Grammatical or Notional Number?
3-year-olds' Production and Comprehension of Verb Agreement

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Background

Syntax and Semantics in Acquisition

What is the nature of the grammatical categories that children use in production and comprehension?

- Lack of categorization errors suggests syntactic representations (e.g., Valian, 1986; Gordon, 1985).
- Limited set of semantic relations in early word combinations suggests lack of syntactic abstraction (e.g., Bowerman, 1973).

English number marking offers an opportunity to explore the role of semantics in forming grammatical categories and grammatical dependencies:

- Number is marked on nouns, and has a canonical semantic interpretation.
- But notional and grammatical number do not always match:
  - Mass: *the corn is…* (one or more ears)
  - Invariant Plural: *the glasses are…* (one or more pairs)
- Subject NP number controls agreement on verbs; for adults, grammatical number dominates (Bock & Middleton, 2011).

Notional or Grammatical Number:

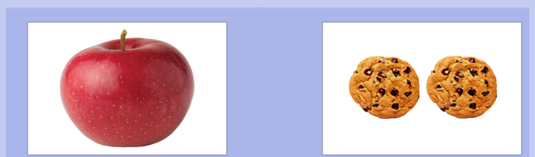
When children compute verb agreement, do they rely on number meaning or on syntax?

Early noun production and comprehension reflects sensitivity to both notional and grammatical number:

- 2.5-year-olds consistently inflect count nouns for number (*dog/dogs*; e.g., Brown, 1973).
- 2-year-olds interpret linguistic number as conveying object number (*There are some daxes*; Kouider et al., 2006).
- But 2-year-olds mark mass nouns as singular regardless of object number (*What do you get in a furniture/toy store? furniture/toys*; Gordon, 1985; Valian, 1986).
- … and use count vs. mass syntax to disambiguate the meaning of novel nouns (Gordon, 1985; Soja, 1992).

Toddlers produce and comprehend agreement-marked verbs with count noun subjects

- 2- to 3-year-olds produce mostly correct verb forms (Brown, 1973; Theakston, Lieven & Tomasello, 2003).
- 2- to 3-year-olds use number-marked verbs predictively in online comprehension (Lukyanenko & Fisher, 2010; see also Grüter & Fernald, 2011).



Does early production and comprehension of verb number-marking reflect grammatical or notional number?

- How do children expect verbs to agree with mass nouns and invariant plurals?

Experiment 1: Production

Question

Do children rely on grammatical or notional number in their productions of noun inflection and verb agreement?

Method

Elicited Production

Participants

24 3-year-olds (mean 3;2 | range 2;10-3;6)

Stimuli

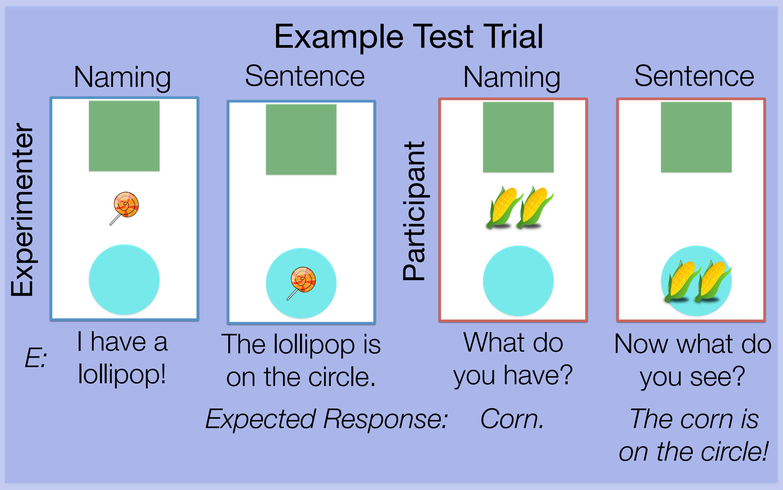
Clip-art pictures displayed on a computer screen

4 count noun practice trials, followed by 12 test trials:

- 4 count — *shirt, apple, banana, phone*
- 4 mass — *corn, toast, bread, cheese*
- 4 invariant pl. — *scissors, glasses, pants, pajamas*

Half 1-object and half 2-object trials

Half preceded by a singular and half by a plural model



Experiment 2: Comprehension

Question

Can children use verb agreement online as a cue to the grammatical number of the subject noun phrase?

Method

Looking-while-Listening (Fernald et al., 2008)

Participants

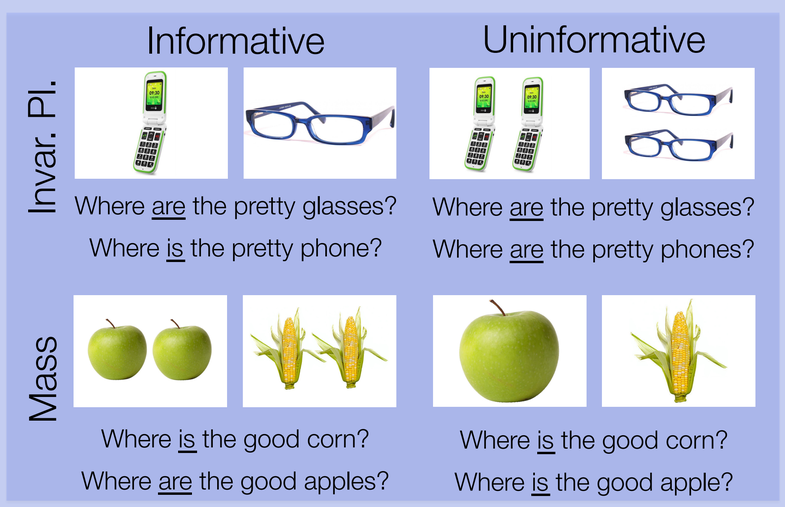
32 3-year-olds (mean 3;1 | range 2;10-3;5)

Stimuli

32 trials: 8 of each of the 4 trial-types shown below

Yoked pairs of pictures:

- Invariant Plural: *glasses-phone* *pants-shirt*
- Mass: *toast-banana* *corn-apple*



Results

Experiment 1: Production

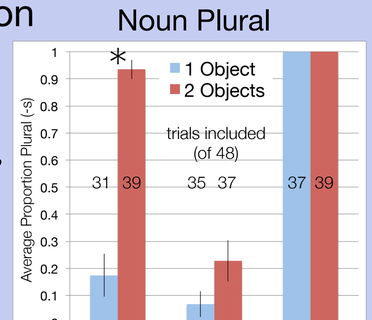
Marking the nouns

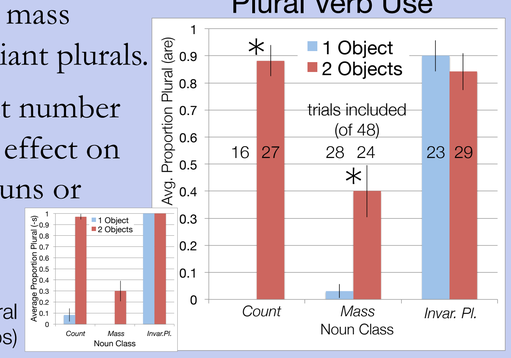
Children used plural /s/ reliably more in 2-object trials, for count but not mass nouns or invariant plurals.

Marking the verbs

Children produced plural verbs reliably more often in 2-object trials, for count and mass nouns but not invariant plurals.

In both cases, object number had a reliably larger effect on count than mass nouns or invariant plurals.

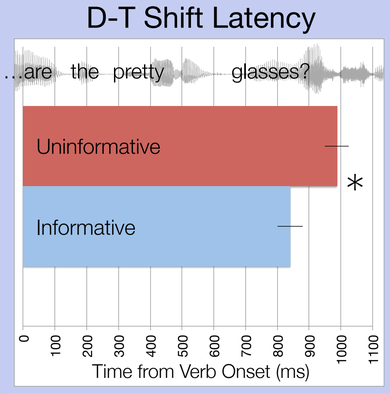


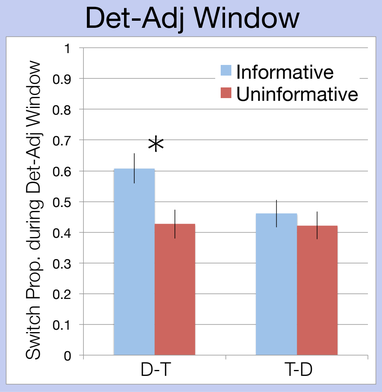


Experiment 2: Comprehension

Even when notional number was held constant, 3-year-olds used number-marked verbs in online processing. In informative compared to uninformative trials, children were:

- reliably faster to shift from distracter to target
- more likely to switch from distractor to target before noun onset.





Conclusions

Production

Across subcategories of nouns, 3-year-olds rely primarily on grammatical, not notional, number in choosing:

- to use or omit plural /s/
- the appropriate form for an agreeing verb

Comprehension

Even in the absence of its canonical notional correlate, children used number marking on a verb to predict the grammatical number of an upcoming noun.

Children's reliance on grammatical rather than notional number in these contexts suggests that children use the syntactic features of a noun, not solely its meaning:

- to determine the appropriate form of the noun itself
- to control grammatical dependencies between elements of the sentence.

Acknowledgements

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