Testing the Competing Sources of Input Account on English-Speaking Children's Verb-Marking Errors Across Development

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1. INTRODUCTION

- Many young English-speaking children make verb-marking errors in their speech such as using:

  1) the bare form of the verb when an inflected form is required.

  e.g., "**Baby cry**" instead of "**Baby cries**"

  2) the progressive participle when an auxiliary and progressive combination is required.

  e.g., "**Baby crying**" instead of "**Baby is crying**"

- The **Competing Sources of Input** (**CSI**) account proposes that verb-marking errors reflect the extraction of bare form sequences from longer structures in the input.

  e.g., "**Baby cry**" from "**Does baby cry?**" or "**Baby crying**" from "**I can hear the baby crying**"

- Children use these bare form sequences in contexts in which the inflected form is required.

  e.g., producing "**This baby cry**" or "**The baby crying there**"

- However, apparent support for this account[1,2] can be explained by effects of bare form verbs alone.

AIMS

We use two pre-registered corpus analyses to investigate:

Study 1 Whether there are sequence effects on children's verb-marking errors and whether these effects occur over and above verb effects which are already well established in the literature[3,4].

Study 2 How these effects change over development.

Pre-registrations:
Study 1: http://osf.io/ef8bm

Study 2: http://osf.io/rx43n

2. METHODS

Procedure

Stage 1 — Select Child and Child-Directed Speech Corpora

Stage 2 — Extract and Identify Verb-Marking Errors in Third-Person Singular (3sg) Utterances

Stage 3 — Calculate Child-Directed Speech Measures (Bias Statistics)

Analysis — Mixed Effects Logistic Regression Modelling

Stage 1

Child Corpora

Study 1: Manchester Corpus[5]:
12 children between 2 and 3 years old.
N = 4592 3sg Utterances

Study 2: Data from Study 1 +
Post-Manchester Corpus[6,7]:
12 children between 3 and 4 years old.
N = 9263 3sg Utterances

Child-Directed Speech Corpora

English (UK & USA) subsections of CHILDES[8]

All corpora (**N = 32**) were of naturalistic speech between typically developing children and their caregivers.

Stage 2

Utterances were coded for error:

1 = **Error** (where the bare form was produced instead of the inflected form)
e.g., **Baby cry**

0 = **Correct** (where the correctly inflected form was produced)
e.g., **Baby cries**

NA = **Exclude** (e.g., where the bare form was produced correctly)
e.g., **Why does baby cry?**

*CHI: does [/] does your baby go in the bath ?	NA
*CHI: because he gets lost sometimes .	0
*CHI: he want get some fire .	1
*CHI: where [*] that other one go ?	NA
CHI: where [0does] a baby cow goes [*] ?	NA
*CHI: teddy likes to play with it .	0
*CHI: sometimes it fits in to this .	0
*CHI: and Nana want sit in the front .	1
CHI: it need [0es] some those .	1

Stage 3

Subject-Verb Sequence Bias:

Frequency of a bare form subject-verb sequence (e.g., "**Baby cry**" in "**Does baby cry?**")

Vs

Frequency of an inflected subject-verb sequence (e.g., "**Baby cries**" in "**The baby cries**")

Verb (in 3sg contexts) Bias:

Frequency of a bare form verb in any 3sg context (e.g., "**Cry**" in "**Baby/Mummy/He cry**" etc.)

Vs

Frequency of an inflected verb in any 3sg context (e.g., "**Cries**" in "**Baby/Mummy/He cries**" etc.)

Verb (in any context) Bias:

Frequency of a bare form verb in any context (e.g., "**Cry**" in "**I/You/We cry**" etc.)

Vs

Frequency of an inflected verb in any context (e.g., "**Cries**" in "**Baby/Who Cries**" etc.)

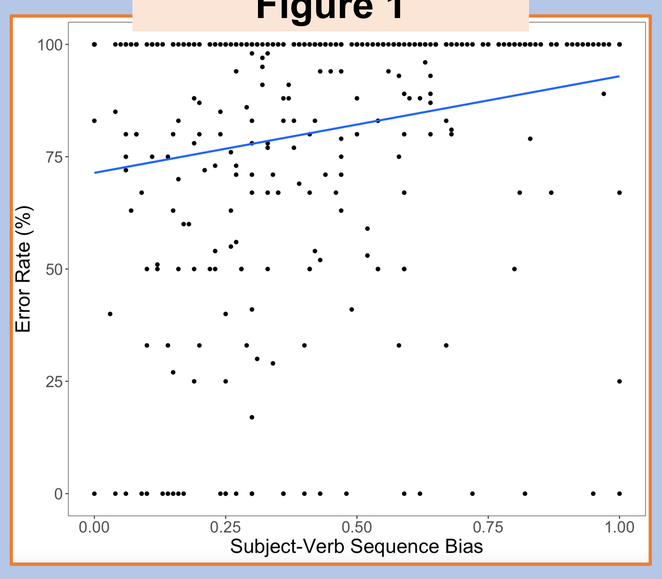
All bias statistics ranged from **0** (fully biased towards inflected form) to **1** (fully biased towards bare form)

3. RESULTS

Study 1

- **All 3** bias statistics **significantly predicted** verb-marking errors.
- **High bias** = **more errors.**
- **Best predictor** = **subject-verb sequence bias** (see **Figure 1**).
- Subject-verb sequence bias accounted for significant unique variance **= occurred over and above verb effects**.

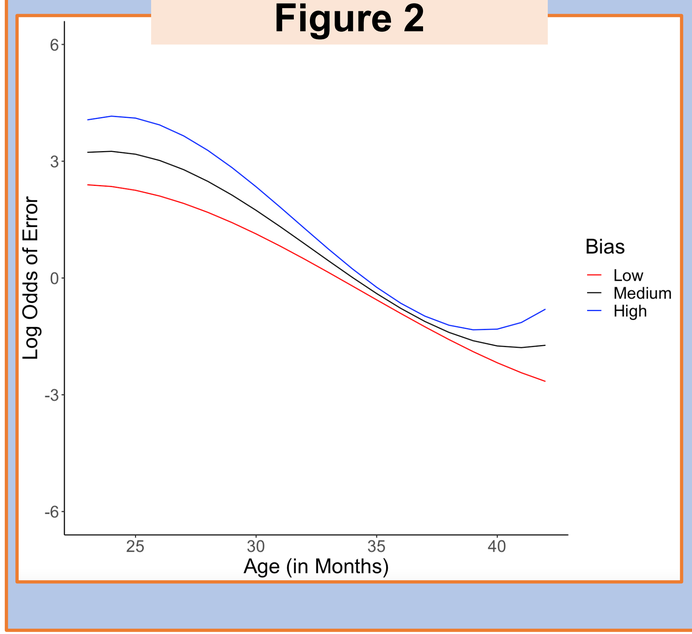
Figure 1



Study 2

- **Subject-verb sequence bias** = only **consistent** effect across **both** age groups.
- **Verb bias** = **not predictive** in the **older group**.
- Effect of **subject-verb sequence bias** grew **weaker** over time (see **Figure 2**).
- This suggests that children recover from making verb-marking errors by becoming progressively **more sensitive** to **context**.

Figure 2



4. CONCLUSION

- We found strong evidence for input effects on children's verb-marking errors and evidence for sequence-specific effects directly supporting the CSI account.
- The developmental pattern is consistent with the idea that children can recover from verb-marking errors by becoming more sensitive to context, at first just immediate contexts (e.g., "**Baby**" in "**Does baby cry?**") and eventually more distant contexts (e.g., "**Does**").
- An interesting avenue for future research is to investigate sequence effects in other languages e.g.,

1) Spanish agreement errors (e.g., "**Mama y Papa quiere**" from 3sg sequences like "**Papa quiere**")
2) Dutch Optional Infinitive errors (e.g., "**Dolly dansen**" from modal questions like "**Kan Dolly dansen?**")

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