

24.949

Language Acquisition

Class 8

Wh-Movement

Relatedness of structures

- Part of knowing a grammar is to know which type of grammatical structures are related and in what way
- (1)
- a. Mommy will kiss the baby.
 - b. The baby will be kissed by Mommy.
 - c. Will Mommy kiss the baby?
 - d. Who will kiss the baby?
 - e. Who will Mommy kiss?

Relatedness of structures

- via movement

- **Head Movement:**

(1) [CP [C' will [TP Mommy [T' ~~will~~ [VP kiss the baby]]]]

- **A-Movement:**

(2) [CP [C' [TP the baby [T will [VP be-kissed ~~the baby~~]]]]

- **\bar{A} -Movement:**

(3) [CP who [C' [TP ~~who~~ [T' will [VP kiss the baby]]]]

Today

- Acquisition of \bar{A} -movement: *wh*-questions as a case study

Question formation

- interesting place to look to assess the state of children's knowledge of syntax
 - Often involves pretty dramatic word order changes.
 - Word order changes vary from language to language.
 - Subtle restrictions on what is and isn't a possible question

English *wh*-questions

- Two components to forming a (main clause) *wh*-question:
 - Move one *wh*-word to SpecCP (adhering to islands, superiority etc.)
 - Move Aux to C (Subject-Aux Inversion)
- Language-specific stuff the child has to learn
 - What is an auxiliary (which inverts) vs. a main verb (which does not)
 - What are the *wh*-words?

Space of variation

in simplex questions

- in-situ vs. fronting (English vs. Japanese, Malayalam)
- if yes to fronting...
 - front all vs. front one? (English, Spanish vs. Bulgarian)
 - invert auxiliary or no? (English vs. Finnish)
- Restrictions
 - Wh-islands (English vs. Japanese)
 - Adjunct islands (English vs. Bulgarian)
 - Left branch islands (English vs. Hungarian)

Space of variation

in long-distance questions

- **Long-Distance Movement:** wh-phrase moves through an intermediate spec-CP on the way to the matrix spec-CP, but leaves no overt trace/copy. e.g. English.

(1) [CP who [C' did Maria say [CP ~~who~~ [C' Mommy will kiss who?]]

- **Partial movement:** Movement involving strictly local movement of a wh-phrase to the spec-CP of the embedded clause. A “scope marker” inserted in the matrix spec-CP, e.g. Hindi.

(2) [CP What [C' did Maria say [CP who [C' Mommy will kiss who?]]

- **Wh-copying:** wh-phrase moves through intermediate spec-CP on the way to the matrix spec-CP and seemingly leaves an overt copy

(3) [CP Who [C' did Maria say [CP who [C' Mommy will kiss who?]]

Preview

- Much of the focus on English
 - Kids get a lot of things right, even those things for which evidence is sparse
 - Kids get some things wrong in interesting ways

What kids get right

Wh-qs in naturalistic production

- Early acquisition of fronting
 - Guasti (2000): transcripts of 4 English-speaking children aged between 1;6 and 5;1 (Adam, Eve, Sarah, Nina).
 - Together, these children asked 2,809 wh-questions, only 41 of which (1%) had a wh-element in situ
 - similar findings in Stromswold 1990

Subject-object asymmetries?

- Is there a difference in the timing of emergence between subject *wh*-questions and object *wh*-questions?
 - In English, there is an apparent difference in complexity (“distance” of movement, SAI).
 - Possibility that subject *wh*-questions do not involve movement at all
 - If so, a subject-object asymmetry in acquisition might be taken as evidence for *wh*-in-situ being easier/having priority

Subject-object asymmetries?

- Stromswold 1995: no real evidence for such an asymmetry in naturalistic production

TABLE 3
Age of Acquisition of Subject and Object Questions

<i>Child</i>	<i>Subject Questions</i>	<i>Object Questions</i>
Adam	2;4.5	2;4.5
Allison	2;4.2	2;4.2
April	2;9.6	2;1.6
Eve	1;8.5	1;9.8
Mark	3;8.2	2;7.2
Naomi	1;10.9	1;10.6
Nathan	2;6.0	2;5.6
Nina	2;0.1	2;2.4
Peter	2;0.2	2;0.2
Ross	3;1.0	2;7.0
Sarah	2;6.7	2;8.8
Shem	2;2.5	2;2.5

Subject-object asymmetries?

- Early *early* wh-questions (before production begins)
- Seidl, Hollich & Jusczyk, 2003
 - 13-, 15- and 20-month-olds
 - Use looking preferences to “answer” of wh-questions.
 - Subject: What hit the apple?
 - Object: What did the apple hit?
 - Baseline: Where is the apple?
 - Infants were shown brief animated clips where, e.g., a book hit some keys.
 - Then, two screens were presented side by side, one with a book displayed, one with keys displayed.
 - Expectations, if adult-like:
 - What hit the keys? Look longer at book
 - What did the book hit? Look longer at keys
 - Where is the book? Look longer at book

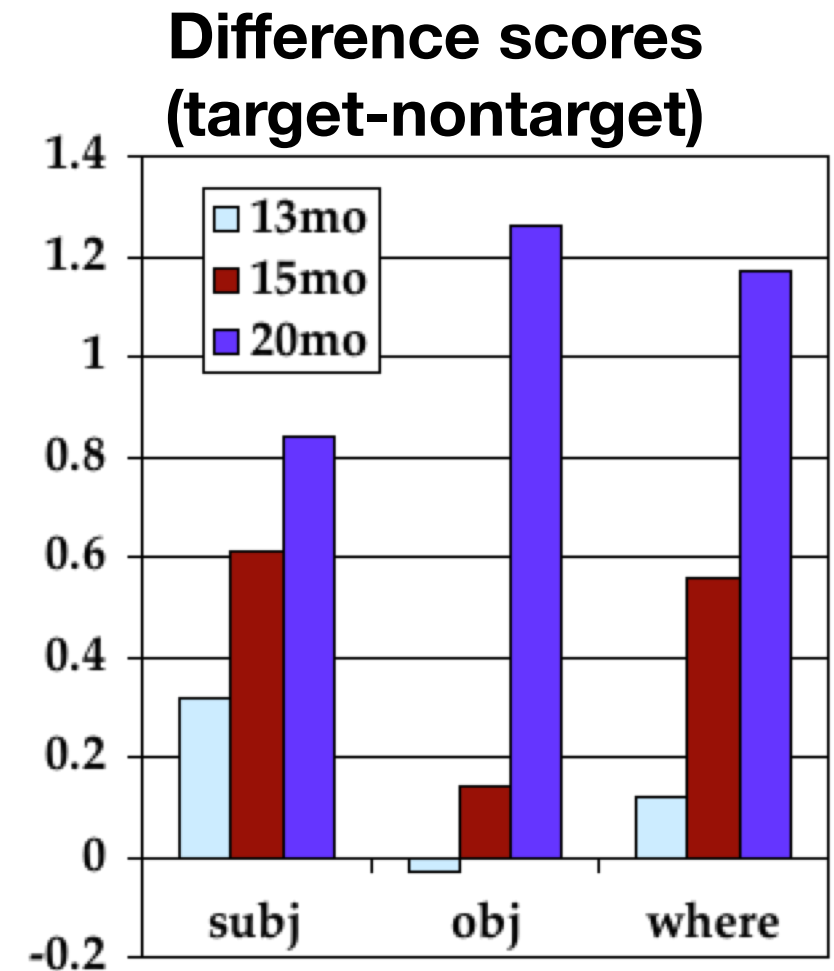
Seidl et al.

Overall Mean Looking Times (And Standard Error) for All Age Groups

Age	Question Type	Target	Non-Target	Diff	Means to Target
13	Subject	1.92 (.16)	1.61 (.16)	.31	<i>n</i> = 11
	Object	1.64 (.16)	1.67 (.15)	-.03	<i>n</i> = 9
	Where	1.73 (.11)	1.61 (.13)	.12	<i>n</i> = 11
15	Subject	2.11 (.15)	1.49 (.13)	.62*	<i>n</i> = 17
	Object	1.81 (.13)	1.66 (.09)	.15	<i>n</i> = 10
	Where	1.95 (.12)	1.38 (.13)	.57*	<i>n</i> = 14
20	Subject	2.25 (.12)	1.41 (.12)	.84*	<i>n</i> = 18
	Object	2.43 (.14)	1.17 (.12)	.126*	<i>n</i> = 17
	Where	2.45 (.12)	1.23 (.09)	1.22*	<i>n</i> = 18

Note. *indicates $p < .05$.

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- 20-month-olds seemed quite capable of comprehending all three kinds.
- 15-month-olds couldn't do objects;
- 13-month-olds couldn't do any

Early knowledge

- At least by 20mos, children seem to have some command of *wh*-movement in questions
- But are kid *wh*-constructions the same as adult structures? If not, how are they different?
 - Are these in fact movement constructions? Are there copies of movement?
 - Do they obey the same constraints (e.g., *wh*-island, ...)?

Copies of movement

- How can we tell if children analyze fronted *wh*-words as having *moved* from somewhere lower down?
 - Roeper et al. 1985, de Villiers 1991: early *wh*-questions may involve *wh*-words base-generated in an initial position, perhaps analogous to:

(1) How come you didn't show up?

Wanna-contraction

1. a. I **want to** invite Malia to my party
b. I **wanna** invite Malia to my party
 2. a. You **want to** invite Malia to your party
b. You **wanna** invite Malia to your party
 3. a. She **wants to** invite Malia to her party
b.*She **wan?sa???** Invite Malia to her party
- **Generalization v1:** if *want* is followed by *to* and there is no overt intervening material, *want+to* → *wanna*

Wanna-contraction

1. a. We cannot expect that *want to* be satisfied
b. *We cannot expect that *wanna* be satisfied.
2. a. The *want to* be loved is felt by all.
b. *The *wanna* be loved is felt by
- **Generalization v2:** if *want* is a verb, followed by *to* and there is no overt intervening material, *want+to* → *wanna*

Wanna-contraction

1. a. I don't **want to** flagellate oneself to become standard practice in this workplace.
b. *I don't **wanna** flagellate oneself to become standard practice in this workplace.
 2. a. I don't want anyone who continues to **want to** stop wanting.
b. *I don't want anyone who continues to **wanna** stop wanting.
 3. a. One must **want** (in order) **to** become an over-effective consumer.
b. *One must **wanna** become an over-effective consumer.
- **Generalization v3:** if *want* is a verb followed by *to*, *to* heads the infinitival complement to that verb, and there is no overt intervening material, *want+to* → *wanna*

for more on this: Postal & Pullum 1982, Goodall 1991

Wanna-contraction in questions

- proceeds as usual...
- (1) Q: Who do you **wanna** invite who to your party?
(A: I wanna invite Malia to my party.)

Wanna-contraction in questions

- But what's wrong with this?

(1) Q: *Who do you wanna have the most fun at your party?

Wanna-contraction in questions

(1) Q: *Who do you wan-~~who~~-na have the most fun at your party

(A: I want Malia to have the most fun)

- **Generalization v4:** if *want* is a verb followed by *to*, *to* heads the infinitival complement to that verb, and there is no ~~overt~~ intervening material, *want+to* → *wanna*
- (NB: need to say something about PRO)

Thornton 1990

- Participants: 2;10 to 5 yos
- Task: Elicited Production
 - Context-scenarios carefully designed to extract certain types of constructions from the child

Thornton 1990

- Set up as a game that revolved around a puppet character, a rat named Ratty, who had come to live with the grown-up experimenter, but was shy of grown-ups. Because of this, the experimenter didn't know anything about him, what he needed/liked/etc. The child's help is therefore solicited.

(1) Wanna-contraction allowed

- Experimenter: The rat looks hungry. I bet he wants something to eat. Ask him what.

(2) Wanna-contraction disallowed

- Experimenter: I bet the rat wants someone to brush his teeth for him. Ask him who.

Thornton 1990

Thornton 1990

- 68 elicited questions where contraction is allowed = 88% used *wanna*
- 74 questions where contraction is disallowed = 8% used *wanna*
- **Upshot:** By 3 years of age, children know when they can and cannot carry out the contraction, which, if our analysis is right, entails knowledge of copies of movement

Island restrictions

- Moving a *wh*-word out of a *wh*-island is better or worse depending on whether that *wh*-word is an argument (subject or object) or an adjunct.

(1) *How did he ask [where to fix the car *t*]?

(2) What did he ask [how to fix *t*] ?

de Villiers, Roeper and Vainikka 1990

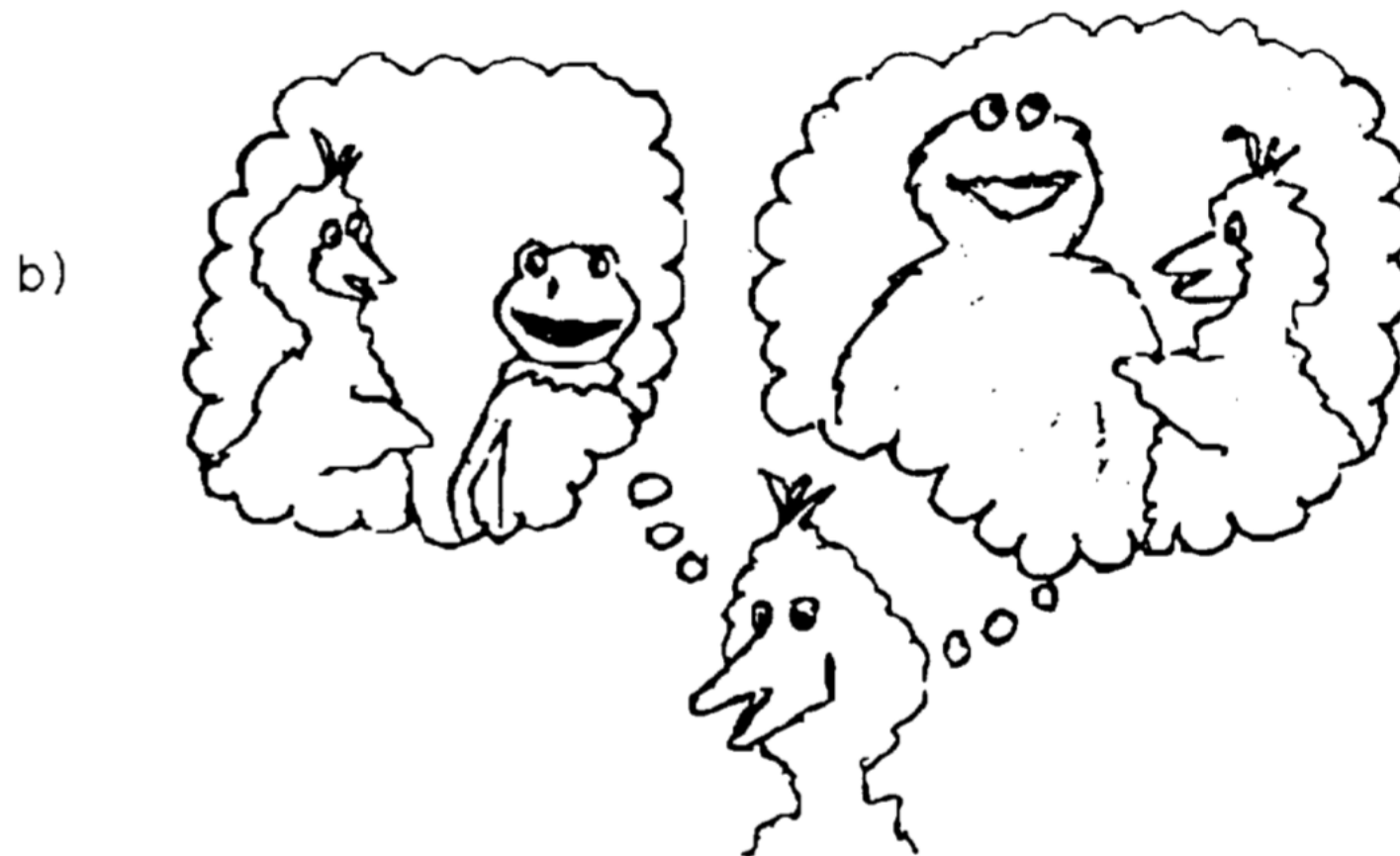
- Questions after story paradigm
- 25 3;7-6;11 yos
- 2*3 crossing type of LD-question asked (argument vs. adjunct) and type of intervening wh-word (none vs. argument vs. adjunct)
 - Argument-wh sentences:
 - **0-medial:** Who_i did the girl ask t_i to help t_i?
 - **Argument-wh medial:** Who_i did the girl ask t_i what to throw *t_i?
 - **Adjunct-wh medial:** Who_i did Big Bird ask t_i how to paint t_i?
 - Adjunct wh-sentences:
 - **0-medial:** When_i did the boy say t_i he hurt himself t_i?
 - **Argument-wh medial:** How_i did Kermit ask t_i who to help *t_i?
 - **Adjunct medial:** When_i did the boy know t_i how he hurt himself *t_i?

de Villiers, Roeper and Vainikka 1990



Kermit and Cookie Monster were baking

de Villiers, Roeper and Vainikka 1990



Big Bird came in and wanted to help someone. He wanted to do his favorite kind of baking, but he didn't know who he should help.

de Villiers, Roeper and Vainikka 1990



**So he asked Bert with a big shout:
“who should I help with my favorite kind of baking?”**

de Villiers, Roeper and Vainikka 1990



This is what happened in the end with Big Bird.

Attention-check: "What is Cookie Monster wearing?"

Test question:

a) How did Big Bird ask who to help? (adjunct-arg_med)

b) How did Big Bird ask to help? (adjunct-0_med)

de Villiers, Roeper and Vainikka 1990



This is what happened in the end with Big Bird.

Attention-check: "What is Cookie Monster wearing?"

Test question:

- a) How did Big Bird ask who to help? (adjunct-arg_med)**
- b) How did Big Bird ask to help? (adjunct-0_med)**

If knowledge of *wh*-islands, only upper-clause response ("with a shout") in (a), whereas "with a shout" and "w/ fav kind of baking" possible answers to (b)

de Villiers, Roeper and Vainikka 1990

TABLE 1
Site of interpretation for wh-question

	Argument		Adjunct	
Medial:	–LD	+LD	–LD	+LD
0	68% (34)	32% (16)	50% (25)	44% (22)
Arg	70% (35)	2% (1)	23% (23)	8% (8)
Adj	63% (63)	30% (30)	48% (24)	6% (3)

- No wh-island:
arguments & adjuncts
take long distance
interpretation about
30-40% the time
- Argument wh-island:
neither argument nor
adjuncts can move out
(2-8% LD)
- Adjunct wh-islands:
arguments can move out
(30% LD) but not
adjuncts (6% LD).

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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: infection 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: Adjunct vs. Argument

- Spontaneous production:
 - Stromswold: 100% correct for *who*, 97% for *how*, 95% for *where*, 94% for *what*, 87% for *why*, 79% for *which*, and 77% percent for *when*
 - Bellugi 1971, Labov & Labov 1978, Thornton 2008: a more marked drop in inversion rates w/ *why*

figures from Thornton 2008

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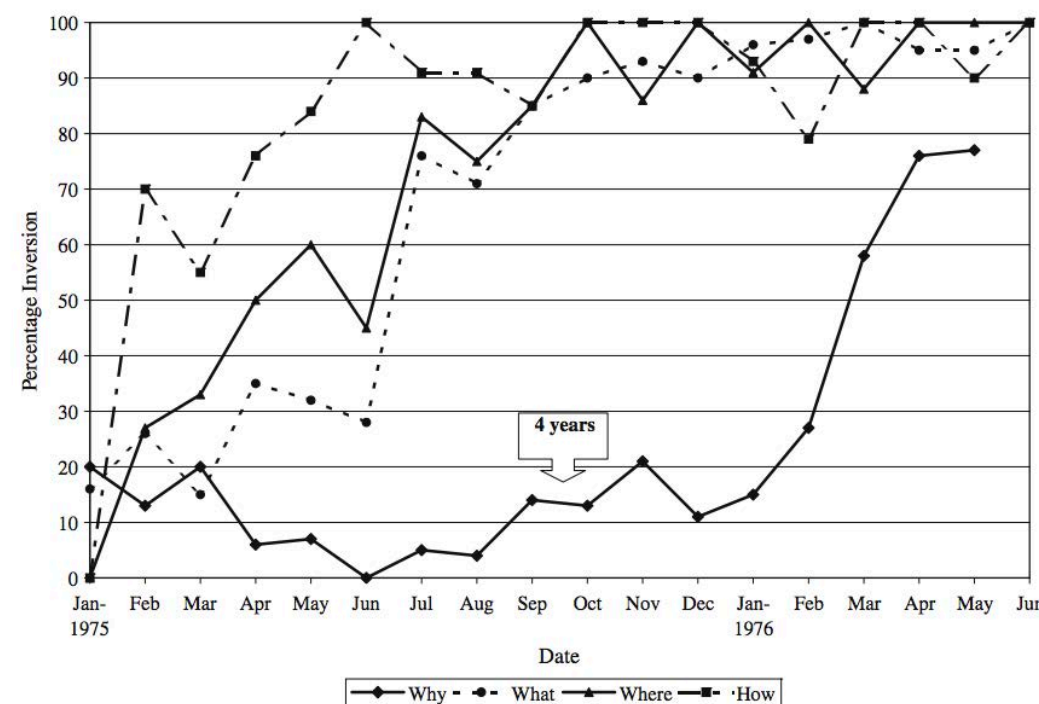


Fig. 1 Comparison of inversion in *why/what/where/how* in Jessie's *wh*-questions (Adapted from Labov and Labov 1978)

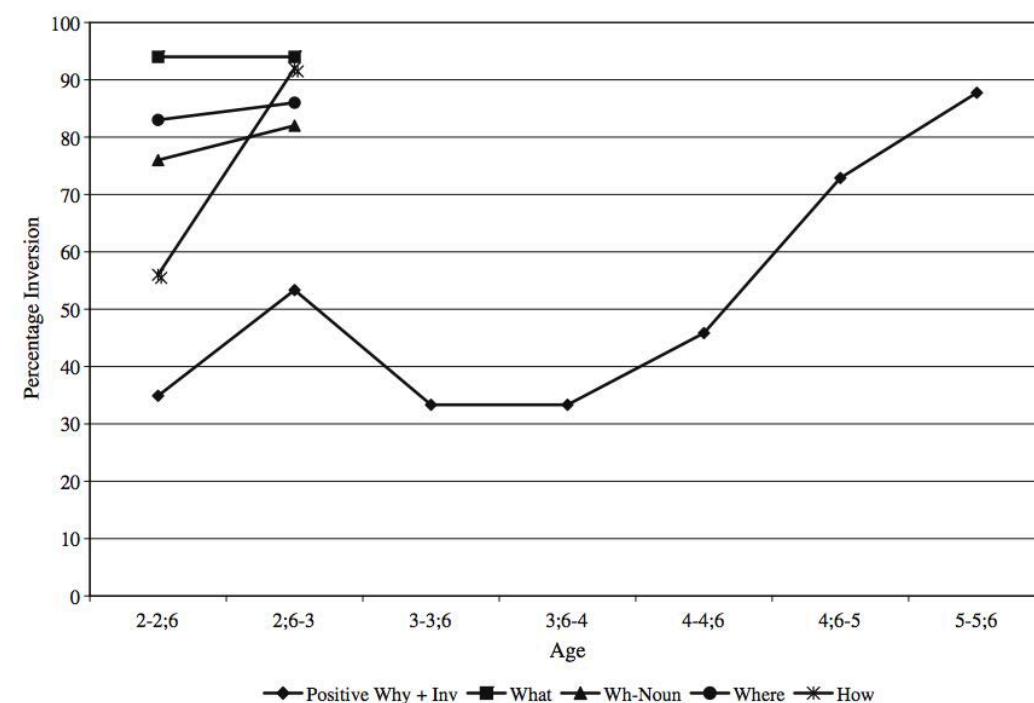
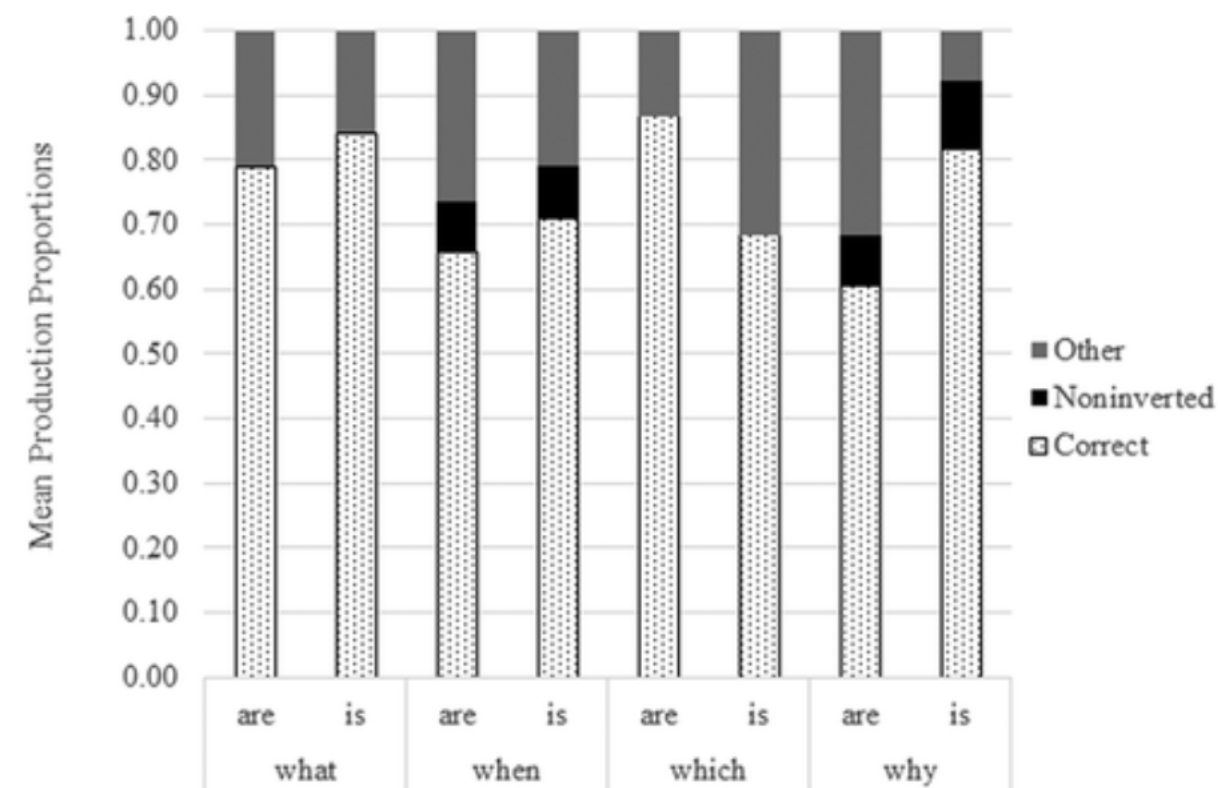


Fig. 3 Percentage of inversion in AL's questions by age; *Why* compared with 'other' *wh*-phrases

Asymmetries: Adjunct vs. Argument

- Elicited Production Tasks
 - no asymmetry found in Ambridge et al. 2006
 - asymmetry found in Pozzan & Valian 2018
 - 40 3-6-yos in an “Asking Game”
 - “Katie’s dog is digging a hole. Katie wants to find out why, so she says: “Mom ...”



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Asymmetries: Adjunct vs. Argument

- One proposal (de Villiers 1991): adjunct *wh*-words base generated and thus doesn't trigger T-to-C movement

Asymmetries: Auxiliaries

- Errors are argued to occur only for two auxiliaries that display idiosyncratic properties: copula BE and the dummy auxiliary DO (Santelmann et al., 2002; see also Stromswold, 1990; Hattori, 2003)

Asymmetries: Auxiliaries

- Santelmann et al. (2002)
 - Elicited imitation task w/ 2 to 5 yos
 - Y/N-questions and matched declaratives
 - Errors more prevalent with copular *be* than any other auxiliary, including progressive *be*

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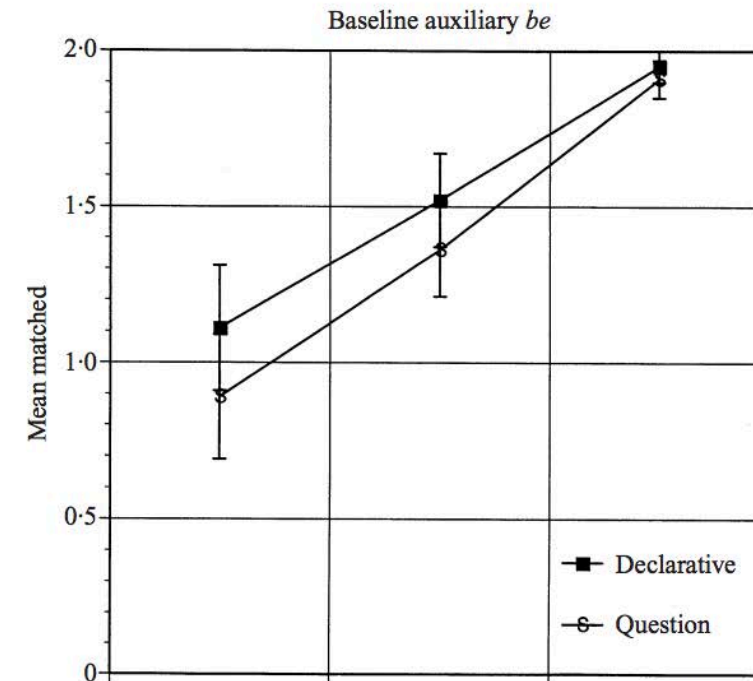


Fig. 2. Mean number matched (declarative and question) for baseline Auxiliary *be*. (Error bars represent standard error of the mean.)

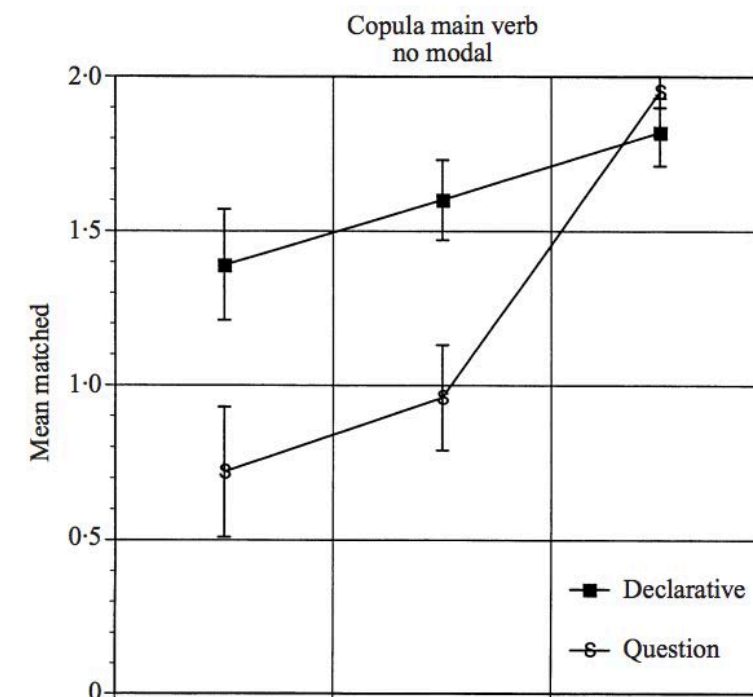


Fig. 5. Mean number matched (declarative and question) for copula main verb, no modal. (Error bars represent standard error of the mean.)

Asymmetries: Auxiliaries

- Elicited Production, Ambridge et al. (2006)
 - 28 3;6 - 4;6 yos
 - 4x3x2: wh-word (*what/who/how/why*) x auxiliary type³ (*be_{aux}/do/can*) x number (3sg/3pl)

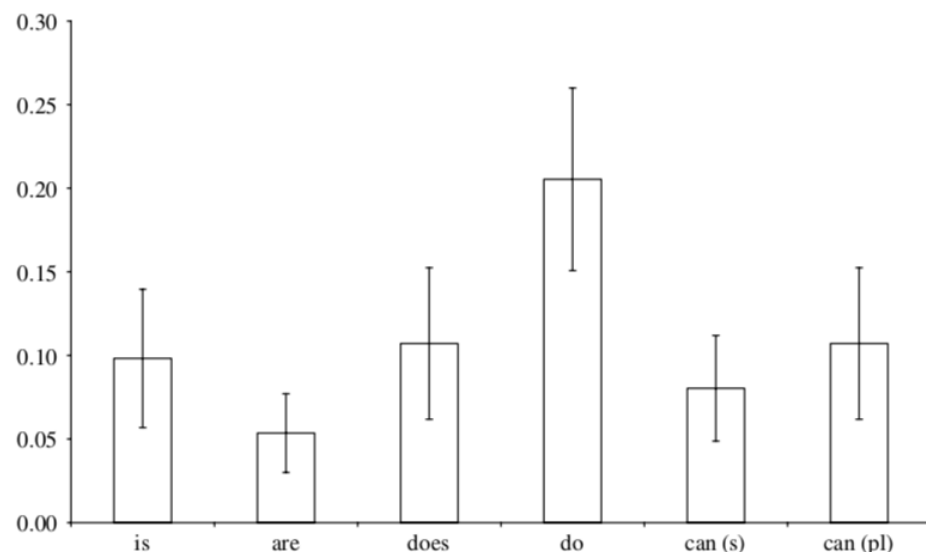


Fig. 1. Non-inversion errors by lexical auxiliary (auxiliary x number) as a proportion of all responses for each lexical auxiliary (error bars represent standard error).

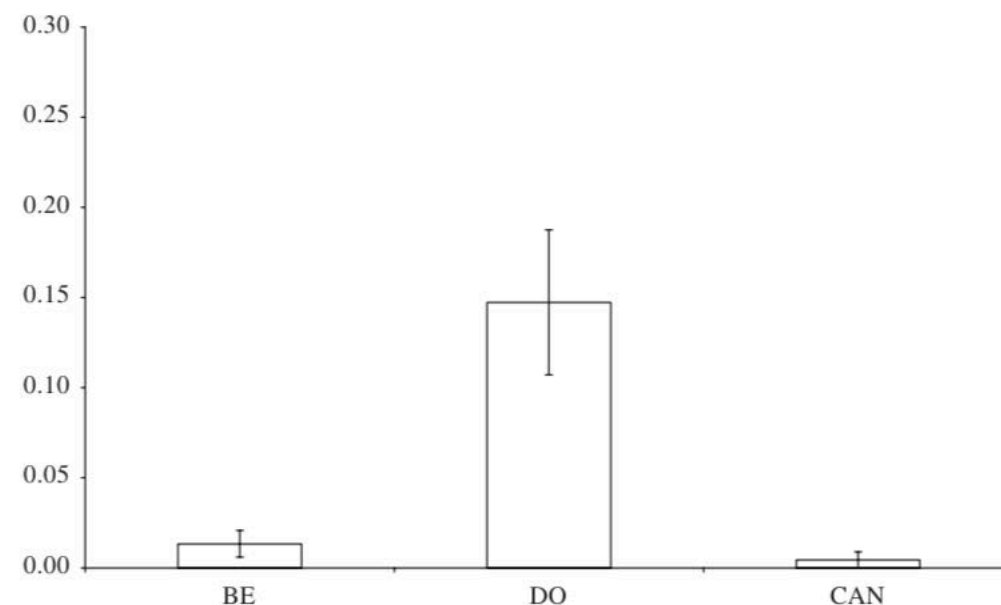


Fig. 3. Auxiliary-doubling errors by auxiliary as a proportion of all responses for each auxiliary (error bars represent standard error).

- Non-inversion is general across auxiliaries
- Doubling errors are *do*-specific (NB: copular be not included)

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)

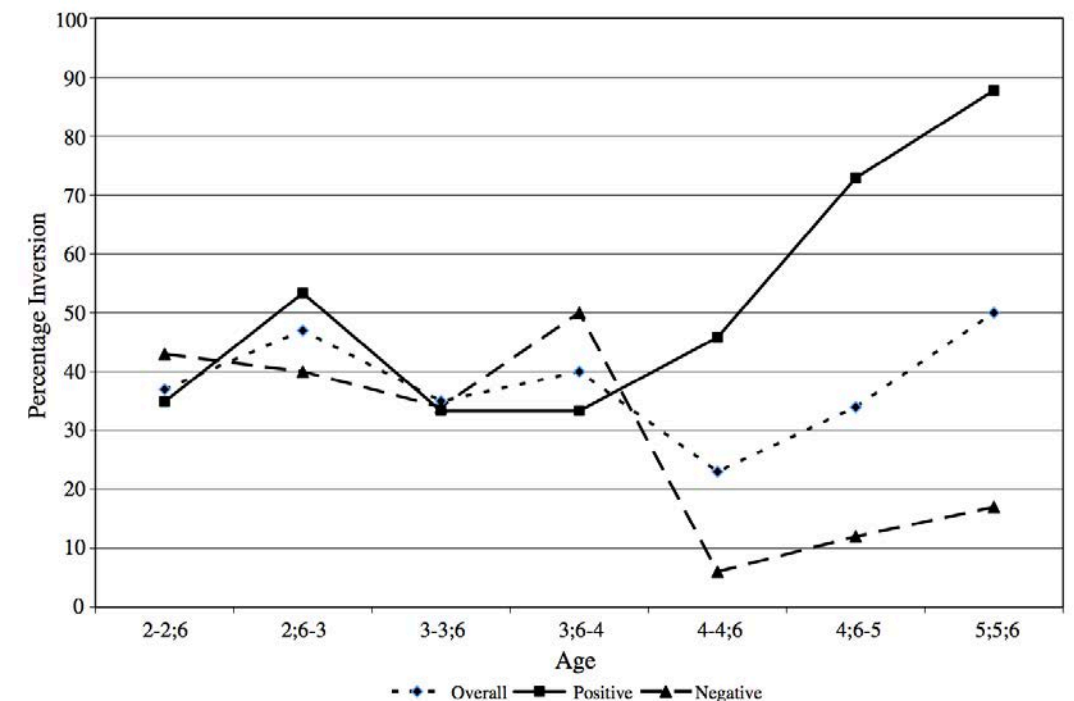


Fig. 2 Percentage of inversion in AL's questions by age

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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.

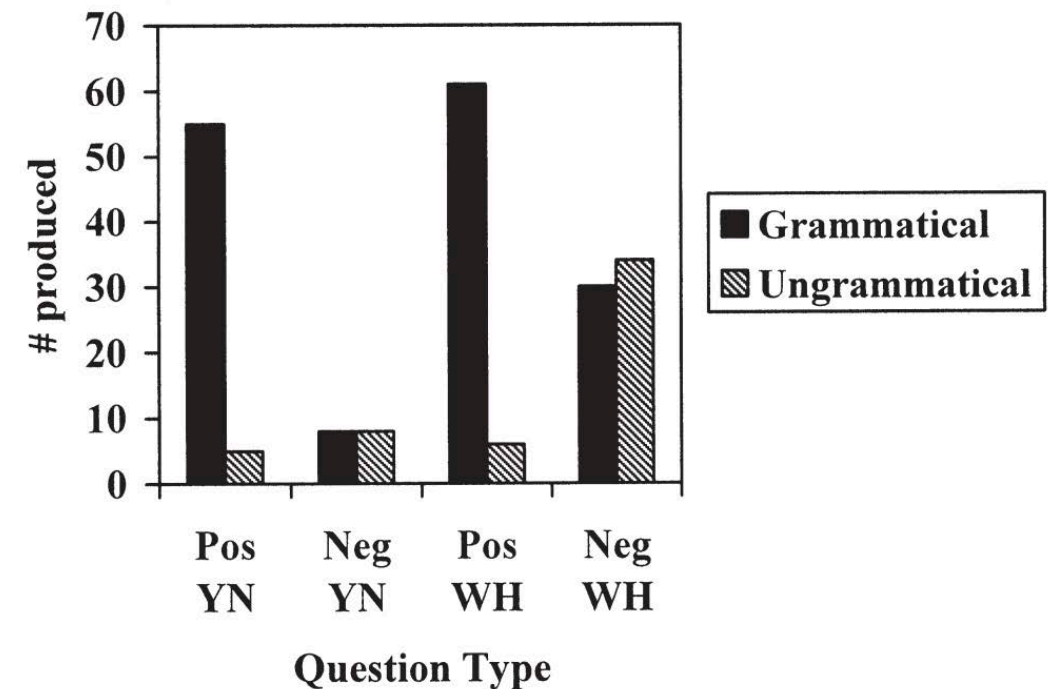


FIGURE 1 Number of children's grammatical and ungrammatical questions produced by sentence type in Experiment 2. YN = yes/no.

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

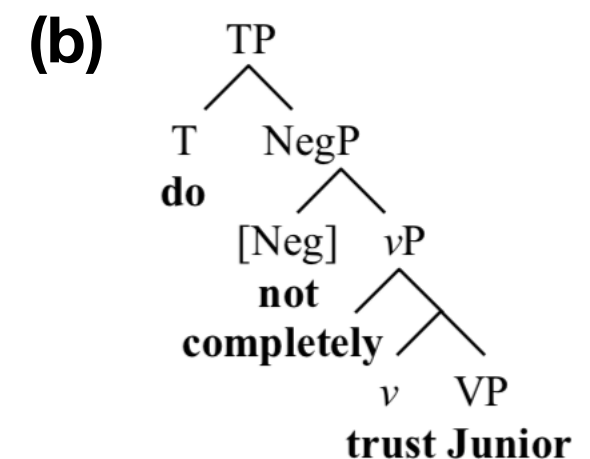
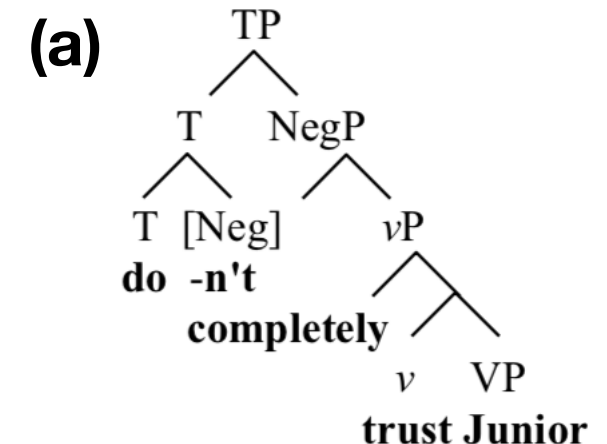
- (17) Exp: This is a story about Cabbage Patch Girl [CPG].
 CPG: Today's my shopping day. I'm going to go to the mall.
 [Goes behind wall.]
 Look at all those things. I like this one, but I don't like this other one.
 Lulu: I have a question. What did Cabbage Patch Girl don't like?
 Exp: Did Lulu say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

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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



Proposals

- GTW: Mis-set parameter; general syntactic ban on raising Neg out of TP (Paduan is a language with such a ban)
- Hiramatsu/Xu & Snyder: mis-analyze *n't* as occupying a different structural position (adjunct, specifier)
- 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

Main effects of
age + wh word

Table 6
Distribution of medial wh-questions

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

Same wh-word is repeated

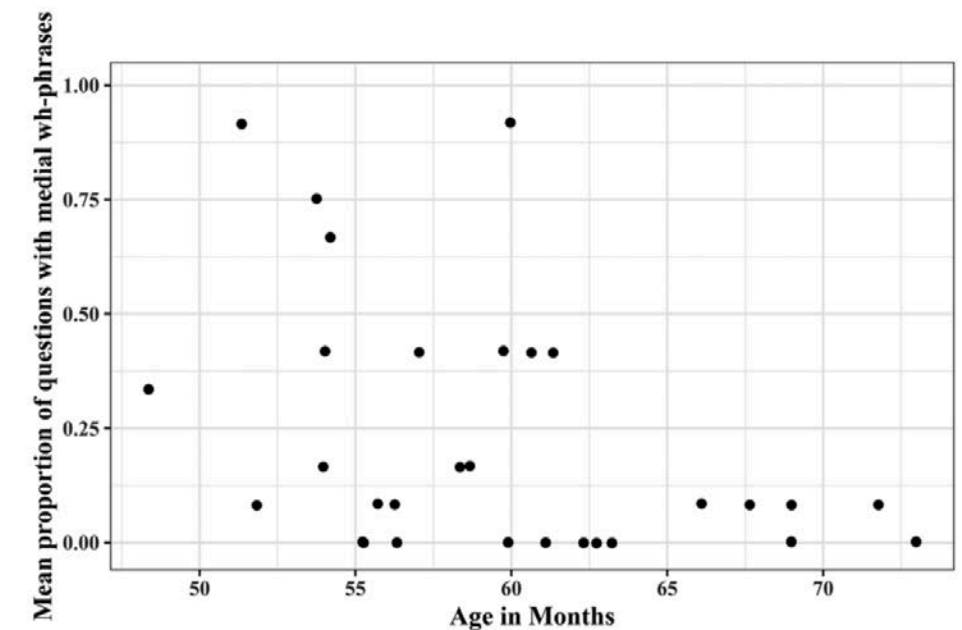


Fig. 1. Proportion of utterances with medial wh-phrases by participant.

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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*)

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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.

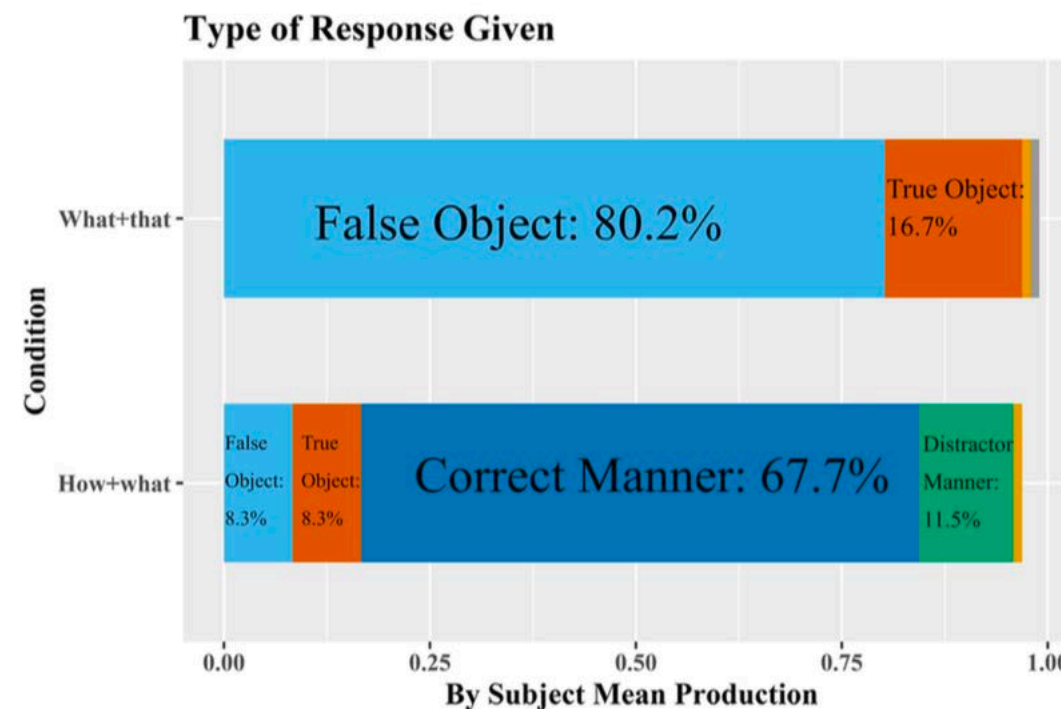


Fig. 2. By-participant mean production rate of responses observed in Experiment 2. Light orange, unlabeled responses indicate an irrelevant manner response (1% in each condition). Gray indicates the child gave both possible manner responses (1% in *what + that* condition). See Table 11 for the description 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...
- ▶ r^2 of .0016: no correlation

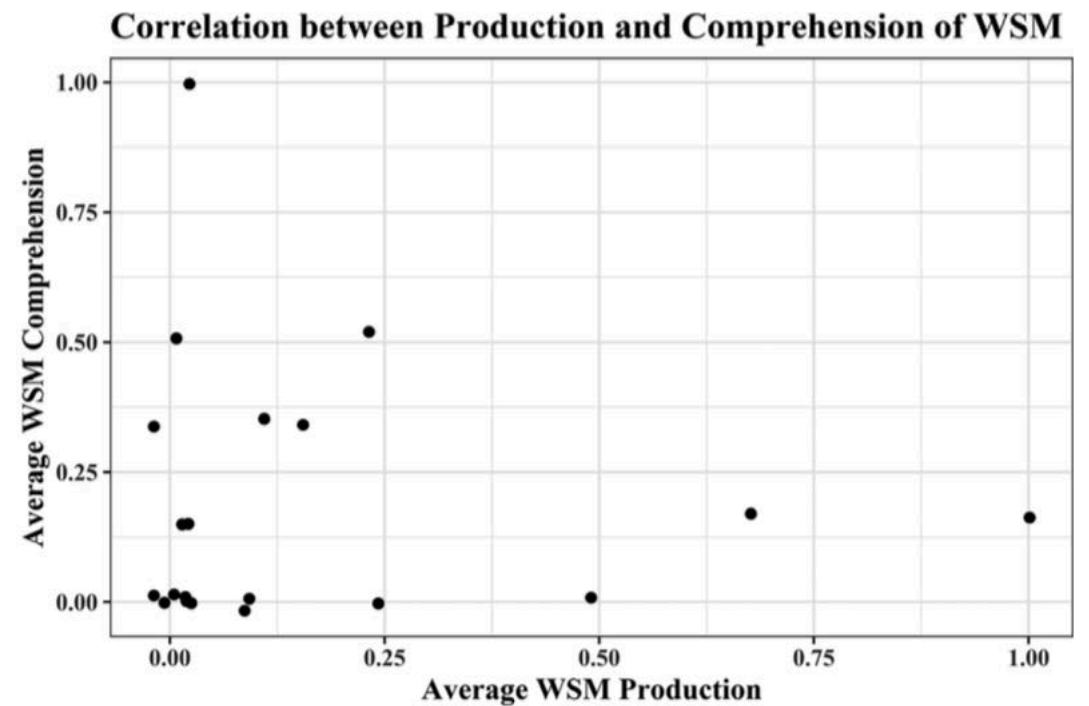


Fig. 4. Individual performance on the production and comprehension tasks.

Medial *wh*-production errors

- So what are they doing?
 - multiple copy spell-out?
 - perhaps supporting evidence from children's overproduction and acceptance of resumptives (e.g. McKee & McDaniel 1998)
 - 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?

Next week

- All read:
 - Katsos et al. 2018
 - Philip 2011
 - Gualmini et al. 2008
- Extras:
 - Quantifier spreading
 - Philip 1995
 - Aravind et al. 2017
 - Quantifier raising
 - Lidz & Musolino 2002
 - ACD
 - Syrett & Lidz 2009
 - Sugawara et al. 2013

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