# A Quantitative Look at the
# Acquisition Order of Functional Morphemes
## ENG-3040 First Language Acquisition

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## Research Question

1. present participle
2./3. in, on
4. regular plural
5. simple past (irreg.)
6. possessive -'s/-s'
7. copula 'be' (uncontractible)
8. articles
9. simple past (reg.)
10. 3.SG.PRES (reg.)
11. 3.SG.PRES (irreg.)
12. auxiliary 'be' (uncontractible)
13. copula 'be' (contractible)
14. auxiliary 'be' (contractible)

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**Adam**

Present
  progressive
*in*
*on*, plural

Uncontractible
  copula,
  past irregular

**Sarah**

I (2;3)

II (2;10) | Plural

*in*, *on*

Present
  progressive,
  past irregular
Possessive

III (3;1)

Uncontractible
  copula
Articles

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- Shortcomings of an automated, quantitative analysis?
    - How to define whether a morpheme has been acquired?
    - Expectation: Tagging errors

## Data

Parent-child interactions (English):

| Corpus | Age | N |
|---|---|---|
| Braunwald (1971) | 1;3–7;0 | 1 |
| Brown (1973) | 1;6–5;2 | 3 |
| Demetras (1989) | 2;0–3;11 | 1 |
| Henry (1995) | 2;0–4;6 | 8 |
| Kuczaj (1977) | 2;4–5;0 | 1 |
| Sachs (1983) | 1;2–4;9 | 1 |
| Resulting corpus | 1;2–**5;0** | 15 |

Tagged: morphology, dependencies

# Method

Python, modified version of NLTK's corpus reader (Bird et al., 2009)

Method:

- ▶ Define rules for each morpheme, e.g.
  - ▶ 1. present participle: suffix, PRESP
    *CHI:   doing                nothing              .
    %mor: part|do-**PRESP** pro:indef|nothing .

  - ▶ 12. auxiliary 'be' (uncontractible): 'be', aux, syntactic position
    *CHI:   are               you            making              [...]
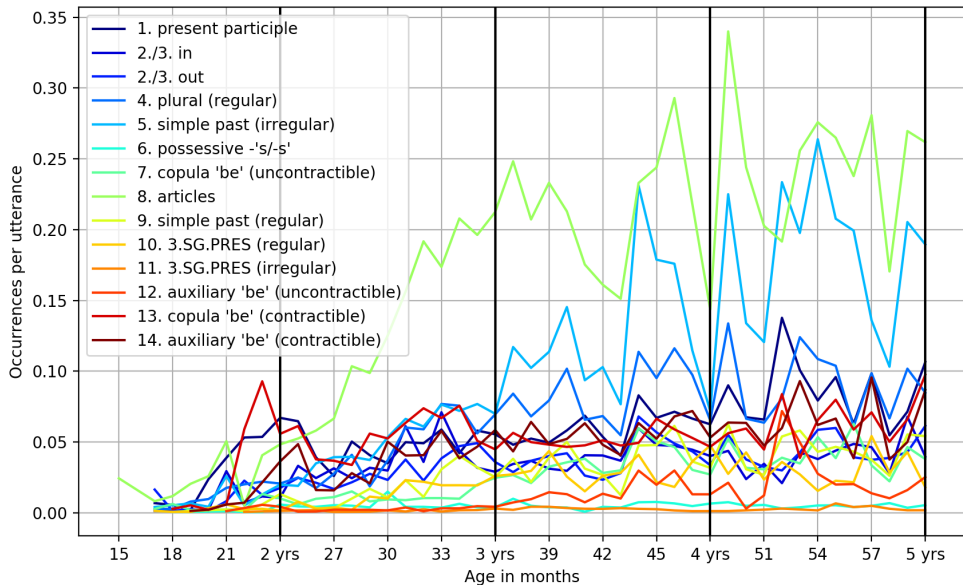    %mor: **aux**|**be**&PRES pro:per|you part|make-PRESP [...]

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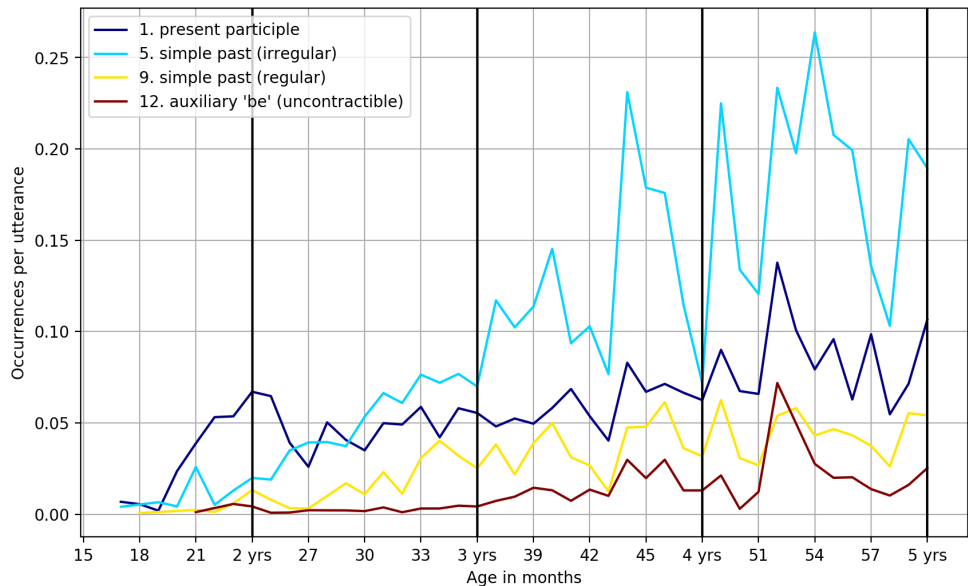
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- ▶ Tally how often each functional morpheme appears
  (per person, per age).

- ▶ Map the number of each morpheme's occurrences per
  utterance by month.

# Results

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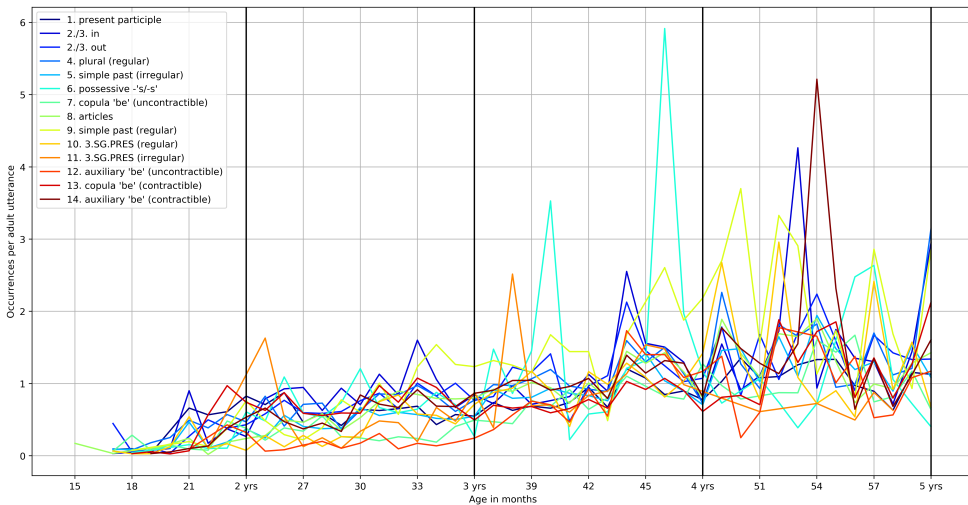  - Partially yes
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# Results

- Does a larger corpus reflect Brown's results?
  - Partially yes
  - Partially not, probably also due to...
- Shortcomings of an automated, quantitative analysis?
  - How to define whether a morpheme has been acquired?
    - Emergence vs. mastering
  - Tagging errors: worse than expected!
  - Corpus size still very small

Code:
github.com/verenablaschke/morph-development-childes

# Additional Graphics

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