

## THE GENESIS OF COMPLEX SENTENCES<sup>1</sup>

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One of the most interesting and important aspects of language acquisition is the child's development of an ability to produce and understand complex sentences of various kinds. Lees (1960) puts his finger on perhaps the most important issue, one distinguishing human language from many other symbolic systems.

Even if we disregard all those nominal expressions employed with purely connotative meaning, that is, those which do not refer to any object, and confine our attention to nouns which are names of things, it is clear that no extant lexicon contains anywhere near enough expressions of this kind to suffice even for ordinary daily life. We cannot get along with any single common noun to refer to a familiar object, but must have at every moment modifiers with which to construct new, more complex names to use for all the specific instances of that object which we encounter and talk about [p. xvii].

From many reports on early syntactic development, it would seem that most children display the ability to construct various complex nominal constructions--syntactically generated names--as well as other complex constructions out of simpler components well before their third birthday (3;0). Leopold (1949b), for example, in his classic study, remarks about his daughter of 2 years, 11 months (2;11) that: "...with the mastery of complex sentences, the linguistic development has reached the last stage. In the future only refinements can be expected. In general, it is astonishing how little her language differs from recognized usage [Vol. 4, p. 37]."

This chapter concerns the development of complex sentences in a number of English-speaking children before their third birthday. In large part, I believe, Leopold's remarks are borne out by our research. Needless to say, the extent to which anyone will subscribe to this proposition will depend on a number of things including (1) what aspects of linguistic behavior or knowledge one wants to count as syntactic; (2) how finely one discriminates among various constructions; (3) what one will accept as evidence that a child has or has not productively acquired a given construction; and (4) perhaps the most important, which particular children one happens to observe. I do not think, however, that I want to directly take up any of these notorious issues save the last at this time; instead I prefer to simply report and discuss some of the implications of our observations of the spontaneous production of complex sentences by children under 3.

These sentences I am about to consider come from the records of a number of children in the Boston area between the ages of 1;6 and 3;0 who for the past year and a half have participated in a longitudinal developmental study of early language acquisition whose focus is on early segmentation, morpheme structure, and phonological development (cf. Kornfeld, 1971; Limber, 1970b). The relevant details of this study are, in brief, as follows. The child and parent--generally the mother--visit our laboratory monthly for a recording session in which we obtain up to 30 minutes of spontaneous speech between parent and child alone, and up to 30 minutes of experimenter-elicited speech, generally naming objects, describing pictures or toy situations. In addition to the speech samples, we have administered the Bayley Scales of Infant Development (Bayley, 1969) to each child on approximately his second birthday (2;0). Also at this time the parent is interviewed in depth concerning the child's home environment, behavior patterns, etc. Currently there are twelve children in our study. They range between 1;11 and

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<sup>1</sup> This research was done at the Department of Psychology, M.I.T., where the author is a research associate. It was supported by a grant to Dr. J. A. Fodor from the National Institute of Child Health and Human Development (HD 05168). I take this opportunity to thank Dr. J. A. Fodor, Dr. M. F. Garrett, and especially my research assistant, Rhoda Goodwin for their contributions to this work.

3;0. Most of my remarks here are based upon the records of three of these children--two girls and a boy. These children had no siblings for at least their first two years, have no health problems, and all have above average scores on the Bayley mental scales. Their parents have attended or were graduated from college.

We have gone to considerable effort to obtain a variety of nonlinguistic behavioral and environmental information on each child. We have done this following the hypothesis that much of the often-lamented individual differences known to exist in the course of early development are not due to vagaries in the child's language learning processes but rather to systematic variation in other aspects of development and environment. To point out one obvious factor, it is striking to what extent studies of phonological development have been carried out on children raised in multilingual environments. No one would be surprised if such children differed characteristically in some developmental respect from the children of monolingual homes in our study. It is our hope that by being able to compare our children on the various factors likely to affect development, we will be able to reduce the environmental noise and thereby permit the basic acquisition processes to be observed more clearly. Although it is premature to draw any conclusions as to the effectiveness of this research strategy, already it appears possible that we will be able to partition children into two groups. One group is characterized by relatively high intelligibility in one word utterances and very predictable developmental sequences in morphology, phonology and syntax, and in general, a relatively small amount of individual variation within children. The other group is essentially the converse of the former group--unpredictable with a relatively large amount of individual variation, and relatively slower development. The sentences discussed in this paper are exclusively from the former group; the others (two in number of age 3;0) being nowhere near this level of productive development.

Before going on, I might point out that the design of this research is not optimal for the study of syntax. Our data are quite fragmentary. Although in a one-hour session a good sample of output bearing on phonological issues is readily obtained through elicitation, we have to make do with whatever sentences are spontaneously produced. Because of the fragmentary nature of my data, I am only able to report on the development of production and not that of comprehension. Therefore, all references to development are to be taken as referring to spontaneous production, i.e., anything but obvious imitation.

### **A CHRONOLOGY OF THE DEVELOPMENT OF COMPLEX SENTENCES**

Various aspects of syntactic development are displayed in Fig. 1. Only some of these will be discussed here although the others may help in conveying a more complete picture of overall development. The complex constructions include verb object complements, *wh*-adverbials, question-word (Q) clauses, relative clauses, and a variety of coordinate and subordinate conjunctions. As a rule of thumb, I will consider any sentence with more than one verb (V) as complex; auxiliaries and possessives are perhaps arbitrarily excluded. It is important to understand that I do not intend the above grammatical descriptions to be mutually exclusive or imply an independent genetic or linguistic analysis. I believe quite the contrary to be true and hope that a careful study of development will shed light not only on the acquisition processes but also on the linguistic mechanisms of the mature speaker-hearer. Indeed the structural schemata of 2-year-old speech discussed in (2) and (5) following are remarkably similar to those reflected in the speech of the mature English speaker (cf. Limber, 1970a). The major discrepancies generally seem to arise from a proliferation of exceptions rather than the introduction of wholly new structures.

#### **Precomplex Constructions**

The earlier stages of language development are relatively well suited--if not understood (e.g., Bloom, 1970; Braine, 1963a; Brown, in press; McNeill, 1970b). Here it may be useful to very briefly



### *Simple Names and Predicates*

The earliest intelligible words for most children appear to be lexically simple names or predicates, e. g., *mamma* [mama], *milk* [miy], *bottle* [ba], *shoe* [su]. As I have suggested elsewhere (Limber, 1970b; 1971), many children appear to follow a nearly optimal segmentation strategy for isolating their early word forms from utterances in English directed to them--take the last relatively stressed syllable in the utterance as a word form. Not only does this generally get the form for a predicate or name; it gets one of immediate semantic salience, e.g., *Where's Mommy? Do you want some milk? That's a shoe!* It also avoids having to look at reduced syllables as targets for learning the English vowel system and takes advantage of recency effects in short-term acoustic memory. Until the child develops the ability to syntactically generate names by using combinations of words, he must make do with using single words when referring to objects in his perceptual field, his wants, various actions, etc.

### *Referential Pronouns*

One way to make reference or individuate things is by using pronouns of various sorts--*that, there, it, now*. Of course, this avoids the problem of selecting names altogether and is quite satisfactory when objects are immediately present and in some sense perceptually salient. It is not so satisfactory when the object is not close at hand or is abstract, e.g., an action, want, or proposition. For a considerable time after 1;6, however, children make frequent use of such referential pronouns. To look ahead a bit, the emergence of complex constructions--nominalizations or complements in particular--enables the child to describe and individuate for others instances of those concepts such as object, action, event, place, time, and manner which at first he can only refer to by using a pronoun or simple lexical predicate--if at all.<sup>2</sup>

### *Wh-questions*

Questions such as *What's that? Where's Momma? and What doing?* are among the earliest multiword constructions, appearing before 2;0 in many cases. Questions involving *how, when, who, and why* appear somewhat later throughout the third year. There can be little doubt of the importance of the patterning of questions between parent and child for both syntactic and cognitive development (cf. Ervin-Tripp, 1970a). As Fig. 1 suggests, there seems to be a developmental relationship between indirect questions, *wh*-adverbials, and relative clauses.

### *The Possessive*

Typically the earliest departure from the two- or three- word utterances generally interpreted by the listener as somehow fitting the schema (*Agent*) (*Action*) (*Patient*) (*Object*) is the modification or syntactic individuation of the object noun phrase (NP) by a possessive, for example, from *what hat* to *want daddy hat*. This construction foreshadows several aspects of both complement and relative constructions. It is an NP expansion expressing a relationship among its constituents that is itself subordinate to the main clause. It is perhaps the child's first attempt to individuate entities syntactically by combining lexical items rather than using a pronoun or simple lexical item. Furthermore, this NP expansion typically occurs on the object NP, or in an alternate description, the utterance-final NP. The relationship of these features of the possessive to aspects of various complex constructions will be seen in the discussion of relatives and complements.

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<sup>2</sup> Of course I am talking about the ability to individuate entities linguistically, I have absolutely nothing to say about the conceptual bases for those distinctions.

## The Complex Constructions

### Complements

The first complex constructions to appear in the children's speech are object complements or what Lees (1960) in his *Grammar of English nominalizations* calls complex nominals. These are, on his account, nounlike versions of sentences, functioning as nominals within another sentence. Some ideas of the variety of constructions in English falling under this description are as follows:

- (1)
- a. *I want Bill to go*
  - b. *That I left surprised Mary*
  - c. *I heard him leave*
  - d. *I compelled Bill to leave*
  - e. *I like playing cards*
  - f. *I like to play cards*
  - g. *I promise that I will clean up my room*
  - h. *Watch the girl feed the ducks*
  - i. *Did you ask Mary to put her toys away?*
  - j. *I'll show how to do it*
  - k. *I don't remember if I was there*

What is characteristic of all these examples, is of course, that they are composed of two elements--the main clause or matrix sentence (verb **boldface**) and a more-or-less sentence-like element containing the verb and perhaps other residue of the complement or constituent clause now embedded in the main clause.

The development of complements can be summarized in the following generalizations (or hypotheses--to put it more conservatively).

- G1.** Invariably the first complements are object nominals.
- G2.** Complements with a given complement-taking verb will appear within a month after the first use of that verb in any construction *unless* the child has not produced any four-word utterances. This last qualification is necessary as children may use *want juice*, etc., as early as 1:6.<sup>3</sup>
- G3.** Verbs from various complement-taking verb classes have a characteristic order of appearance across children.

The first generalization (G1) simply follows the pattern set out by the possessives--expand the object NP first. There is no question as to its validity; no subject complements appear in the speech of any child up to 3.

The second and third generalizations, G2 and G3, are most interesting, and somewhat less firm. Consequently, they demand further scrutiny in light of the fragmentary data upon which they are based. I can perhaps put the issue of verbs and their complements in some perspective by noting that there are over 200 verbs in English which may take complements; verbs familiar to most adults (cf. Rosenbaum, 1967). Looking over the records of the children in our study, I have found that about 30 of these verbs

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<sup>3</sup> In the talk upon which this paper is based I mentioned that I had not observed *make* and *help* with complements. Afterward several people informed me that they had in fact observed the use of *make* with complements shortly after 2. In a check of my records I have found I was in error about *make*--it does follow G2 and there are isolated instances of *help* with complement; not enough however to let me conclude *help* does follow G2.

appear in their spontaneous speech. These are listed in Table 1. Of these only three did not appear in a complement construction--*find*, *miss*, and *help*.

**Table 1** *Complement Verbs Used during Third Year*

Age 1;11-2:5	Age 2;5-3:0
want	think
need	told
like	guess
watch	know
see	hope
lookit	show
let	remember
ask (tell)	finish
say <sup>b</sup>	wonder
go <sup>b</sup>	wish
make	help
	said
	pretend
	decided
	forgot

<sup>a</sup>Auxiliaries excluded, e.g., *going to*, *'posted to*, *have to*, and some modals.

<sup>b</sup>Say and *go* are used to express direct speech and noises, e.g., *Cows go "moo."*

The fact that children use these various verbs in object-complement (G1) constructions almost immediately upon using them in any construction (G2) should not, upon reflection, be very surprising. For many of them like *guess*, *wish*, *think*, and *pretend* there is scarcely any way to refer to their objects other than by using a nominal complement of some type. Where simple NP objects do appear in adult speech, those NPs must be interpreted as elliptical,<sup>4</sup> e.g., *I guess a goat*, *I suggest a goose*, *I think a martini*. Even *I want a martini* might be argued to imply some implicit verb whose object is *a martini*, e.g., *to drink* or *have*.

Some investigators may be reluctant to consider utterances such as *I wanna go* or even *I want to go home* as evidence for embedding processes in the child unless he also produces contrastive examples with an overt subject of the embedded constituent sentence present, for example, *I want mommy do it*. Several recent grammars describing early sentences in children (Bloom, 1970; Brown, in press) have characterized the verbs, *wanna*, *want to*, and *gonna*, *going to* as a special distributional class of catenative verbs, perhaps on analogy to English auxiliary verbs. There seems to be no objection to such a descriptive analysis permitting NP-V<sub>cat</sub>-V strings as long as no suggestion is intended that catenative verb constructions are somehow simpler than complement constructions--or auxiliaries for that matter.<sup>5</sup>

<sup>4</sup> I have discussed these and similar examples in Limber (1969; 1970a)

<sup>5</sup> It is perhaps of some interest to note at this point that most auxiliary verbs appear several months after instances of the complement verbs. The obvious exceptions are the early use of modals such as *can*, *could*, *may* in *yes-no* questions, e.g., *Can I knock it over?* One might consider the possibility that inductions made by the child on the modals in questions is related to their later appearances as auxiliaries. As Ross (1967) points out, auxiliaries are not

However, with the uncertainty attendant upon any classification of lexical items into grammatical categories in children's speech, I would be chary of assuming that an utterance such as *I want car* differs syntactically from *I want see* or even *I want up* as far as the child's language processes are concerned. For all anyone can tell, it might be that in such examples, the word following *want* is not selected on any intrinsic syntactic basis at all. Instead it may be that the child simply selects any lexical item which strikes him as an effective description of whatever it is he wants. Thus *car*, *see*, and *up* in the previous examples may all serve the same semantic-syntactic function, namely, to refer to the object of the verb *want*. The child is temporarily in a dilemma implicitly raised by Lees's passage quoted above. He does not have enough names (predicates) in his lexicon to adequately individuate those objects of which he is capable of conceiving and would like to talk about. Not enough that is, until he catches on to the English rules for syntactically generating complex names, i.e., the various nominalizations.<sup>6</sup>

The claim that many children at 2 produce complex sentences does not solely depend on instances of *want* utterances. Not only are such sentences as *I don't want you read that book* common; but also complements with *watch*, *see* and *lookit*, for example: *Watch me draw circles*, *I see you sit down*, and *lookit a boy play ball*. There are, thus, two classes of verbs--the *wants*: *want*, *need*, and *like*; and the *watches*: *watch*, *see*, and *lookit*--taking complements at the very beginning of the third year. Of the former class, only *want* appeared with a noncoreferential infinitival complement subject, though all three appear with a wide range of embedded verbs and occasionally without the infinitive mark *to*. *Want* would appear to provide an important model for the child in his attempts at formulating rules for production and perception of a wide variety of infinitival constructions. *Watch*, *see*, and *lookit* provide a somewhat different model in that all complement subjects must be overtly indicated. The fact that the children use verbs from both classes, generally all the *wants* and one or two of the *watches*, suggests that the productivity of object complement constructions is firmly established.

Unfortunately, my data are too fragmentary to make a fine-grained analysis of the order of appearance of individual verbs profitable. However, the order of the following groups of verbs appears reliable across a number of children (cf. Fig. 1). First, at about 2 come the *want* and *watch* groups with complements; both, especially *want*, may have been used previously without full complements. About the same time, most auxiliaries, *is*, *will*, *may*, *can*, *could*, appear initially in *yes-no* questions. A month or two later (2;2) all the auxiliaries appear in declarative sentences, *I can go*. This is followed (before 2;6) by several verbs taking *wh*-clause objects, e.g., *I show you how to do it*, and the first verb--generally *think*--taking propositional objects. Finally, throughout the last half of the third year come a variety of verbs also taking propositional objects; these are without a *that* complementizer until close to 3.

Examining the right-hand side of Fig. 1, it is apparent that most of the major object-complement structure types in English are represented: unmarked infinitive--*Watch me go*; marked infinitive--*I want to go*; full sentence and *wh*-clause--*I guess she's sick* and *I show you how to do it*. Missing are a variety of *-ing* complements; for example, *I like eating lollipops* in contrast to the very common *I like to eat lollipops*. A few instances of the *-ing* form were found with *finish* or *all done*, e.g., *I all done eating*.

It is of some interest, I believe, to notice that the child's inferences about English complement structures are based on a very small sample of all English verbs. In particular, those inferences are based exclusively on a sub-set of true object-complement-taking verbs in contrast to other complement --taking verbs, such as *defy* or *force* (Rosenbaum's oblique-object verbs). One feature of the true object verbs not shared by the oblique-object verbs is that while both appear in surface structures of the form *I V-ed Bill to*

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your randomly selected verbs. A detailed longitudinal study of the development of the auxiliary system would be of great interest.

<sup>6</sup> The practice of assigning morphemes used by the child to the most appropriate adult grammatical categories raises many questions. As early as 2;6 I have observed several instances of apparent generalization from noun to verb form, i.e., using established noun forms as verbs, e.g., *Is he typewriting?* *Can I fire the candle?* These seem to be novel creations on the part of the child. As an alternative to crediting the child with plausible but incorrect generalizations in such cases, it is worth considering that perhaps he never made a syntactic distinction between nouns and verbs in the first place.

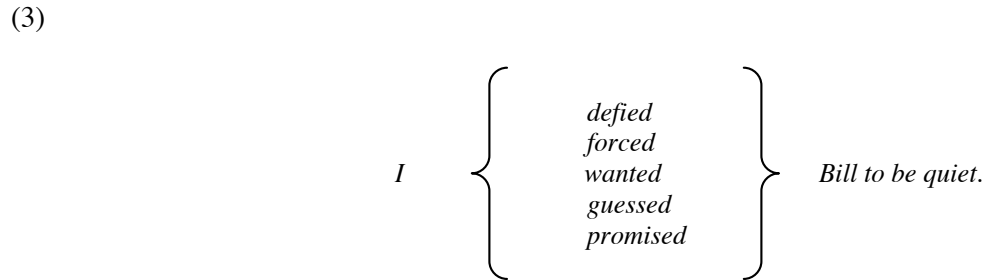
*leave*, only the true object verbs have corresponding questions of the form *What did I V?*, i.e., *What did I want?* but not *What did I force?* (in the analogous sense). Thus in the true object-complement verbs, *want*, *think*, *wish*, etc., the entire complement structure is a constituent. Thus on the basis of a very small set of verbs, the child learns structures that are shared by verbs he has not yet encountered.

From one point of view this would seem to be merely a reflection of a general feature of English; namely, that relatively few syntactic formats serve to carry a much larger variety of syntactic-semantic relationships--a fact often causing linguists headaches and perhaps microcomplexities in the everyday sentence processing of fluent English speakers as they work, for example, to interpret appropriately a string containing...*to V ...*

From the child's point of view, however, things are not so chaotic. Since he only uses true object-complement verbs, he can count on the syntactic structure to give him the unique and correct semantic relationship of the word or words following the main verb. For the child at this stage, English verbs take the object structures schematized in (2).

(2)	Subject	Main Verb	Object
a.	(NP)	V	(NP)
b.	(NP)	V	(NP)-V-(NP)

Elements in parentheses are optional in certain constructions. Thus the child, who does not use such verbs as *force*, *defy*, or *promise* has no problem interpreting the superficially similar sentences in (3)



according to schema (2b). When he does begin to use those verbs<sup>7</sup> which do not have the same underlying structures as the other verbs sharing a surface structure in the adult language, it would seem that he incorporates or assimilates the new verbs into the old surface forms. *Force*, for example, fits either into the (2b) structure of that of an oblique form NP-V-NP-P-NP, i.e., *I forced Bill into eating lollipops* on the model *I put baby into her carriage*.

Surely a basic process or strategy in language development is using previously acquired decoding devices in order to interpret or produce new ones. From the primitive initial segmentation strategy for isolating word forms up through the use (Limber, 1970a) of such schemata described above, to the mature speaker-hearer trying to infer the meaning of an unfamiliar word from its sentence, that process is operative. One consequence of such a developmental process would be that surface form of an utterance becomes progressively less valuable as an indicant of the basic semantic-syntactic structural relationships as more alternative underlying structures share a given surface form. Correspondingly more attention must be given to idiosyncratic properties of the lexical items involved in order to interpret such structures appropriately.

Several such constructions involving verbs having particularly idiosyncratic syntactic properties have been recently studied by C. Chomsky (1969). She reports that several constructions involving the verbs *ask* and *promise* indeed are not correctly interpreted by many children between 6 and 9 years. C.

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<sup>7</sup> I believe the verbs *force* and *promise* do not appear in the speech of most children before age 6.

Chomsky (1969, p. 121) claims that this indicates many children have not acquired all the syntactic rules of their native language as late as 9 years. Another way of putting these same facts, however, is to say simply that the child's previously developed normal interpretation devices--involving assignment of coreference in this case--do not work when those particular verbs take infinitival complements. It cannot be a surprise that a generalization made by the child between 2 and 3 and found valid for a number of years should give rise to problems when exceptions are encountered. To suggest that the child has not learned certain syntactic rules seems misleading in this case; what the child must learn is to give up certain effective structural generalizations, i.e., syntactic rules, when confronted by specific lexical items, e.g., *ask*, *promise*. One wonders to what extent such syntactic irregularities hinder the child's acquisition of the appropriate semantic concepts corresponding to those words. It appears fair to conclude that the child at 3 has acquired in some sense the syntactic structures for most object complements except the various *-ing* forms. What remains for him to learn is how to handle the various exceptions associated with certain verb classes and individual verbs that he encounters after 3.

### *Wh-Clause Constructions*

A number of more or less related constructions come under this heading including *wh*-adverbials, question-word clauses, and relatives. Their chronological development is outlined in Fig. 1. The *wh*-clause is essentially a grammatical device like the complement clause for syntactic generation of individuating expressions. Whereas complements are typically generated names for abstract entities such as proposition, facts, events, actions, the *wh*-clauses in general individuate or describe concrete and abstract objects, and the adverbial notions of place, time and manner.<sup>8</sup>

Referring back to Fig. 1, one can see that around 2;6 or before that, the *wh*-adverb sentences such as *Do it how I do it*, *Can I do it when we go home?* appear at the same time that those same adverbial forms appear in question-word complements to verbs, e.g., *show*, *remember*, as in *I show you how to do it*, *I remember where is it*. Other *wh*-clauses also appear in such constructions; e.g., *I show you what I got*, *I don't know who is it*. The precise onset of relative clauses will depend on one's view of the relationship of relatives to *wh*-adverbs and question clauses. Although it has on occasion been proposed that the adverbs *when*, *where* and *how* be derived from the corresponding abstract NPs, time, place, and manner, Fig. 1 indicates that the corresponding *wh*-adverbial precedes the use of the abstract noun plus relative by more than a month, e.g., *I show you where we went*, then *I show you the place we went*. It is of some interest that generally if two constructions have been derived from a common base form within a transformational analysis, it is a good bet that the construction furthest from the base will be produced earlier. The effect of the additional transformational rules is typically to further reduce the construction in contrast to its counterpart.

The general trend in the development of the clear relatives seems to be as follows: first on the abstract adverbial nouns, *place* and *way* (but not *time*); next on various empty noun heads, e.g., *thing*, *one*, *kind*; and finally on common nouns like *ball* or *cheese*. These latter forms in fact are quite rare up to 3. Compared with complement constructions, use of relative clauses is very infrequent. Furthermore there is a curious gap in the relative clause distribution: There are no subject relatives or any relative clauses attached to subject NPs. I will come back to this point during my concluding remarks. One more thing deserves mention. Although I have referred to relative clauses as *wh*-constructions, in fact no *wh*-morphemes were observed up to 3. The order of embedding morphemes is 0, then *that*.

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<sup>8</sup> The syntax of relatives and complements is similar in several respects, converging in the ambiguous *The fact that Otto knew was surprising*. The semantic differences between relatives and complements is more interesting and elusive. One difference seems to be that relatives may be used to make indirect reference, picking out an entity by its stated relationship to some other entity presumed known by the listener. Complements are more like proper names, making direct reference.

### Conjunctions

The third group of complex sentences in Fig. 1 includes various coordinate and subordinate conjunctions (C). Representative examples taken from the records of one child are found in (4).

- (4)
- a. *You lookit that book; I lookit this book.* (2;0)
  - b. *I do pull it the way he hafta do that so he doesn't -- so the big boy doesn't come out.* (2;6)
  - c. *And that mouse is not scary; it's a library friend.* (2;8)
  - d. *You play with this one and I play with this.* (2;8)
  - e. *He was stuck and I got him out.* (2;8)
  - f. *I can't put it on--too little.* (2;8)
  - g. *He still has milk and spaghetti.* (2;8)
  - h. *Here's a seat. It must be mine if it's a little one.* (2;10)
  - i. *I went to the aquarium and saw the fish.* (2;10)
  - j. *I want this doll because she's big.* (2;10)
  - k. *When I was a little girl I could go "geek-geek" like that; but now I can go "this is a chair."* (2;10)

The earliest suggestion of conjunction is the grouping of two sentences (S) together without a distinguishable conjoining morpheme. Very often in listening to tapes made between 2;0 and 2;4, one is apt to perceive a *so*, *and*, or *if*, when in fact, upon replay there is not any direct basis for this percept.

Throughout the second half of the third year a variety of adverbial conjunctions come into frequent use. Many are of the form  $S_1$ -C- $S_2$  or the preposed version C- $S_2$ - $S_1$  where C includes *so*, *if*, *because*, *when*. There are also sporadic appearances of *before* and *after*.

### SUMMARY AND CONCLUDING REMARKS

Having surveyed various aspects of syntactic development taking place in the third year, we are now in a somewhat better position to evaluate the issue raised at the beginning of this paper--how does the syntactic structure of these 3-year-olds compare with that of a mature English speaker? Among the many points to consider are the following:

(1) By 3 these children have unmistakably acquired the ability to generate syntactically complex names and descriptions--complements and relatives. Thus they are able to individuate linguistically a wide variety of abstract and concrete entities, e.g., desires, actions, foods for which syntactically simple expressions may be inadequate.

(2) Their utterances display the basic structural features of English. The major exceptions to this, that is those aspects of English syntax not present in the child's production during this period, include subject complements and subject relatives, relatives attached to subject NPs, *-ing* complements, ordering of elements in the auxiliary system, full passives, and a number of lexical-specific morphological features, e.g., tense marking, choice of preposition.

(3) The major developments involving complex sentences during the third year are informally summarized in (5).

- (5)
- a. An N-V-N sequence is the common simple sentence.
  - b. Form complements: expand (or substitute) an N-V-N sequence for certain noun phrases.
  - c. Conjoin two sentences as  $S_1$ -C- $S_2$ .
    - 1. conjunction: C = 0, *and*, ...

2. *wh*-adverbial: C = *where, how, when*
3. relative: C = 0, *that*
- d. Do not explicitly express an N in a lower clause (4b, 4c) if that N is coreferent with the last (i.e., rightmost) N in the main clause.
- e. Do not apply syntactic operations to any subject NPs.

It goes without saying, of course, that there are a number of alternative observationally equivalent descriptions or analyses of these utterances which may turn out to be preferable for one reason or another. Times does not permit consideration of the many alternatives; however one interesting case in point involves (5e), which serves to rule out production of subject complements and subject relatives, along with object relatives attached to subject NPs. While this restriction accurately excludes the appropriate constructions, it does not as it stands explain why such constructions are not observed.

Several possibilities suggest themselves, of course. One might interpret (5e) as reflecting the current state of the child's grammar, perhaps as a function of some universal heuristic concerning the acquisition of grammatical rules, e.g., generalize from object NPs to the others. On the other hand one might appeal to certain performance factors, or simply to various pragmatic aspects of the child's language behavior. Notice, for example, that (5e) has the effect of maintaining the contiguity of all elements within each clause, e.g., it precludes nested clauses. Since nesting is a recognized factor complicating production and perception even for the fluent speaker, it is not surprising that children refrain from using nested constructions.<sup>9</sup> We cannot however simply rewrite (5e) as (5é); it would not explain the lack of subject relatives on object NPs.

(5é) MAINTAIN THE CONTINUITY OF ALL ELEMENTS IN A SINGLE CLAUSE.

As an alternative to a structural or performance oriented explanation, we might look into the possibility that the observed distribution results from what children of that age talk about, i.e., general exigencies of communication rather than as a gap in their knowledge of English syntax or whatever. Consider the distribution of relative clauses in mature English. A (restrictive) relative, with few exceptions, can be attached to any NP in a clause other than a proper name or pronoun. Thus the distribution of relative clauses is dependent on that of names and pronouns--an extensive use of name and pronouns in an environment precludes or reduces the observation of relatives in that environment. One must therefore consider the possibility that the observed patterning of relatives is not a consequence of the familiar competence or performance factors, but simply of the extensive use by these children of names and pronouns in subject NP position.

A preliminary evaluation of this hypothesis was made by examining the simple declarative sentences (156 sentences in this sample) produced by one child between 1;11 and 2;11. Looking only at subject and object NP positions in sentences of the form NP-V-(NP)-NP, the following pattern emerges. Nearly all subject NPs are animate; the few exceptions are demonstratives, e.g., *that's mine*. Furthermore, the vast majority of these animate NPs are in fact personal pronouns or names. Less than one in 30 are animate phrases like *the baby*.

Object NPs, in contrast, are typically inanimate although they display the entire range of the child's vocabulary and simple syntactic combinations; 43% inanimate nouns including body parts; 29% inanimate pronouns; 12% animate pronouns or names including indirect objects; 11% animals; and 5% humans, including dolls. To put it another way, the object NP position carries more information, that is, is less predictable, than the constrained and quite predictable subject NP position.

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<sup>9</sup> Complete and grammatical utterances containing nested clauses are much less frequent than one might suppose even in adult speech. Very often there is some kind of breakdown in structure--anacoluthon, recapitulation, insertion of pronoun into the relative clause coreferent with the deleted NP (cf. Quirk, 1957). Remarkably similar phenomena are frequently seen in the writing of early Anglo-Saxon writers (Mitchell, 1968). Of course today we edit out such things when writing.

These observations, taken together with the assumption that complex sentences will be formed from the child's repertoire of simple sentences, clearly suggest that pragmatic factors alone may suffice to explain the lack of relatives involving subject NPs. There is simply no opportunity for a relative clause in environments where the NP is typically a name or pronoun--hence no relatives on subject NPs. Similarly one does not expect to see many subject relatives on object NPs when relative clause formation requires that the matrix and constituent NP be coreferential but not a name or pronoun. Even for the few animate objects which could take relative clauses there is a greater chance of finding an appropriate coreferential NP in another object NP than among the predominately name and pronoun subject NPs.

It is likely that these same distributional differences between subject and object NPs can explain the fact that the possessive and complement constructions, like the relative, appear in object position when first acquired.

I should perhaps add here that I certainly do not want to discount the importance of other factors, especially the performance one noted earlier, in children's production. Indeed the first subject relative observed in the speech of this one child (at 3) was *I think that the girl ... that's here ...doesn't ...she doesn't want me to open it*; i.e., a subject relative on the subject NP in an object NP complement. A clearly interpretable yet ungrammatical utterance of this sort would hardly be unexpected in the speech of a mature speaker of English (see footnote 9) and certainly suggests that this child does have productive control of subject relatives by this time even though they may be very infrequent.

(4) There are several lacunae in the children's productive syntax that seem to be inextricably related to the development of certain semantic notions. Carol Chomsky's verb-complement examples can be thought of in this way. Time-related constructions, e.g., coordination between tense and temporal adverbs, may not be used properly until the child's conception of time reaches a certain level. In such cases I have no reason to believe that it is the syntax per se that has not been learned rather than the semantic notions involved. Nor do I want to claim that use of a certain construction necessarily implies that the child has developed the appropriate, i.e., adult, semantic concepts corresponding to a certain word or construction.

As an example, all these children use *think* with increasing frequency after about 2;6; typically in sentences like *I think I want grape juice, Do you think he wants some?* In such sentences my guess is that the NP *think* is used parenthetically, especially in the first person, *I*, with the sense of *perhaps* or *maybe* (Urmson, 1963). A bit later some children seem to associate *think* with some kind of activity or at least believe that thinking requires a characteristic posture or facial expression. Perhaps due to their egocentric nature, or whatever, it is likely that children at this age have no (tacit) knowledge of the many complexities attending the use of cognitive verbs and opaque contexts in adult speech at the time when they first begin to use such verbs.

In conclusion, I believe my observations both confirm and extend those made by Leopold over 30 years ago. What I have not been able to do, unfortunately, is to alleviate by explanation any of the astonishment Leopold--or anyone else--is compelled to express upon consideration of the linguistic achievements of these 2-year-old children.

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