Reduplication as a trigger of intersubjectivity:

Mandarin Chinese ideophones and reduplication in the CHILDES corpora

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Roadmap

Introduction	language acquistion and ideophones
Research question	how are ideophones and related constructions acquired in Chinese?
Material	CHILDES — childesdb
Quantitative results	
Qualitative case studies	*sun/moon; apple*
Discussion	intersubjectivity
Conclusions	

Introduction

Usage-based approach to acquisition

In Cognitive Linguistic approaches acquisition is mostly agreed as being usage-based and bottom-up.

Two big frameworks

- Usage-Based theory of language acquisition (e.g. Tomasello's e.g. 1992; 2003)
- Emergentist approach (e.g. MacWhinney & O'Grady 2015)

Chunking

There are competing form-meaning mappings (constructions),

with chunks of language first learnt as a whole,

only to be later analyzed in more discrete ‘words’

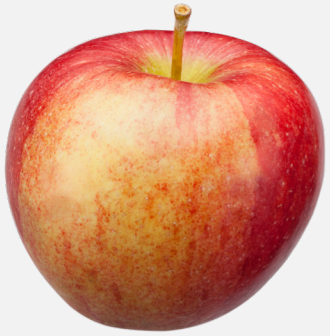
I mean I can remember when I was
very young, much + young + er, and I applied for a job
they said, well, are + n’t + you planning to have children? Well, I mean,
that’s none of + their + business.

20 choices, 35 words, 25 words in prefabs
(Bybee 2010:60)

Frequency, salience, prototypicality

Important factors include frequency, but also salience and prototypicality.

- Skewed frequency of input facilicitates learning (Goldberg & Casenhiser 2008).
- Salience and prototypicality (cf. Geeraerts 2000; 2017) also prove an important factor.



Apple (píngguǒ 蘋果)

- relatively high token frequency
- relatively early and high conceptual frequency
- relatively early and high referential frequency
- prototypical structure (fruit vs. e.g. 'apple of my eye')
- easily identifiable shape and colour

Nouns first? Or verbs first?

Across many languages, nouns appear to be learnt earlier than verbs (Gentner 1982; Gentner & Boroditsky 2001; Tomasello 2003; Imai et al. 2008; Waxman et al. 2013).

But for verbs there are cross-linguistic differences.

In 'verb-friendly' languages such as **Chinese** (Tardif 1996; Tardif 2006), Korean (Choi & Gopnik 1995; Kim, McGregor & Thompson 2000), and arguably Japanese (Ogura et al. 2006; Imai et al. 2008) nouns are often dropped, and **verbs — relational items — get a somewhat privileged status**.

Acquiring ideophones / mimetics

Imai & Kita (2014) have argued for a lexical bootstrapping hypothesis, which shows that 0;11 Japanese infants are already sensitive for some aspects of sound symbolism and mimetics.

Mimetics in Japanese are quite well-defined in terms of construction and often appear as an adverb, becoming part of the verb complex — relational items.

constructional schema	mimetic	Japanese	meaning
ABAB	*korokoro*	コロコロ	'small thing rolling'
ABN	*koron*	コロン	'small thing rolling once'
ABri	korori	コロり	'small thing rolling once'
…			

Acquiring ideophones / mimetics

Cross-linguistically, the concept of ideophones is generally defined as “marked words that depict sensory imagery, and which belong to an open lexical class” (Dingemanse 2011; 2012; 2019)

Chinese also has a large number of ideophones (cf. Mok 2001; Lu 2006; Bodomo 2008; Meng 2012; Van Hoey 2015; Van Hoey & Thompson 2019), spanning onomatopoeia (sound ideophones) but also other modalities (visual and inner feelings being quite frequent).

Chinese ideophones

霧　茫茫

wù　mángmáng

mist　hazy.IDEO

“It’s foggy.”

狗　吠　汪汪

gǒu fèi　wāngwāng

dog bark　woofwoof.IDEO

“The dog is barking woofwoof.”

Instagram: @nickprometheus31

Chinese ideophones

這　篇　文章　讀起來　凌亂。
zhè piān wénzhāng dú-qǐ.lái líng~luàn
DEM CL paper read-MID in.a.mess.IDEO
“This paper reads sloppily.”

摸起來　滑滑的，　冷冷的。
mō-qǐ.lái huá~huá=de léng~léng=de
touch-MID slippery.IDEO=LNK cold.IDEO=LNK
“It feels slippery and very cold.”

Ree Lin’s pet snake Seysey

RQ:
How are ideophones acquired in Chinese?

We want to know **how ideophones and ideophonized constructions are acquired in Mandarin Chinese.**

What are some **factors** that can help their acquisition?

Does this differ from other languages?

Material and methodology

CHILDES database

We are using the **CHILDES** database (MacWhinney 2000)

“CHIld Language Data Exchange System”

Collaborative effort to exchange reocrded and transcribed transcriptions between infants or children and adults, in order to study how input relates to output, viz. how language is learned.

The data is stored in a standardized manned (CHAT ‘Codes for the Human Analysis of Transcripts’) and can be queried with CHILDES’s CLAN query builder.

CHILDES and childes-db

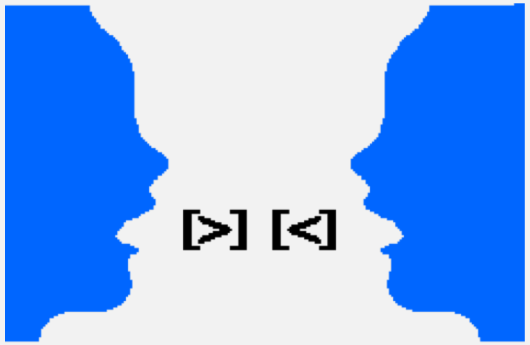
While the CHILDES project (since 1984!) is very impressive, it is hard to master these idiosyncratic query languages.

In this age of data-science, familiarity with R or python etc. should help us make use of CHILDES as well.

Sanchez et al. (2018) developed an R mirror of CHILDES, called **childes-db**:

- Improve efficiency
- Reduce errors and inconsistencies
- Share scripts and improve reproducibility
- Track previous instances of CHILDES

CHILDES and childes-db



CHILDES

https://childes.talkbank.org

childes-db

http://childes-db.stanford.edu

version 2018.1

childesr

https://github.com/langcog/childesr

version 0.1.1

MATERIAL for this study

CHILDES — childes-db: Chinese

Mandarin	Cantonese	Taiwanese
AcadLang	HKU-70	Tsay
Beijing	Lee/Wong/Leung	
Chang1	PaidoCantonese	
Chang2		
Context		
LiZhou		
TCCM		
Tong		
Xinjiang		
Zhou1		
Zhou2		
ZhouDinner		
ZhouNarratives		

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XuMinChen		

CHILDES — **childes-db**: Chinese

	Mandarin	Cantonese	Total
Total utterances	435,452	281,371	716,823
Usable for age_{child}	**237,887**	**281,371**	**519,258**
Not usable for age_{child}	197,565	NA	197,565

For this study 237,887 utterances of Mandarin Chinese are usable

Methodology

1. **Quantitative** overview of onomatopoeia, ideophones, and reduplicative constructions, using simple exploratory techniques from datascience
   (using the R language and mostly `tidyverse` packages)

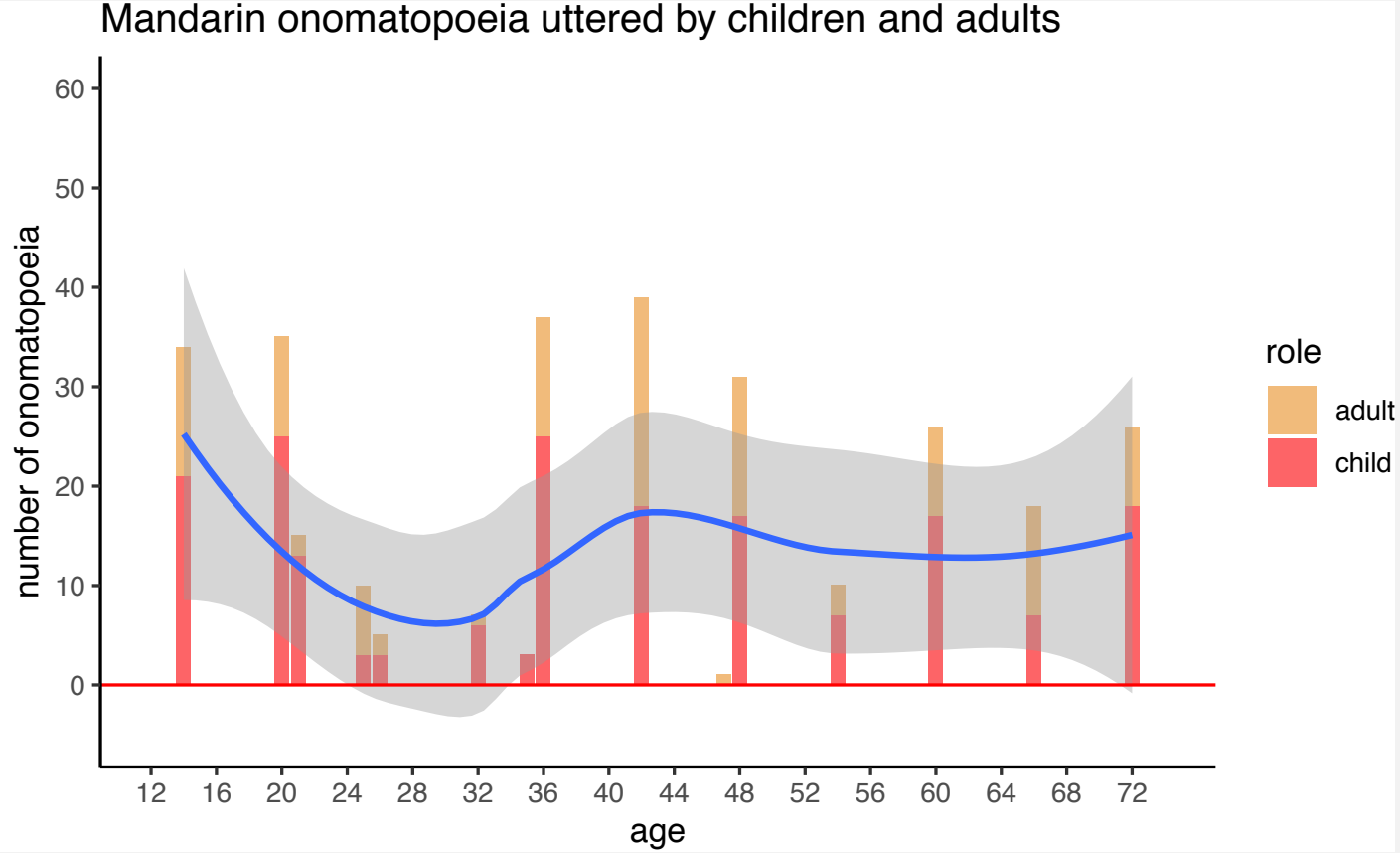
2. **Qualitative** case studies

3. Discussion on markedness, depiction and intersubjectivity

Quantitative results

Onomatopoeia

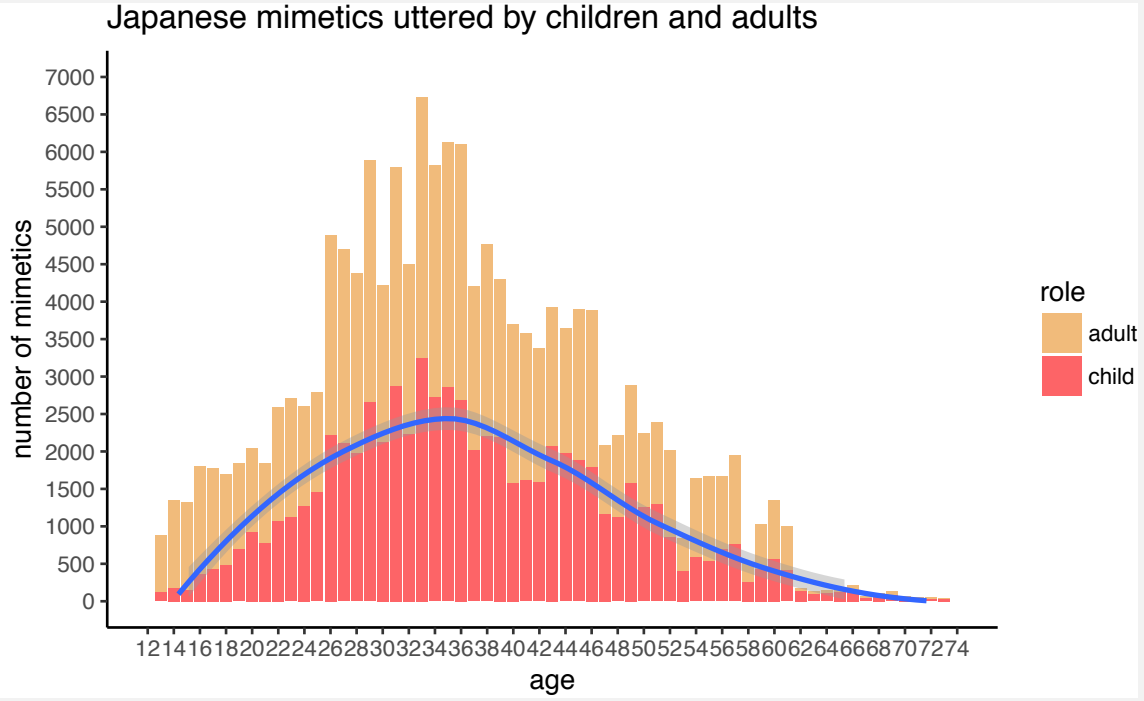
Glossed as ‘on’ (onomatopoeia)

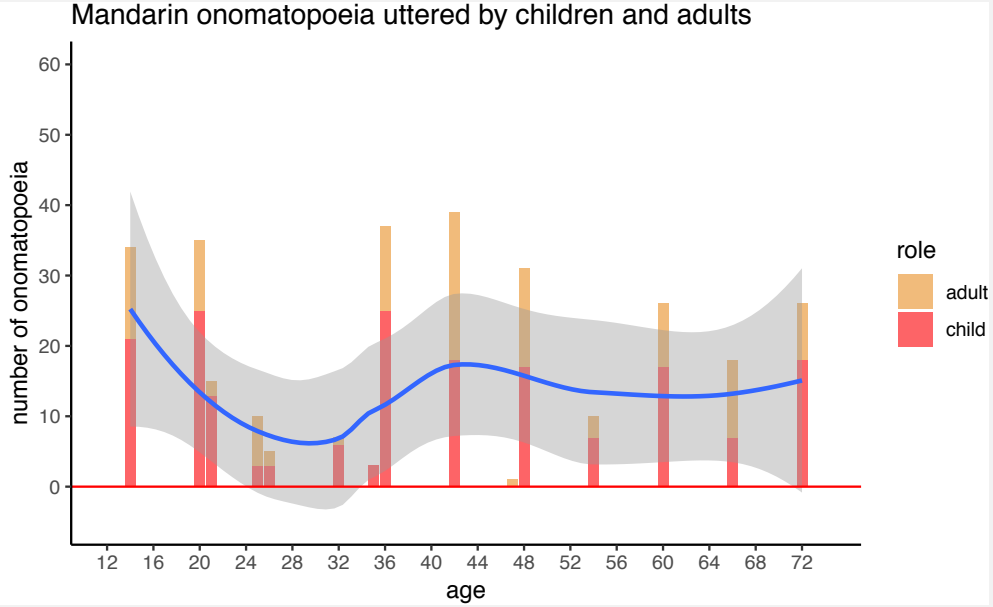


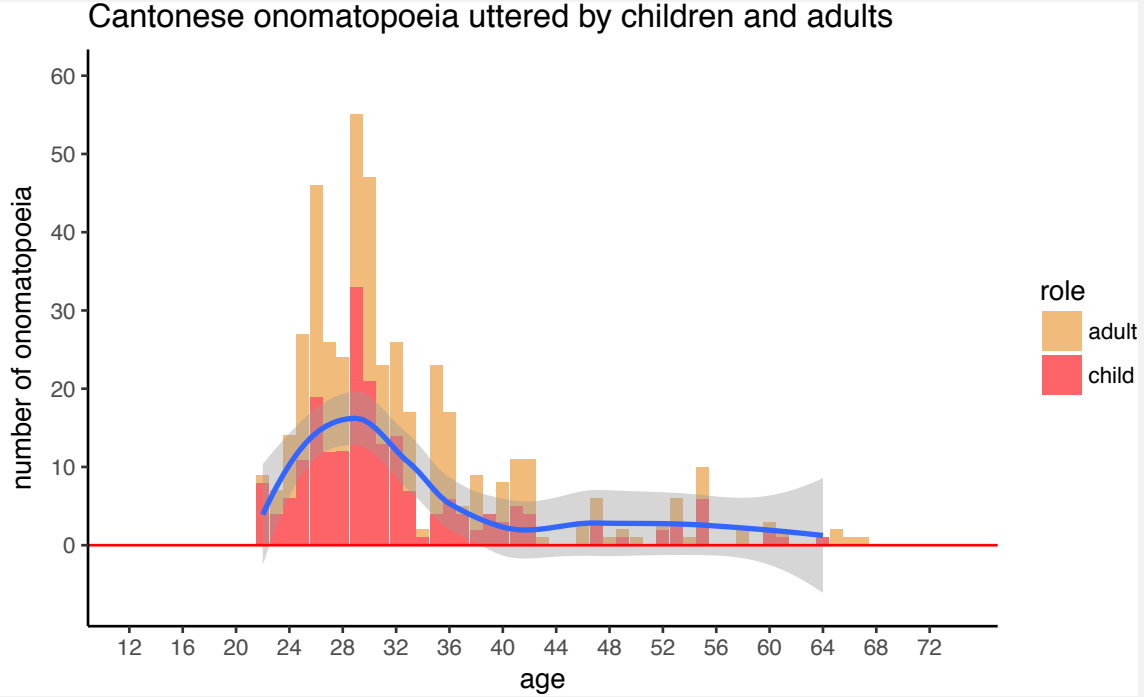
Age	Example utterance
1;2	嘎嘎 / 呱呱 / 呜
1;8	啪啪 / 呜 /汪汪 / 咩 /叽 叽 喳 叽 叽 喳
2;11	那个 呜 呜 来 了
3;0	有 个 小 鸭子 嘎嘎 嘎嘎 嘎
3;6	咚咚咚 咚咚咚
4;0	轮胎 破 掉 了 轮胎 啪 / 然后 他 就 拿 着枪 砰 砰
4;6	这 个 噔 噔 噔
5;0	它 就 会 咚
5;6	咔嚓 咔嚓 / 眼 汪汪 的
6;0	怪 呼呼 戴 顶 帽子

Onomatopoeia

- Weird shape of plot
- Normally bell curve
- But evidence of early usage

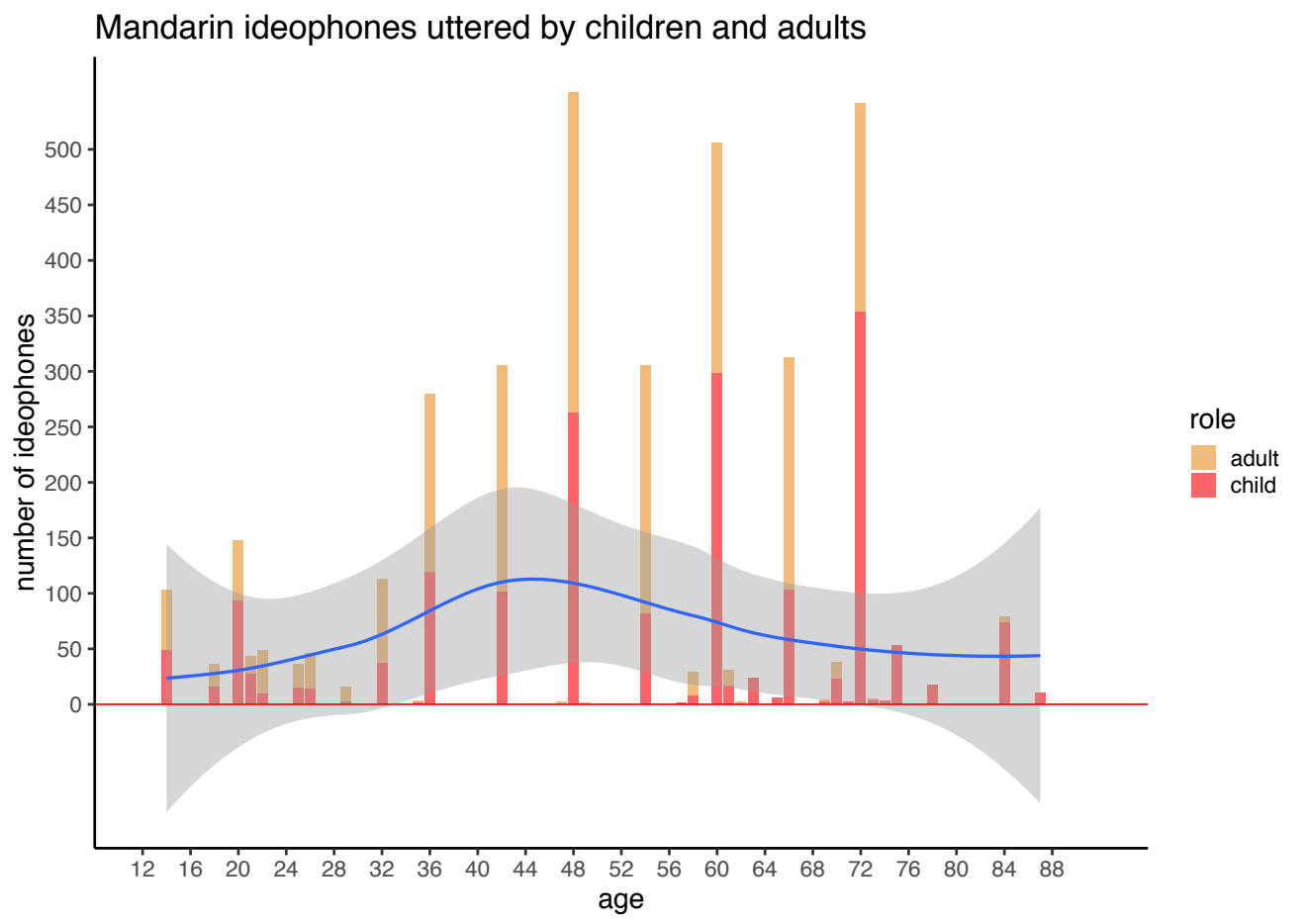






Ideophones

A better result may be obtained by comparing the childes-db to the Chinese Ideophone Database (CHIDEOD, Van Hoey & Thompson 2019)



*Leaving out very frequent sentence particles like *a* 啊 , *ba* 吧 etc.

Reduplicated items

Closer investigation of the previous groups showed that reduplication occurs very frequently in onomatopoeia and ideophones.

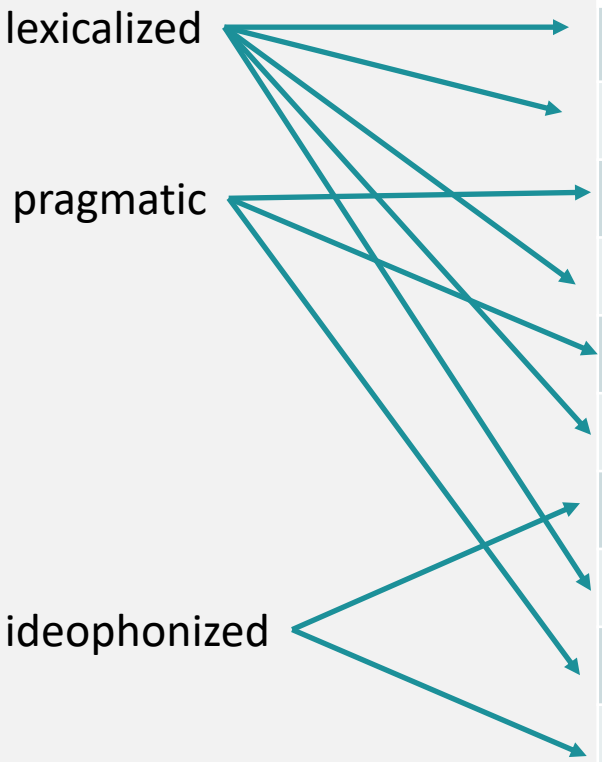
This prompted our interest into reduplicated items in general.

Let us look at the top 10 reduplicated items:

Reduplicated items

item	pinyin transcription	meaning	n
爸爸	*bàbà*	dad	1930
妈妈	*māmā*	mom	1448
然后然后	*ránhòu ránhòu*	and then, and then	533
谢谢	*xièxiè*	thank you	433
他他	*tātā*	he he	352
毛毛	*máomáo*	1. name; 2. hairy	325
圆圆	*yuányuán*	round	287
哥哥	*gēgē*	older brother	255
看看	*kànkàn*	look for a short while	185
甜甜	*tiántián*	sweet	176

Reduplicated items



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Mostly interested in these items, because they often occur in a construction 'XXde' (XX的)

The XXde construction

1. $\left[\begin{array}{c}\text{yuányuán} = \text{de} \\ \hline \text{圓圓} = \text{的}\end{array} \mid \text{ROUND. IDEOZ} = \text{LNK}\right]$

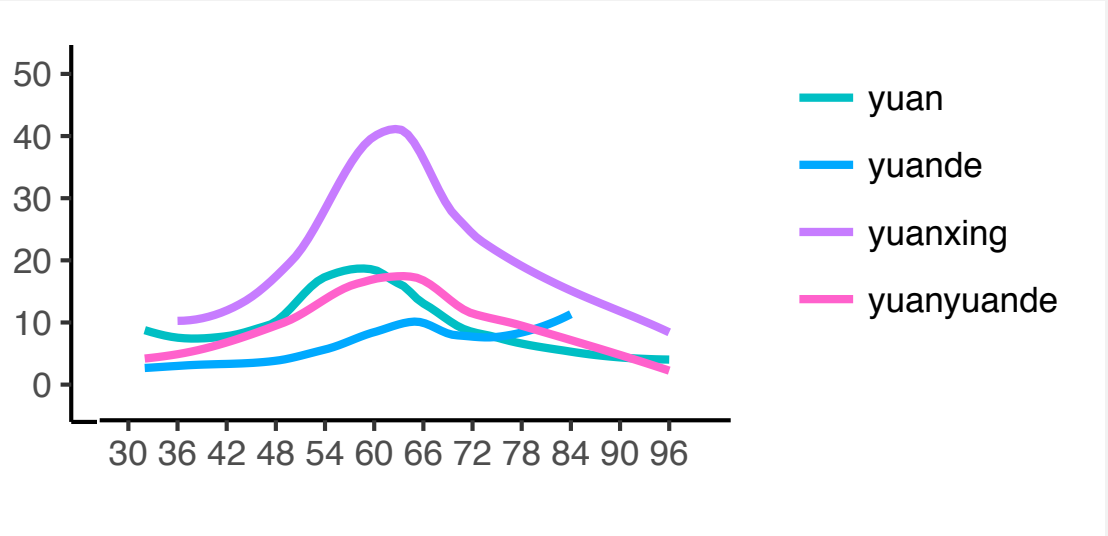
2. $\left[\begin{array}{c}\text{yuán} = \text{de} \\ \hline \text{圓} = \text{的}\end{array} \mid \text{ROUND} = \text{LNK}\right]$

3. $\left[\begin{array}{c}\text{yuán} - \text{xíng} \\ \hline \text{圓} - \text{形}\end{array} \mid \text{ROUND} - \text{SHAPE}\right]$

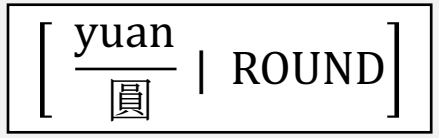
4. $\left[\begin{array}{c}\text{yuán} \\ \hline \text{圓}\end{array} \mid \text{ROUND}\right]$

Different choices to be made on the speaker's side (onomasiological choice).

In the case of round objects later on are talked about by ROUND-SHAPE but earlier on by ROUND, **ROUND.IDEOZ=LNK**, and ROUND=LNK.

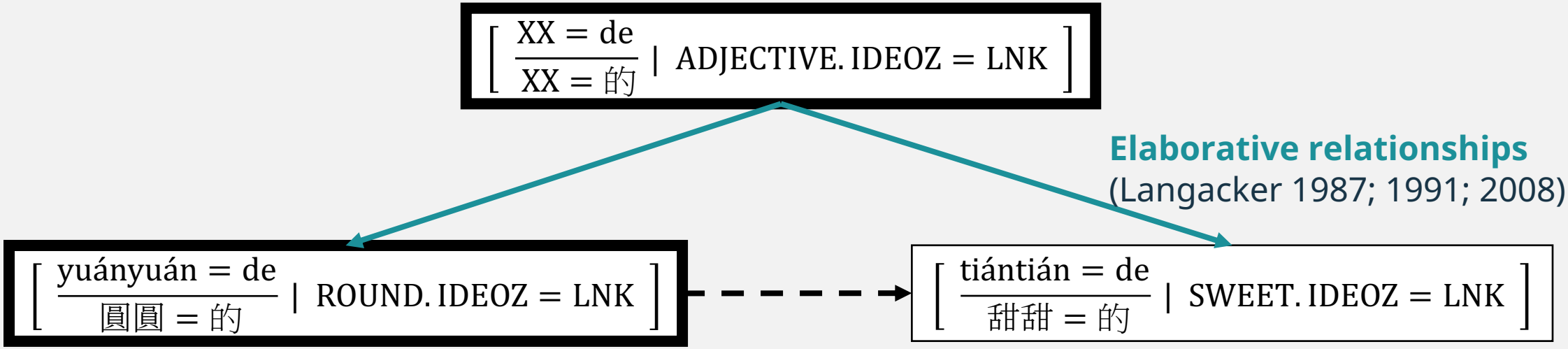


The XXde construction



Extension relationship
(Langacker 1987; 1991; 2008)

The XXde construction

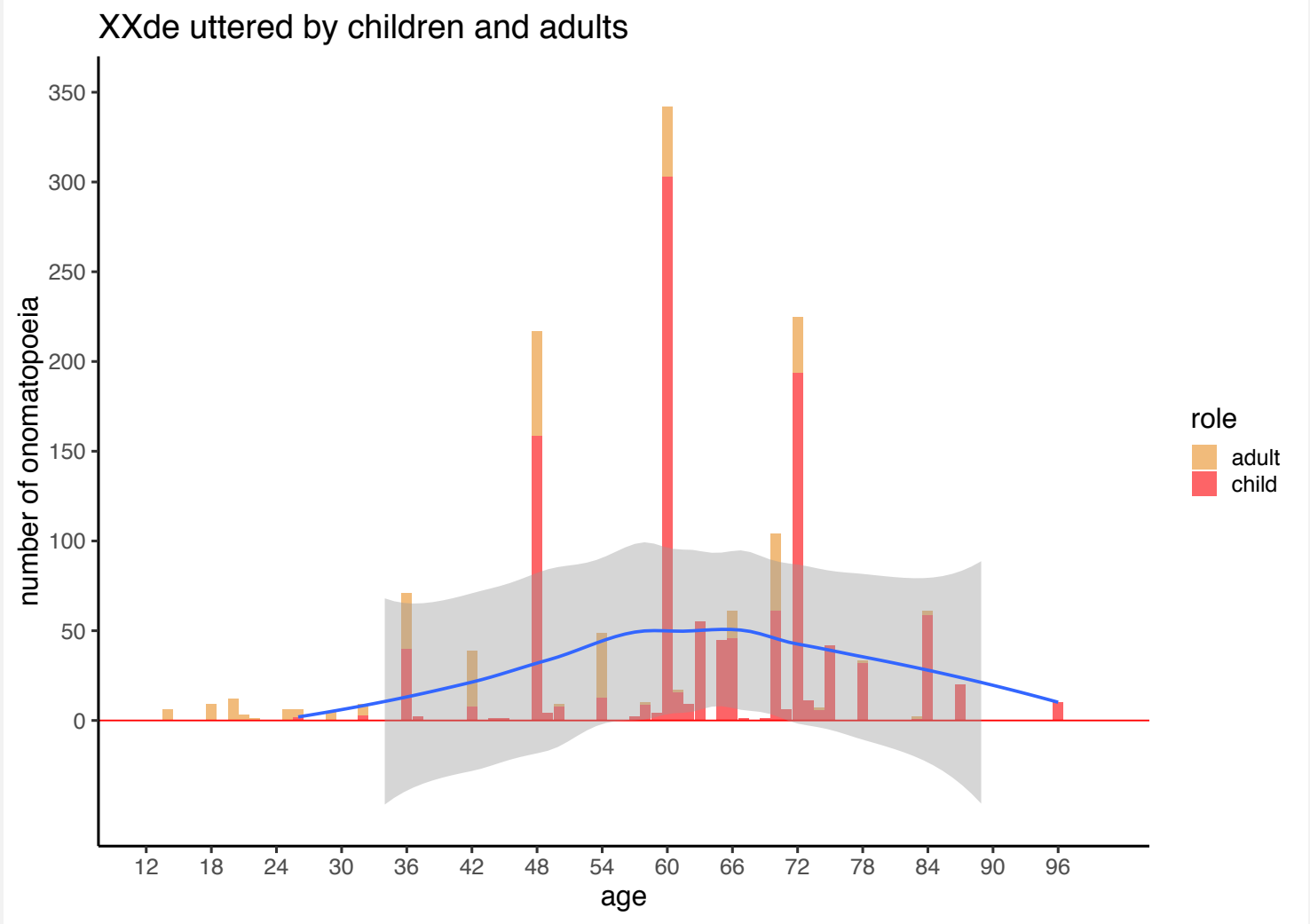


[yuán = de / 圓 = 的 | ROUND = LNK]

[yuan − xíng / 圓 − 形 | ROUND − SHAPE]

[yuan / 圓 | ROUND]

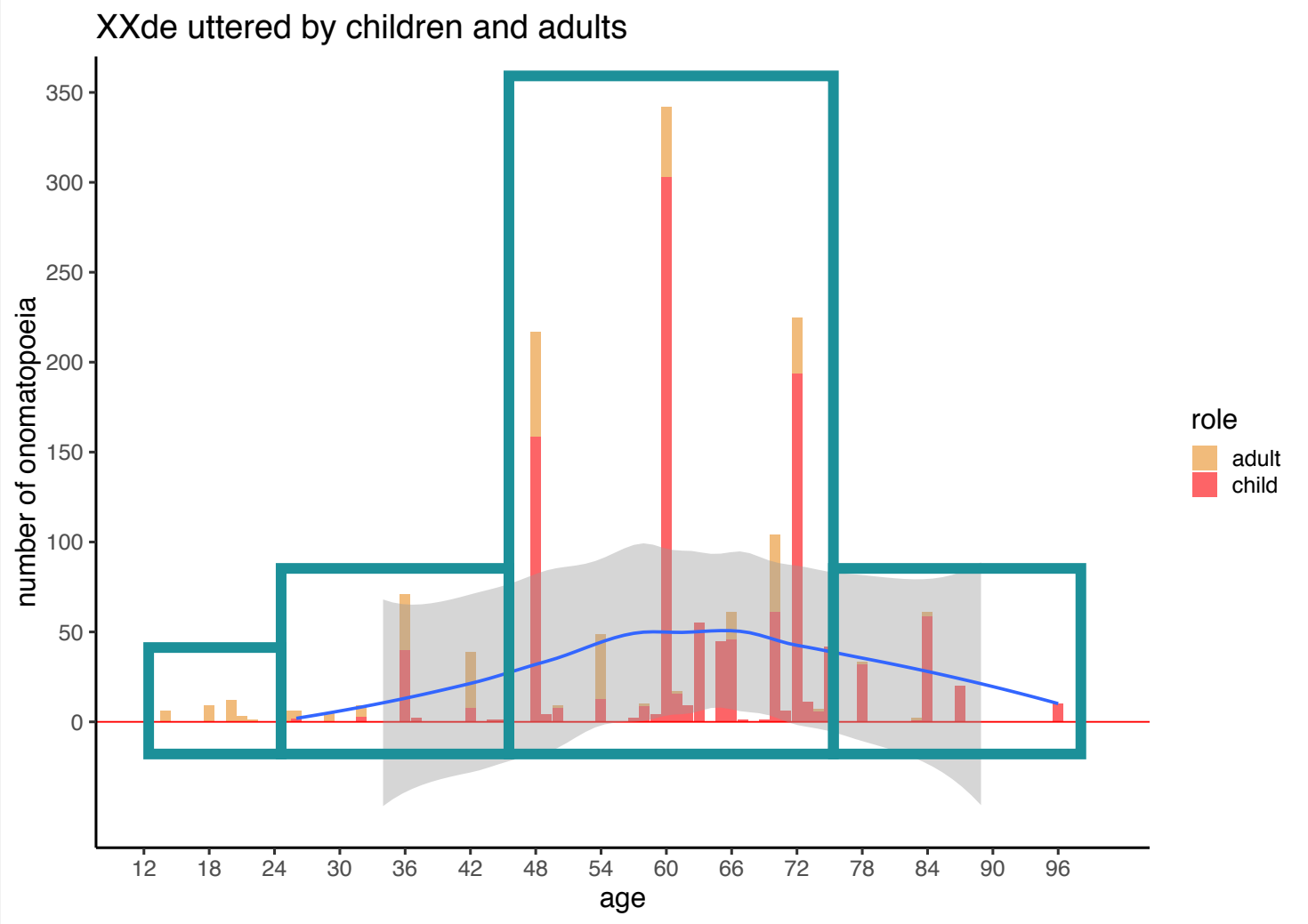
Reduplication: ideophonized constructions



Reduplication: ideophonized constructions

4 main periods

1. (0;0 – 2;0)
   input from adult
2. (2;0 – 3;9)
   rising out from child
3. (3;9 – 6;3)
   child usage peak
4. (6;3 – …)
   child post-peak

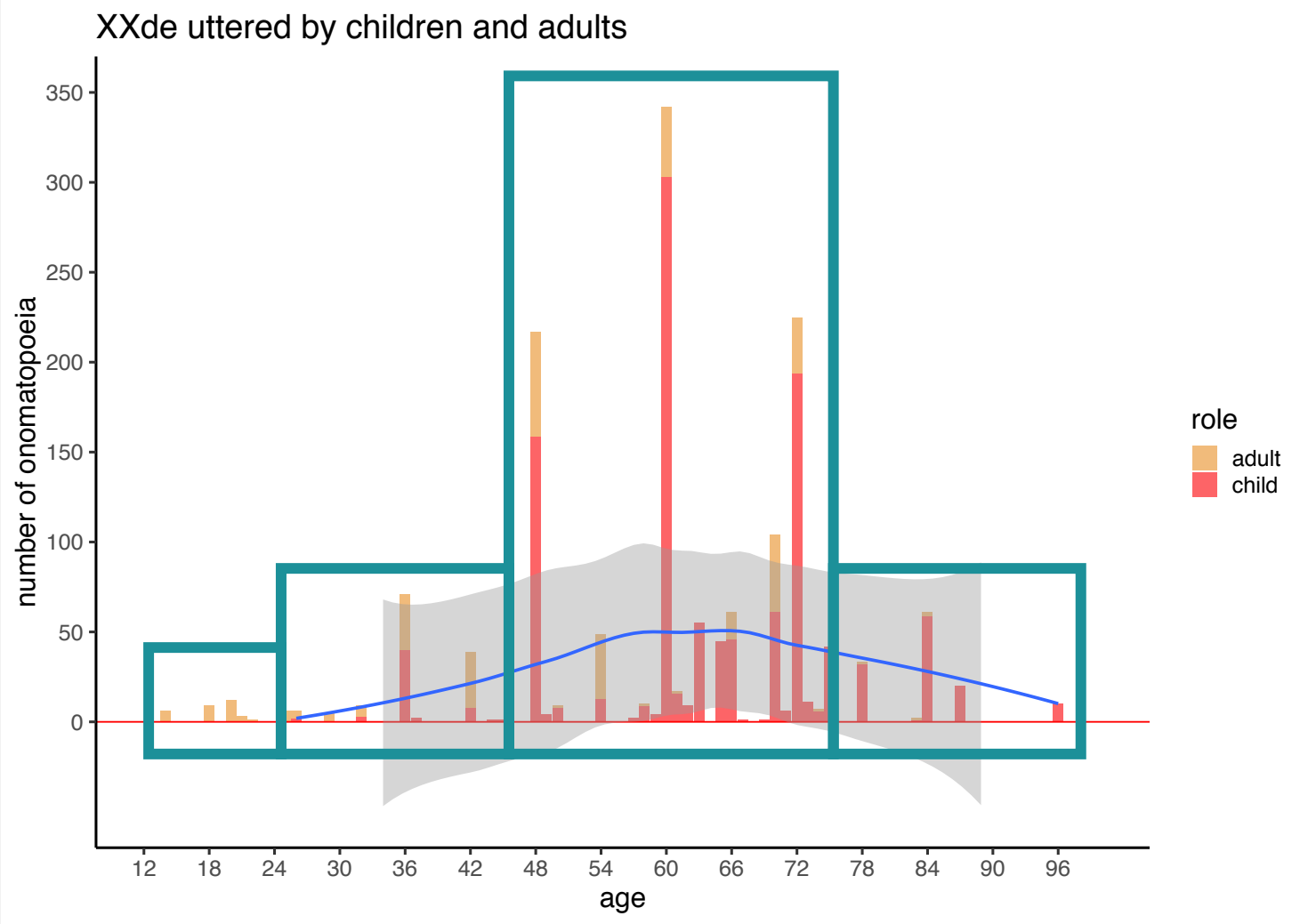


Qualitative case studies

Reduplication: ideophonized constructions

4 main periods

1. (0;0 – 2;0)
   input from adult
2. **(2;0 – 3;9)**
   rising out from child
3. **(3;9 – 6;3)**
   child usage peak
4. (6;3 – …)
   child post-peak



The sun is round and the moon crooked (stage II)

A	这 是 什么 颜色	What colour is this?
A	圆圆 的 红 太阳	A **round-round** red sun
C	我 正 准备 画 圆圆 的 红 太阳 呢	I'm just about to draw a **round-round** red sun
A	好 哟	Okay
A	这 太阳 画 得 真 漂亮	You drew this sun really beautifully
C	好啦	Okay
A	好啦	Okay
A	这 画 了 几 个 太阳 呀	How many suns did you draw here?
A	一 个 太阳 两 个 太阳 三 个 五 个 太阳	One sun, two suns, three suns, five suns
A	你 画 个 小 鱼	Let's draw a small fish
A	好不好 呀	Can you do it?
C	这 是 什么 笔 呀	What kind of brush is this?
A	这 是 水彩笔	This is a watercolour brush
A	圆圆 的 太阳 弯弯 的 月亮	A **round-round** sun and a **crooked-crooked** moon
A	画 个 弯弯 的 月亮	Let's draw a **crooked-crooked** moon
A	弯弯 的 月儿 小小 的 船	A **crooked-crooked** moon, a **small-small** boat
C	弯弯 的 月儿 小小 的 船	A **crooked-crooked** moon, a **small-small** boat

Zhou1, age (2;8)
Transcript_id: 20336
Utterances: 201-217

Apples are red-red, hard-hard, fragrant-fragrant and sweet-sweet (stage III)

C	苹果 的 皮 是 红红 的	Apple skin is **red-red**
C	而且 里面 的 肉 是 白色 的	And the *meat* inside is **white-colour**
A	嗯	Yes
C	它 的 把子 黑黑 的	The stem is **black-black**
A	摸 上去	What does it feel like?
C	硬硬 的	**Hard-hard**
A	好 闻 上去	Good, what does it smell like?
C	香香 的	**Fragrant-fragrant**
A	咬 在 嘴巴 里面	And if you bite it?
C	甜甜 的	**Sweet-sweet**
A	很 好 那 咬 了 一 口 苹果 不 吃 放 在 那 边 它 就 会 怎么样	Very good. And if you bite the apple but don't eat and put if over there, what will happen?
C	黑 掉	Become **black**
A	很 好	Very good

AcadLang, age (4;2)
Transcript_id: 11450
Utterances: 1-13

What is going on?

Around age 1;0 Mandarin acquiring infants already use a number of onomatopoeia / ideophones.

At around age 2;0 simple but real dialogues can occur between infants and adults, in which they get output that contains reduplicated constructions.

In these dialogues there is a certain object that the child is asked about and a ***more contentful* conversation** emerges.

This is possible because of the **joint attention** the child and the adult have towards the object.

Intersubjectivity: in three stages

1st order

Proto-mimesis

- neonatal imitation
- (simple) empathy
- mutual attention

Zlatev (2008:227)

Intersubjectivity: in three stages

1st order

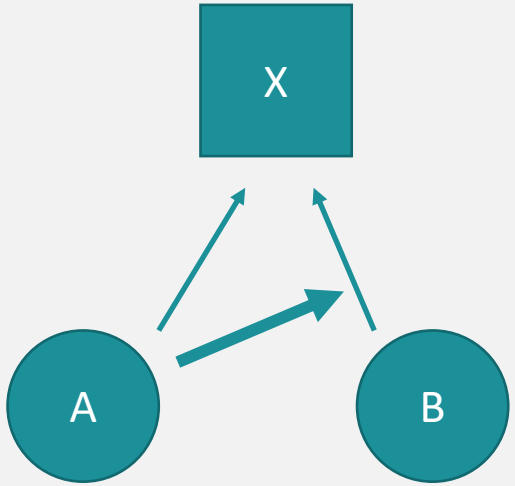
Proto-mimesis

- neonatal imitation
- (simple) empathy
- mutual attention

2nd order

Dyadic mimesis

- cognitive empathy
- shared attention
- understanding other's intentions



Zlatev (2008:227)

Intersubjectivity: in three stages

1st order

Proto-mimesis

- neonatal imitation
- (simple) empathy
- mutual attention

2nd order

Dyadic mimesis

- cognitive empathy
- shared attention
- understanding other's intentions

3rd order

Triadic mimesis

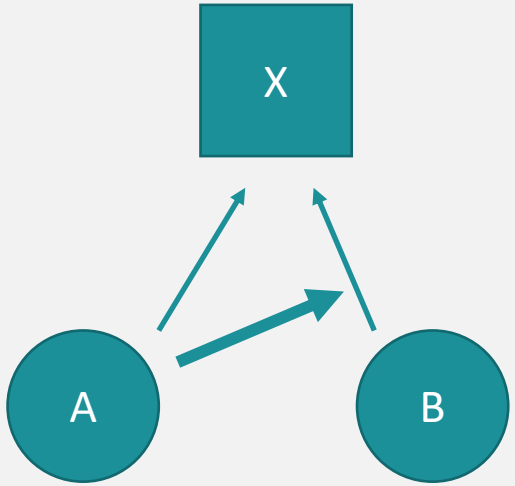
- joint attention
- haven and under-standing intentions

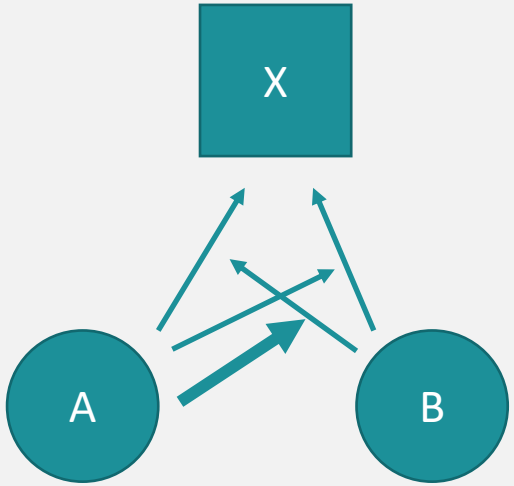
Protolanguage

- semantic conventions

Language

- (false) belief understanding





Zlatev (2008:227)

Reduplication as a trigger for intersubjectivity

Ideophones are
- marked
- words
- that depict
- sensory imagery,
- which belong to an open lexical class

Reduplicative constructions are
- marked
- constructions
- that depict
- sensory imagery,
- ~~which belong to an open lexical class~~

Based mostly on the criteria of MARKEDNESS and DEPICTION, we believe that the function of these reduplicative constructions ismultifold:

1. Draw attention to the object
2. Scaffold the language for the child
3. Depiction of what the object looks, feels, smells, tastes… like
   (“ideophones are the next best thing to having been there.” Levinson, quoted by Dingemanse 2011:299)

Reduplication as a trigger for intersubjectivity

While reduplication are is thus an important factor facilitator for intersubjectivity, it is neither sufficient nor necessary — other means, e.g. gesture, exist to convey these language elements.

Important to note, is that

1. There is an onomasiological choice made at every scaffolding moment (from the adult's perspective)
2. This XXde construction persists well into adult language, so it is not (just) motherese/parentese.

Conclusions

Ideophones are starting to be learned early on, especially onomatopoeia

Onomatopoeia / ideophones are acquired from about the age of 1;0 onwards.

In Cantonese and Japanese they frequency shows nice bell-curves, but in Mandarin it did not.

This is perhaps due to gaps in the data collection, or due to less salient constructions that would fit the idea of onomatopoeia / ideophones.

Still, the peaks seems to be around 3;0 and 4;0 — later than Japanese (2;8) or Cantonese (2;6).

Reduplication can act as a signal to trigger intersubjectivity through markedness and depiction

We have attempted to show that, based on corpus material, reduplication can act as a trigger for intersubjectivity — most notably to let the acquiring child ‘second-hand’ experience the sensory imagery of the object.

This is mostly limited to basic level items, or items that the child is referentially familiar with (sun, moon, animals, fruit…).

Furthermore, we acknowledge that this work is still “in its child’s shoes” (Dutch phrase), so more research is needed to investigate the interplay more comprehensively.

Evaluation of the material and methodology

As for material and methodology, the childes-db as a mirror of CHILDES works well:

+ the data is open,

+Scripts will (soon) be available at github.com/simazhi

- Many utterances are ‘lost’ because of lack of child_age

- Typical for corpora: you have to make do with what you have — we did not collect the data, but recycle it.

+ That means we did not manipulate it either

Thank you!
ご清聴ありがとうございました!

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