

24.904

Language Acquisition

Class 15: What They Don't Get Quite Right

Question-formation

- Complex syntax and a fairly wide space of parametric variation
- Still, children get lots of things about questions right, very early on
 - ▶ in-situ vs. fronting
 - ▶ that fronting involves syntactic movement, not just base-generation of wh-word to the left

What they don't quite get right

Subject-Aux Inversion Errors

- Stromswold 1990, Guasti 2016
 - In spontaneous production, English-acquiring children make very few errors in question-formation (<10% error rate), but the errors they do make are all in the realm of Subj-Aux Inversion
- (1) a. Why that's a little piece of foil? [Abe, 2;9]
b. Is these are yours? [Peter, 2;7]
c. What are these are? [Joel, 2;4]

Syntax of SV-Inversion in English

- Generally thought to be a remnant of V2 phenomena that occurs in Germanic (so an instance of T-to-C movement)
 - Auxiliaries and modals invert
 - (1) a. Is Kermit eating a cookie?
 - b. Who can Aladdin draw?
 - c. What have you done?
 - Main verb *be* inverts like auxiliaries in all dialects of English; main verb *have* inverts in some
 - (2) a. What type of student are you?
 - b. Have you a dollar?
 - Triggers *do*-support (assumption: inflection can appear on V only under adjacency between T and V; T-to-C interrupts this)
 - (3) What did you eat? *What you ate?

Asymmetries: Affirmative vs. Negative

- Spontaneous production:
 - Stromswold (1990): SAI correct in 90.7% of positive questions, but in only 55.6% of negative ones.
- (1) Why does Superman doesn't wear Underoos on his bottom? (3;03)
- (2) Why did you didn't know? (Abe, 3;08)
- (3) What do we don't have that we can make? (Abe, 3;09)

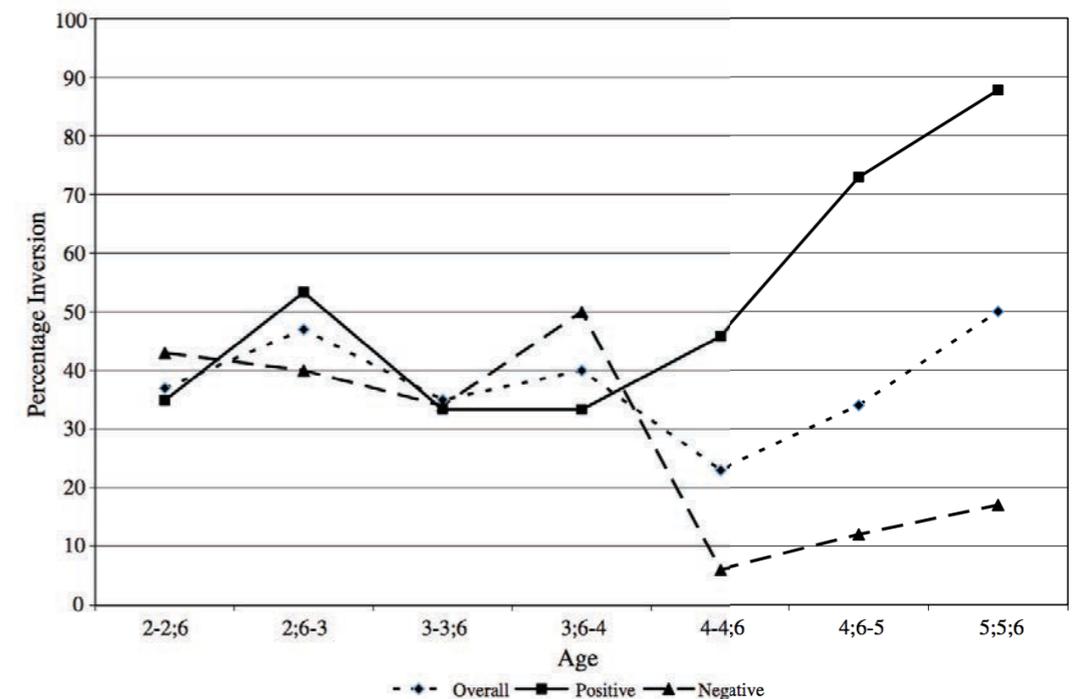


Fig. 2 Percentage of inversion in AL's questions by age

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Asymmetries: Affirmative vs. Negative

- Guasti, Thornton and Wexler (1995):
 - 10 monolingual English speaking kids between 3;8 and 4;7 in an elicited production task, with positive & negative declaratives and questions
 - Elicitation prompts for negative questions:
 - I heard the snail doesn't like some things to eat. Ask him what.
 - There was one place Gummi Bear couldn't eat the raisin. Ask the snail where.
 - One of these guys doesn't like cheese. Ask the snail who.
 - I heard that the snail doesn't like potato chips. Could you ask him if he doesn't?

Asymmetries: Affirmative vs. Negative

- Kids got positive questions right for the most part.
 - 88% of kids' wh-questions had inversion
 - 96% of kids' yes-no questions had inversion
 - Errors primarily from the youngest kid (3;8), who had inversion only 42% of the time.
- Kids got negative declaratives right without exception, with *do*-support and clitic *n't*.

Asymmetries: Affirmative vs. Negative

- Kids got lots of negative wh-questions wrong...
 - Aux-doubling
 - (1) What kind of bread do you don't like? (3;10)
 - Neg & Aux doubling
 - (2) Why can't she can't go underneath? (4;0)
 - No T-to-C (inversion)
 - (3) Where he couldn't eat the raisins? (4;0)
 - Low *not* structure
 - (4) Why can you not eat chocolate? (4;1)

Asymmetries: Affirmative vs. Negative

- Production vs. judgment (Hiramatsu 2003)
 - Elicited production task w/ 15 4-5yos replicates GTW
 - Grammaticality judgment w/ same children
 - 4 participants produced double-aux Qs >80% of the time; 3 of them rejected 2AuxQs $\geq 75\%$ of the time in the judgment task.

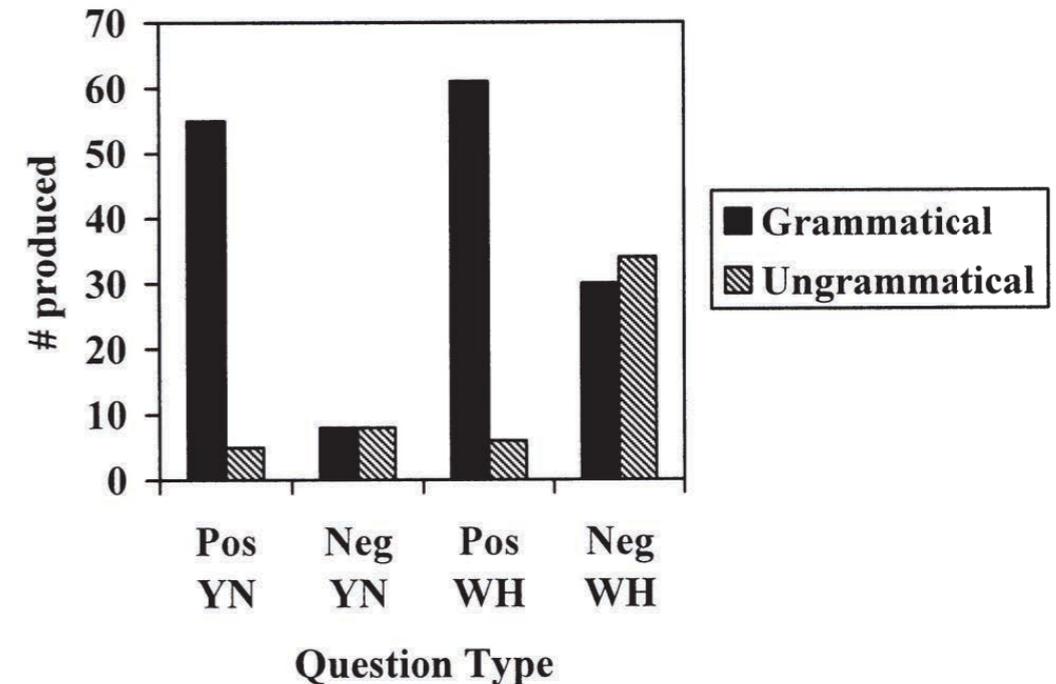


FIGURE 1 Number of children's grammatical and ungrammatical questions produced by sentence type in Experiment 2. YN = *yes/no*.

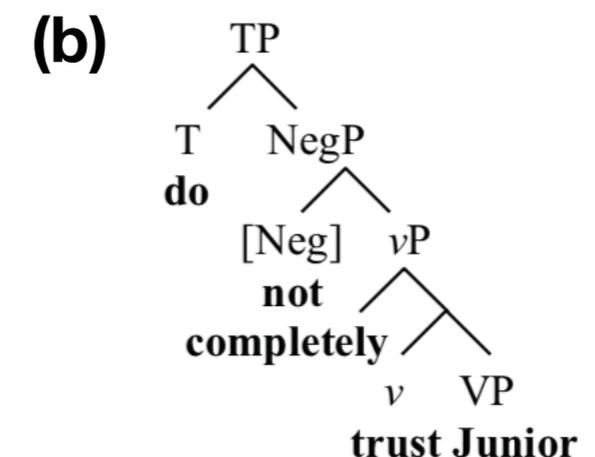
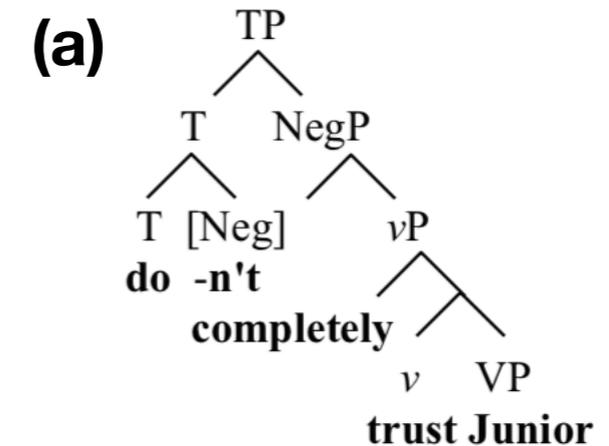
TABLE 7
Experiment 3: Overall Judgment Results

<i>Sentence Type</i>	<i>Adult-Like Responses (%)</i>
Declarative, control, filler	94
Test items (2Aux)	73
2Aux + m	67
2Aux - m	79
Positive 2Aux	77
Negative 2Aux	69
Positive 2Aux + m	73
Negative 2Aux + m	62
Positive 2Aux - m	82
Negative 2Aux - m	77

- (17) Exp: This is a story about Cabbage Patch Girl [CPG].
 CPG: Today's my shopping day. I'm going to go to the mall.
 [Goes behind wall.]
 Look at all those things. I like this one, but I don't like this other one.
 Lulu: I have a question. What did Cabbage Patch Girl don't like?
 Exp: Did Lulu say it right?

T-to-C Movement and Negation

- Some assumptions:
 - NegP is a functional projection between TP and vP
 - Neg can raise to T (a) or stay in situ (b)
 - *n't* and *not* are allomorphs of Neg; When [Neg] is to be spelled out in situ within NegP, it is realized by the Vocabulary Item *not*; when [Neg] is to be spelled out in its alternative raised position, it is realized by *n't*
 - T obligatorily raises to C in English direct questions (yielding subject-AUX inversion). If Neg has raised to T, it goes along for the ride



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Proposals

- Hiramatsu: children only have clitic *n't* — forces the presence of a local auxiliary
- Pak: a production planning error + doesn't have the allomorphy rule
 - The child starts the utterance not planning as far down as required by the iterative head movement in negative qs
 - clitic *n't* as the default negation

Another kind of doubling error

back to de Villiers et al. 1990...

- When kids make a mistake with a question like...
 - (1) How did Big Bird ask who to help?
- ...it will often be that they answer something like “Cookie Monster” —seemingly answering the question “Who did Big Bird help?”
- replicated in de Villiers and Roeper (1995), who found ~50% rates of medial-wh responses

Medial wh

- What are they doing?
- **Possibility 1:** They are just answering the last wh-word they hear, which might be easier to remember
 - Evidence against this (from control conditions in de Villiers et al. and follow-up studies)
 - Kids don't answer medial wh-words in yes-no questions. E.g. "Did she say how she ripped her dress?" Answer is never: "climbing the fence"
 - Kids don't answer wh-words in relatives. E.g. "How did you meet the man who sang?" Answer is never: "John"

Medial wh

- **Possibility 2:**

(1) Was hat er gesagt [wie er das Kuchen machen kann]? What has he said how he the cake make can
'How did he say he could make the cake?'

- Are kids treating the upper wh-word like a scope marker? (i.e. are they “speaking German”?)
- de Villiers et al interpretation: yes, because no successive-cyclic movement

Medial wh-production

- Thornton 1990
 - Elicited production of long distance questions from 3-5-yr-olds finds medial *wh* production
- Same phenomenon?

Medial wh production

- Lutken et al. 2020
 - careful replication of Thornton's seminal studies
 - production and comprehension of LD questions over 3 experiments
 - ~4-to-6-yos, 30 Exp1; 32 Exp2, 29 Exp3

Lutken et al.

- Exp. 1
 - Elicitation task similar to Thornton
 - Embedding verb *believe* as opposed to *think*
 - 2x2 crossing *wh*-phrase (who, what) and extraction site (subj, obj)

Wh-extraction type examples

Wh-phrase	Extraction Type	Example
<i>What</i>	Object	<i>What do you believe the bear wants to eat___?</i>
<i>What</i>	Subject	<i>What do you believe ___ can make the witch happy?</i>
<i>Who</i>	Object	<i>Who do you believe we should ask___?</i>
<i>Who</i>	Subject	<i>Who do you believe ___ can get the wand?</i>

Lutken et al.

Table 1
Sample trial sequence for *What do you believe can stop the witch?*



The experimenter explains that the three friends are wandering down the path, when the witch appears. She is flying around and won't let them past. We need to find out what can stop the witch



The experimenter then prompts the child to ask characters 1 and 2 *What can stop the witch?* Each character responds with what they believe can stop the witch (Character 1: *I believe a net can stop the witch!* Character 2: *I believe a rope can stop the witch*). The experimenter points out that they need to know what the target character believes to break the tie



The experimenter reminds the child that to help the target character talk, they have to work with the fairy puppet. The fairy then gives the lead in. *Ok the question starts like this: What do you believe. . .* The child repeats the preamble *What do you believe* and then completes the question



In response to the target question, the target character gives her answer: *I believe a net can stop the witch, because a net covers lots of space*

Results

Table 4
Distribution of medial wh-questions across wh-phrase and extraction types

Condition	By-Subject Mean Productions With Both Sentence Initial and Medial Wh-Phrases
What-object	0.22
What-subject	0.11
Who-object	0.29
Who-subject	0.27

Table 6
Distribution of medial wh-questions

Type of Extraction	Utterances With Medial Wh-Phrase	
	Same Wh-Phrase (percentage)	Different Wh-Phrase (percentage)
<i>What</i> object	18 (94.7%)	1 (5.3%)
<i>What</i> subject	9 (81.8%)	2 (18.2%)
<i>Who</i> object	16 (84.2%)	3 (15.8%)
<i>Who</i> subject	21 (72.4%)	8 (27.6%)
Total	64 (82.1%)	14 (17.9%)

Same wh-word is repeated

Lutken et al.

- Exp. 2
 - Question after story task similar to de Villiers et al.
 - Embedding verb *tell* as opposed to *say*
 - 2 types of questions: *how-what* (medial *wh*) vs. *what-that* (no medial *wh*)

Lutken et al.

Table 10
Sample story for Experiment 2



Detective Sherry wants to catch the famous thief, Evil Steve. She is pretty sure he's going to steal the queen's crown while it is on display at the museum



Meanwhile, Steve is planning how to steal the crown, but he knows Sherry is really smart. He decides he's going to trick her and tell her he's going to steal the queen's diamond ring at the queen's palace instead. Steve has invented a TV machine that can put him on people's televisions even when the TV isn't on! He tries using that to tell Sherry, but it breaks and doesn't work.



Instead, Steve writes Sherry a letter telling her he will steal the ring and there's nothing she can do to stop him



Sherry goes to the Queen's palace, but the guard shows her that the ring is fine



Sherry figures out that Steve must have been tricking her and goes to the museum where she catches him red-handed. Finally, Sherry has caught the famous thief, Evil Steve

How + what question:
What + that question:

How did Evil Steve tell Detective Sherry what he was gonna steal?
What did Evil Steve tell Detective Sherry that he was gonna steal?

Table 11
Contrasting possible answers for the story in Table 10

Question	Alternative	Actual
How Steve told Sherry	The TV machine	A letter
What Steve stole	The ring	The crown

Lutken et al.

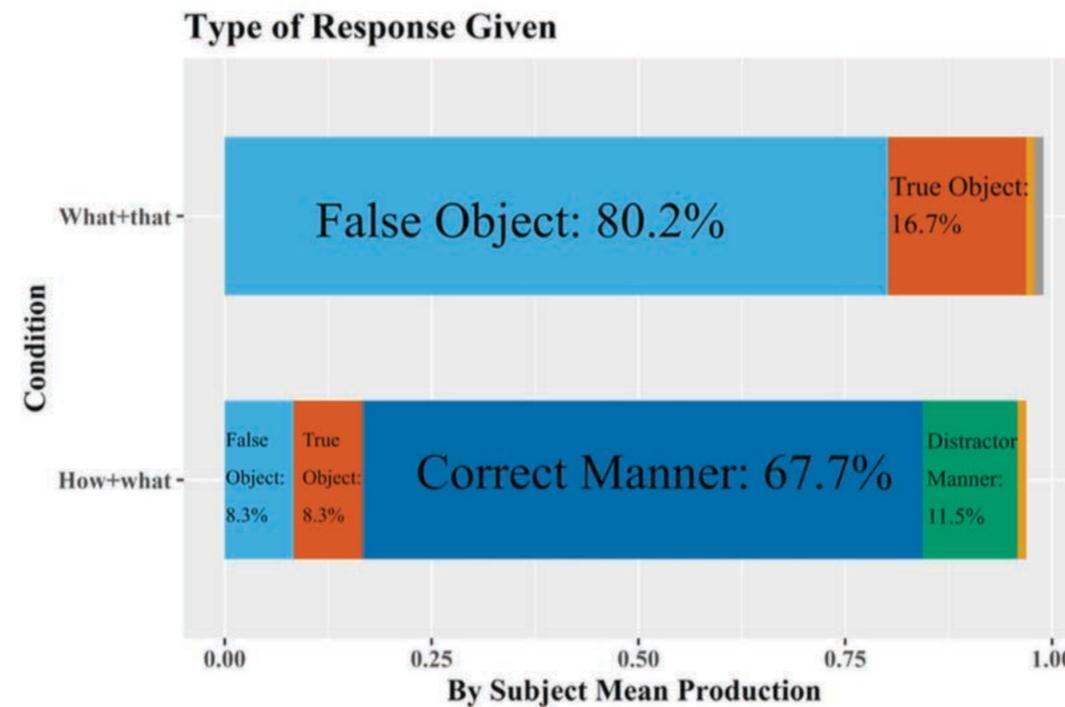


Fig. 2. By-participant mean production rate of responses observed in Experiment 2. Light orange, unlabeled responses indicate an irrelevant manner response (1% in each condition). Gray indicates the child gave both possible manner responses (1% in *what + that* condition). See Table 11 for the description of each response type.

~8.3% medial responses in wh-questions

Lutken et al.

- Exp 3
 - Direct (i.e. within subjects) comparison across modalities
 - Of children's productions, 15.4% included a medial wh-phrase (compared to 22% in Experiment 1)
 - 15% of responses in the comprehension task can be analyzed as medial responses, but...
 - ...no correlation between the two types of errors, i.e. not the same kids ($r^2 = .0016$)

Medial *wh*-production errors

- So what are they doing?
 - multiple copy spell-out?
 - if so, why?
 - production planning issues (Lutken et al.)
 - production of filler-gap dependencies in *wh*-questions involve reactivation the sentence-initial *wh*-phrase at the embedded clause boundary
 - adults can do this without articulation; children cannot
- Aux and *wh* doubling errors the same problem?

Midterm

- Tuesday: review!
- Thursday: mid-term
 - in-class, open notes, up to, but not including, the question-formation classes
 - format: short-answers
 - time: a little under 90 minutes

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24.904 Language Acquisition, Spring 2022

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