

Evaluating Children's Language Abilities in Côte d'Ivoire: Introducing the Ivorian Children's Language Assessment Toolkit



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INTRODUCTION

Local Language Education: Children in rural communities in Ivory Coast begin learning French at school (Brou-Diallo, 2011), however French is often not their first language or the language of their community.

The use of the local language as a language of instruction (LoI) in school has been found to have advantages for children's educational outcomes, especially in reading^{1,2}. More research is needed to better understand how children learn in both the local language and French. However, there is a lack of research tools available to evaluate children's linguistic abilities in their first language.

Specific Aim: To develop a toolkit adapted to local cultural and linguistic contexts that will increase our understanding of how local language instruction influences learning outcomes.

We present *The Ivorian Children's Language Assessment Toolkit*, a new oral language assessment that can be used by educators and researchers to evaluate primary-school children's language abilities in four languages found in Ivory Coast: Abidji, Attié (Akie), Baoulé, and Bété.



METHODS

Participants

Children (n=830; ages = 4-14y M=9.4, SD=2.2) from 8 monolingual (n=492) and 6 bilingual schools (n=338) from 4 languages: Abidji (n= 193), Attié(n= 225), Baoulé (n=207), and Bété(n=205)

1st grade (CP1) (n=206) 3rd grade (CE1) (n=326) 5th grade (CM1) (n=298)

Demographic and Socioeconomic Measures:

Socioeconomic status was evaluated by how many items on a 15 item list the child's family owns (owning a book, refrigerator, radio, television, car, motorcycle, having access to water, electricity)..



Toolkit Development

A research team consisting of linguists and native speakers of Attié, Abidji, Baoulé, and Bété worked together to prepare this toolkit. These tasks were designed to be culturally appropriate and use common words and expressions from each language.

Linguistic Description: Abidji, Attie, Baoule, Bete

Language / (group)	Abidji (Ogbrou from Sikensi)	Attie (bodin)	Baoulé (Aïtou et Nanafoué)	Bété-occidentale : "dakɔgbu"
Historical origin	Kwa language (Niger-Congo)	Akan origin (population of West Africa who have historically migrated from Ghana)		Krou language (Liberia-Guinée)
Estimated number of speakers	50,000	621,000	3,540,000	410,000
Phonemic Inventory	9 vowels (all can nasalize) 32 consonants	15 vowels (6 nasal) 22 consonants	12 Vowels (7 Oral and 5 Nasal) 18 Consonants	13 Vowels 23 Consonants
Syllabic Structure	V, CV, CCV	V, CV, CCV	V, CV, CCV, CCCV	CV, CVV, V (V), CCV
Tonal system	Two punctual tones: high and low Two modulated tones: descending and amount	Spot tones: very high, high, medium and low Modulated tones: descendants and uprights	Spot tones: high, medium and low Modulated tones: descendants and amounts	Four point tones: high, medium-high, medium-low

Tasks

Phonemic Awareness Tasks

Initial Phoneme Identification Baoulé Example - Children identified initial phoneme³

Baoulé Prompt	IPA	Correct Response	English Translation
swa	/swá/	/s/	"house"

Initial Phoneme Elision Attié Example - Children removed initial phoneme

Baoulé Prompt	IPA	Correct Response	English Translation
waka	/wáká/	/áká/	"wood"

Final Phoneme Elision Attié Example - Children removed final phoneme

Baoulé Prompt	IPA	Correct Response	English Translation
kpa.nu.n	/kpáú/	/kpá/	"bread"

Phoneme Segmentation Attié Example - Children segmented phonemes⁴

Baoulé Prompt	IPA	Correct Response	English Translation
bla	/blá/	/b/ /l/ /a/	"woman"

Vocabulary Tasks

Synonym Generation Attié Example - Children generated a synonym of the prompt

Baoulé Prompt	English Translation	Correct Response	English Translation
keklefue	"daring"	yakpafue	"courageous"

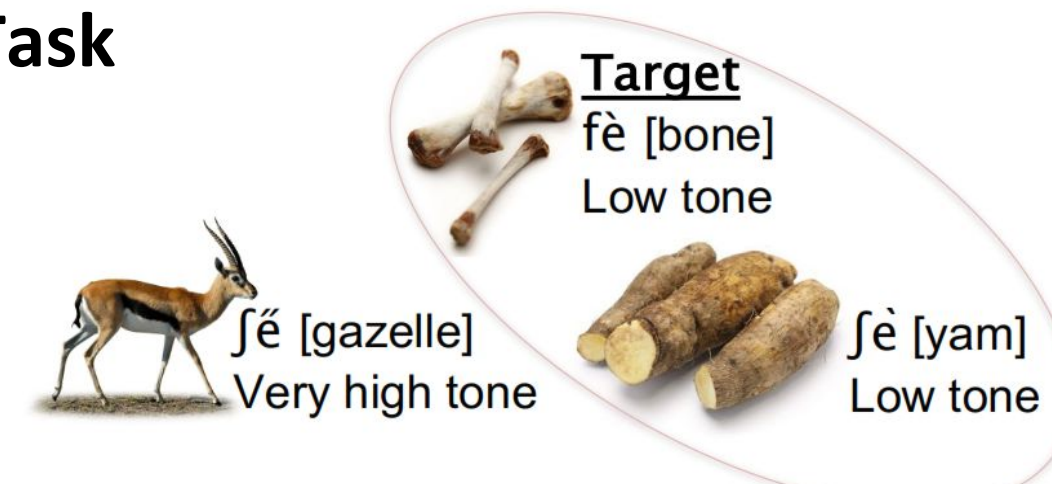
Antonym Generation Attié Example - Children generated an antonym of the prompt

Baoulé Prompt	English Translation	Correct Response	English Translation
sakpa	"true"	ato	"false"

Tonemic Awareness Task

Attie Example.

Children were asked to match two out of three words based on tone



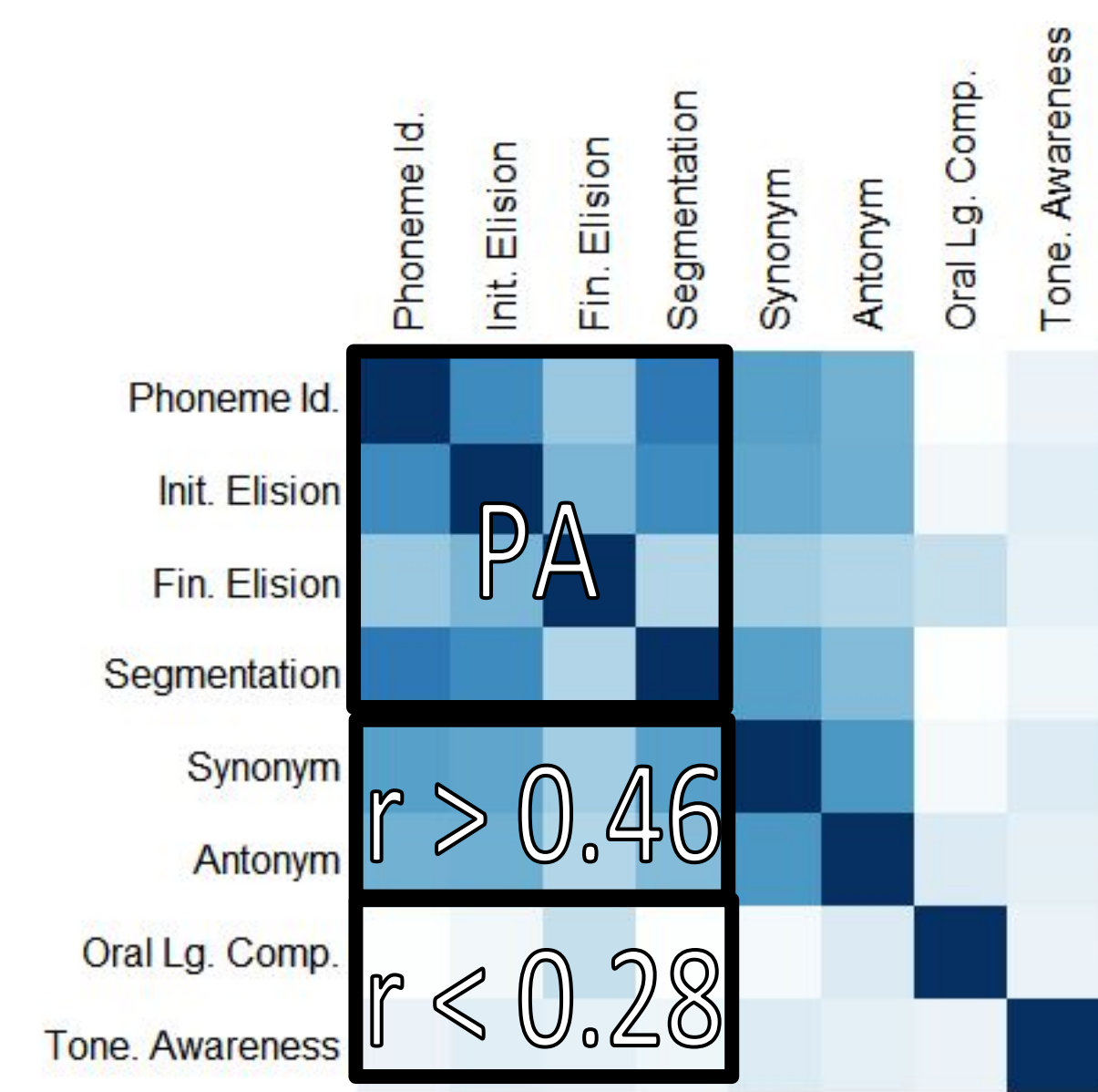
Oral Comprehension Task

The evaluator reads a text on a familiar and culturally relevant subject to the child. The child is asked to answer comprehension questions.

RESULTS

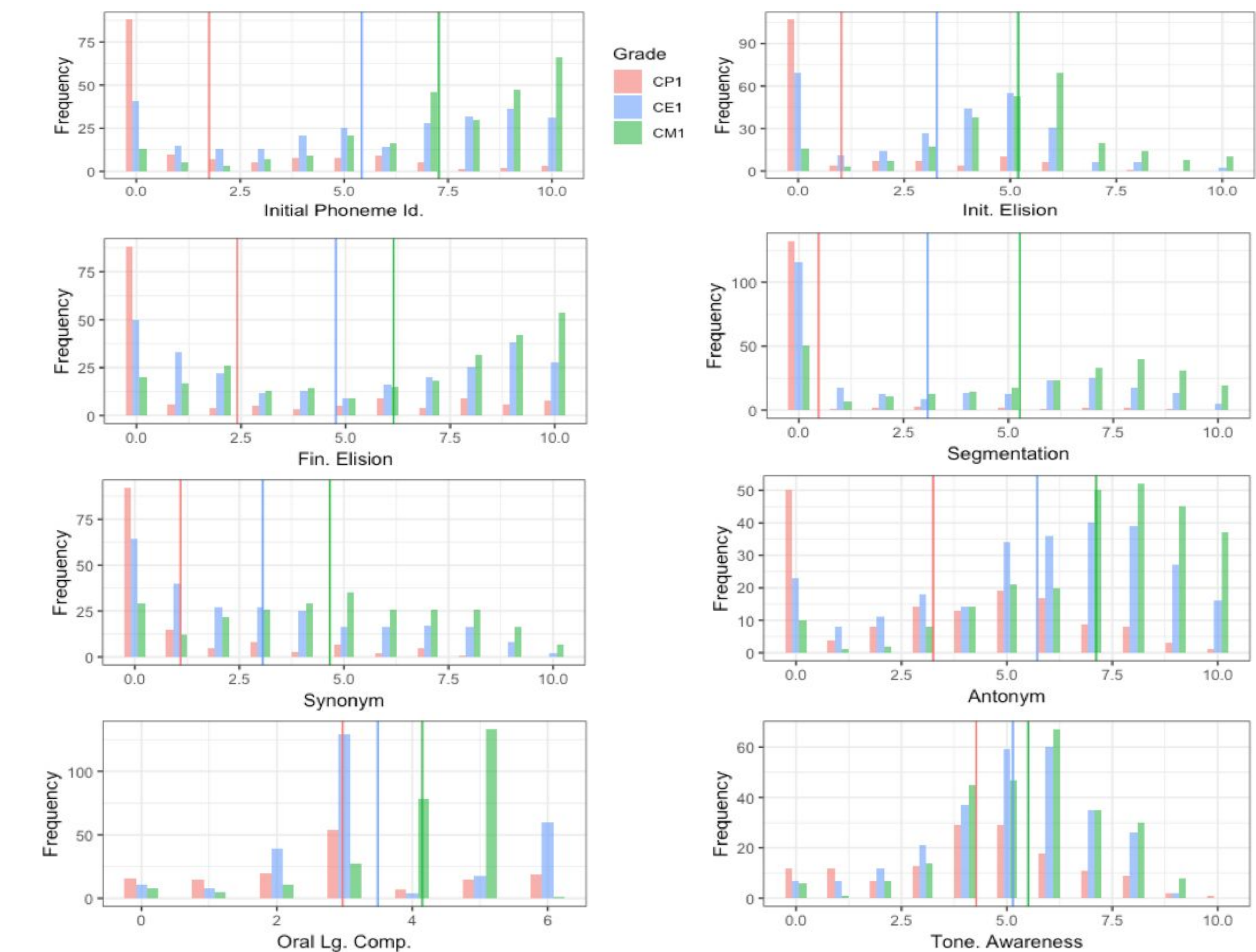
Task Scores & Correlation

	CP1	CE1	CM1
Age (SD)	6.63 (1.29)	9.19 (1.35)	11.29 (1.29)
Phoneme Identification	1.75 (2.7)	5.42 (3.44)	7.28 (2.75)
Initial Phoneme Elision	1.02 (1.92)	3.27 (2.42)	5.19 (2.23)
Final Phoneme Elision	2.41 (3.48)	4.77 (3.71)	6.15 (3.47)
Phoneme Segmentation	0.47 (1.65)	3.08 (3.35)	5.27 (3.41)
Synonym Generation	1.09 (2)	3.06 (2.83)	4.67 (2.82)
Antonym Generation	3.25 (2.89)	5.72 (2.83)	7.12 (2.4)
Oral Comprehension	2.97 (1.78)	3.49 (1.64)	4.15 (1.2)
Tonemic Awareness	4.27 (2.31)	5.14 (1.92)	5.5 (1.83)
Sample size	206	326	298



PA was strongly correlated with vocabulary, whereas TA and oral comprehension were only modestly correlated with other tasks.

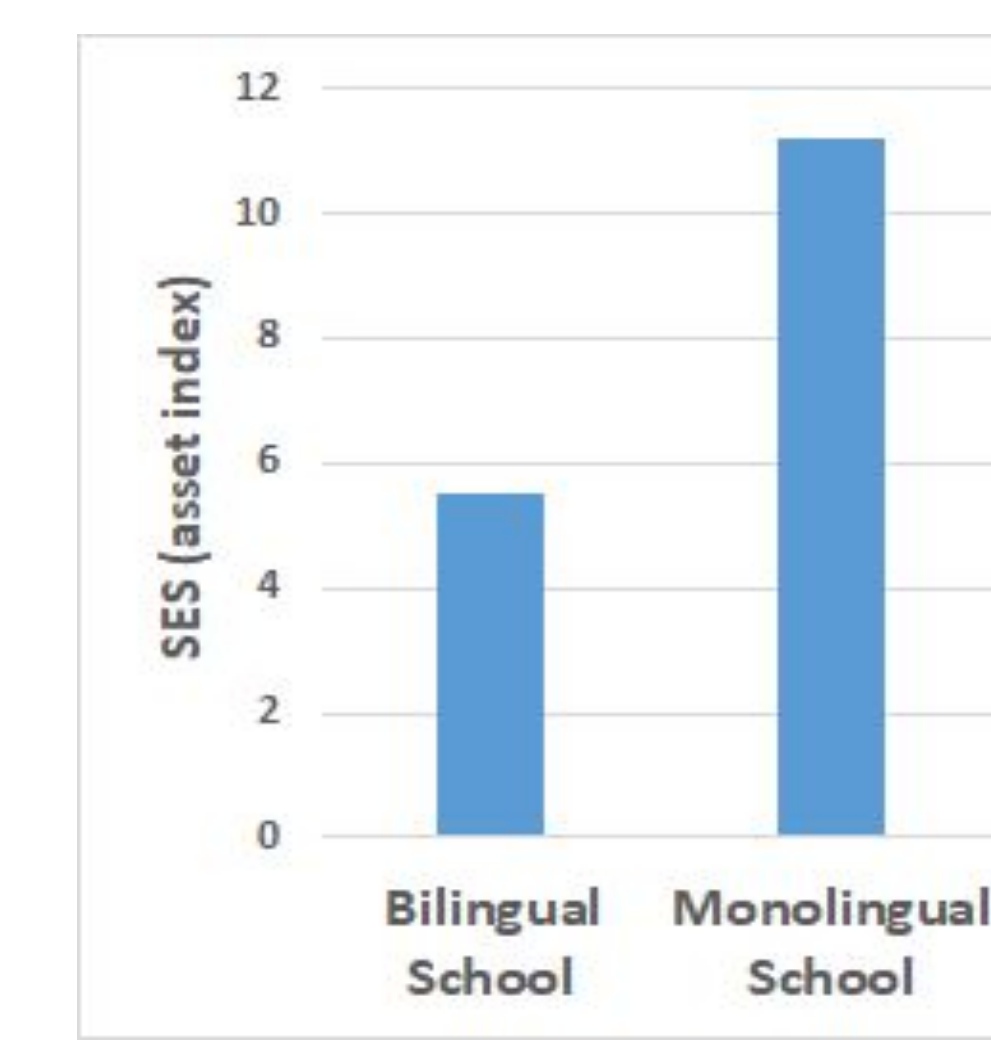
Grade and Age



Age (F(1,8)=41.96, p<.001, Wilk's Λ=0.635); Grade (F(2,8)=15.71, p<.001, Wilk's Λ=0.678)

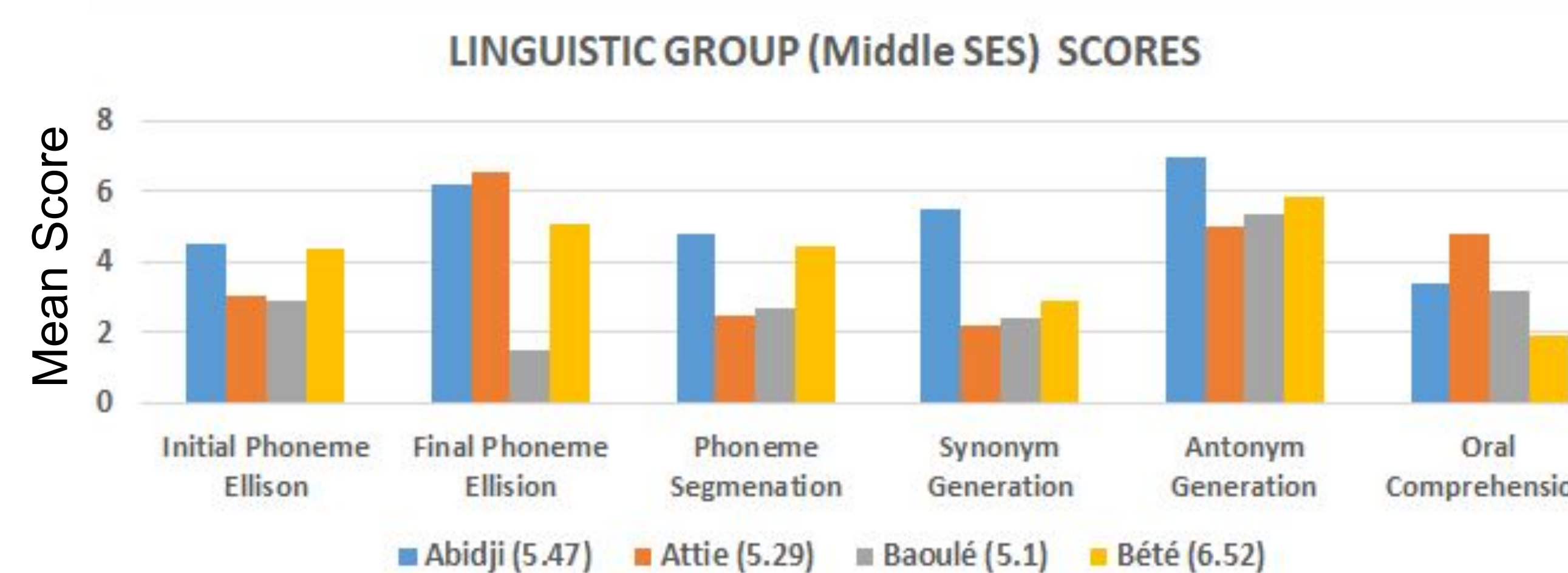
Language of Instruction at School and Language Group

	Bilingual	Monolingual
Phoneme Identification	4.85 (3.57)	5.27 (3.72)
Initial Phoneme Elision	3.48 (2.63)	3.42 (2.74)
Final Phoneme Elision	5.49 (3.81)	4.24 (3.84)
Phoneme Segmentation	3.04 (3.59)	3.41 (3.59)
Synonym Generation	3.03 (2.93)	3.48 (3.04)
Antonym Generation	5.76 (2.87)	5.68 (3.12)
Oral Comprehension	1.9 (1.78)	3.72 (1.45)
Tonemic Awareness	5.13 (2.12)	5.04 (1.93)
Sample size	338	492



Language group (F(3,24)=39.57, p<.001, Wilk's Λ=0.276)
School type (F(1,8)=6.45 p<.001, Wilk's Λ=0.919)

Children at monolingual schools outperform their bilingual peers on initial phoneme identification, phoneme segmentation, and synonym generation. However, higher SES children were more likely to attend monolingual schools (b=0.672, t(815)=2.162, p<.05).



Variation in scores by language may reflect cross-linguistic differences (e.g., higher word-initial PA scores in Bete, which permits more complex-onset clusters), and/or regional SES differences (lowest for Baoule sample).

DISCUSSION

- ✓ This study shows the first age and grade data describing rural Ivorian children's performance on specific sub-tasks of a comprehensive language assessment.
- ✓ Presently, no references exist on the development of rural Ivorian school-children's language abilities.
- ✓ The data from this toolkit provides descriptive information (mean, sd, range, distribution) for each grade and age. However, cross-linguistic differences in language structure and environmental factors (e.g., LOI, SES) also affect children's scores on specific sub-tasks.
- ✓ Our study provides insights into the sources of variance in children's language scores, and a guide that can be used by researchers and educators alike. For example, the ability to measure children's PA, vocabulary and comprehension skills (robust predictors of literacy) in their mother tongue can yield useful information to support the child's reading development.

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