Week 4. Null subjects (and some more root infinitives)

Null subjects (in English)

- Until after around 2 years old, kids will often omit subjects:
  - Drop bean.
  - Fix Mommy shoe.
  - Helping Mommy.
  - Want go get it.

- Why?

Null subjects

- Lots of languages allow you to drop the subject.
  - Italian, Spanish: the verb generally carries enough inflection to identify the person, number of the subject.
  - Chinese: where the subject is obvious from context it can be left out.

- 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 to the contrary.
- Null subjects are grammatical for kids

- Kids do tend to speak in short sentences. There seem to in fact be identifiable stages in terms of the length of the kids' sentences (one-word stage, two-word stage, multi-word stage...), often measured in terms of MLU (mean length of utterance) which roughly corresponds to linguistic development.

- Therefore, the kid’s just trying to say a three-word sentence in a two-word window, so something has to go.
- That is, some kind of processing limitation.

- Subjects (in a non-null subject language like English) are way more likely to be dropped than objects. There’s something special about subjects.
- Makes a processing account more difficult to justify.

- Bloom (1990) made some well-known proposals about how the null subject phenomenon could be seen as a processing issue, and tried to explain why subjects are the most susceptible to being dropped.
- See also Hyams & Wexler (1993) for a reply.
Null subjects vs. time

- Null subjects seem to be pretty robustly confined to a certain portion of linguistic development. There’s a pretty sharp dropoff at around 2.5 or 3.
- Hamann’s Danish kids illustrate this well.

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 kid that they’ve got the wrong kind of language?
- A “subset” problem.
- Possible solution? Expletive it and there.

Ok, maybe these kids are speaking Chinese...

- In adult Chinese, subjects can also be omitted.
- In Italian, Spanish, the allowability of null subjects was taken to be tied to the verbal agreement. Something about the 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.

Speaking Chinese?

- Suppose that these are parameters.
  - ±Pro-drop for the Italian/English difference.
  - ±Topic-drop for the Chinese/English difference.
- Kid English isn’t +Pro-drop.
- In +Topic-drop languages, subjects aren’t particularly privileged.
- Subjects are often old information, but when objects are old information, they too can be dropped.

Not speaking Chinese

- We’ve already seen that Kid English overwhelmingly drops subjects, not objects.
  - 33% subjects, 23% objects (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.

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.
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.

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.

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.
- Looked at past tense verbs and cognitive states (need) to avoid any confusion with imperatives.

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.

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”
Hyams & Wexler (1993)

- 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%.

"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%).

Hyams & Wexler (1993)

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

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.

Hyams & Wexler (1993)

- "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 to overt pronouns 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.

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.
Hyams & Wexler (1993)

- 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.

So what allows null subjects?

- Here’s where we start to tie in to other properties of that age.

- Notice that in English (a non-null subject language) you can have a grammatical null subject in one context:
  - I want [Ø to have a fire drill]
  - [Ø to have a fire drill] would make my day.

Proportion of null subjects in finite and non-finite clauses

Null subjects...

- Null subject parameter(s) is/ are not initially mis-set (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 (the OI stage).

- 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 return to this.

Hyams & Wexler (1993)

- Basic conclusion:
  - 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.
Null subjects and C

- Crisma (1992): French kids typically (1/114 = 1% vs. 407/1002 = 41%) do not produce null subjects with a wh-phrase.
- Valian (1991): English kids typically (9/552 = 2%) do not produce null subjects with a wh-phrase.
- Poeppel & Wexler (1993): German kids typically exclude null subjects from post-V2 position.

It looks like: If the kid shows evidence of CP (wh-words, V2), then the kid also does not drop the subject.

Rizzi’s idea:
- A discourse-licensed null subject is available only in the highest specifier in the tree (topic-drop).
- Axiom: CP=root
- Kids don’t “get” the axiom until between 2-3 years old.

Truncated trees

- The result (of not having CP=root) is that kids are allowed to have truncated structures—trees that look like adult trees with the tops chopped off.

Importantly: The kids don’t just leave stuff out—they just stop the tree “early.” So, if the kid leaves out a functional projection, s/he leaves out all higher XPs as well.

Truncation

- Pierce (1989) looking at French observed that there are almost no root infinitives with subject clitics—this is predicted if these clitics are instances of subject agreement in AgrS; if there is no TP, there can be no AgrSP.

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If kid selects anything lower than TP as the root, the result is a root infinitive—which can be as big as any kind of XP below TP in the structure.

Note in particular, though, it can’t be a CP.

So: we expect that evidence of CP will correlate with finite verbs.

Truncation

There is some dispute in the syntax literature as to whether the position of NegP (the projection responsible for the negative morpheme) is higher or lower than TP in the tree.

- If NegP is higher than TP, we would expect not to find negative root infinitives.
But we do find negative Root Infinitives—(Pierce 1989): in the acquisition of French, negation follows finite verbs and preceds nonfinite verbs (that is—French kids know the movement properties of finiteness, and thus they have the concept of finiteness).

So, is TP higher than NegP?

Hard to say conclusively from the existing French data because there are not many negative root infinitives—but further study of child language could lead to a theoretical result of this sort about the adult languages, if we assume a truncation analysis of child language.

Usually (Poeppel & Wexler 1993) German kids put finite verbs in second position, and leave nonfinite verbs at the end.

Occasionally one finds a finite verb at the end.

Rizzi suggests we could look at this as an instance of a kid choosing AgrSP as root, where CP is necessary to trigger V2.

P&W had to basically consider these “noise”.

As for null subjects:

If the tree is just a VP, the subject can be omitted in its base position—it’s still in the specifier of the root.

If the tree is just a TP, the subject can be omitted from the normal subject position—note that this would be a finite verb with a null subject.

If the tree is a CP and SpecCP is filled (like in a wh-question) we expect no null subjects.

Italian seems to show no (or very very few) root infinitives. If this is maturation of “Root=CP” how could languages vary?

Rizzi suggests:

In English, V doesn’t move

In French, tensed verbs move to AgrS (I), untensed verbs may move to AgrS

In Italian, all verbs move to AgrS

The idea is that a verb in Italian needs to get to AgrS—it has a feature/property (parametric) that marks it as needing to get to AgrS in a grammatical sentence. Hence, the kid needs AgrS.

English verbs have no such need, so the English kids have to rely on Root=CP to tell them to keep going.
Null subject languages vs. root infinitives

- Rizzi and Wexler capture NS/OI similarly:
  - Wexler: AgrS does not “need” a subject in its specifier in Italian, so there is no competition between AgrS and T, and thus no need for root infinitives. AgrS and T are always both there.
  - Rizzi: AgrS can never be omitted in Italian, because the verb needs AgrS to be there. Having AgrS implies T. AgrS and T are always both there.

Back to null subjects vs. ±Fin

- Bromberg & Wexler (1995) promote the idea that null subjects with finite verbs arise from a kind of “topic drop” (available to adults in special contexts).

- Proposal (Bromberg & Wexler)
  Topic-drop applies to Very Strong Topics
  Kids sometimes take (in reality) non-VS topics to be VS topics (a pragmatic error)

Prediction about NS

- RI’s have two ways of licensing NSs:
  - PRO (regular licensing of null subject)
  - Topic drop
- Finite verbs have one way to license a NS:
  - Topic drop
- So: We expect more null subjects with root infinitives (which we in fact see).

  - Cf. Rizzi: Subject in highest specifier can always be dropped, and RI’s also allow PRO. Same story, basically.

Bromberg, Wexler, wh-questions, and null subjects

- If topic drop is something which drops a topic in SpecCP…
- …and if wh-words also move to SpecCP…
- …we would not expect null subjects with non-subject (e.g., where) wh-questions where the verb is finite (so PRO is not licensed).

  - Cf. Rizzi: Same prediction; if you have a CP, a subject in SpecTP won’t be in the highest specifier, so it can’t be dropped. One difference: Rizzi predicts no nonfinite wh-questions at all, hence no null subjects at all.

*Truncation

- Rizzi’s “truncation” theory predicts:

  - No wh-questions with root infinitives
    - wh-question ⇒ CP, but
    - CP ⇒ IP, and
    - IP ⇒ finite verb

  - And of course we wouldn’t expect null subjects in wh-questions if null subjects are allowed (only) in the specifier of the root.

Bromberg, Wexler, wh-questions, and null subjects

Finiteness of nullpronominal subjects, Adam’s wh-questions (Bromberg & Wexler 1995)

<table>
<thead>
<tr>
<th></th>
<th>Finite</th>
<th>Nonfinite</th>
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<tbody>
<tr>
<td>Null</td>
<td>118</td>
<td>2</td>
</tr>
<tr>
<td>Pronoun</td>
<td>111</td>
<td>117</td>
</tr>
</tbody>
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Guasti points out that although Bromberg & Wexler did find null subjects in \textit{wh}-questions in English, English is weird in this respect.

Arguably, null subjects are precluded from \textit{wh}-questions in most other languages.

\textbf{V2 and \textit{wh}-null subjects...}

German and Dutch have extremely few root infinitives when there is anything in SpecCP.

This does go with Rizzi's prediction...

But they are V2 languages—finite verbs are what you find in C, and when SpecCP is filled, there must be something in C. Hence, Wexler's prediction seems to be:

V2 language $\Rightarrow$ no \textit{wh}-question root infinitives

And this seems closer to accurate, given English.

\textbf{Adult null subjects ("diary drop")}

Both Rizzi and Bromberg & Wexler appeal to properties of adult language to justify the child null subjects.

Both Rizzi and Bromberg & Wexler appeal to properties of adult language to justify the child null subjects.

B&W suggest that topic drop is available in English, but only for Very Strong topics, and what kids are doing wrong is identifying far too many things as VS topics.

Rizzi suggests that the ability to drop a subject in the highest specifier is available in certain registers ("diary drop") (where presumably Root=CP is disregarded, or at least relaxed to allow Root=IP).

\textbf{Saw John today. Looked tired.}

\textbf{Hamann & Plunkett (1998)}

Finite null subjects. Hamann discussed this question: If null subjects are licensed by RIs, what should we say about the null subjects with finite verbs? W had previously said "topic drop", but H showed that Danish kids' use of null subjects with finite verbs correlated highly with the use of RIs in general.

That's a problem because "topic drop" according to B&W is due to kids mistaking what can be a VS topic, and should be independent of Tense/Agr. For truncation, though, the same basic mechanism is at work creating both finite null subjects and RIs.

\textbf{Root infinitives vs. time}

The timing on root infinitives is pretty robust, ending around 3 years old.
Wexler (2000)

- Are there really lots of null subjects with finite verbs in Danish?

- Idea: køb-er looks like present tense finite, but it could be missing T (hence legitimately license NS).
  - [+Agr, +Tns] køb-er (present) (adult)
  - [-Agr, +Tns] køb-e (infinitive) no NS allowed
  - [-Agr, -Tns] køb-e (infinitive) NS allowed

- Predicts: No NS’s with past tense verbs like køb-de (since unambiguously +Tns, which is the thing that prevents NS). True?

Hamann (2002) vs. Wexler

- Well, not really vanishingly small...
- Jens (20-34 mos.) 14/42 (33%) NS past.
- Anne (18-30 mos.) 13/33 (39%) NS past.

- Hamann herself prefers a truncation story to account for these; finite NS corresponds to truncating at TP.
- Yet, don’t forget about Swahili, and the apparently visible effects of ATOM.

Interpretation and functional categories

- A basic premise of Hoekstra & Hyams (1998) is that tense is a means of connecting between the structural meaning and the discourse. Tense anchors a sentence in the discourse.
- They propose that the relation between discourse (CP) and T must be signaled (to ground an utterance), and is signaled by different things in different languages.
  - Dutch: number morphology ← only these have RIs?
  - Japanese: tense morphology
  - Italian, Spanish, Catalán: person morphology

Underspecification of number?

- H&H propose in light of this that what’s wrong with kids has to do with number specifically. OI languages are those where number is crucial in the finite inflection.
- H&H picked up on something about when these RIs seem to be used. It seemed that there are certain verbs that showed up in the nonfinite form, but others that didn’t.

Eventivity Constraint

- In particular, it seems that RIs show up only with verbs referring to events—not with verbs referring to states, not with auxiliary verbs. Finite verbs seem to have no such restriction. Original research on Dutch on French, also Russian.

- Eventivity Constraint
  RIs are restricted to event-denoting predicates.

Modal Reference Effect

- The other thing is that RIs often have a “modal” meaning (can, will, must, want to...) (pretty dramatic in Dutch, German, French).
- Poeppel & Wexler (1993) did give a German example from Andreas that showed an RI with seemingly no modal meaning (Thorsten Ball haben); if H&H are right, this was “noise”.

- Modal Reference Effect
  With overwhelming frequency, RIs have modal interpretations.
English = weird

- English doesn’t seem to conform to the pattern. Ud Deen (1997) found:
  - plenty of bare stative verbs (*EC)
    - Man have it
    - Ann need Mommy napkin
    - Papa want apple
  - plenty of non-modal bare verbs (*MRE)
    - Dutch: 86% of RIs have modal meaning, Cl. 3% of finite forms.
    - English: 13% of bare forms have modal meaning Cl. 12% of finite forms.

H&H’s hypothesis

- Number is an inflectional property both of the nominal and the verbal system.
  - though it arises in the nominal system.
- Missing determiners and RIs are both a symptom of “underspecified” Number.
- Spec-head agreement communicates number (under)specification to the verb.

H&H (1998) BUCLD

- Looked at Niek (CHILDES, Dutch).
- They found that with “finite DPs”, the verb was pretty much always finite too.
- They found that with “nonfinite DPs”, the verb was somewhat more likely to be nonfinite than with a finite DP, but still overwhelmingly favored finite DPs.
- Only null subjects didn’t overwhelmingly favor finite V. (NS 45% nonfinite).

H&H (1998) BUCLD

- All things being equal, we might have expected a 1:1 correlation between finite DP subjects and finite V, if it were a matter of Spec-head agreement. We don’t have that. We have a one-directional relation.
  - If DP is finite, V is finite.
  - If V is nonfinite, DP is nonfinite.

H&H (1998) BUCLD

- In a sense, one setting “cares” about its partner in the Spec-Head relationship, and the other setting doesn’t.
  - Finite V seems not to care whether the subject is finite or not.
  - Nonfinite V does seem to care, and requires a nonfinite subject.
- More specifically, there is a “default”, and the “default” does not need to be licensed (and non-defaults do).
  - This goes along with an assumption that either the syntax doesn’t make person distinctions if the morphology doesn’t, or that this part of “checking” is really about morphology.

H&H (1998) BUCLD

- In Dutch, 3sg is default.
  - 1sg verb licensed only by a 1sg subject.
  - 3sg verb licensed by any old subject.
- In English, 3sg is not the default. It’s the one marked form.
  - 3sg verb licensed only by a 3sg subject.
  - bare verb licensed by any old subject.
Thus

- The doggie bark.
- He bark
- Doggie sit here.
- *Doggie barks.

- *Het hondje hier zitten.
- *He hier zitten.
- Hondje hier zitten.
- Hondje zit hier.

**English bare form ≠ infinitive**

- S&W and H&H agree that the English bare form isn’t strictly speaking (necessarily) the true infinitive.

**cf. Schütze & Wexler**

- “…the English bare form is ambiguous between an infinitive … and a finite form…” (H&H98:101)
- Although stated in different terminology, and addressing a slightly different arena of facts, the basic concept is the same as that in S&W96.
  - [+T+A] -> finite (-s)
  - [+T-A], [-T+A], [-T-A] -> “nonfinite” (stem)
    - but +A ones will have +A properties (e.g. NOM), even if just a stem form. Same for +T.

**H&H and interpretation**

- Claim: RIs are interpreted as [-realized], the contribution of the infinitival morpheme itself.
- Languages with an infinitival morpheme and actual RIs should show 100% modal ([−realized]) interpretation with RIs.
- English, with a Ø infinitival morpheme, obscures the correlation; in practice, we expect only some (the actually infinitive) bare forms to be modal.

**Modality and kids**

- In other circles of research, people have proposed that kids basically “don’t have” epistemic uses of modality (*John must be a genius*) before about 3 years old—for whatever reason.
- If that’s true, there’s only deontic modality (*John must go to class*).
- If deontic modality only goes with eventive predicates, we’re done. Kids RIs are modal, necessarily deontic, hence necessarily with eventive verbs.

**Epistemic vs. deontic**

- *John must leave.*
- Deontic: About the way the world isn’t now but needs to be.

- *John must know French.*
- Epistemic: About our beliefs about the world.

- Seems to be a correlation between “eventivity” and modality type, in the adult language.
English must be different

- English bare forms are not (necessarily) infinitives, not necessarily modal, hence not necessarily deontic, eventive.

- Hence, the EC and MRE appear not to hold of English, but for reasons we can now understand.

A pause to regroup

- English bare form is unmarked, only -s is unambiguously +T+A.
- Do is a reflex of +T (and/or +A), and as expected, almost never in negative sentences was there a post-negation inflected verb (she doesn’t go vs. *she not goes).
- The actual infinitive morpheme in English is Ø, so we can’t differentiate bare forms between infinitives and other bare forms.
- The infinitive morpheme seems to carry modal meaning—in languages where you can see it you can tell. Effectively RI only with eventives.

A pause to regroup

- H&H propose that the languages which show OIs are those which rely (only) on number in their inflectional system. Those that don’t (Japanese [tense only], Italian [person]) seem to be immune. Hence, person is the special, possibly omitted thing for kids.
- This isn’t really distinctly at odds with ATOM. Wexler suggests that the problem is with double-movement of the subject, but movement of the subject might itself be driven by person features in recent versions of the syntactic thy.

A pause to regroup

- H&H observed a correlation between specified (“finite”) subjects and verbal form.
- Specifically, “finite” subjects seem to “cause” finite verbs. Not obvious why this would be under ATOM directly, but it might be something like what H&H suggest—there is feature sharing between the subject and the AgrP. It might be interesting to see if “finite” subjects necessarily always show the reflex of AgrP and not necessarily of TP.