Null subjects
Patterns in the data
Viability of a processing account
Connection to the root infinitive stage

6. Null subjects in L1A

CAS LX 540: Acquisition of Syntax

Spring 2012, Groundhog Day

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The phenomenon
Two possible explanations

Null subjects in English

Until around 3 years old, children will often omit subjects:

(1) Drop bean.

(2) Fix Mommy shoe.

(3) Helping Mommy.

(4) Want go get it.

Why do they do this? What if anything does this tell us about the developing grammar?

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Null subjects as an adult language option

Lots of languages *allow* you to drop the subject.

Italian The verb generally carries enough information to identify the person, number, gender of the subject.

Chinese Where the subject is obvious from context it can be left out.

Not English Let's talk about Bill. *Left. *Bought groceries. *Dropped eggs.

On the view that kids know language, but are just trying to figure out the specific details (principles and parameters), one possibility is that they always start out speaking Italian (or Chinese) until they get evidence for the contrary. This hypothesis: **Null subjects are grammatical for children.**

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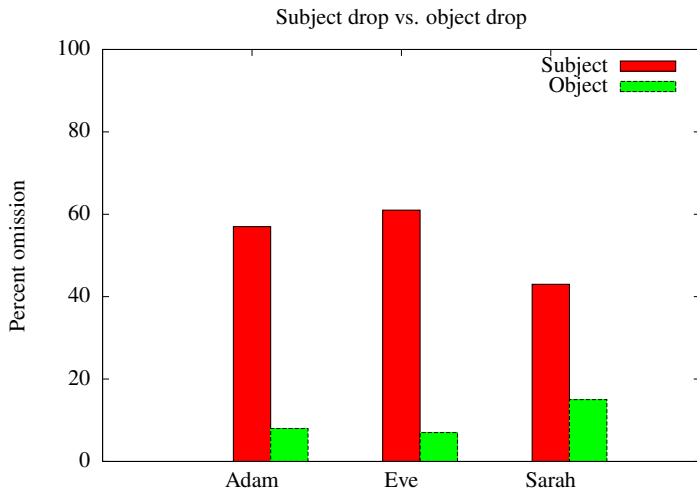
The phenomenon
Two possible explanations

Null subjects as a processing limitation?

Children do tend to speak in short sentences. There seem to in fact be identifiable stages in terms of the length of children's sentences (one-word stage, two-word stage, multi-word stage). This is often measured in terms of MLU (mean length of utterance), which roughly corresponds to linguistic development.
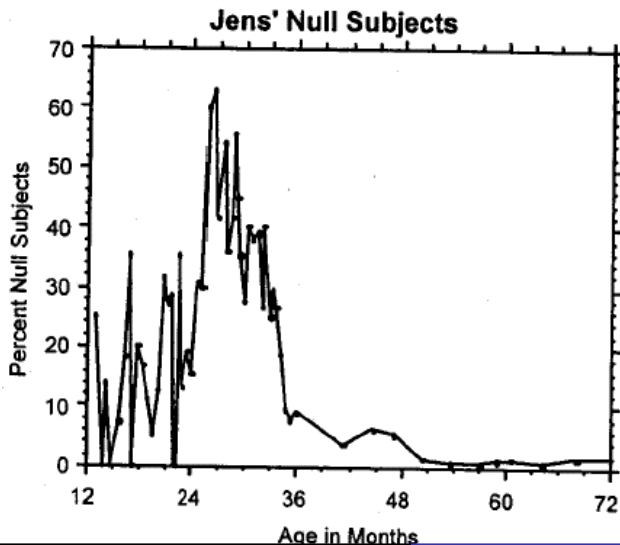
Perhaps the kid's just trying to say a three-word sentence in a two-word window, so something's got to go.

This hypothesis: **Null subjects result from some kind of processing limitation**

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Subject/object asymmetries
Against a mis-set null subject parameter

Subject vs. object drop

Subject drop vs. object drop

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Null subjects vs. time

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Subject/object asymmetries
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Why can't English kids really be speaking Italian?

In Italian, subjects can be dropped (but *need* not be), in English, they can't be dropped at all.

So, since *having* subjects is consistent with Italian, what's going to signal to the child that they've got the wrong kind of language?

This is a "subset" problem. One that could conceivably be solved via *it* and *there*?

In Italian, null subjects are allowed wherever a subject pronoun would be, including embedded finite clauses ("I know that [he] has left") and finite root questions ("What has [he] bought?").

In Kid English, null subjects never show up in these environments. It doesn't seem so much like Italian.

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Ok, are they speaking Chinese?

In adult Chinese, subjects can also be omitted.

In Italian, Spanish, the allowability of null subjects was taken to be tied to agreement. Something about rich agreement licenses null subjects.

In Chinese, there is no agreement morphology, so that isn't what's allowing null subjects.

Proposal: What allows argument omission in Chinese is a form of *topic drop.* They are allowed roughly when they are "old information," recoverable.

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Is Kid English Chinese?

Suppose that these are the parameters:

±pro-drop The Italian/English difference.

±topic-drop The Chinese/English difference.

Kid English isn't +pro-drop. In +topic-drop languages, subjects aren't particularly privileged. Subjects tend to be old information, but when objects are old, they too can be dropped (in adult Chinese).

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Kid English is not Chinese

We've already seen that Kid English overwhelmingly drops subjects, not objects. (33% subjects, 4% objects, according to Wang et al. 1992).

Kid English looks like English with some extra null subjects.

But Kid Chinese drops even more subjects and lots more objects (47% subjects, 23% objects).

Kid Chinese looks like Chinese with maybe some extra null subjects.

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Parameters are quick

And recall that Italian allows null subjects in embedded clauses, *wh*-questions, etc.

Kid Dutch and French have practically no null subjects in *wh*-questions.

Kid Italian has something like 56% null subjects in *wh*-questions.

If Chinese/Dutch is distinguished by [±topic-drop] and Italian/English is distinguished by [±pro-drop], the kids already know what they're trying to speak by the time we're testing them.

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Bloom 1990 and processing
Hyams & Wexler 1993 contra processing
Null subjects come from the pronoun pile
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Processing accounts?

Kids have severely limited processing power, and so they leave off subjects to ease the load. (Bloom 1990)

In favor:

- Length limitations even in imitations.
- Kids omit things other than subjects.
- Some kids don't eliminate subjects, only reduce their frequency.

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Against processing accounts?

Contra? Hyams points out:

- Build house. . . Cathy build house
- Go nursery. . . Lucy go nursery
- Kathryn want build another house.

Bloom: So, no absolute limit on length, only a tendency to reduce length.

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Predictions about VP length

Bloom (1970) found: negated sentences tend to lack subjects more frequently than non-negated sentences.

Bloom (1990): Hypothesis: Sentences without subjects will have longer VPs than sentences with subjects.

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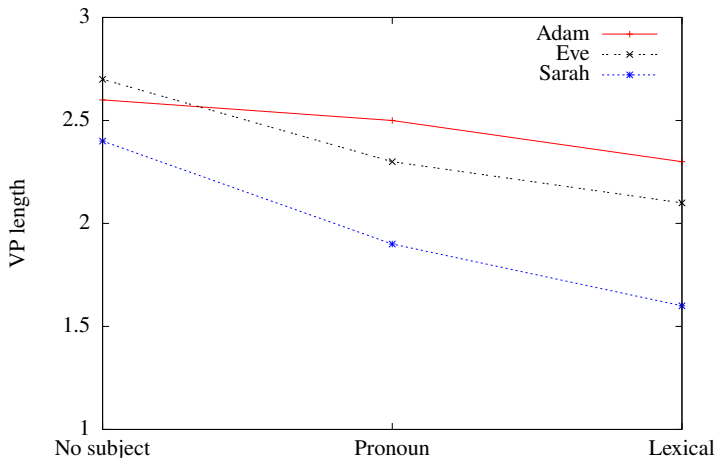Null subjects as a grammatical option

Results on VP length

VP length (words from verb to the end) was counted for sentences with and without subjects.

Results: Mean length of VP in sentences with subjects were (statistically) significantly shorter than those without. E.g., Adam 2.333 with, 2.604 without.

In fact, "long subjects" (lexical subjects), "short subjects" (pronouns), and null subjects correlated with an increase in VP length as well.

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Bloom 1990: VP length results

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Bloom 1990: Why subjects?

And why are subjects dropped more frequently than objects?
Two possibilities?

- Subjects tend to be "given" (old) information) (low "informativeness," more expendable).
- Maybe processing "saves the heaviest load for last."

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Subjects are special

Bloom's (1990) approach (processing) can't be right either.

The difference between subjects and objects is big, and only rate of *subject* drop changes. Adam & Eve both drop around 40–50% of their subjects in an early stage, and in a later stage are down to 15–30%—meanwhile, their rate of object drop stays around 5–10%.

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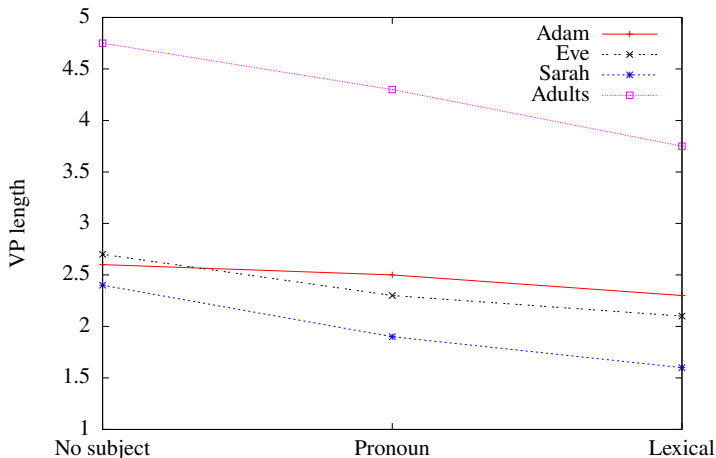
Informativeness doesn't predict omission

With respect to "informativeness": All else being equal, the ratio of missing subjects to specific subjects should be equal to the ratio of missing objects to specific objects.

Turns out that kids drop specific subjects about twice as often (Adam 52%) as they drop specific objects (Adam 21%).

Also: considering Italian adults, we find exactly the same correlation Bloom reported for English kids: VP seems to be longer where there is a null subject, shorter with a pronoun, and shorter still with a lexical subject.

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Italian adults vs. English children

Subject type vs. VP length

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Do Italian adults have a processing deficiency?

Regardless of why the correlation holds, if it is a processing deficiency in kids, what is it for the Italian adults?

Seems like kids act like they're speaking a language where the null subject is a grammatical option. Note: might be slightly different from a "null subject language" though. Point: dropping subjects is grammatical for these kids, not an error.

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What null subjects compete with

"Output omission" model predicts ratio of overt lexical subjects to overt pronouns should increase over time.

Pronouns are easier, they'll survive. Lexical subjects are harder, they'll be dropped. Initial advantage to visible pronouns.

Grammatical omission model predicts ratio of overt lexical subjects should decrease over time. If null subjects are a form of pronoun for

kids, they will "dilute the pool," putting visible pronouns at an initial disadvantage.

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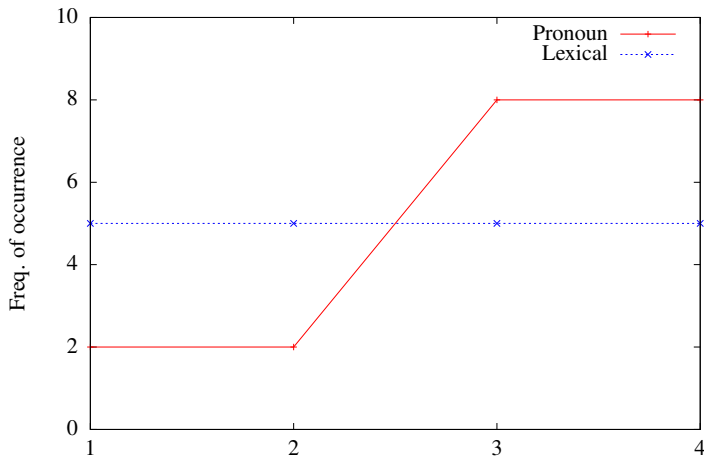Null subjects as a grammatical option

Null subjects in English

We find: Ratio of overt lexical subjects to overt pronouns decreases over time. Adam goes from about 3:1 in favor of lexical subjects (during subject drop stage) to 1:2 (after subject drop stage).

When he's dropping subjects, they are coming out of the "pronoun" pile—the number of lexical subjects is staying about the same across development.

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Null subjects in English

Overt occurrence of pronouns and lexical subjects

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Bigger subjects are more difficult?

Ok, so maybe pronouns are more difficult than lexical nouns?
(Doesn't fit well with the length of VP result, but maybe.)
Problem is: kids show a steady level of *object* pronouns throughout
this time period—and output omission model doesn't have anything to
say about subject vs. object

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Hyams & Wexler 1993: Conclusions

Null subjects don't seem to arise in child language solely due to
processing difficulty.

Rather, they seem to be *allowed* in the child grammar.

- This allows a distinction between subject (high rate of omission)
  and object (low rate of omission)
- Explains the tradeoff between null subjects and pronouns (and
  the VP length/subject correlation) if the principles governing
  availability of subject drop are similar to those at work in Italian.

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Null subjects of infinitives
Null subjects vs. root infinitive stage

So what allows null subjects?

Here's where we start to tie into the other known property of that age.

Notice that in English (a non-null subject language) you can have a grammatical null subject in one context.

(5)   I want [∅ to have a snow day]

(6)   [∅ to have a snow day] makes more sense if it snows.

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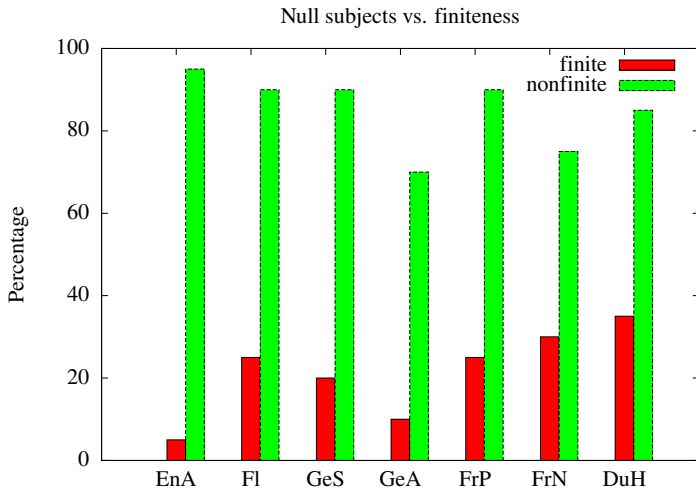
Null subjects in English

Subjects of infinitives can be null.

(7)   Bob wanted [PRO to win the lottery].

Kids at the age where subjects are often missing often use infinitive verb forms.

Perhaps that's the key: Since kids can use infinitives where adults can't (main clause main verb), this allows them to use null subjects in those sentences as a side effect.

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Null subjects of infinitives
Null subjects vs. root infinitive stage

Null subjects vs. finiteness

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Null subjects

Null subject parameter(s) is/are *not* initially misset (kids don't all start off speaking Italian or Chinese—contra Hyams 1986, 1992); rather, child null subjects are (at least in part) due to the availability of non-finite verbs.

Most null subjects are licensed by being the subject of a nonfinite verb (i.e. PRO).

But there are still some null subjects with finite verbs. . . We'll come back to this.

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Root infinitives vs. time