Why Complement Clauses Do Not Include a *That*-Complementizer in Early Child Language

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1. The problem and data

It has been repeatedly noted that complement clauses are virtually never marked by a *that*-complementizer in early child language (cf. Limber 1973; Phinney 1981; Pinker 1984; Bloom et al. 1989). In this paper we show that the absence of *that* in complement clauses is due to the particular structure of complex sentences that young children use. Specifically, we argue that children don't use a *that*-complementizer because early complement clauses are not embedded.

Our study is based on data from six children from the CHILDES database (MacWhinney & Snow 1990). As shown in (1), the children are between 1;2 and 5;1 years of age.

(1) Age of children

	Age range	Number of complement clauses (Total: 1238)
Naomi	1;2 - 4;9	32
Eve	1;6 - 2;3	46
Peter	1;9 - 3;2	163
Nina	1;11 - 3;3	141
Sarah	2;3 - 5;1	370
Adam	2;3 - 4;10	486

Our data include 1238 complement clauses. We restricted our investigation to finite complement clauses marked by *that* or by zero. So we did not consider infinitive constructions, if clauses, and embedded wh-sentences that function as complement clauses. There are only 14 complement clauses introduced by *that* in our data. All other clauses are marked by zero. That means that almost 99 percent of the sentences in our sample do not include a complementizer. This number is in stark contrast to the number of *that*-complement clauses that previous studies have found in adult language. Elsness (1984) reports, for instance, that in the BROWN corpus more than 60 percent of all complement clauses are marked by a *that;* McDavid (1964) examined a sample of written academic language in which more than 90 percent of all complement clauses include a *that*-complementizer. Compare the figures in (2).

(2) Number of complement clauses marked by *that* or by zero

	THAT	ZERO	TOTAL
Our sample	14 (1.2%)	1224 (98.8%)	1238
Elsness (1984)	406 (60.5%)	265 (39.5%)	671
McDavid (1964)	415 (91%)	40 (9%)	455

The absence of *that* in early complement clauses has been attributed to various factors. Pinker (1984:224) argues, for instance, that complementizers and other functional categories are often omitted because they are "perceptually nonsalient" and "semantically empty". And Bloom et al. (1989) suggest that the use of *that* as a demonstrative might inhibit young children from learning the same form as a complementizer (cf. the 'Principle of Contrast'; e.g. Clark 1987).

We think that these explanations are inadequate to account for the absence of *that* in early complement clauses. The lack of perceptual salience and semantic substance cannot be the reason why *that* is omitted because other functional categories, including other conjunctions such as *and* or *when*, are widely used in our data. And the multifunctionality of *that* is probably not a sufficient reason either, because other function words with multiple meanings such as *to*, which is used as a directional preposition and an infinitive marker, do not seem to cause any delay in the acquisition process. In fact, in an earlier study Bloom at al. (1984) argued that the directional sense of *to* may facilitate the acquisition of *to* as an infinitive marker. Obviously, only one of these claims can be true.

In contrast to Pinker and Bloom, we maintain that the absence of *that* in complement clauses is due to the conceptual and syntactic structure of complex sentences that English-speaking children first learn. Pinker and Bloom assume that sentences like those in (3) and (4) (which we adopted from Bloom et al. 1989:106-8)

(3) I think the children go to bed.
(4) I know I open it up.

are complex sentences that consist of two clauses: (i) a matrix clause and (ii) a complement clause marked by zero. Challenging this view, we maintain that (3) and (4), which are similar to the sentences in our sample, do not consist of two propositions. Rather, they are simple utterances in which the matrix clause functions as an evidential marker. What we claim then is the following: Children don't use a *that*-complementizer because constructions that appear to be early complement clauses are really independent sentences accompanied by parenthetical matrix clauses (e.g. *I think)* that do not make an independent assertion.

Parenthetical matrix clauses are characterized by a number of features that distinguish them from ordinary main clauses: The verb of a parenthetical matrix clause is usually a cognition verb in the present tense. The subject is either a first or, less frequently, a second person pronoun. The apparent matrix clause is short and

formulaic and may precede or follow the associated proposition. Auxiliary verbs, adverbs, and prepositional phrases are almost entirely absent in the parenthetical clause. And the associated 'complement clause' is usually not marked by *that* (cf. Bolinger 1972; Hooper and Thompson 1973; Hooper 1975; Noonan 1985; Thompson and Mulac 1991). Table (5) shows the most frequent matrix verbs in our sample; only those verbs that occur ten times or more are given.

(5) Most frequent matrix verbs (others: *find, hear, forget, be glad, be afraid, show)*

	Naomi	Eve	Peter	Nina	Sarah	Adam	Total	*that* tokens
Think	11	12	49	19	87	193	371	2
See	2	14	29	34	83	73	235	1
Say	9	3	18	29	41	28	128	2
Look	2	3	13	31	10	41	100	-
Know	4	1	6	7	32	35	85	1
Mean	-	-	2	4	20	14	40	-
Guess	-	1	7	1	14	13	36	-
Bet	-	-	1	3	14	18	36	-
Pretend	1	1	3	18	2	9	34	3
Wish	-	-	-	-	5	26	31	-
Tell	1	2	4	6	7	5	25	4
Watch	-	-	3	8	2	5	18	-
Hope	-	-	1	-	6	10	17	-
Remember	-	6	1	1	5	4	17	1
								Total: 14

As can be seen in table (5), there are only seven verbs that occur with a *that*-complementizer in our sample: *think, see, say, know, pretend, tell,* and *remember.* None of the other verbs (including those not shown in (5)) ever occur with a clause introduced by *that.* Table (6) shows that all 14 *that*-complement clauses were produced by a child over three years of age. None of the complement clauses produced by children below this age included a *that*-complementizer.

(6) Number of complement clauses with *that* or with ZERO

Age:	1;2-2;11	3;0-3;11	4;0-5;1
ZERO	325 (100%)	338 (97.4%)	561 (99.1%)
THAT	0 (0%)	9 (2.6%)	5 (0.9%)
TOTAL	325	347	566

In the remainder of this paper, we take a closer look at the sentences that include one of the verbs in table (5). We show that the vast majority of clauses that include one of these verbs are parentheticals, which do not make an independent assertion.

2. Evidential markers: *think, guess, bet, mean,* and *know*

Five verbs are commonly used as evidential markers: *think, guess, bet, mean,* and *know*. Nearly 50 percent of all sentences in our sample occur with one of these five verbs. The following examples show the first fifteen sentences that Sarah used with the apparent matrix verb *think*.

(7) Sarah (first sentences including *think* as a 'matrix verb')	age
I thing I'm go in here.	3;1
And I think (pause) we need dishes.	3;2
Think some toys over here too.	3;3
I think I play jingle bells xx with the record player .	3;5
I think he's gone.	3;5
Oh (pause) I think it's a ball.	3;5
It's a crazy bone (pause) I think.	3;5
I think it's in here.	3;5
I think it's in here # Mommy.	3;5
think it's in there.	3;5
I think I don't know that one.	3;6
I'm get my carriage (pause) I think.	3;6
Think it's in this.	3;6
I think that your hands are dirty.	3;6
I think my daddy took it.	3;7

At first glance, the sentences in (7) seem to consist of two propositions, a matrix clause and a complement clause marked by zero, but there is good evidence that the matrix clauses in (7) are not full propositions. In all 15 sentences, the matrix clause is short and formulaic. There is hardly any variation: *think* is always used in the present tense and with the first person pronoun *I* as subject. Apart from the pronominal subject, there is no other element that co-occurs with *think* in these clauses: *think* is never accompanied by an auxiliary verb or modified by an adverb (or prepositional phrase). The 'matrix clause' usually precedes the 'complement clause', but there are two examples in which *I think* occurs at the end of the sentence. All this suggests that the matrix clauses do not make an independent assertion; rather, they are used as parenthetical evidentials that indicate the speaker's degree of certainty towards the associated proposition (cf. Chafe and Nichols 1986).

The following examples illustrate the use of *guess, bet, mean,* and *know*.

(8) Sarah (first sentences including *guess* as a 'matrix verb')	age
I guess I better come xx.	3;5
Guess I'll write xx some more white.	3;9

Guess I lay it down.	3;10
I guess saw me break them.	3;10
Guess who we spun?	4;1
Guess who we spun (pause) all up?	4;1
I guess I have no more.	4;4
That goes right here but it don't fit (pause) I guess.	4;4
(9) Adam (first sentences including *bet* as a 'matrix verb')	
Yeah (pause) I bet now it's too big.	4;4
I bet I know.	4;4
I bet I could play it.	4;6
I bet Smokey can tear off dose bears.	4;6
I bet I can do dat one.	4;6
I bet I can put something in through here.	4;6
I bet you have something else.	4;6
I bet you don't know what this is.	4;10
(10) Adam (first sentences including *mean* as a 'matrix verb')	
Down (pause) I mean (pause) I have to do all (pause) of this.	3;9
You mean I do xx .	3;9
You getting crisscross (pause) I mean.	4;6
Y(ou) mean (pause) put that up?	4;6
I mean he's big.	4;7
I mean um (pause) I don't know what the name is.	4;7
I mean that teacher was gonna color in school but not today.	4;7
I mean I'm awful stupid today.	4;8.
(11) Sarah (first sentences including *know* as a 'matrix verb')	
I know he sit right here.	3;2
Know (pause) I'm not.	3;5
I know you get a princess telephone.	3;6
She knows she gets some stickerbirds.	3;7
I know got different colors.	3;10
Do you know I'm really xx?	4;0
I didn't know it was that late.	4;1
That can go on my bike too (pause) you know.	4;2

The examples in (8) to (11) are the earliest sentences that Sarah and Adam used in which *guess, bet, mean,* and *know* seem to function as matrix verbs. These sentences basically have the same structure as the sentences in (7), in which the matrix clauses function as parenthetical evidential markers. *Guess, bet, mean,* and *know* are always used in the present tense, and they are never accompanied by an auxiliary verb or adverb. Table (12) shows that the subject of these verbs is almost always a first or a second person pronoun.

(12) Subjects of *guess, bet, mean, know* and *think*

	1 person	2 person	3 person	lexical noun	imperative	Total
guess	36	-	-	-	-	36
bet	36	-	-	-	-	36
mean	13	12	-	-	-	25
know	30	47	5	3	-	85
think	315	50	5	1	-	371
TOTAL	430 (78%)	109 (20%)	10 (2%)	4 (0.7%)	- (0%)	553

98 percent of all sentences in which *guess, bet, mean, know,* and *think* seem to function as matrix verbs include a first or second person pronoun as subject; *guess* and *bet* occur only with *I* in subject position. *You* is especially common with *know*; *you know* accounts for more than 50 percent of all sentences including *know* in our sample. Third person pronouns and lexical NPs are extremely rare in subject position; they occur in fewer than 3 percent of all 'matrix clauses'.

Note that some of the apparent matrix clauses in (8) to (11) follow the associated clause, as does *I think* in (7). There are twenty-eight sentences in the data where *I think, I guess, I mean,* and *you know* occur sentence-finally. These sentences provide, perhaps, the strongest support for our hypothesis that the matrix clauses in our sample are parentheticals. They do not have the status of an independent assertion. Rather, they function as evidential markers, somewhat similar to an epistemic adverb such as *maybe*.

3. Deontic modality markers: *wish* and *hope*

We turn now to two other 'matrix verbs', *wish* and *hope,* that are commonly used to indicate the speaker's desire. Like *think, guess, bet, mean,* and *know*, these two verbs are used as parentheticals in our sample.

(13) Adam (first sentences including *wish* as a 'matrix verb')	age
I wish I could play with dis [= a Christmas present].	3;5
I wish I can keep it (pause) for writing on.	3;5
I wish I can keep dat so I can tick (pause) tick it.	3;5
I wish we can eat...	3;8
I wish we could eat that.	3;8
I wish I could have a tractor to drive in them.	3;8
I wish (pause) could (pause) make some more just like dat.	3;8
I wish you could color all dese.	3;9
(14) Adam (first sentences including *hope* as a 'matrix verb')	
Hope he tipped again.	3;6
I hope he won't bother you.	4;0
I hope my cat friends are alright.	4;4
I hope dey alright.	4;4

I hope I can knock dese pretty bowling balls down with only one strike. 4;9
I hope de house won't be on fire. 4;9
I hope dat kitty's not getting into trouble. 4;9
I hope I put my sponge in here. 4;9

The sentences in (13) and (14) basically have the same structure as the sentences we examined in the preceding section. Table (15) shows that *wish* and *hope* are almost exclusively used with a first person pronoun as subject.

(15) Subjects of *wish* and *hope*

	1 person	2 person	3 person	lexical noun	imperative	Total
wish	30	-	-	1	-	31
hope	15	2	-	-	-	17
TOTAL	46 (96%)	2 (4%)	- (0%)	1 (2%)	- (0%)	48

With three exceptions, the subject of *wish* and *hope* is the first person pronoun *I*. *Wish* and *hope* are never accompanied by an auxiliary verb or modified by an adverb, and they occur invariably in the present tense. The lack of variability suggests that *I wish* and *I hope* are parentheticals. They are distinguished from the verbs in the previous section due to their meaning or function. *I wish* and *I hope* do not mark the degree of certainty with which the speaker asserts the associated proposition; rather, they indicate the speaker's desire. *I wish* and *I hope* can be viewed as deontic modality markers, serving basically the same function as a modal adverb such as *hopefully*.

4. Discourse directives: *see, look, watch,* and *remember*

Apart from the epistemic and deontic modality verbs considered in the previous two sections, there are four other 'matrix verbs' in our sample that are commonly used as parentheticals: *see, look, watch,* and *remember*. Table (16) shows that 94 percent of these verbs occur with no overt subject in the imperative form.

(16) Subjects of *see, look, watch, remember*

	1 person	2 person	3 person	lexical noun	imperative	Total
see	16	3	2	-	214	235
look	-	-	-	-	100	100
watch	-	-	2	-	16	18
remember	1	1	-	-	15	17
TOTAL	17 (4.5%)	4 (1%)	4 (1%)	- (0%)	345 (94%)	370

(17) Nina (first sentences including *see* as 'matrix verb')

See that monkey crying.	2;1
I see Becca sleeping.	2;1
See Becca sleeping.	2;1
See that go.	2;1
You see that have a hole.	2;1
That's a that's a zoo see.	2;3
See cars going on the train too.	2;3
See Snoopy have those feet.	2;3

(18) Adam (first seven sentences including *look* as a 'matrix verb')

Look birdie fly.	2;5
Look (pause) Mommy (pause) cowboy reach.	2;6
Look (pause) Daddy put it on a wall.	2;8
Fell down (pause) look.	2;9
Look (pause) dat man doing.	2;10
Look (pause) see new wheel.	2;10
Look (pause) dat me talking.	2;11
We (pause) all (pause) look (pause) mail come out.	2;11

(19) Adam and Sarah (first sentences including *watch* as a 'matrix verb')

Watch get it.	2;8
Watch Mommy make it.	3;1
Watch it jump through the hole.	3;6
Watch me do it again by myself now.	4;1
I can make that disappear (pause) watch.	4;4
Watch push it up and see.	4;5
This is a valentine (pause) watch.	4;5
This fits me watch.	4;5

(20) Sarah and Adam (first sentences including *remember* as a 'matrix verb')

Mom (pause) remember we went to to Rhode Island?	2;0
Remember we goed to Peabody School and have...	2;1
Remember we had some macaroni for supper?	2;2
Remember we remember we fixed the beans this morning?	2;2
Remember we had some macaroni for supper?	2;2
Remember you reading de puzzle (pause) I put it in there?	3;2
You remember I broke my window.	4;0
Put it (pause) you have to put it in the barn (pause) remember?	4;1

See, look, and *watch* are common perception verbs, but in our data they serve a pragmatic function: They can be viewed as attention getters that focus the hearer's attention on entities in the speech situation (cf. Tomasello 1992). *Remember* denotes a cognitive activity in its most common meaning, but in our data it functions to qualify the information expressed in the associated clause. It does not serve as the main verb of an imperative sentence. Rather, it indicates that the co-occurring clause

conveys information that is familiar to the interlocutors due to shared experience. Like *see, look,* and *watch, remember* has a discourse pragmatic function.

5. *Say, tell* and *pretend*

Finally, there are three other verbs that we need to consider: *say, tell* and *pretend.* These three verbs have more semantic weight and a less abstract meaning than all other verbs in our sample. *Say* and *tell* refer to a verbal activity, an act of speaking. *Pretend* seems to have a more abstract meaning. In adult language, *pretend* is commonly used to indicate that somebody acts contrary to his or her beliefs or desires. But children use *pretend* in a more concrete sense, denoting a game in which objects are manipulated in particular ways. In their use, *pretend* means something like 'acting' or 'staging' and is thus not a cognition verb as in adult language (Tomasello 1999).

(21) Nina (first sentences including *say* as a 'matrix verb')	age
She says "justin don't eat it".	2;5
The cowboy say (pause) "I'm angry at you".	2;9
He sayed he has something to play with for me.	2;9
That means peoples say "put the kitty down".	2;10
She gonna say I have a pretty dress on.	2;10
The kitty says he wants to come in.	2;10
He say the alligator's gonna bite him up.	2;10
You make a rabbit and a bear I said.	2;10
(22) Nina and Sarah (first sentences including *tell* as a 'matrix verb')	
She telled me she for get the doll carriage for me.	2;10
He telled me (pause) me don't scream again.	3;0
Tell me (pause) I would like to come to your house again.	3;0
I'm gonna tell him I wanna go to his house.	3;3
You tell me that I hate God.	3;4
I told you I could make a carrot.	4;2
I told you you are cuckoo.	4;6
Tell Daddy I'm sick.	4;10
(23) Adam and Sarah (first sentences including *pretend* as a 'matrix verb')	
Let's pretend we taking he all of de clothes off.	3;4
And pretend we ride a firetruck?	3;4
We pretend we (pause) the milk is coming.	3;5
I can pretend too that I the baby dragonfly.	3;8
Mommy, let's pretend dat we (pause) de animal men (pause) alright?	4;1
Let's pretend dat we can drive dis car.	4;1
Hey (pause) let's pretend it went down dere.	4;10
Mommy, let's pretend it's raining.	5;2

The sentences in (21) to (23) differ significantly from those that we have seen in the previous three sections. The matrix clauses occur in the present AND past tense and frequently include a third person pronoun or a full noun phrase as subject:

(24) Subjects of *say, tell,* and *pretend*

	1 person	2 person	3 person	lexical noun	imperative	Total
say	45	14	35	29	21	144
tell	10	2	5	1	7	25
pretend	5	2	1	4	22	34
TOTAL	60 (29.5%)	18 (9%)	41 (20%)	34 (16.5%)	50 (24.5%)	203

Say, tell, and *pretend* are the only matrix verbs in our sample that are commonly used with a complement clause that is really embedded. Note, however, that *say* frequently introduces a direct quote, which is not a typical embedded clause. On the contrary, the quoted sentence is usually the main proposition, which is reflected in the fact that the *say*-clause is often postposed, as in the final example in (21). We therefore assume that only some of the sentences introduced by *say* are dependent complement clauses.

Not counting the sentences in which *say* is used with a direct quote, there are 97 clauses in our data introduced by *say, tell* or *pretend.* Table (25) shows that 9 out of 14 *that*-complementizers in the entire sample occur with one of these three verbs. This means that *say, tell,* and *pretend* are 20 times more likely to occur with a *that*-complement clause than all other verbs in our sample. This is a clear indication that these three verbs have a special status. They are the first 'real' matrix verbs that English-speaking children older than age three commonly use in a bi-clausal construction including a complement clause. All other verbs are always (or almost always) used in a parenthetical matrix clause functioning as an evidential marker, an attention getter, or a deontic modality marker.

(25) The number and percentage of *that* with different matrix verbs

	THAT	ZERO	TOTAL
Say, tell, pretend:	9 (9.25%)	88 (90.75%)	97
Other verbs (including *say* + direct quote)	5 (0.46%)	1070 (99.53%)	1075
TOTAL:	14 (1.2%)	1224 (98.8%)	1172

6. Complement clauses in adult speech

In the linguistics literature, it is commonly assumed that the parenthetical use of cognition and perception verbs is secondary compared to their use as matrix verbs of (embedded) complement clauses. Thompson and Mulac (1991) have argued, for

instance, that the use of *I think* and *I guess* as evidential markers developed historically via grammaticalization from ordinary matrix clauses. If their analysis is correct, one has to ask why children learn the secondary use of these constructions first? The answer to this question is very simple: Children learn the parenthetical use first because this is what they hear in the speech addressed to them. Table (26) shows that fewer than 3 percent of all complement clauses used by the parents in talking to their children include a *that*-complementizer.

(26) Percentage of complementizers in the complement clauses of the parents

	COMP-clauses marked by *that*		COMP-clauses marked by zero		Total
Naomi's mother	13	(4.5%)	280	(95.5%)	293
Eve's mother	2	(0.9%)	230	(99.1%)	232
Peter's mother	2	(1.3%)	147	(98.7%)	149
Nina's mother	43	(2.9%)	1459	(97.1%)	1502
Sarah's mother	26	(2%)	1222	(98%)	1248
Adam's mother	36	(3.9%)	899	(96.1%)	935
TOTAL:	122	(2.9%)	4237	(77.1%)	4359

The parents basically use the same kind of sentences that we have seen in the speech of their children. They consist of an evidential marker or an attention getter and an associated clause without *that*. Both the children and their parents do not use embedded complement clauses in this informal speech setting. The absence of a complementizer in the speech of young children is thus expected and does not require an account as suggested by Pinker or Bloom, who compare the utterances of young children with complex sentences that are primarily used in written genres, which preschool children do not know.

7. Conclusion

To summarize, we have argued that the six children whose speech we examined do not use complementizers because most of the sentences that appear to be sentential complements turned out to be independent main clauses. More than 80 percent of the complex sentences in our sample are monoclausal. They consist of a single proposition and a parenthetical phrase that functions as an evidential marker, an attention getter, or a deontic modality marker. There are only three verbs that are commonly used with a 'true' complement clause: *say, tell* and *pretend* (all after 3 years of age). These three verbs have a more concrete meaning than all other verbs in our sample. They are the first matrix verbs that children use, which is reflected, among other things, in the fact that they are much more likely to occur with a *that*-complementizer than all other verbs in our sample.

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