

**The contribution of full tone
marking to fluency and
comprehension
in YORUBA and IFE**

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Orthography development in Africa

- 2000+ languages
- Marginalized, minority languages
- Overwhelmingly oral cultures
- Roman script orthography development since mid-19th century
- Hundreds of orthographies developed since then
- Tone languages

Tone orthography

- Should tone be written?
- If so how?
 - Superscript diacritics
 - Word initial and final punctuation (Côte d'Ivoire)
- And how much?
 - Zero, partial, full
 - 'Full' = one fewer accents than the number of level tones in the language

“When writing tone reduces fluency” (Bird 1999)

- Quantitative experiment
- Dschang, Grassfields, Cameroon
- Full vs zero tone marking
- Finding: Full tone marking inhibits reading fluency
- Influential but...
- ... only one language
- ... only 11 participants

Aim

- Multiply Bird's 1999 methodology in as many languages as possible
- 10 Niger-Congo languages which all mark tone fully (Elip, Mmala, Yangben, Yoruba, Idaasha, Ife, Nateni, Mbelime, Eastern Dan)
- 5 countries (Cameroon, Nigeria, Benin, Togo, Côte d'Ivoire)
- 4 language families (Bantu A62, Ede, Gur, Mande)
- 308 adult participants who were literate in their own language

Preparation

- Translated 4 narrative texts into 10 focal languages
- Typed in two versions: ZERO TONE / FULL TONE
- Administrator training

Tasks and performance variables

- **L1 ORAL READING:** orally read four unprepared texts. 2 ZERO TONE, 2 FULL TONE. Varied order of presentation.
 - SPEED
 - GENERAL ACCURACY
 - TONE ACCURACY
- **COMPREHENSION:** answer three questions about each text
 - COMPREHENSION
- **L1 WRITING:** add accents to the ZERO TONE texts (20 minutes)
 - WRITING ACCURACY

Social variables

- FOCAL LANGUAGE
- GENDER
- AGE
- PARENTAGE
- DIASPORA
- EYESIGHT
- FAMILIARITY

Literacy variables

- EDUCATION
- L1 EXPERIENCE
- L1 READING FREQUENCY
- L1 WRITING FREQUENCY
- L2 SPEED
- L2 ACCURACY
- L2 COMPREHENSION

IFE and YORUBA: Linguistic similarities

- Two extremes of a dialect continuum: Nigeria - Benin - Togo
- High cognate levels (69%)
- Isolating morphology
- Pervasive vowel elision: /CV VCV/ → [CVCV]
- Restricted vowel harmony
- Three level tones (H, M, L)
- Object pronoun tonal polarity
- Heavy lexical functional load of tone

IFE and YORUBA: Orthographic similarities

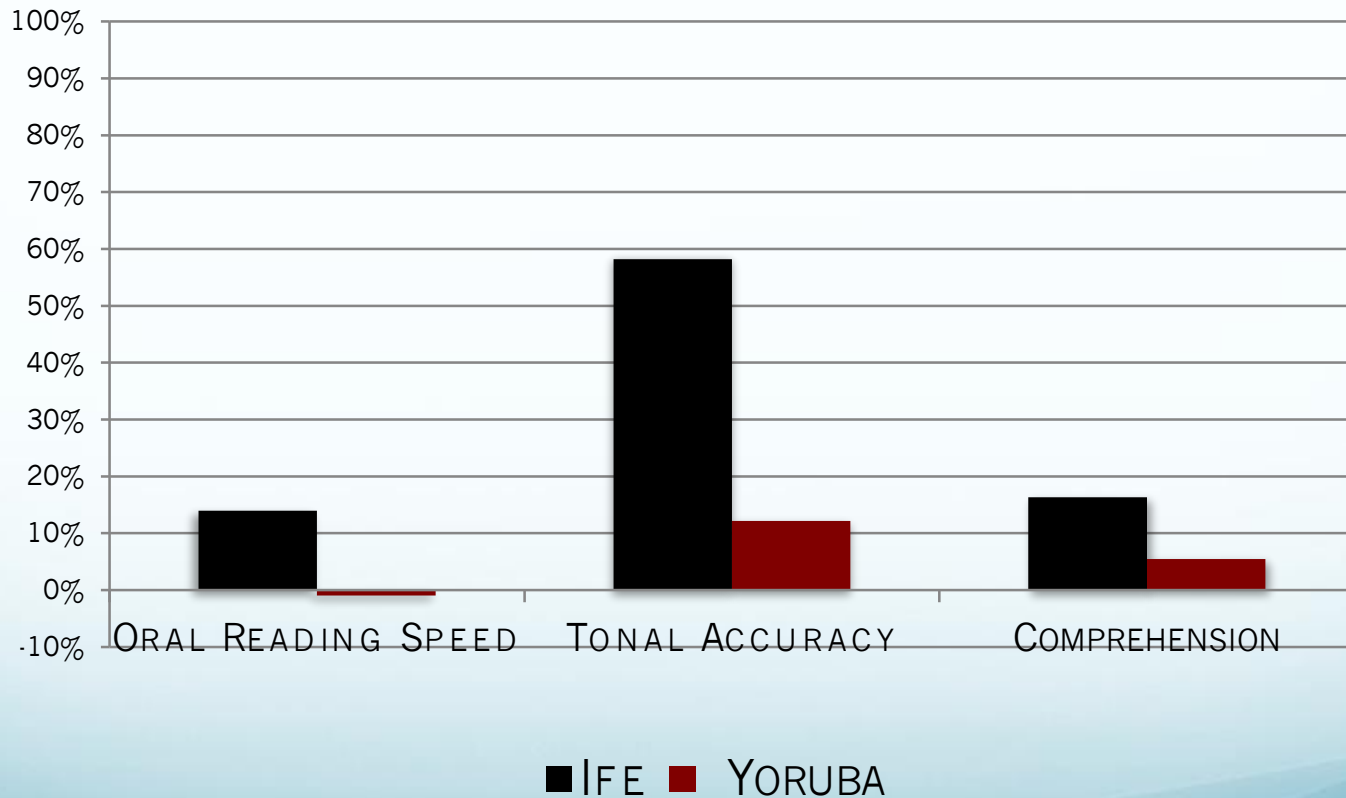
- Short average word length
 - IFE 1.68
 - YORUBA 1.61
- High tone diacritic density
 - IFE 71.67%
 - YORUBA 70.70%
- Contested word break issues

IFE and YORUBA: Orthographic dissimilarities

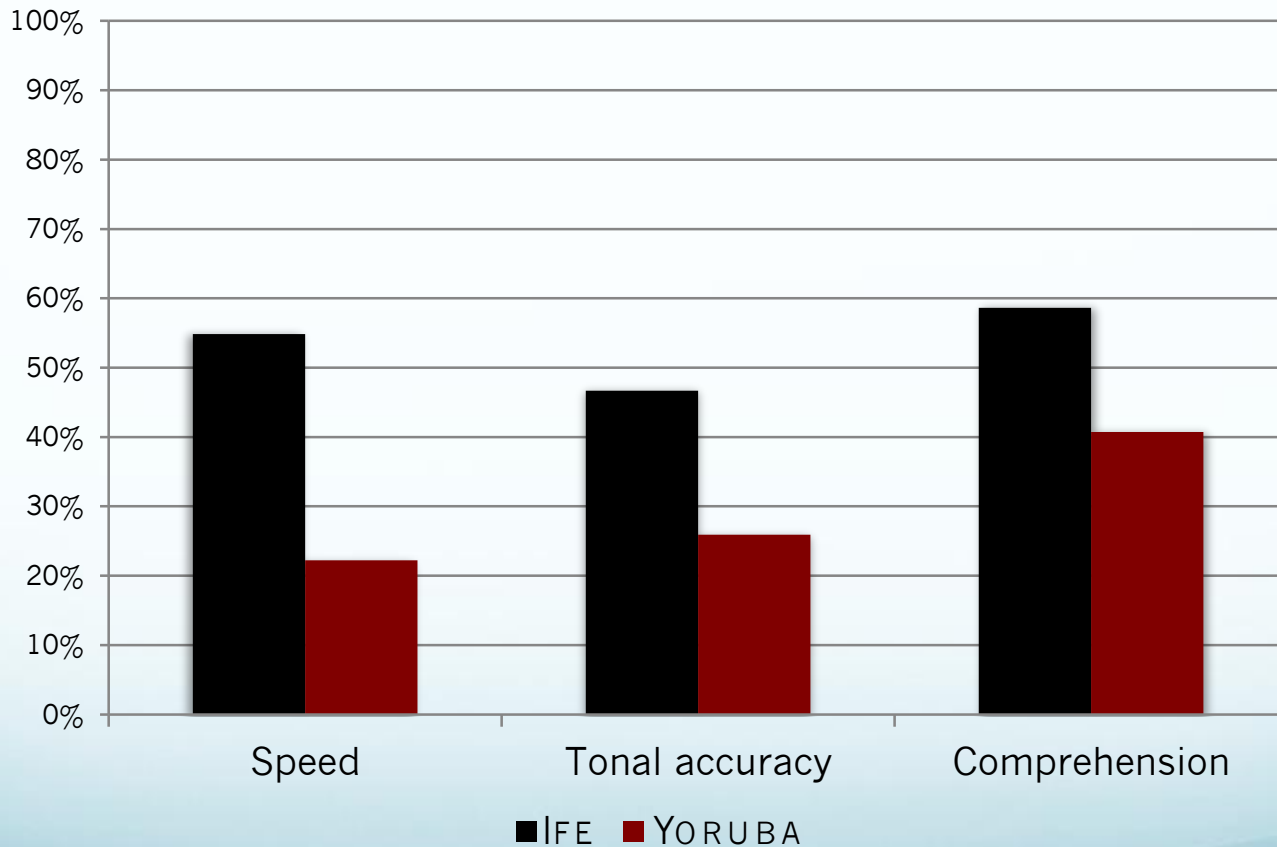
- -ATR vowels /ɛ, ɔ/
 - IFE - special characters: <ɛ, ɔ>
 - YORUBA - subdots: <ẹ, ọ>

- Nasal vowels /ĩ, ũ, ẽ, ɔ̃/
 - IFE - superscript tilde /ĩ, ã, ẽ, ã/
 - YORUBA - following nasal: <in, un, ẹn, ọn>

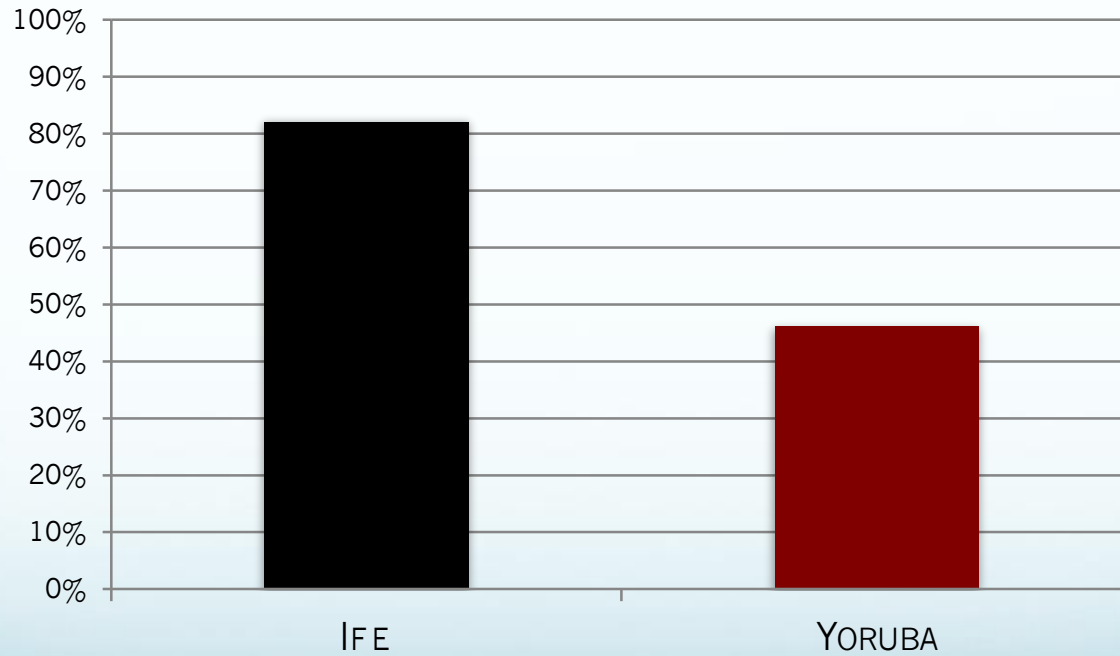
Mean improvement on oral reading of FULL TONE texts



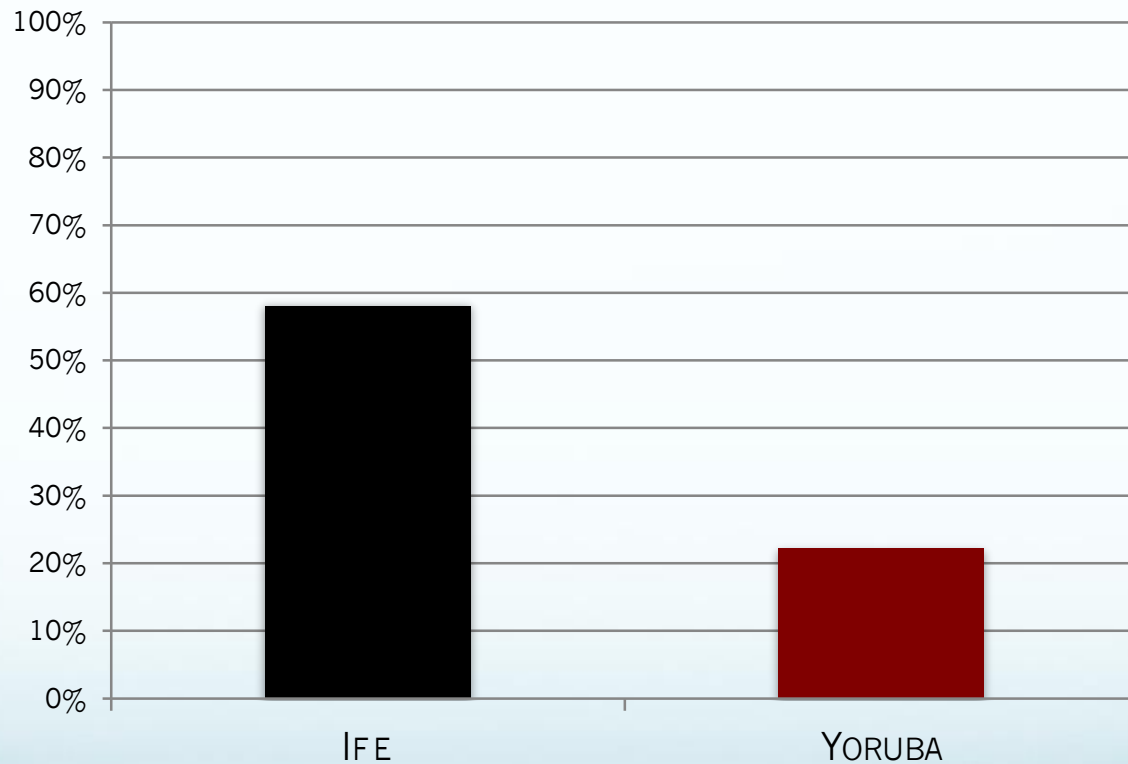
Percentage of participants who improved on FULL TONE texts



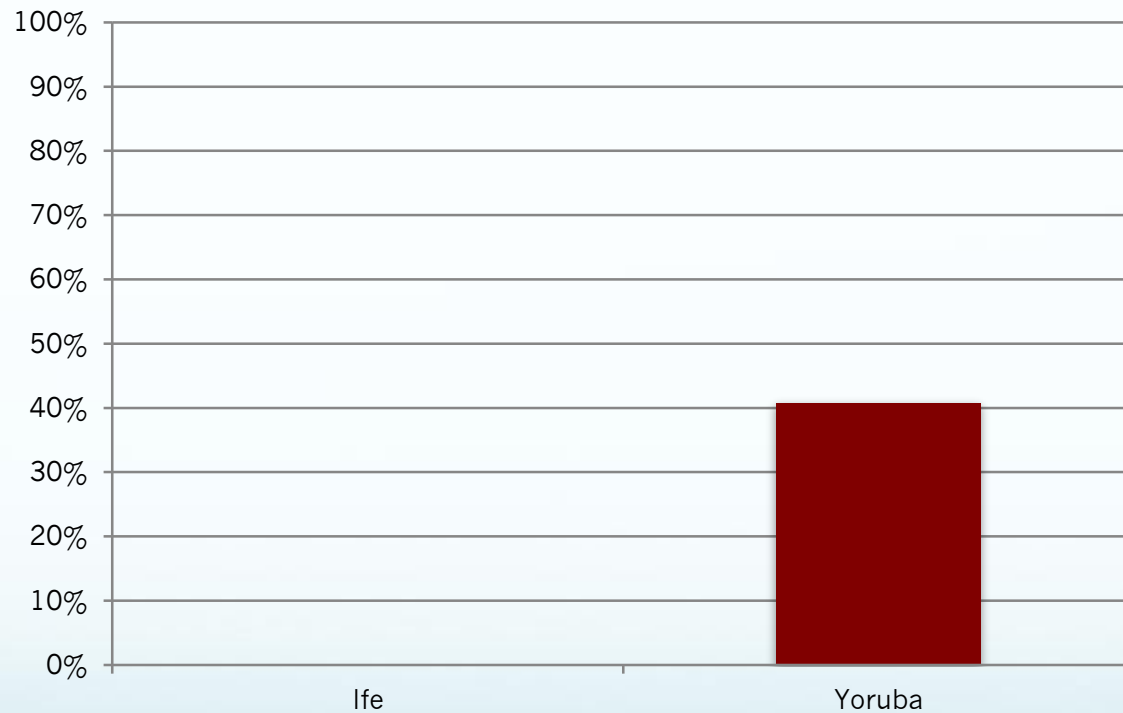
Mean success rates adding accents to unmarked texts



Proportion who scored over 90% adding accents to unmarked texts



Adding accents to unmarked texts: No attempt



Explaining the gap between IFE and YORUBA performance

- Linguistic profile? *X*
- Orthographic profile? *X*
- Ethno-literacy context *✓*
- Social profile of the participants? *✓*

Ethno-literacy contexts of YORUBA and IFE populations

- Language vitality
- Expanded Graded Intergenerational Disruption Scale (EGIDS; Lewis & Simons 2010)
- **YORUBA:** Level 2 “provincial ... developed to the point that it is used and sustained by institutions beyond the home and community.”
- **IFE:** Level 5 “developing ... in vigorous use, with literature in a standardized form being used by some though this is not yet widespread or sustainable.”

Ethno-literacy context of YORUBA and IFE populations

	IFE	YORUBA
Population	170,000	30 million
Status	None	Official language
Taught in schools	No	Yes
Orthography development	1982	1852
Vernacular literature	Modest	Extensive
Pedagogical emphasis on marking tone	Yes	No

Social profile of YORUBA and IFE samples

	IFE	YORUBA
EDUCATION (years)	6	16
MONOLINGUAL (% of sample)	55%	0%
EXPERIENCE (years)	13	23
L2 SPEED (TBU/s p/m)	137	184
L2 COMPREHENSION (out of 3)	2.27	1.66

Summary

- **IFE:** in a small language with no institutional support, low levels of formal education, many beginners, limited literature, readers benefit from full tone marking.
- **YORUBA:** in a large language with institutional support, high levels of formal education, experienced readers, and extensive literature, readers do not need full tone marking (but might benefit from partial marking).

ÀÀFIN ALÁKÉ TI ILÈ ÈGBÁ



What can we learn from Hebrew?

- Hebrew vowels play a morphological role and are under-represented orthographically after grade 3.
- In African languages, should full tone marking (in languages where it is needed at all) be reserved for beginners and L2 learners?
- Should one aims of the literacy program be to wean learners off tone marks?
- Should the ability to read fluently without full tone marking be considered a badge of honour?

Thank you!

**È kútsé !
(IFE)**

**Ẹ ẹ̀ se!
(YORUBA)**