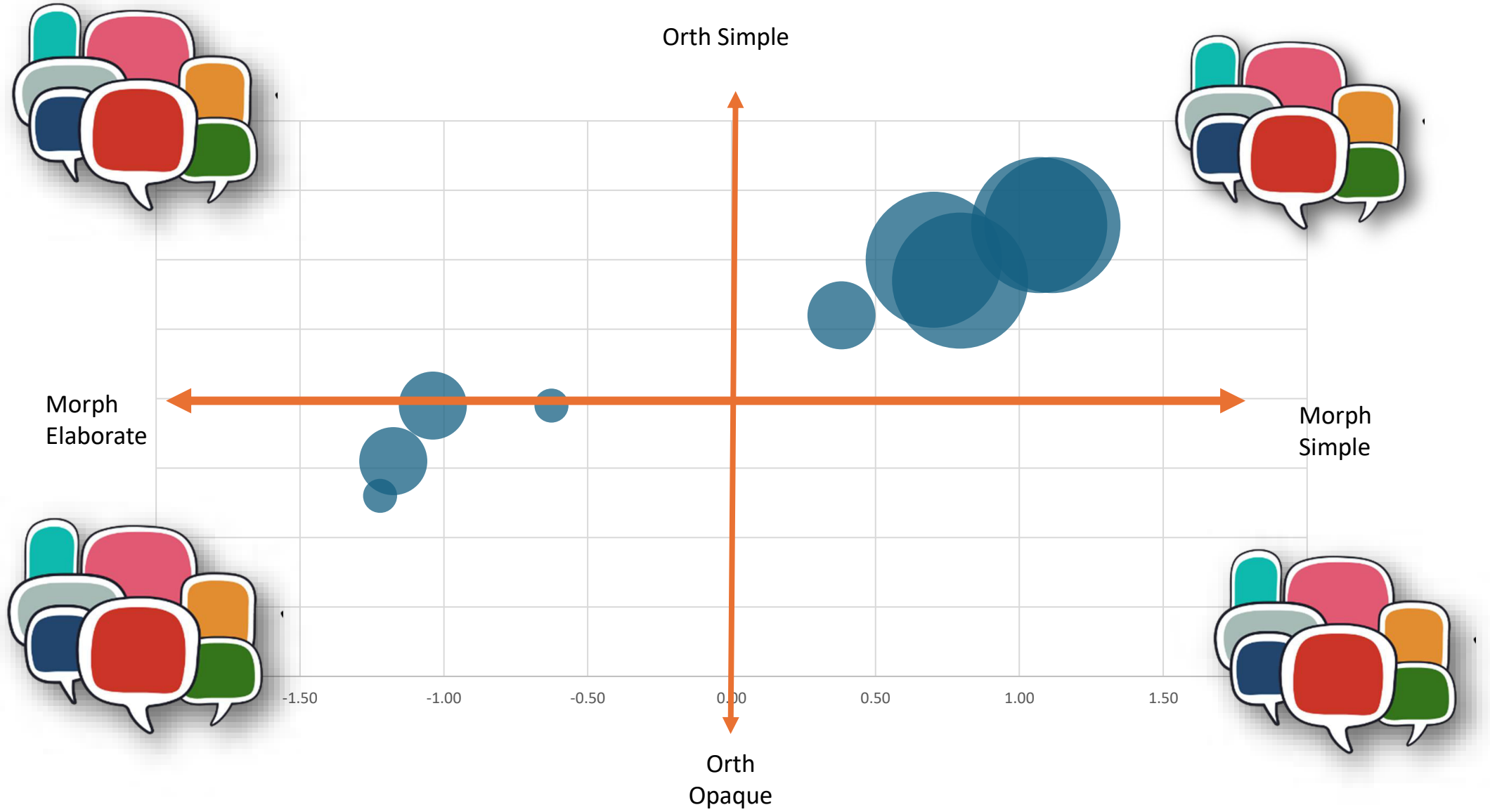


Fig. 5 Hierarchical clustering of languages based on eye movements

Several examples already available for grouping adult reading and language



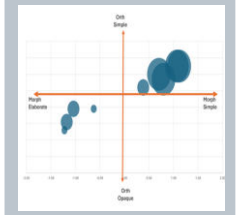
Expert judgement is an essential core to the process

- To vet corpus-linked clustering
- For languages with limited child publishing

In this presentation: To recap

We find language and script level differences in precursor skills to reading comprehension.

A multi-dimensional approach is proposed for a global BLGF.



It is possible to present data by country, and by language and script groups.

- Acknowledgements
  - The Talktogether team at the University of Oxford and The Promise Foundation with partners of the TMB series and the Assessing Speaking and Listening series.
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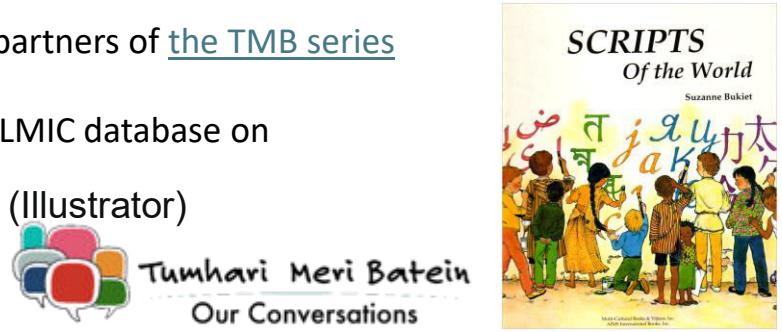
  - Suzanne Bukiet (Author), Hélène Muller (Illustrator), Christian Lai Cong Phuoc (Illustrator)



Tumhari Meri Batein
Our Conversations

- Slide 5 (Cross-script and cross-language comparison tables)
  - Li. B. & Nag, S. (in press). Learning to Read the Manchu Writing System. In H. Winskell & H. Paye, Springer Handbook on Nonlinear Scripts.
  - Spaull, N., et al. (2020). Investigating the comprehension iceberg: Developing empirical benchmarks for early-grade reading in agglutinating African languages', *South African Journal of Childhood Education* 10(1), a773.
- Slide 17 (example of corpus-based characterizing of a language and script)
  - Nag, S., John, S. & Agrawal, A. NSP-SCD: A corpus construction protocol for child-directed print in understudied languages. Behav Res 56, 2751–2764 (2024). https://doi.org/10.3758/s13428-024-02339-x
- Slide 18 (examples of corpus analysis to understand how language group on different parameters)
  - Coupé et al. , (2019). Different languages, similar encoding efficiency: Comparable information rates across the human communicative niche. Sci. Adv.5,eaaw2594 https://doi.org/10.1126/sciadv.aaw2594
  - Gao, C., Shinkareva, S.V. & Desai, R.H. SCOPE: The South Carolina psycholinguistic metabase. Behav Res 55, 2853–2884 (2023). https://doi.org/10.3758/s13428-022-01934-0
  - Siegelman, N., Schroeder, S., Acartürk, C. et al. Expanding horizons of cross-linguistic research on reading: The Multilingual Eye-movement Corpus (MECO). Behav Res 54, 2843–2863 (2022). https://doi.org/10.3758/s13428-021-01772-6

•Thank you!

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