The structure of very early multiword utterances

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Introduction

Children seem to combine words at a very early age

- Ethan's speech[1] at 15 months:

"key open door"

"bottle rolling"

"blue car broken down"

How early do children produce multi-word utterances?

- Most research has claimed that they appear around age 20 months[2], but with little empirical evidence.

Are early multi-word utterances syntactically structured?

- Important for language acquisition theories:
  e.g., nature[2] vs. nurture[3]

Methods

Data

- Primary: 7 children's multi-word utterances from longitudinal corpora[1, 4, 5, 6] in CHILDES[7]
- Secondary: 12 children's multi-word utterances from Manchester[8], CHILDES[7]

Child	Age (months)	Word types by 20 / total word types	Utterances by 20/ total utterances
Ethan[1]	11-35	813 / 1827	4471 / 9803
Naima[1]	12-46	1141 / 2855	6874 / 24304
L[4]	15-84	615 / 2040	5708 / 21345
Ross[8]	1-92	204 / 416	1033 / 1747
Cameron[5]	6-34	404 / 759	2130 / 4280
Rebbeca[5]	3-20	687 / 739	13430 / 14474
June[6]	15-21	180 / 261	1840 / 2458

Analyses

Both the aggregated data of all children and individual children's data were analyzed.

- Study 1: the distribution of 1-5+ utterances by age
- Study 2: the proportion of structured vs. unstructured 3-word utterances by age

Classifier

- Task: classify structured vs. unstructured utterances
- Structured utterances have either:

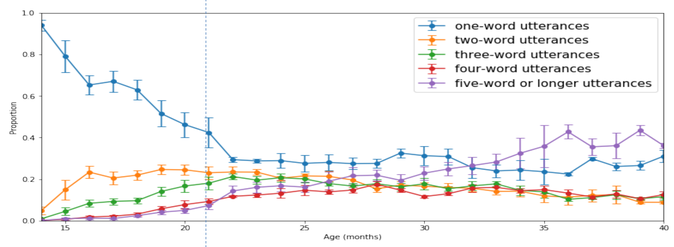
  a) phrasal structure (e.g., PP, Det P, VP) **OR**

  b) subject-predicate or predicate-object structure

Results

Study 1: How early do children produce multi-word utterances? By 15 months

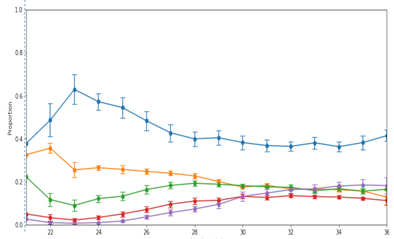
Early three-word utterances



15 months–545 (n=7) utterances (16%)
20 months–2829 (n=6) utterances (57%)

5/7 children follow the overall pattern

Manchester



21 months – 61%
23 months – 40%

9/12 children follow the overall pattern

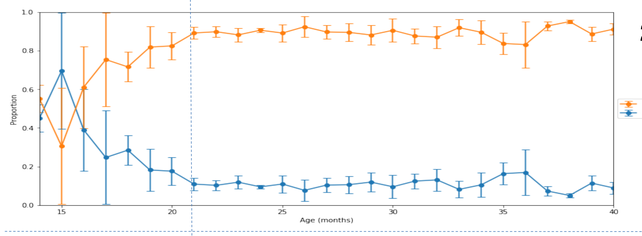
Study 2: Are early multi-word utterances syntactically structured? Yes

Classifier evaluation

- 10 random samples from child utterances
- Each sample – 50 vs. 50 utterances
- Evaluated by hand

	Structured	Unstructured
Structured	49.00 (0.71)	31.80 (4.44)
Unstructured	1.00 (0.71)	18.20 (4.44)

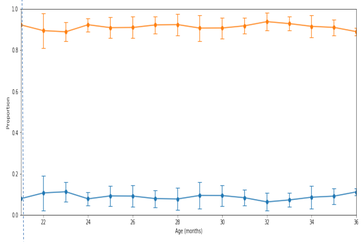
Early three-word utterances



15 months–18 (n=7) 3-word utterances (35%)
20 months–486 (n=6) 3-word utterances (85%)

6/7 children follow the overall pattern

Manchester



21 months – 96%

All children follow the overall pattern

Discussion

How early do children produce early multiword utterances?

- Children produce a **sizable** number of multiword utterances before 20 months

Are early multi-word utterances structured?

- **Yes.** The proportion of 'structured' utterances dominates 'unstructured' ones as of 16 months of age, although the classifier tends to underestimate the proportion of structured utterances.

Future research

Do the structured utterances reflect children's abstract syntactic knowledge or merely imitations from adult input?

References

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