

verb – present participle

noun phrase

[ Studying Language Development

within a Text Classifier Framework ]

preposition

indefinite  
article

noun phrase

Flora Zhang

Proper nouns - names

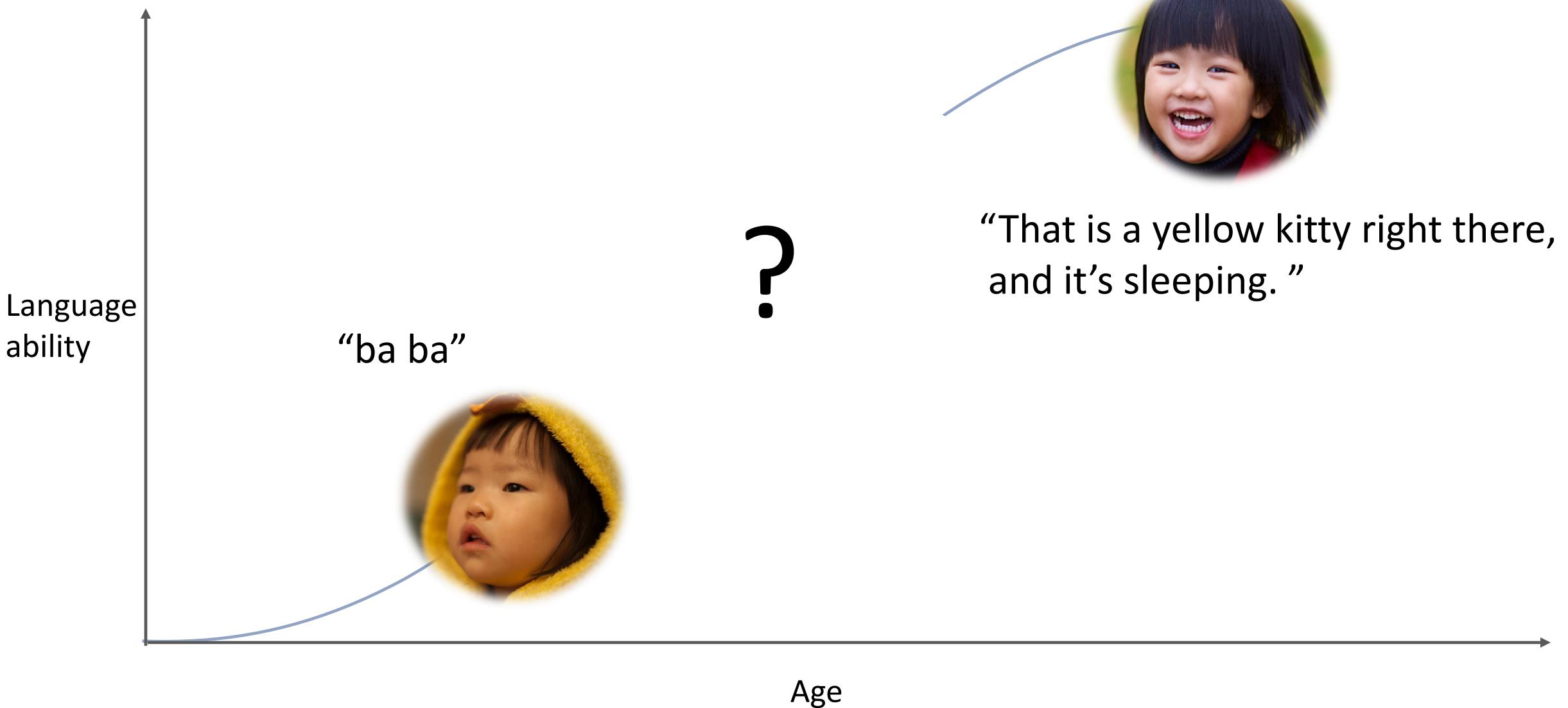
[ Who do you think said these sentences?

... and, how can you tell? ]

“That is a yellow kitty right there,  
and it’s sleeping.”

“ba ba”

# [ How did children become competent speakers of a language? ]



Historically, the focus has been on

Topically

Number of words  
(Huttenlocher et al., 1991; Fernal et al., 2013)

Specific syntactic structures  
(Brown, 1973; Bowerman, 2014)

... ...

Methodologically

Small number of data points  
(Nice, 1925; Brown, 1973)

Observation at one or a few time points  
(Johnson et al., 2005; Yuan & Fisher, 2009)

Data collection  
(Nice, 1925; Brown, 1973; Parra et al, 2011)

Historically, the focus has been on

## Current project

Topically

- Number of words
- Specific syntactic structures
- ....



**The construction of language:**  
- grammar  
- words  
- communicative signals

Methodologically

- Small number of data points
- Observation at one time point
- Data collection



**Data from the Language Development Project**  
**(Goldin-Meadow et al., 2014)**

- 60 children and their parents
- racially and socio-economically diverse
- Across 5 years, from 14 to 58 months
- Transcriptions of recordings

# [ Build a text classifier for each time point in our data ]

At time  $t$ , **Input:** a sentence

**Output:** child OR parent

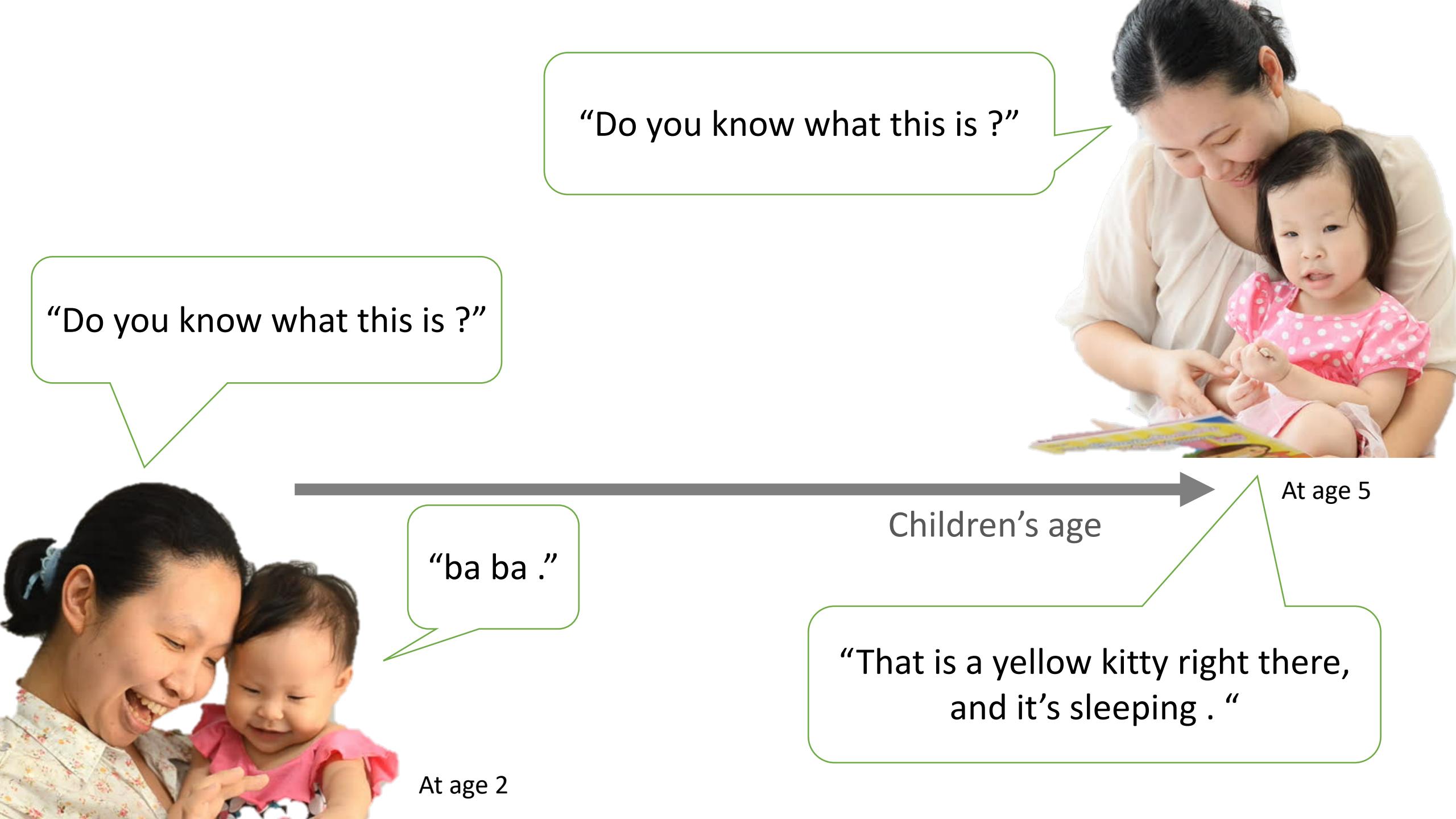
For a given sentence  $S$ ,

what is the probability that a parent said  $S$ ?

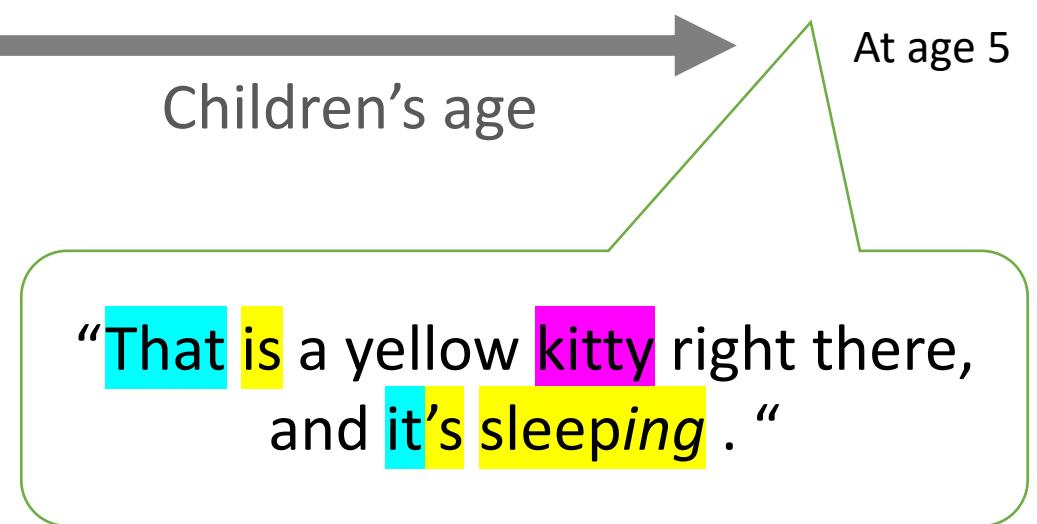
what about the child's probability?

$S$  is represented as a composition of different linguistic features

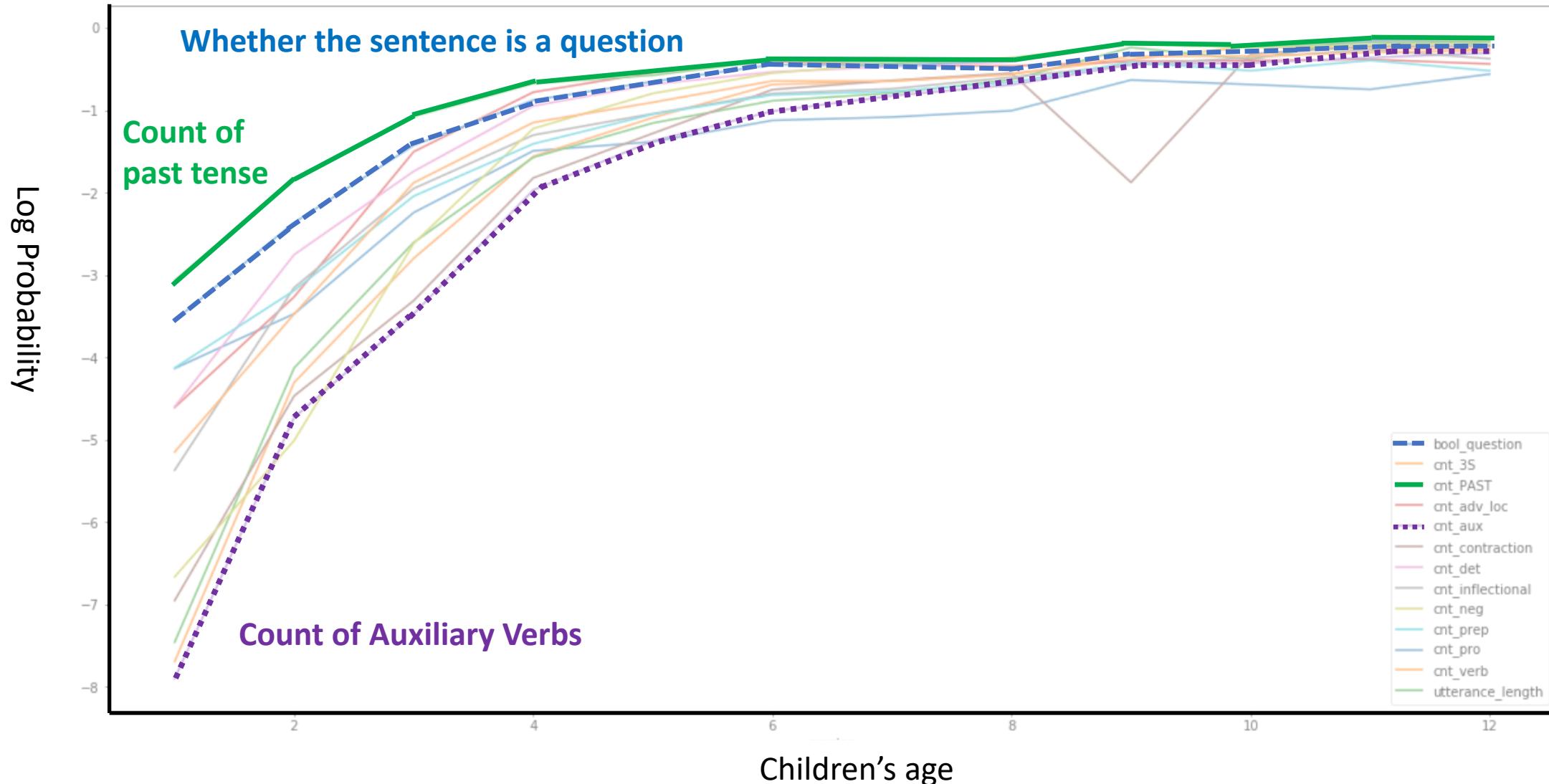
# of words, # of verbs, # nouns,  
whether it is a question, ... ..., in  $S$



Yellow	Verb
Cyan	Pronoun
Magenta	Noun
#	Number of words
Green	Question



[ “meaningless” features of language  
can be particularly informative and a crucial part of a mature language]





Advisor: Daniel Yurovsky



Collaborator: Allyson Ettinger

# [ Thank you ]



Members of CAL Lab