

Bridging phonology, meaning, and written form across time:

Introducing a database of Chinese ideophones — CHIDEOD

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ILL-12
12th International Symposium on
Iconicity in Language and Literature
3-5 May 2019, University of Lund

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Ideophones: a typologically widespread phenomenon

Dingemanse's definition

marked

words

that **depict**

sensory imagery (2011; 2012)

[and that belong to an **open lexical class**] (2019)

What we know about Chinese ideophones

Some cross-linguistically notable features of ideophones

(cf. a.o. Dingemanse & Akita 2016)

- prosodic foregrounding
- often less integrated in sentences
- often marked by reduplication
- expands on the phonological system of prosaic words
- gesture
- variable written forms

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(1) 她 咣地一聲 跑過去了。
tā xiū=de=yì-shēng pǎo-guò-qù=le
she IDEO=ADV one-sound run-past-go=PFV
“Shoow, she ran by.”

(2) 飛機 咣咻咻 飛過去。
fēijī xiū xiū xiū fēi-guò-qù
airplane IDEO IDEO IDEO fly-over-go.
The planes whizzed over.

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Actor Jackie Chan performing newly coined ideophone *duāng* 'very black, thick and smooth hair' > 'wow!'

成龍

成龍 Cheng Long 'Jackie Chan'

What we know about Chinese ideophones

Chinese research on Chinese ideophones is mostly concentrated on onomatopoeia (ideophones that depict sound).

Zhao Aiwu 赵爱武 (2008)
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However, there are some broader discussions of ideophones

- phonology
- Beijing dialect
- Southern Sinitic
- Cantonese (vs. Dagaare)
- Mandarin (vs. Japanese)
- Japanese (vs. Mandarin)
- reduplication in Old Chinese
- Middle Chinese

Mok (2001); Thompson (2018)
Meng (2012)
Wu (2014)
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You (2015)
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These studies often append data to their work (good!)
but the data is not standardized so not always reusable (less good).

How can we unify what we know about Chinese ideophones?

We need to centralize these data so they can be reused

- Dedicated studies
- Dictionaries
- (scattered examples)

Our answer: **CHIDEOD — the Chinese Ideophone Database**

Collecting data from these sources,
storing them in a user-friendly dataset and repository,
provide a number of formal and semantic variables that can be explored

Similar databases: BCCWJ's word profiler

Balanced Corpus of Contemporary Written Japanese (NINJAL 2016) has a word profiler (LWP)

The word profiler looks up words in the BCCWJ and provides sketch grammar-like statistics.

NINJAL-LWP for BCCWJ

fuwafuwa

絞り込み 元に戻す

all noun verb adj. conj. adv. mimetic

すべて 名詞 動詞 形容詞 連体詞 副詞 オノマトペ

見出し 読み ローマ字表記 頻度 ?

ふわふわ フワフワ fuwafuwa 414

This screenshot shows the NINJAL-LWP interface for the BCCWJ corpus. The search term 'fuwafuwa' is entered in the search bar. Below the search bar are buttons for '絞り込み' (refinement) and '元に戻す' (reset). Underneath the search bar is a row of category buttons: 'all', 'noun', 'verb', 'adj.', 'conj.', 'adv.', and 'mimetic'. Below these are more detailed buttons: 'すべて' (All), '名詞' (Noun), '動詞' (Verb), '形容詞' (Adjective), '連体詞' (Attributive), '副詞' (Adverb), and 'オノマトペ' (Mimetic). At the bottom of the interface are four tabs: '見出し' (Headword), '読み' (Reading), 'ローマ字表記' (Romanization), and '頻度' (Frequency). The frequency value '414' is displayed at the bottom right.

The goal of CHIDEOD is to collect all TYPES,
which later could be used in a corpus study

Similar databases: MEJaM

The Multimedia Encyclopedia of Japanese Mimetics (Akita 2016)

Body movement / 体の動き

bururu
[collocation]
verb
adjective
nouns

ぶるぶる
[コロケーション]
動詞：震える / shiver
形容詞：寒い / cold
名詞：手 / hand、唇 / lip、身体 / body、眼 / eye
[Google画像]



buru~buru

**CHIDEOD might eventually evolve into a
Multimedia CHIDEOD**

**Which would include pictures and video
clips to illustrate the depictive nature.**

**However, given the diachronic and
synchronic scope, this may not be
realizable for all items.**

Similar databases: Quechua Real Words

Audiovisual ANTI-dictionary of expressive Quechua ideophones

(Nuckolls 2017; Nuckolls & Swanson 2019)

The goal is to study the multimodal interaction between Quechua ideophones and gesture through video clips

Subsets of data provided in CHIDEOD can aid in researching how multimodality(gesture) interacts with Chinese ideophones.



polan

CHIDEOD: why and where



- digitization of data
- centralization of data
- exploration
 - semantics
 - phonology
 - orthography
 - historical
- expandable research resource rather than the finalized tool
- type frequencies
(not yet token frequencies)

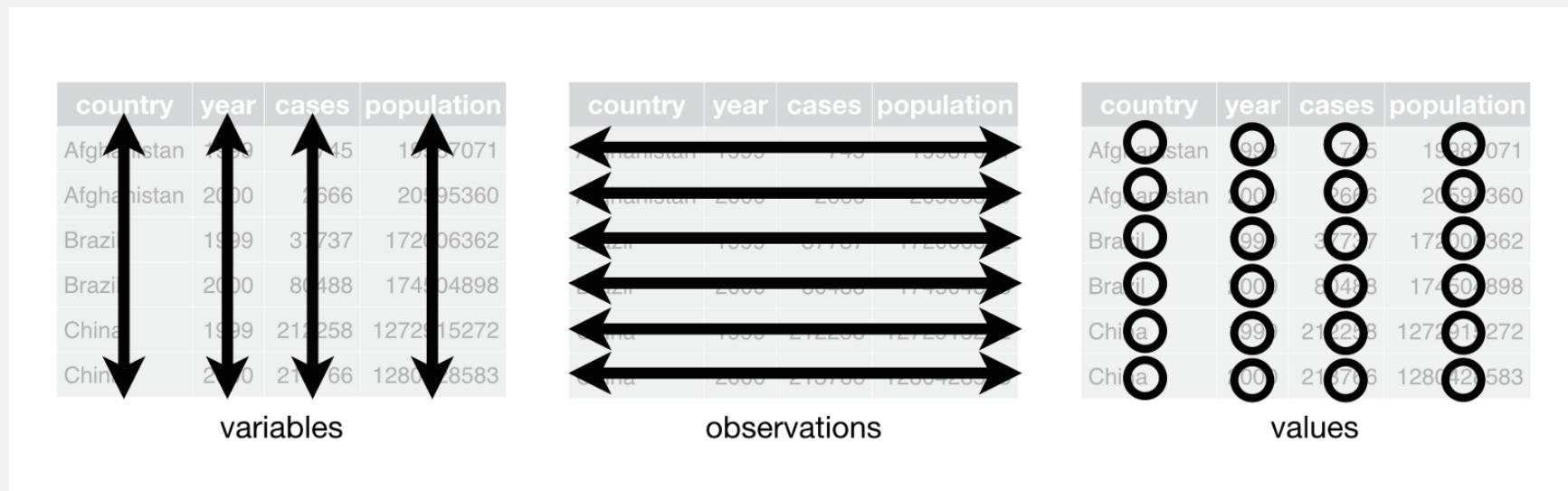
Open source project available at OSF
<https://osf.io/kpwgf/>

Available as online app
<https://simazhi.shinyapps.io/Chineseideophone/>

Also available as an R package
(see osf website)

CHIDEOD is structured in a *tidy* format

- Ever growing resource
- Modeled after the recent [Chinese Lexical Database](#) Sun et al. (2018)
- Lives mostly as a large *tidy dataframe*
 - R (but also other programming languages like python)
 - Export to csv, excel, pdf



1 character: 3,913
2 characters: 34,233
3 characters: 7,143
4 characters: 3,355
Total: 48,644
(>200 variables)

Wickham (2014);
Wickham & Grolemund (2016);
Forkel et al. (2018) 14

CHIDEOD (the online app version)

CHIDEOD Table About

Phonology

Pinyin without tones
 Pinyin with tones
 Pinyin with numbers
 Middle Chinese
 Old Chinese

Orthography

Traditional Chinese
 Simplified Chinese
 Traditional 1
 Traditional 2
 Traditional 3
 Traditional 4
 Simplified 1
 Simplified 2

Copy CSV Excel Search:

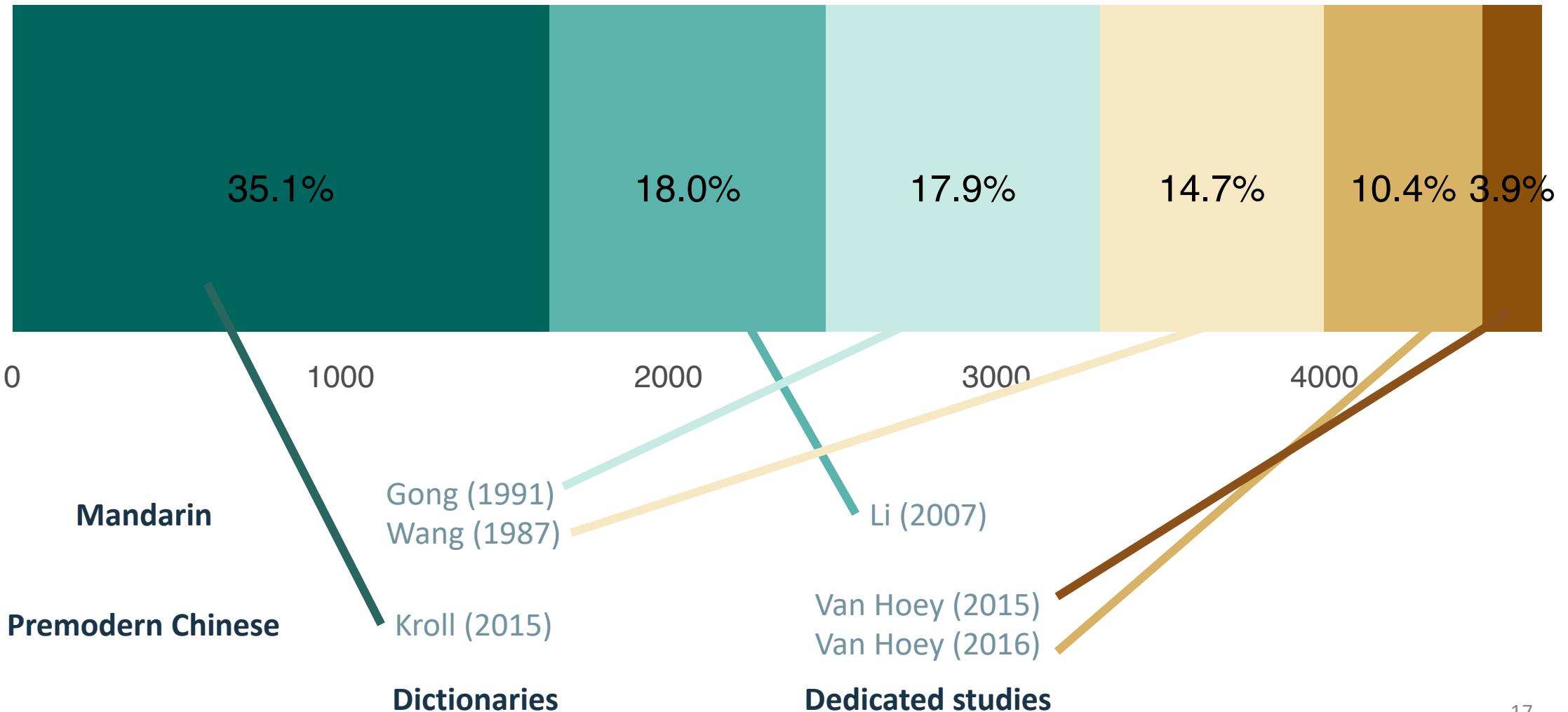
	pinyin	none	traditional	Kroll
1	xu	吁		gasp, onom. of surprise, whew!, or dismay, oh no!; to sigh, ahh
2	fei	吠		onom. Dog's bark
3	zha	咤		onom. of eating noisily and with gusto, smacking the lips; onom. of exclamatory admiration or sighing regret
4	zi	咨		onom. of weariness, discouragement, heartache: ah me!
5	wa	哇		vomit, retch (onom.)
6	xi	唏		onom. for sighing in sadness or grief, syeah!
7	kui	喟		onom. Sighing, heaving a sigh
8	xiao	嘯		onom. Bamboo flute
9	sou	嗾		onom. of sound by which one calls or commands a dog
10	xu	嘘		onom. of exhaling serenely, in a satisfied and unhurried manner; a sigh of ease and contentment

Showing 1 to 10 of 4,662 entries

Previous 1 2 3 4 5 ... 467 Next

Variables coded in CHIDEOD

Sources for CHIDEOD



Formal variables		Semantic variables	Other variables
phonology	pinyintone, pinyinnum, pinyinnone Middle Chinese (MC) Old Chinese (OC)	word level	variants note datasource
orthography	traditional simplified T1-T4 S1-S4 S1-S4.charfreq S1-S4.famfreq S1-S4.sem S1-S4.semfreq S1-S4.semfam S1-S4.phon S1-S4.phonfreq S1-S4.phonfam	morphology character level radical support below-character level	Kroll dictionary Handian (zdic) Hanyu Da Cidian sensory modality

variables in CHIDEOD

Abbreviations:
S = simplified,
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sem = semantic radical,
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Formal variables

Traditional
character

關 關 關

Simplified
character

关 关

onomatopoeia
'cry of an osprey'

Formal variables

word level

Traditional
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關 關

Simplified
character

关 关

onomatopoeia
'cry of an osprey'

Phonology

guān~guān

guan1~guan1

guan~guan

Middle Chinese

kwaen~kwaen

Old Chinese

*[k]ʳo[n]~[k]ʳo[n]

(Baxter & Sagart 2014; 2015)

Formal variables

Traditional
character

關 關

Simplified
character

关 关

onomatopoeia
'cry of an osprey'

word level

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guān~guān

guan1~guan1

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Middle Chinese

kwaen~kwaen

Old Chinese

*[k]ˤro[n]~[k]ˤro[n]

(Baxter & Sagart 2014; 2015)

character level

T1

關

S1

关

T2

關

关

T3

NA

NA

T4

NA

NA

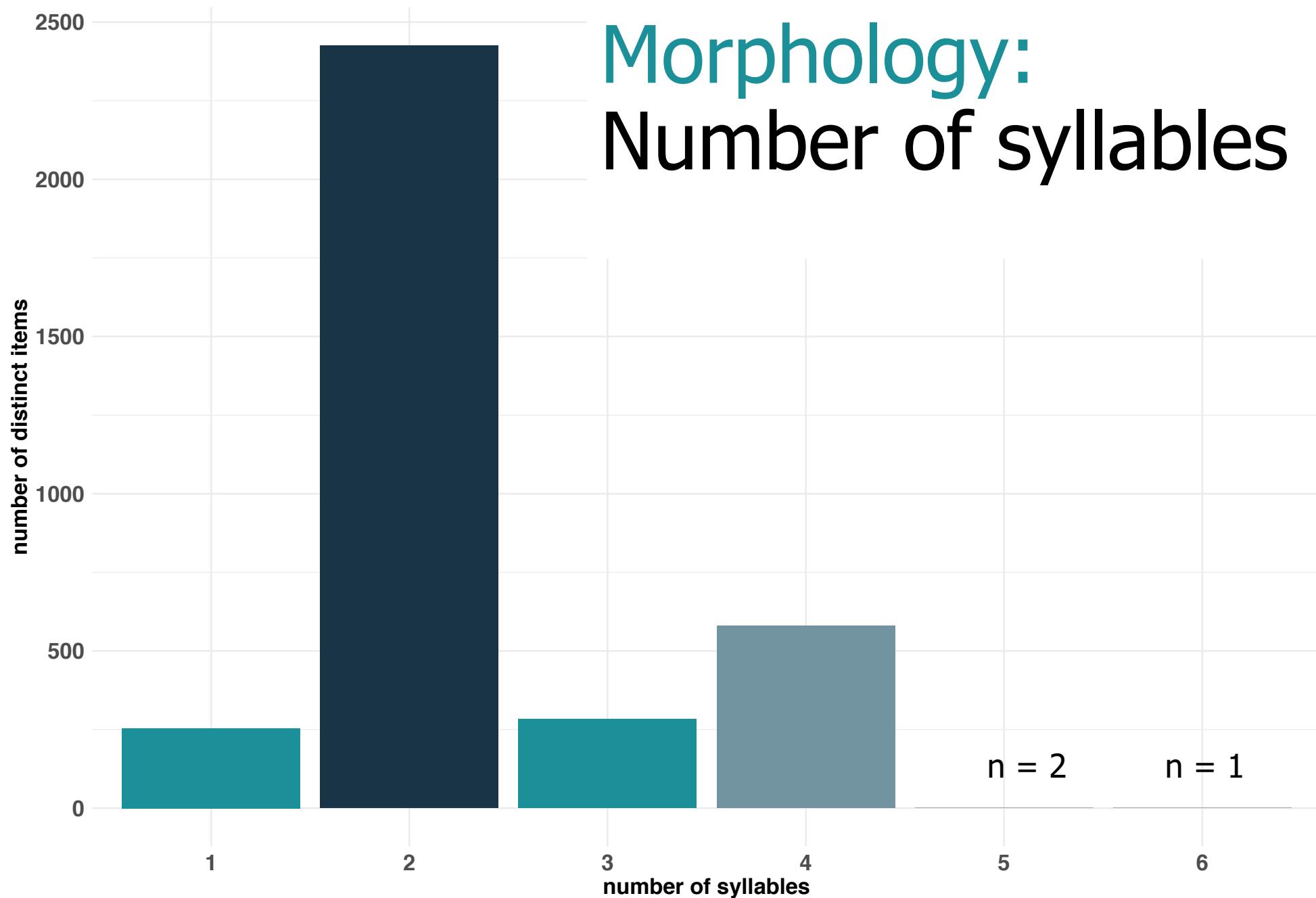
Character frequency per million

976,716

Family frequency

90

Morphology: Number of syllables



Morphology

Based on identifying a

- **BASE**
- **REDUPLICANT**
- **extra elements**

(cf. Sun 1999)

BASE

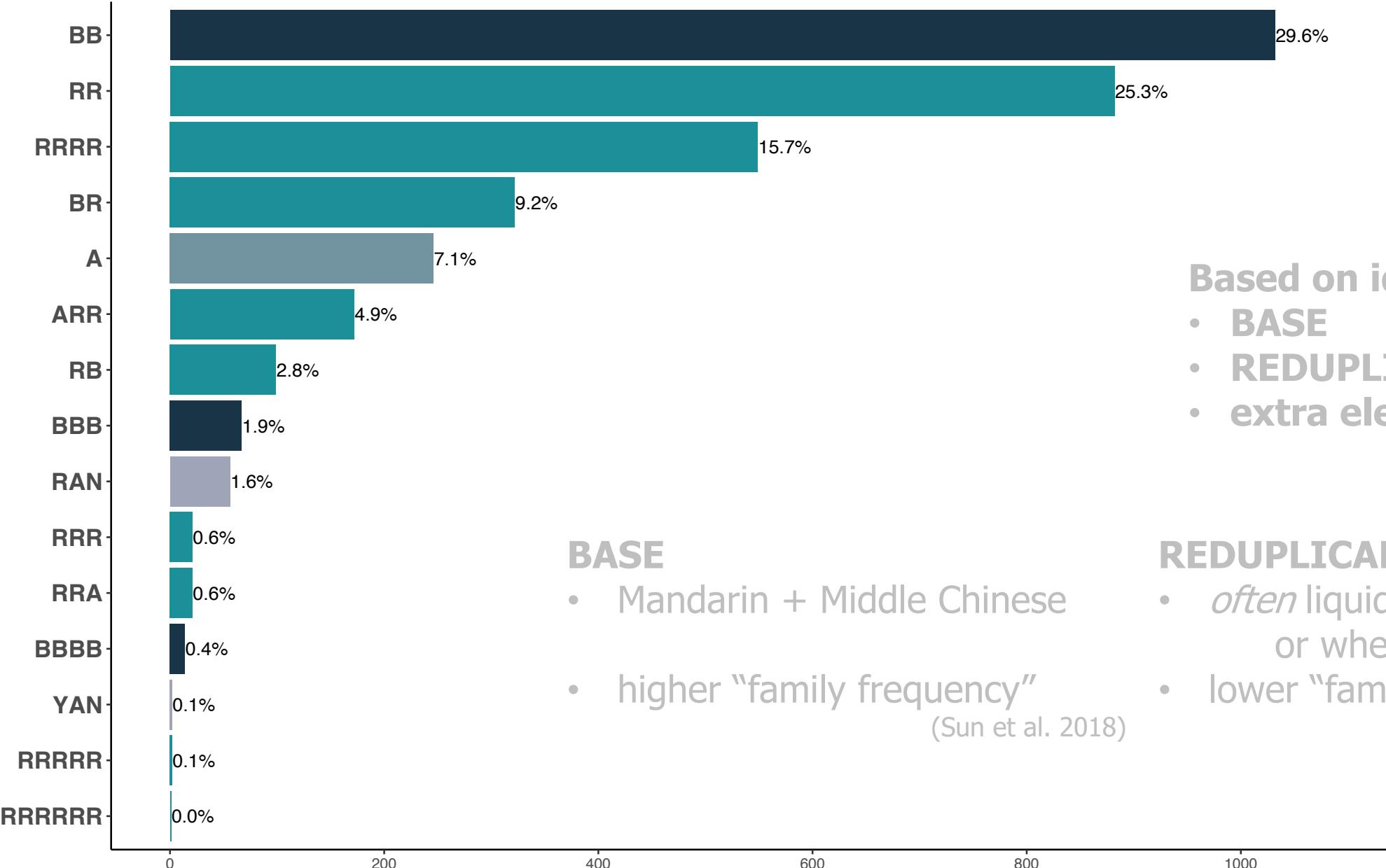
- Mandarin + Middle Chinese
- higher “family frequency”
(Sun et al. 2018)

REDUPLICANT

- *often* liquid (or MC reflex)
or when base unclear
- lower “family frequency”

Morphology

Morphological categories and their frequencies



Based on identifying a

- BASE
- REDUPLICANT
- extra elements

(cf. Sun 1999)

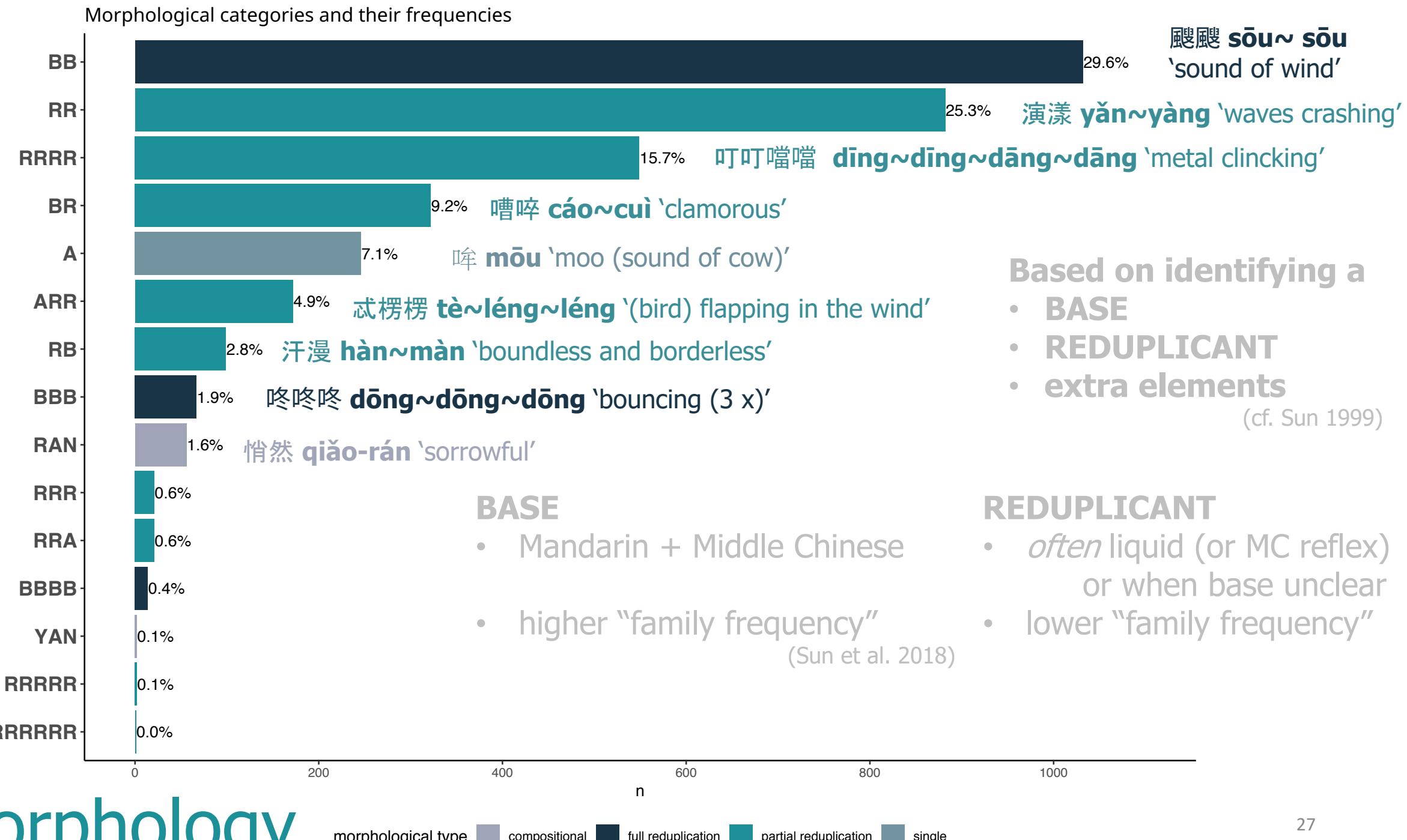
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Morphology



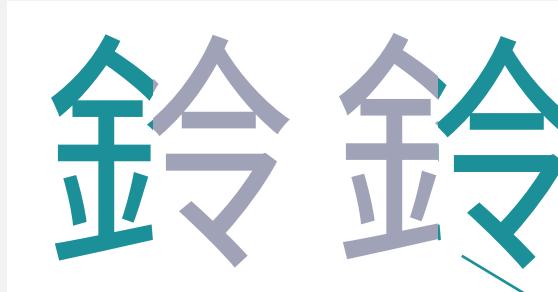
Formal variables: below-character level

About 72 % of Chinese characters are composed of a semantic radical and a phonetic part, based Chinese Lexical Database (Sun et al. 2018)

250 semantic radicals in the CLD

e.g.

• 口	MOUTH	286 characters
• 扌	HAND	255
• 艹	GRASS	244
• 木	WOOD	255
• 亼	PERSON	222



líng~líng
'onomatopoeia:
sound of small clapper bells
on carriages'

1079 phonetic radicals in the CLD

e.g.

• 非	fei	19 characters
• 客	ke	19
• 埸	zhui	18
• 包	bao	18
• 且	ju	18

In 铃铃 the semantic radical 金 (jīn) indicates METAL

The ideophone is motivated by orthography

In 铃铃 the phonetic radical is 铃 /ling

The ideophone is motivated by phonology (BB type)

Phonological support:

Sound correspondences the orthographic forms (of ideophones)

Full reduplication (BB+)

Partial reduplication

- BR
- RB
- RR
- RRA
- ARR
- RR+

Single A

Compositional RAN/YAN

懊惱
ào~nǎo
'vexed'

奧 *ao*
齒 *nao*

42.9% of CHIDEOD (1483 items) **have this kind of phonological support.**

Formal variables: below-character level

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e.g.

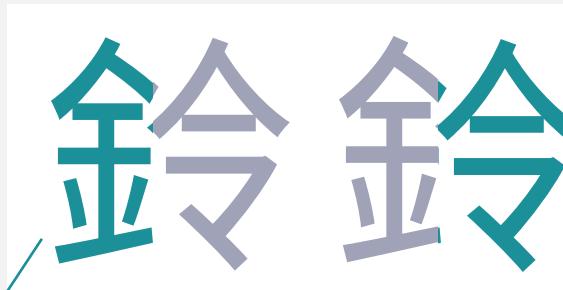
- 口 MOUTH
- 扌 HAND
- 艹 GRASS
- 木 WOOD
- 亼 PERSON

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In 铃铃 the phonetic radical is 令 /líng/

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Formal below: semantic radical support

Radical support:

reduplication in the orthographic form
(of ideophones)

Different ontological domains

- speaking
- nature
- human
- ...

Whether this differs significantly from prosaic words is still undetermined.

Most interesting in partially reduplicated forms.

radical support		morphological pattern frequencies				
radical	meaning	A	BR	RB	RR	RRRR
口	MOUTH	129	8		196	266
氵	WATER		50	7	51	7
山	MOUNTAIN		21		21	
艹	GRASS		11		21	
足	FOOT				18	
玉	JADE				15	5
忄	HEART1		8	6	14	
糸	SILK				12	
扌	HAND		5		10	
心	HEART2				9	
金	METAL				9	6
女	WOMAN		5		8	
辵	WALK				8	
NA		98	154	45	374	254

What is more important in partial?

Subset: datasource = Kroll + binomes (two characters) [morphology = RR | RB | BR]

With these two parameters

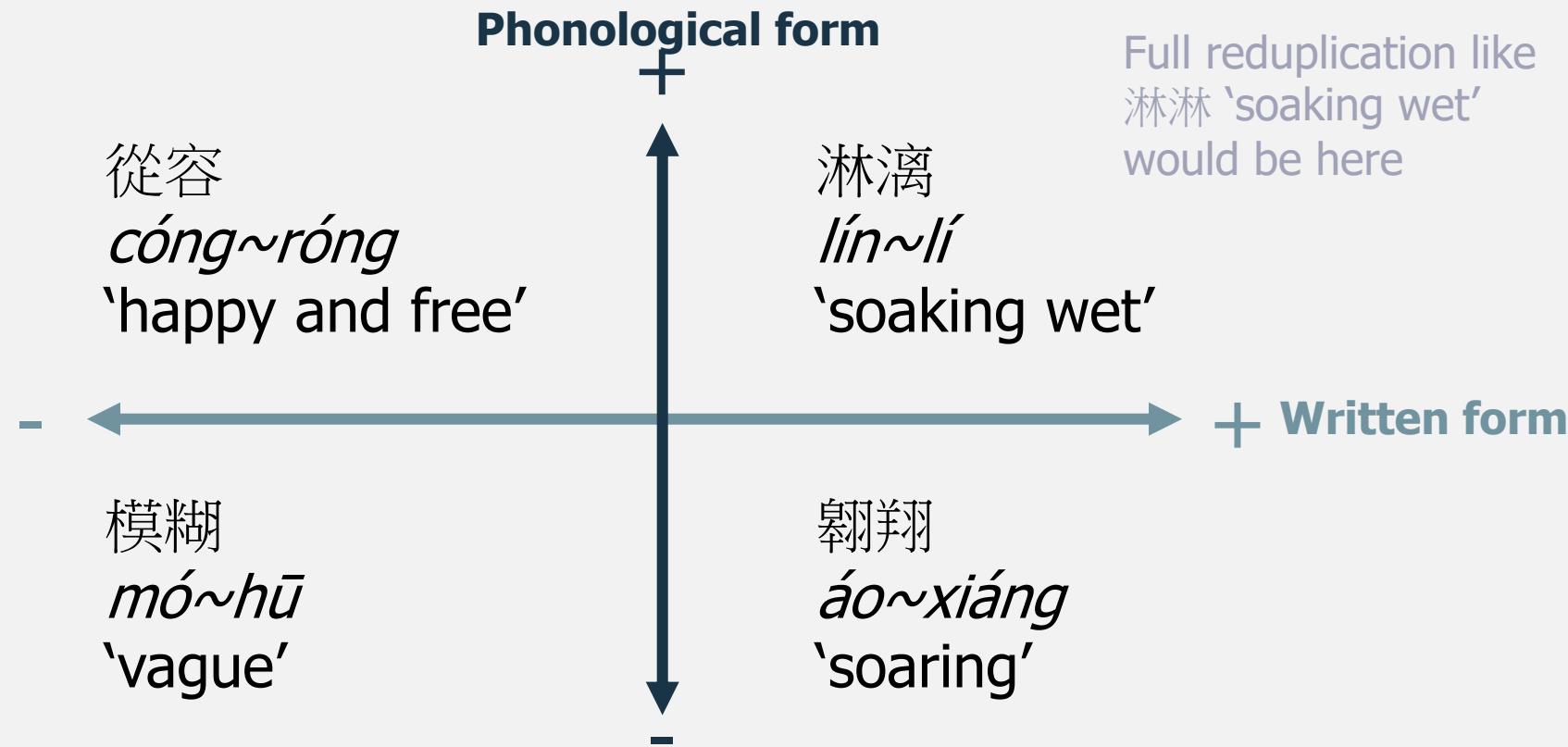
- **Phonological form** — Morphophonological motivation / markedness
- **Written form** — Orthographic motivation / markedness

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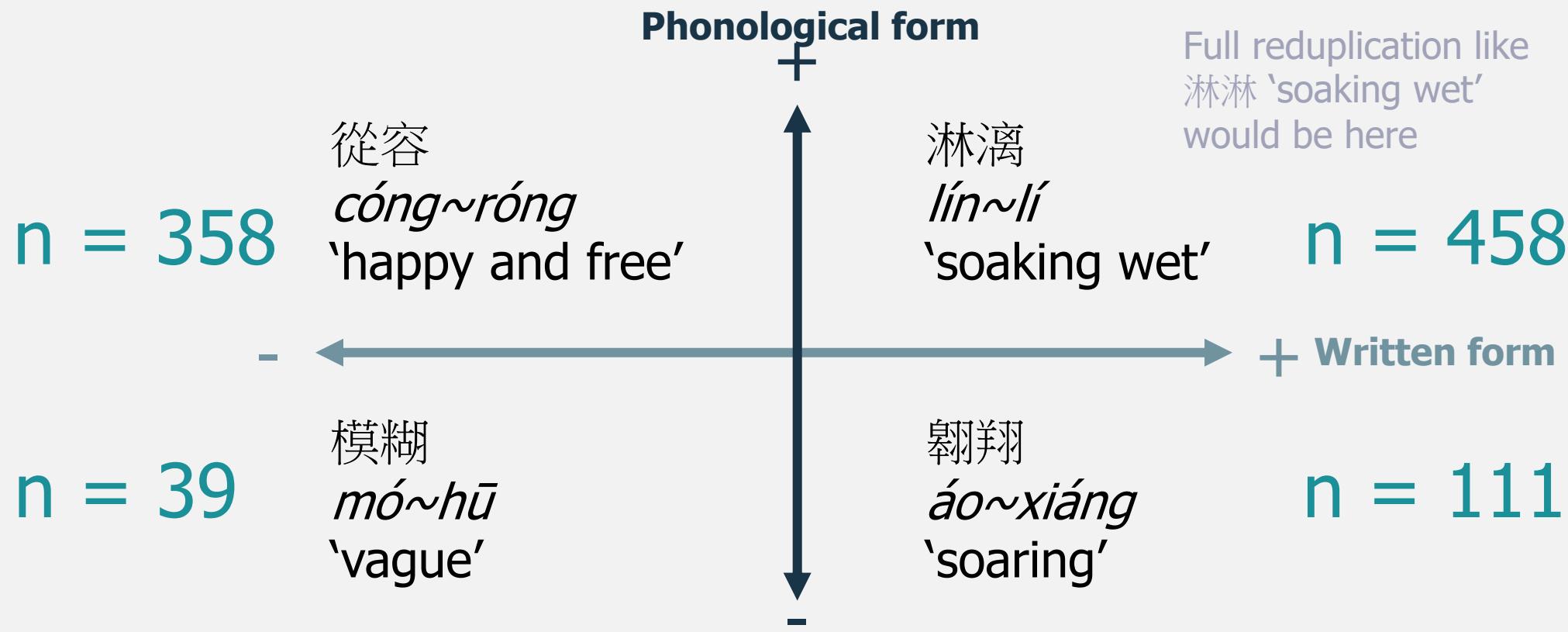


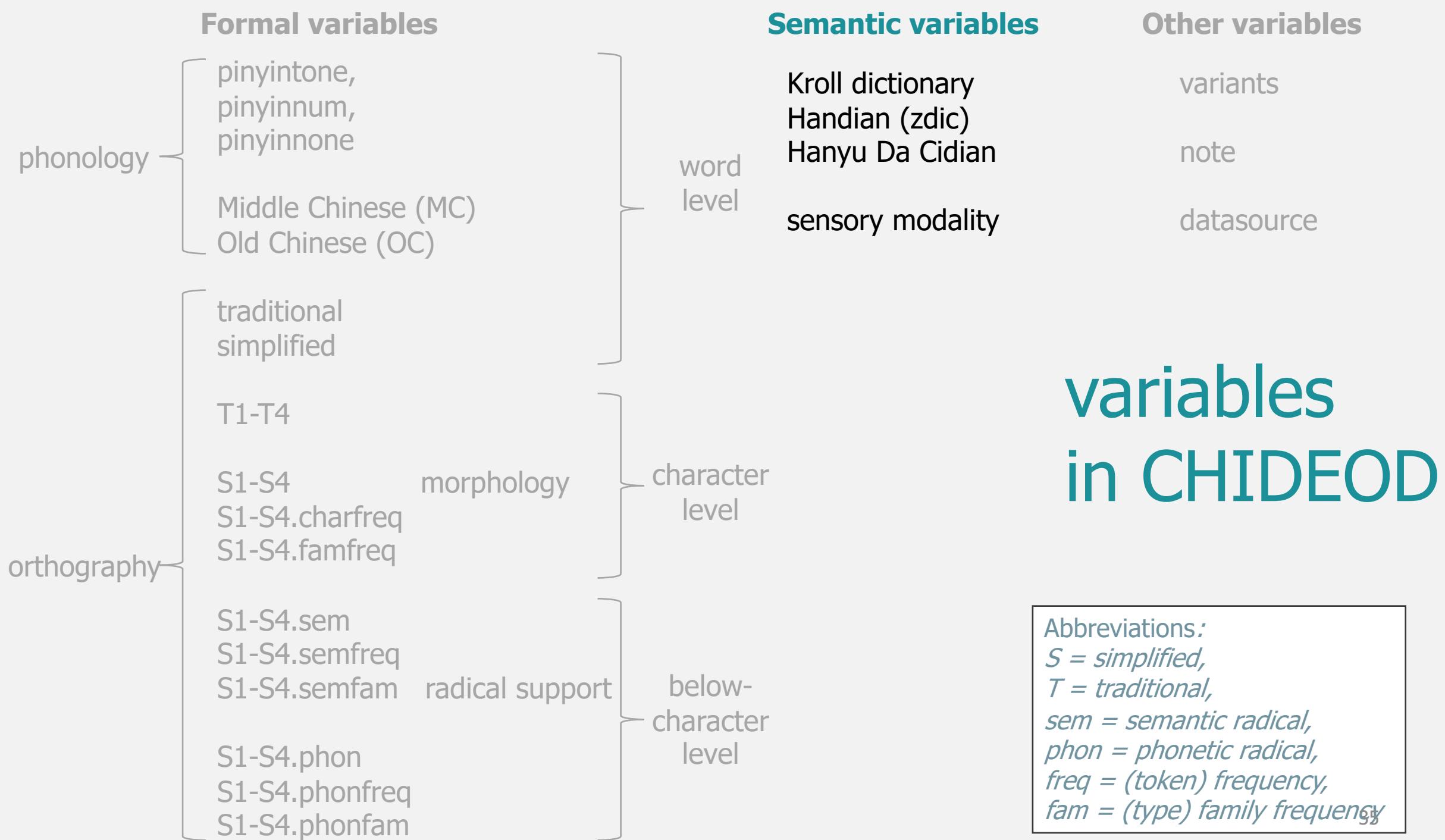
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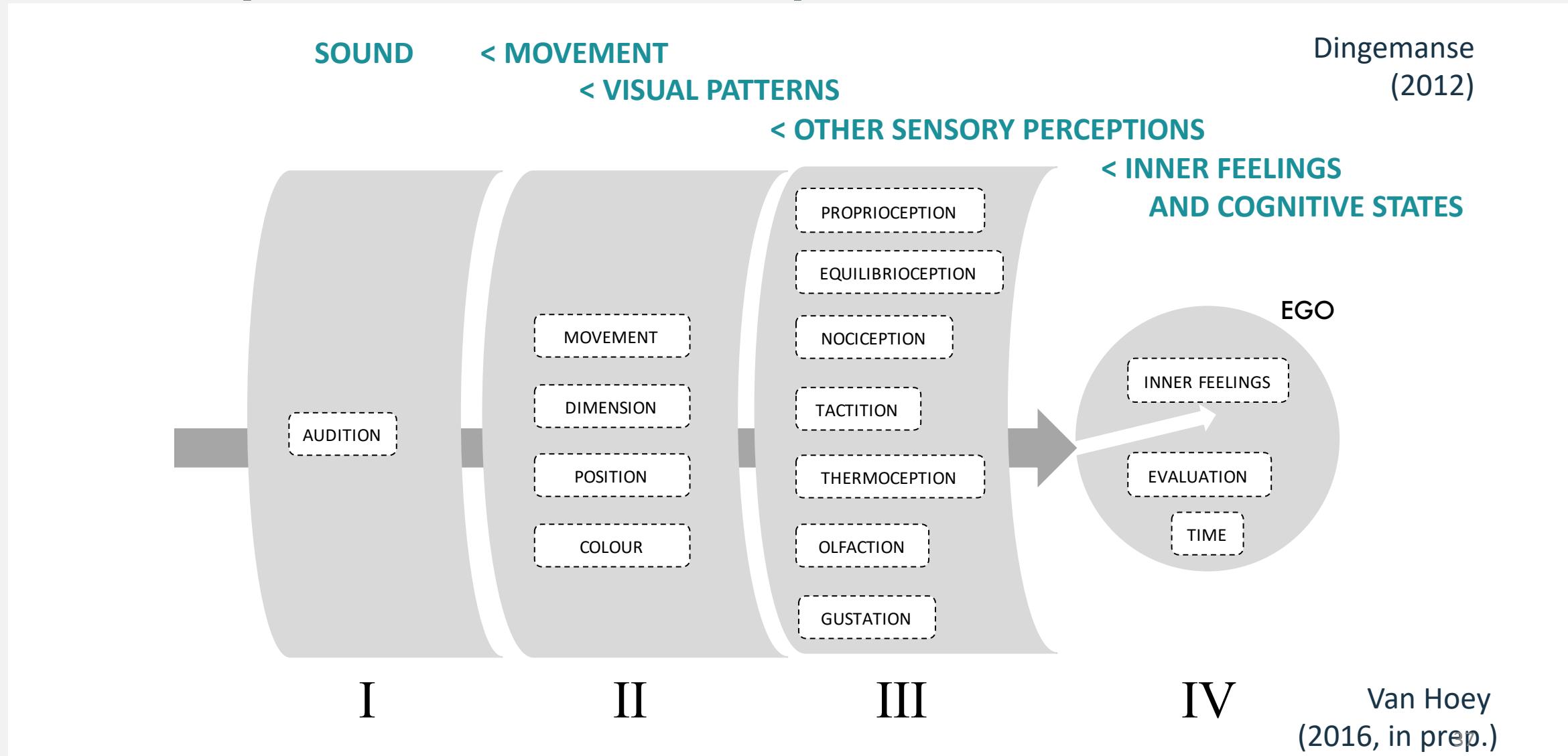
Semantic variables: 3 dictionaries define most ideophones

comprehensive dictionary	Classical Chinese	Mandarin dictionary	n
Hanyu Da Cidian	Kroll	zdic (Handian)	
✓	✓	✓	971
✓	✗	✓	710
✓	✓	✗	423
✓	✗	✗	464
✗	✓	✗	178
✗	✗	✓	46
✗	✓	✓	15
✗	✗	✗	987

This is why in-depth studies are important.

- BBB BBBB RRR RRRR types
- obscure forms

Semantic variables: Sensory domains in-depth studies



Formal variables		Semantic variables	Other variables
phonology	pinyinone, pinyinnum, pinyinnone	word level	variants
	Middle Chinese (MC) Old Chinese (OC)		note
	traditional simplified	character level	datasource
	T1-T4		
	S1-S4 S1-S4.charfreq S1-S4.famfreq		
	S1-S4.sem S1-S4.semfreq S1-S4.semfam	below-character level	
orthography	morphology	S1-S4.phon S1-S4.phonfreq S1-S4.phonfam	
	radical support		

variables in CHIDEOD

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Other variables: variant written forms

xiāng~yáng

'wandering and wavering'

form	radical support
• 儻佯	PERSON 亼
• 儻徉	WALKING 行
• 相羊	NA

Future exploration: differences in the conceptualization between these different orthographic forms with different radical support.

cf.

máng~máng

'stretching farther than they eye can see'

- 芒芒 (GRASS ++)
- 茫茫 (GRASS ++ + WATER 氵)

Over time the grass+water variant became more popular + took over the non-water variant when used in relation to bodies of water (Van Hoey 2019)

A short application of CHIDEOD

Vowel alternation in partially reduplicated syllables

Vowel alternation (ding~dang)

Group 1:

- SOUND ideophones in Kroll's (2015) dictionary of Classical and Medieval Chinese
- Partial reduplication types

Group 2:

- SOUND ideophones in 3 onomatopoeia data sources of Mandarin Chinese (Wang 1987, Gong 1991; Li 2007)
- Partial reduplication types

Vowel alternation (ding~dang)

Group 1:

- SOUND ideophones in Kroll's (2015) dictionary of Classical and Medieval Chinese

```
[datasource == Kroll]  
[sensory modality == SOUND]
```

- Partial reduplication types

```
[morphology == BR, RB, RR, RR+]
```

Group 2:

- SOUND ideophones in 3 onomatopoeia data sources of Mandarin Chinese (Wang 1987, Gong 1991; Li 2007)

```
[datasource == Wang|Gong|Li]  
[sensory modality == SOUND]
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- Partial reduplication types

```
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Vowel alternation (ding~dang)

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n = 167

23/167 with vowel alternation (13.77%)

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```
[datasource == Wang | Gong | Li]  
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```

n = 1421

983/ 1421 with vowel alternation (69.2%%)

Vowel alternation (ding~dang)

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n = 167
23/167 with vowel alternation (13.77%)

$\chi^2 = 195.1928$,
 $p < 0.001$,
 $\phi = 0.35$

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- Partial reduplication types

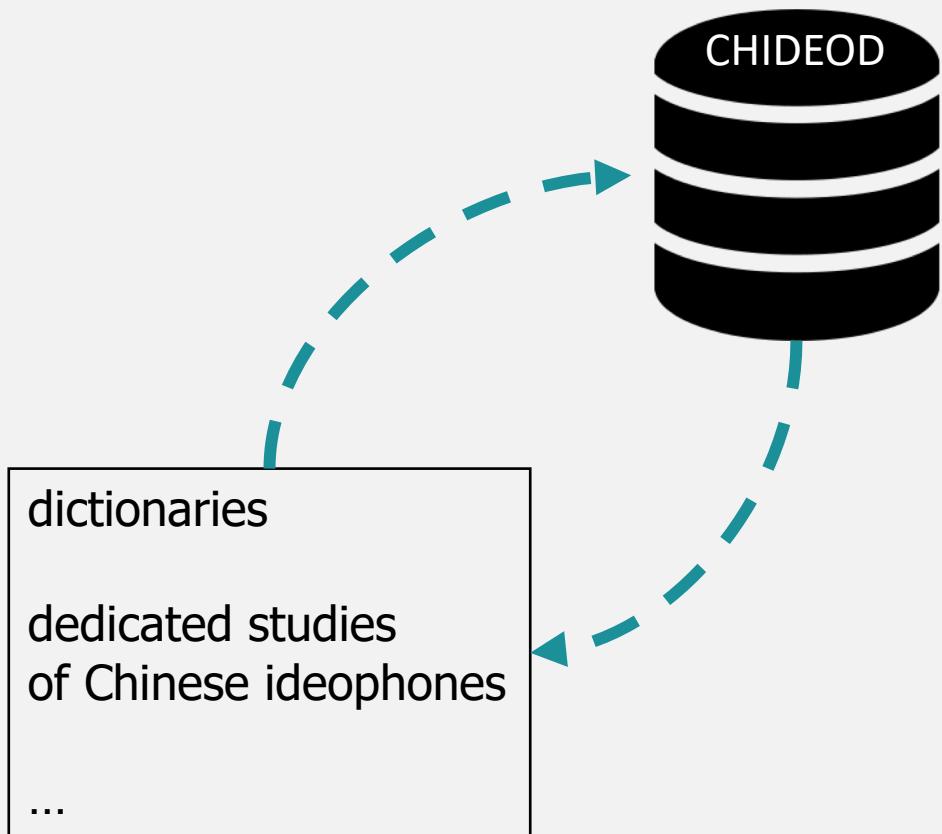
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n = 1421
983/ 1421 with vowel alternation (69.2%%)

**Either this is a recent development (not very likely)
or it has been underdocumented (more likely).**

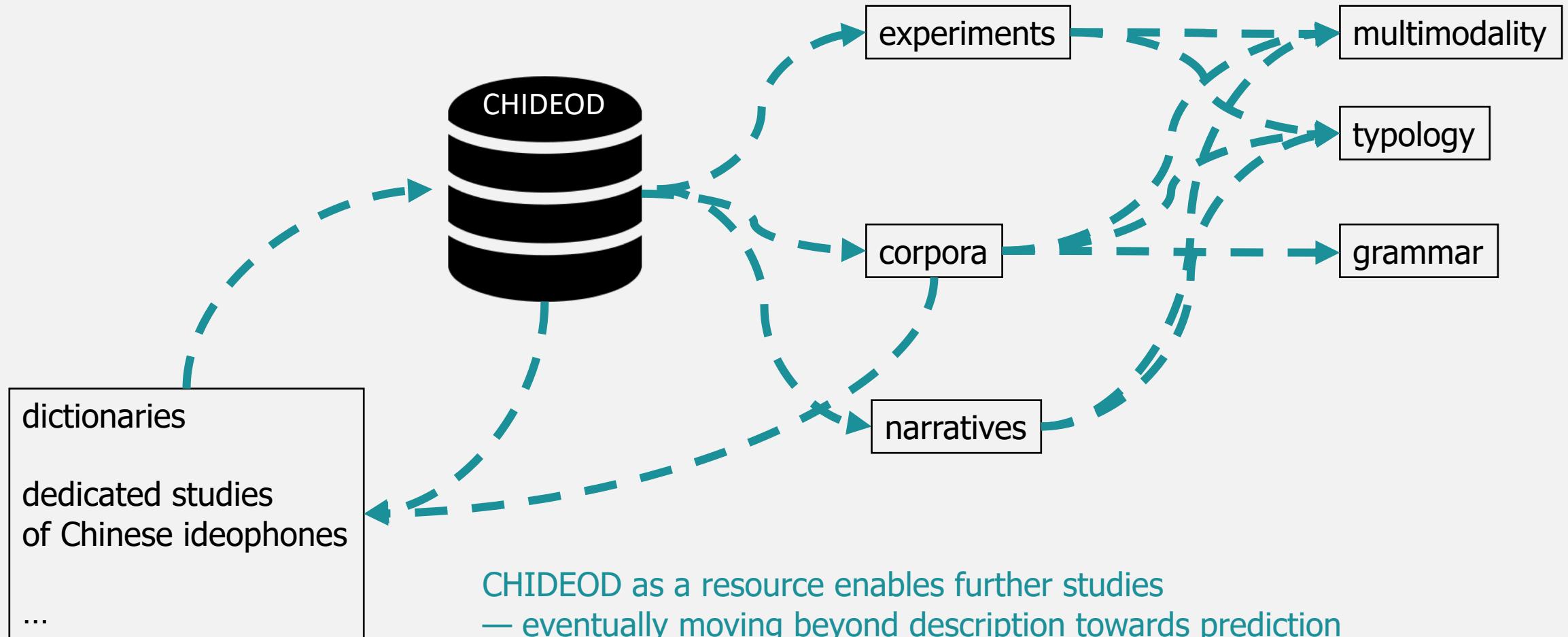
Summary

CHIDEOD: future applications



- In future versions of the database:
 - ❖ more sources
 - ❖ other variables:
 - ❖ other Sinitic languages such as Cantonese, Taiwanese
 - ❖ token frequencies based on corpora
 - ❖ ...

CHIDEOD: future applications



References

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Demonstration

- <https://simazhi.shinyapps.io/Chineseideophone/>
- <https://osf.io/kpwgf/>

Acknowledgements

National Taiwan University
The University of Hong Kong

Chiarung Lu 呂佳蓉
Youngah Doh

Funding:
MOST-108-2922-I-002-198