TWO PAPERS ON CHILDREN'S SPEECH ACTS AND SYNTACTIC DEVELOPMENT

Speech Acts and Syntactic Development: Linked or Independent?‡

By

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Quickly, Before a Witch Gets Me: Children's Temporal Conjunctions Within Speech Acts

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SPEECH ACTS AND SYNTACTIC DEVELOPMENT: LINKED OR INDEPENDENT?

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Abstract

This is a discussion of the argument that the development of syntax must in the case of many forms be understood through the study of discourse. The four levels above the utterance that are discussed are activity level, speech events, conversational exchanges, and speech acts. Examples are presented from temporal conjunctions, passives, auxiliaries, catenatives, and pronouns which all suggest a relationship to discourse features, in particular to speech act contexts.

Methodologically, the argument suggests that inclusion of a wider variety of discourse contexts allows phenomena to appear which are otherwise masked or absent. Enough is known about discourse to identify the activity contexts which will maximize the syntactic forms of interest. In analysis, variation which appears random may not be so if the appropriate contextual features are controlled.

The hypothesis of a form/function relationship suggests that in acquisition the trigger for development of certain forms may be their density and importance in the achievement of conversational goals. The social and activity context makes their meanings clear, simplifying the acquisition process. As has been shown in second language acquisition, certain repeated formal structures heard often in typical interactional situations (e.g. claims to goods, boasts about actions) are a vehicle for expansion and substitution as more is learned.

One of the first things you discover when you start studying children's language is that it is filled with charm and originality. Take an example like

"Quickly, before a witch gets me." (34 months)

It's evident right away that we cannot completely account for such an utterance. What should we consider important? A syntactic description would address the two clauses underlying this utterance, the ellipsis of the first clause, the subordinate temporal second clause, the verb agreement and pronominal case. But there clearly is more to this example than the syntax.

For most of us, the prototype of research on child language has been the study of structure in phonology and syntax. Syntax seems to be most related to what makes language special. It seems to be syntax that makes it different from gesture, different from chimpanzee communication, different from other forms of social behavior.

The great puzzle in language acquisition has been why, all over the world, children grow up to talk pretty much the same way as their peers and parents. And this even though they don't really have to get along in the world. They could speak with an accent, they could

revise the syntax in comprehensible ways. I had a Japanese assistant one year who spoke English without many prepositions or pronouns, but we understood each other to the point that I began speaking the same way. It seemed more efficient because it made use of contextual redundancies. I decided there was more to language than efficiency in communication; there was sounding like the people you admire. As we shall see, this even seems to permeate other levels of learning besides syntax.

Some people have argued that all we have to do to understand child language is to look for universals in abstract features of adult grammars. They believe that these are biologically given. But of course that leaves all the particulars to be learned. That leaves all the differences between Japanese and English unexplained. So others have paid more attention to these particulars. They have examined orders of development carefully, hoping to find universals in the acquisition process itself.

I am going to argue first that the focus on phonology and syntax has led us to ignore major spheres of structural organization in children's language. I will characterize four of these levels. I will argue that these other levels, which are outside the sentence, are essential to language acquisition. I will also argue that we are likely to reach a dead end in studying the learning of either syntax or interactional discourse without a coordinated approach, because they are not entirely independent of each other. In particular, I will argue that we miss major syntactic features by a unifunctional approach to acquisition, and that "triggering" of syntactic development can best be understood by examining discourse.

Let me turn to discuss some of the levels within which we find regularities in children's talk. The highest level has to do with **activities**. Activity types might be role playing, book-reading, jump rope. Talk occurs within types of activities, and the properties of talk change according to those activities. Activities co-occurring with talk are especially salient with young children, who are rarely in a situation of pure talk. The exceptions are sound play and bedtime monologues.

Activities include some that are culturally conventional such as reading a familiar story-book, contexts which are peer-structured but also conventionalized such as doctor play, relatively loose situations which are less predictable like rough-house play. If a child tells a narrative about what happened on a trip to the zoo, the language is quite different than talk about a picture book. Book talk is not just narrative, it is also quite descriptive and ostensive, that is, children describe pictures and name objects as well as tell stories. What makes the activity context relevant to language acquisition is that contexts vary in the kinds of roles they require the child to play, they vary in the kind of speech events and types which occur, and in the functions language serves. As a result activities change not only the content but the structures the child hears and is expected to use.

Even the phases of organization of activities can affect language profoundly. We have observed that during play enactment there is less claiming of property and less disputing than during the organizational or negotiating phases. As a result of observations of a range of

types of scenes, we can establish activities which will ensure the naturally high frequency of certain kinds of syntactic structures. If you want arguments with possessives, negatives and emphatic stress, get organization of peer play with too few objects, or with incompatible objects which lead to different play schemata.

The second level of regularities is **speech events**. I use the term speech event to refer to activities where talk is a central focus. Children have a rudimentary sense of speech event structure very early. An eighteen month old may say "Hi fine bye" on the phone, thus reflecting the three most predictable parts of the phone conversations—the greeting, initial exchange, and parting. By five, children have a meta-knowledge of telephone talk as a genre, as shown by this conversation of a native speaker to a foreign peer on a play telephone at school:

> Spanish speaker: Hello, come to my house, please.
> English speaker: Nora, you've got to say "What are you doing?"

The critical element here is the opener, "What are you doing?" which we found these children used in place of "How are you?" in adult speech.

Role playing plots give the best indicators of the fine-tuning of children's sense of speech event. Claudia Mitchell-Kernan even has recorded children's church services containing everything but the sermon.

In addition to sequential structure, role playing displays children's knowledge of variations in speech. Children at first rely on activities, objects, and address terms like Big Sister, and Baby, to convey role, but they come to use subtler role indicators within speech. These include markers like the *okay* of the teacher introducing new topics, the greater deference of the patient to medical personnel. For instance I found a "patient" saying "Give me a crutch, I need a crutch. Could you please give me a crutch, nurse?"

Their tuning of roles is marvelously sensitive. Consider this four year old example from Andersen (1990):

> A: Father father come here right now. Baby threw up.
> B: Oh damn it. [deep voice]

These features of higher-order organization influence language at the very time we might think we are studying only syntax. The embedding of structured events inside each other and the spontaneous shifting of registers are part of the competence of four-year-olds.

The third level of analysis is **local discourse**. From the beginning, we find that replies are shorter than initiations, and that we must characterize them as having a separate system.

Let me illustrate what I mean by a separate system. One child I studied at 22 months had the following possibilities for replies (Ervin-Tripp 1977b). She had just three response patterns which could be differentiated:

- To "How are you?" or "Where are you?" she replied, "Fine."
- To "Hm?" she repeated what she had said before.
- To rising pitch in any other type of question she either said "Yeah" or repeated with a stress shift.

Since many adult questions at this age are confirmation checks, these replies usually seem appropriate. But it was impossible to get new information from her by questioning. Nor did she ask questions. In such a case, it is necessary to describe a special system for responding since at this stage replies are not just transformations of initiation structures but far more limited.

Indeed many replies continue to be formulaic for years, like "I donno," or "I don't want to," or "I know."

By the period between three and four, an elaborate set of regularities is evident in replies in all the children we studied.

First, there is a great decline in ambiguity. With time, children more often answered *yes* and *no*, and more often gave relevant replies. By 38 months they regularly replaced nouns with pronouns when replying to questions about story characters in pictures.

They used conjunctions to start replies. At first, children only used connectives within their own utterances, next they began to use them between their own utterances, even across turns. Eventually, by Stage IV (MLU 3.5) children tied with connectives when they replied to others. This full range of occurred first with *and*, then other conjunctions followed the same sequence of changes. Because the length of units of child speech changes, it is not surprising that connectives first join nouns, then phrases, then clauses. *Because* was an exception. It began as a conversational second-turn form.

Most conspicuous was verb ellipsis. What is special about verb ellipsis is that the very elements that were absent in telegraphic speech now stand alone. Replies with conjunctions and ellipsis sound very grown up, as in "But HE can." The appearance of ellipsis is a major milestone since it reveals that pronouns and auxiliaries are obligatory.

At the same stage, around MLU of 3.5, we also find emphatic stress (Ervin-Tripp 1977a). Here is an example:

"We don't have a dog though. But *I* do." (3;1)

Let's go back to the example from the 36 month old child: "Quickly before a witch gets me."

This is actually a reply. What happened was that after packing up the puppets they had been playing with, the researcher said to the child, who had just moved to a new house: "You were going to show me your room, weren't you?" The child then said "Quickly, before a witch gets me. I've got Huckleberry Hound upstairs." Then they went upstairs.

Syntactically, what the researcher said was a question, a tag question. "You were going to show me your room, weren't you?" The child could just have said "Yes" and continued playing, but if he had, we would have thought him incompetent.

Conversationally, this was a request, and the child's reply was to the conversational function.

How did he know this was a request? We have done a series of experiments in Berkeley and in Geneva which have shown that children as young as three carry out acts about half the time for unconventional requests. In our experiment the unconventional requests mentioned do-able actions, and later just mentioned desired objects. For instance, we might say "I can't reach my purse" when the purse was near the child. By five, many even heard "My purse is white" as a request for action, if the purse was closer to the child than to the speaker (Ervin-Tripp, Strage, Lampert & Bell, 1987).

In the case of "You were going to show me your room, weren't you?" the researcher had put away the toys. This prepared the child for a coming change. The question contained a direct reference to the desired act: "Show me your room."

Let's look more closely at what the linguist said: "You were going to show me your room, weren't you?"

We know a good deal now about how requests are produced and understood. In this case, the request contains more than one form of softening or mitigation. The way to make a judgment about mitigation or aggravation is to compare various forms. If we consider the most explicit form as "show me your room" we can show that a question is a mitigation, and also a reference to the past. Thus "are you gonna show me your room" contrasts with "you're gonna show me your room." and "were you gonna show me your room" contrasts with "are you gonna show me your room."

It is these forms of mitigation which make the request so complicated. You may be surprised by this. You might be surprised that a researcher is so polite to a child. But in our experience, both mothers and researchers very often produce heavily mitigated requests to children in the American middle class families we have studied. I won't go into what might be the reasons, which are more sociological than linguistic.

Maybe it surprises you that after months of recording, the visiting linguist uses such a linguistically complex form. The social process of mitigation seems to be quite automatic and overrides syntactic accommodation to children. Consider the following example. At one point, the linguist asked a 26 month old,

"D'ya wanna ask Sara if she wants orange juice?"

The child replied "Uh-huh." And that was all.

On successive retries he peeled off the layers of this too complicated directive until he actually asked

L: Ya wanna say Sara?
C: Sara.
L: Do you want orange juice?
C: Uh-huh.

Because adults use complex forms from the very beginning, children must come to interpret conversation structure, in the sense of appropriate interactional responses, even when that structure is not coded literally. By that I mean there is not a direct map between some feature of the utterances and the conversational demand which must be understood. In that respect control acts are an excellent domain in which to explore the most complex features of comprehension.

In the case of English control moves such as requests the problem of interpretation includes at least two facets: I call these the action meaning and the social meaning. The action meaning concerns what the speaker expects the hearer to do if the hearer has understood the request. The social meaning concerns the status and familiarity with the addressee, and the emotional aspects communicated by the request. There is of course also a third, a textual cohesion level if a move calls for a verbal reply. Since control moves account for about forty percent of children's talk, the acquisition of this level of structure is not trivial.

What's the evidence that children understand or convey social meaning this way? Well we have found that by the third year children begin to distinguish how they make requests for the same goal. The distinction they make can most simply be stated as a contrast according to whether they can expect compliance. They distinguish between rights and favors, between requests for the goods of others and their own goods. So in trying to get the toys of a younger sibling, they used mitigated forms 44 percent of the time, otherwise 9 percent. They distinguish requests from mothers who normally serve them from requests from fathers and outsiders. At first these distinctions are made by overt forms like the use of "Can I have some" rather than "I want some" or "Could you tie my shoe" contrasted with "Tie my shoe" (Ervin-Tripp & Gordon 1986).

But as children get older the distinctions become more subtle, and include more complex tactics, like alluding to the obstacles to compliance facing the other person. Here's a complicated example:

"Do you have some water I could drink?"

This was from a twelve year old visitor to my house, but we have heard such forms from seven year olds. Notice the delicate combination of the permission request "Can I have a drink" inside of the question about availability of the water. Worrying about the availability of water is an example of accommodating to the other person's perspective. The use of "could" rather than "can" is a typical temporal displacement. Another example would be "I wanted to ask you about...."

By seven or eight we find wonderfully clever accommodations to the addressee. For instance, the child who says to her three year old brother: "Here Santa, take this bag of toys to the basement" while tying up her laundry in a nightgown. While these complex tactics are themselves outside the domain of linguistics they can entail linguistic consequences like the use of subordinate clauses which refer to goals, reasons, and causes (Ervin-Tripp 1982).

The first causal clauses often appear in the domain of control acts, because speakers either try to explain and justify such acts or to explain or justify refusals. The various complex changes in requests were not, we found, based on differential success in gaining compliance, but like the learning of syntax, seem to be due to modeling of examples which are grist for the child's pattern-forming abilities.

We have focussed on requests, but the variety of speech acts increases markedly during the first years. We find, for instance, that five-year-old second language learners can be contrasted to two-year-old first language learners in that they persuade, they joke, they praise, warn, plan, announce intentions, elicit complex information, contradict, explain. All this they do in their second language. Although formally their language is still primitive, although they are still beginners, their knowledge of the uses of language is different, just as their semantic knowledge is more advanced than that of a two-year-old. The consequence of this much greater range of acts—as well as the greater complexity of speech events—is that they try different kinds of syntax than younger children (Ervin-Tripp 1981).

We have seen examples from four levels of structure above the sentence: the activity level, speech event, conversational exchange, and speech act. What I intend to do now is to show how certain features of syntactic development are related to speech acts. We will look at just a few examples from subordinate clauses, passives, auxiliaries, catenatives, and pronouns. I want you to see that the level of speech acts—and presumably the other levels as well—can have links almost everywhere else in the system.

These studies re-examined issues in structural acquisition on the basis of pragmatic or functional units. But how can we know what units are in the system of the child? Linguists like to work with known categories, especially those already found in some attested linguistic

analysis. But no geographer has given us the map to children's minds. A particularly fruitful tactic has been used by Julie Gerhardt and by Michael Bamberg. What they did was to treat the child's form contrasts as codes for features to be found. They do not presuppose what these features might be.

Bamberg (1987) took the German contrast between past and perfect, and found children used the perfect first to mark unit relations in picture narratives, namely, the end of an episode. Later, they add a new use: major shifts in perspective such as retrospection. The children also changed the way they used pronouns. At the earlier stage, pronouns had two uses: to refer at any time to a human protagonist, and to maintain reference to others. Later, pronouns were used only for reference maintenance, for both humans and animals. The change in both the nominal and verbal systems occurred at the same time, suggesting a common underlying change in the larger discourse organization. What those units were he did not presuppose, but let the child's code contrast point them out.

Gerhardt has used this system fruitfully with respect to a series of contrasts in the verb system, including tense (Gerhardt 1988), aspect, and auxiliaries. A vivid instance is the work she did with Savasir (Gee & Savasir 1986) on the contrast of *will* and *gonna*. They found that there was a speech-event level contrast conveyed by these choices in that *gonna* occurred most typically during planning of play, and will during what they called undertaking. They found numerous indicators of correlated contrasts in person, time perspective and so on. What they indicate then is that the child's language gives us a key to the child's structural categories. But we have to be open-minded about where we might find those categories. Gerhardt has pointed out that sometimes these markers simply indicate shared knowledge; sometimes they are constitutive of the shift in context. We could say the same of other markers such as register and role features and of deference markers.

"Quickly, before a witch gets me" contains a temporal clause.

There is a substantial set of research studies on the development of temporal clauses. A lot of this research is done by asking children to act out utterances which have been stated as narratives. This work has shown that specific markers like *before* and *after* appear later than general conjunctions like *when,* that the subordinate clause follows the matrix clause at first, and that the clause order tends to mirror the order of events.

When Aura Bocaz of Chile asked to use my data to work on temporal clauses, I said we had to see what their contexts were. We saw first that temporal clauses were found in a range of types of moves. The earliest and most frequent were clauses found in directives and in planning.

Planning might be joint activity or just the speaker's activity, such as "I'm going to make a garbage can when I'm all through with the train lid." (3;0)

Directives might be simultaneous, such as "You listen while I read," (3;3) or successive, as in "Can I have your worm when you get finished." (3;1)

These temporal clauses do not look like the ones in narratives in two ways. One is that terms like *before* and *after* appeared in them well before they were found in narratives, before three years of age. The other is that in directives the directive clause is first, before the temporal clause, regardless of the event time. So we find utterances like "Can we play outside after they take our picture?" (4;5)

Narrative clauses tend to have past tense marking on all the verbs, but once we looked at other types of contexts we found an important difference. In planning and directives, there are a variety of function markings on the main verb. These include auxiliaries, catenatives like *hafta, needta, wanna, gonna,* and *gotta,* imperatives, and *let's*. When children chained clauses with *first...then,* or with *and then* they also chained these markings. But when they chose subordinate conjunctions, the verb was only marked with present tense features. This was true from the earliest times. An example is this one:

"So long ago, and when I grow up and you grow up, we'll be the bosses."

Here *will* marks only the matrix clause. In contrast, in a parallel construction, we have "Ring the doorbell, and then you could go in."

Thus the distinction between coordination and subordination is a primitive feature which appears from the start, but was not visible when we only examined narratives. In confirmation, we found that the verbs chosen for narrative clause subordination were less telic and more stative than the verbs in matrix clauses. This was also true from the beginning of clause use.

The focus on narrative use in these studies derives, I believe, from what has been called the referential/propositional bias of linguistics, which has generally assumed that language is unifunctional. In our sample of all moves containing temporal conjunctions of two- and three-year-olds 63% were planning or directive moves, in the four-year-olds 54%. So samples or experimental methods based on narratives distort the children's usage. This distortion would not be important if it did not hide some basic features of clause structure and use, and mislead us about age of mastery.

Let me move to my other topics from syntax. Passives, I think, will prove to be a really good candidate for looking at the relation to discourse and interactional context. Katherine Demuth's work (1986) on Sesotho provides a striking example. Sesotho syntax demands that the pre-verbal argument be highly topical and determinate. For this reason question words cannot occur before the verb. It is not possible to say "Who lashed you?" One must say "you are lashed by whom?" Questions about agents of action are forced into the passive. At the same time, it is a Lesotho interactional feature to elicit with questions, many questions, with many social functions. Interaction with children looks like a prototypic Tannen interview. Children are bombarded with passive questions, and they are also prompted in their construction. They become masters themselves of the full passive construction far earlier than one might predict on the grounds of structural complexity alone, by 32 months. The

interactional style of Sesotho speakers thus combines with a particular demand of their syntax to yield much earlier learning of a complex system.

Let us look even earlier in English, at the beginnings of the auxiliaries. In our texts, auxiliaries commonly begin in control acts, such as requests, and in statements of intent. Here are a few examples from a child of 2;2 who suddenly burst out with many auxiliaries: *Could he have it? Can she came over? Could Bonnie have some juice? Can I have this worm? Could you make some more? Could I have these?* While there is great variation between families in the uses made of auxiliaries, this child shows how marked these first uses can be.

Julie Gerhardt has been engaged in an extraordinarily profound and original analysis of modals and catenatives in context. She argues that face to face discourse is prescriptive, meant to guide conduct, and negotiatory, and that in such contexts even statements are typically not innocent of directive intent. Intentions, motives, and reasons become crucial. They are the domain of three units: the causal clause, the auxiliary, and the catenatives or quasi-auxiliaries. In her work on *gonna* and *will*, the two forms for referencing the future, she showed that they occurred in different types of discourse. They located intentions differently. *Will* identified immediate commitment and occurred in face-to-face engagements; *gonna* implied long range intention or purpose and occurred in planning or organizing.

Gerhardt (1990a, 1990b) has recently been examining data on *want*, *need*, *wanna*, *hafta*, and *needta*. She has found that in three-year-olds *wanna* was used primarily in requests and *don't wanna* in refusals, which fits with my earlier data. *Want* was preferred for requests for action by others in her study, *need* for appropriation of goods by the child. *Hafta* was used by the three-year-olds she studied to refer to conventional external constraints, or to an attempt to constitute or imply such a constraint by the use of the term. The latter uses could be said to be metaphorical extensions based on the situated prototypic uses. The first she calls *prototypic*, *defining*, *mapping*, and the second type *constitutive*, because the child's language creates the situation (Gerhardt, 1990a).

An example of a constitutive use is the following:

> J: Amy, go over there and you'll get in the movie.
> A: [shakes head] Because! See! I hafta sit right here!

In contrast, Gerhardt found that the prototypic or defining uses were argued from the standpoint of conventions, play routines, or local procedures, as in the following example:

> A: [Begins to eat some tea-party cookies.]
> E: Amy! But first you hafta put them on a plate!

The *hafta* here refers to the conventions of tea-parties.

In another example, E's doll starts to go to the tea party undressed.

A: You hafta get dressed to go to the party!

It is clear in these cases that *hafta* had primary use as a refusal or prohibition form. It is a good defense against requests or intentions of others which intrude into one's trajectory or which upset what seems the right way to do something.

Gerhardt found that *needta* contrasts in that it concerns internal rather than external constraints. One typical use is "I needta go pee-pee." That seems to be an internal constraint.

Like *hafta*, these forms functioned as a justification for refusal. They tended to occur in cases of standard treatment of objects, which seem to set up a constraint. They seem to occur there because "I need an object" had already occurred, so a need frame was established. An example is the following exchange:

A: I need this. (frying-pan from joint equipment)
E: No, I need it.
A: I needta cook something.
E: Gimme it. [tries to grab] I needta cook this rice.
A: No you don't.
E: Yes I need.

What is special about this context is that most *need* statements occurred when a child appropriated joint property for personal use. That is, while *want* often expressed a request, *need* was likely to express an intention to claim something to which the other also had rights, but which is appropriate to the agreed-on trajectory of activity.

Gerhardt (1990b) found that *hafta* could not be negated by the three-year-olds but *needta* could. Indeed, children shifted to *needta* to negate *hafta*! Both *wanna* and *needta* could be negated. Why can't children negate *hafta*? The reason seems to lie in the discourse uses, which are not the same. If *hafta* is used to justify non-compliance by reference to customary, regular events, a negation has no utility for the speaker. Would the other try to persuade by a negation? But to do that implies arguing about the rules of the game, which three-year-olds can't yet do.

I have given you such an extensive sample of Gerhardt's findings to show you how rich the study of this part of the syntax can be when viewed from the standpoint of conversational goals.

For my last example, I will discuss the findings with respect to first person pronouns of Nancy Budwig (1989). She looked at the development of differentiation between *my, me,* and *I*. She called the youngest speakers ego-anchored because they talked only about their own activities. These children had all three forms in subject position with verbs. Had she been satisfied with error analysis, she would just have said they had not learned the pronoun

inflection. But she had faith that children's systems are orderly and she looked for their principle. What she found was that the children differentiated between moves in which they were trying to make changes—basically planning and directive speech, and moves reporting changes.

For instance, Jeffrey (J) and a researcher (R) were playing with dried peas:

R: Do you wanna play with the blocks soon?
J: No.
R: You like those peas, huh?
J: I like these peas.

In contrast, Jeff and his mother (M) are filling bowls with peas and pretending to eat ice cream:

M: What flavor would you like?
J: My like vanilla.
M: Vanilla, OK. You want one scoop or two scoops?
J: My want two csco.

In another scene, Mother tells a story while Jeff and she build together.

M: Maybe with this house here a fire occurred. And so the firemen had to come and rescue. They were building the house.
J: [Jeffrey's house collapsed] No! My build tower! [whiny]

In the first case, *I* occurs as a reply to an information question about his experience. In the second *my* occurs as an elicited request, and in the third *my* occurs in a protest. In general, *I* was used when the focus was on the self as experiencer, and *my* when the self was an agent bringing about change, as in boasting about achievements. Budwig found that the contrast in these units was regular and significant.

How did such a contrast come about? I think there are two sources. Anne Carter (1979) has shown that the one-year-olds she studied used *m* plus a vowel and an open-handed reach as a prototypic request, which was expanded by English-speaking mothers as *more* or *mine*. In peer contexts, we find that two-year-olds do a great deal of claiming of territory and objects with *my* plus noun. This is a major component of peer interaction between 18 and 30 months. Thus I think there is good reason for *my* to become the code for desire and claims. Earlier, in research with Werner Deutsch (1983), Budwig had looked at what was coded by the contrast of the child's name versus the possessive pronoun in possessive constructions. They had shown that in possessives, the child contrasted desire with description, choosing "my chair" for the former and (if named Molly) "molly chair" for the latter.

The examples I have given you are from temporal clauses, passives, auxiliaries, catenatives and pronouns, and all suggest a relationship to speech act contrasts.

What are the implications of these few cues as to a relation between the syntactic level and the more macro levels of analysis? There are clearly methodological implications. Texts which include a wider variety of functions, for example, allow phenomena to appear which are masked otherwise. This was evident in our temporal conjunction research. Had we not included data of peer play we would have missed the planning talk in which the earliest temporal conjunctions appear. We would never have found the changes in order rules or the distinction between subordinate and matrix clauses in verb marking. Gerhardt and Budwig's work relies on peer interaction heavily for maximizing function contrasts.

We know enough now about discourse to be able in fact to identify activity contexts which will maximize the occurrence of certain syntactic structures naturally. This is what Gerhardt did in setting up her dissertation research; she deliberately chose activities which would elicit the speech which interested her. This is what Budwig did; she included in her materials a lid that was hard to get off, which she knew would elicit lots of demands for help. These are methods which have the eliciting intensity of experiments, but greater ecological validity and hence generalizability. In contrast, experimental methods too often violate children's norms of use, for example using narrative clauses for future acts to be acted out.

We can also see that there are implications for analysis. As we have seen from the pronoun and auxiliary studies, variation which simply looks random may not be. An analyst who is satisfied with simply leaving the child with random variation will miss a deeper analysis which arises if we treat the child's choices as functionally motivated. To do this, the analyst has to be open to evidence of units at other levels of language, and have rich enough data to permit such analysis.

In fact, if you want to describe the syntax of a twenty-two-month-old, you won't be successful if you don't have units like Question-Answer, because replies are structured so differently from initiations.

Now wait, you might say, I'm not going to use any units that aren't authorized by my favorite syntactic theory. That would be a wild grammar! There is a choice to make between accounting for all of your data and staying too rigidly within a theory that may not have been designed for the language of children. It is obvious when you look at natural data that children behave as if units exist that are not in some of the theories. There has been a strong argument made for continuity. Obviously one would opt for continuity in the face of ambiguity; but not when there is strong evidence to the contrary. The ultimate in continuity is to assume that children have the whole adult grammar; this clearly flies too much in the face of the facts for anyone studying children to stomach.

In fact, it was precisely because attention to these kinds of interactional units radically simplified the problem of analysis of early child speech that I started to do this type of analysis ten years ago. I realized it would be impossible to analyze syntactic development without first doing an analysis of the structures within which the syntactic options are chosen. This analysis brought out some remarkably clear data in the few cases where I had enough videotape evidence for some convincing analysis. It made clear, for example, the division between claiming, in utterances like "my doll," and boasting, as in "I build tower," "I draw a banana," and ostensives such as "That's a deer."

Does this work have any consequences for our notions of how language is learned? Perhaps what we find by broadening our data base is just contexts which allow performance to change. Bringing a wider range of contexts may just allow knowledge to be displayed.

We know that it is not possible to teach language divorced from meaning or context. Cases of impoverished social exposure have been shown by Meisel (1983) and others to lead to defective second language learning. These cases occur when immigrant workers are ostracized or isolated and have exposure to very limited language. Form without content is extremely difficult to learn.

In a disastrous applied experiment, Morton Rand (1970) thought he could accelerate the learning of Russian patterns by giving context-free words and utterances at first. The idea of this experiment was to build up knowledge of the sound system of Russian before introducing meanings. The effect was to irreparably retard learning. The subjects in the experiment never caught up with the control group. One explanation is that the learners devised their own contexts which then interfered later. We know this happens because it also occurs in nonsense syllable research.

Child language is always learned in a context of action and interaction. Even though children of deaf parents have been exposed to television input, they do not learn spoken language from the television. It would be astonishing if children's language did not code the features of that action and interaction system. These contexts motivate language learning and

use. They can also be the basis for mediating the construction of many categories, thus serving as a kind of scaffold for form learning. It is precisely because children are very sensitive to formal features that they become so readily available for these coding processes.

But coding is not all that is at issue. There are two clues that speech act contexts may play a stronger role in acquisition. One is that at each stage of acquisition, functional subtypes seem to call for somewhat different formal structures. In the development of the modal, you will remember the child who had a burst of polite requests based on *Can I* and *Could you*. The argument then is that the trigger for noticing certain forms may be their density and importance in the achievement of particular conversational goals.

In examining the syntax of various speech acts in children, I have noticed that the prototypic cases differ remarkably. In fact there is very little overlap between the types. Claims for territory and objects call for possessives. Boasts call for verbs. Naming and ostensives may include demonstratives or locatives, but not verbs. the speech acts typical of two-year-olds like requests, refusals, prohibitions, acknowledgements, claims and boasts, have fairly predictable structure. Even some later forms like contradictions, replies, permission requests, intention announcements, and joint plans have a lot of common features. By five, we find more variability, in persuasion, joking, praise, and explanation.

We see the same thing in second language learning in children, that their first approach to conversational exchange draws heavily on restricted speech for certain speech acts. Why is this helpful to acquisition?

There are three reasons. One is that the social and activity context makes some meanings clear. This simplifies the problem of acquisition, as redundancies are always necessary at first.

The second reason is that the reduction in formal variability sometimes also occurs in interactional model language—especially when it comes from peers and siblings. Certain mappings are thus highlighted by the recurrence of forms. Alternation within repeated frames is a classic way to expand and to recognize new forms.

The third reason is that the learning of these production types makes it easy for children to get into interaction and to get more talk from comrades. Andersen and Kekelis (1986) have shown how crucial such sibling play routines are for the early language learning of blind children, whose mothers produce a much too restricted range of speech acts.

My own videotaped data do not go back early enough to capture the onset of auxiliaries and pronouns, which are crucial to recent theories of early parameter acquisition as proposed by Nina Hyams (1986), for example. As I have shown, auxiliaries and pronouns both are profoundly involved in the expression of differences between demands and reports, negotiation and commitment. Detailed studies of the type done by Budwig and by Gerhardt, when applied to early triggering of pronoun use should be crucial for evaluating this theory.

An example of the power of these contexts is that in second language learning the restructuring of an optional pronoun system into an obligatory system in five year old Spanish speakers is very rapid. In the 18 texts I have examined of children who have spent 5 to 7 months in English speaking classrooms, I found no examples of missing subject pronouns in English speech by Mexican children, though there were missing copulas. Pronouns were learned early because they appeared in many formulaic constructions like "I dunno," and the telephone opener "What are you doing?"

So my advice to those who study syntax is to get a video camera and look at what is going on. And my advice to students of discourse is to see what morphological and syntactic clues children are using to mark the larger structures of their discourse.

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QUICKLY, BEFORE A WITCH GETS ME: CHILDREN'S TEMPORAL CONJUNCTIONS WITHIN SPEECH ACTS[1]

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Abstract

All temporal conjunction examples in naturalistic samples from 1;10 to 7;8 including peer play were categorized according to the interactional/semantic function of the utterance. The connectives used, their order of development, and the ordering principles for clauses all differed depending on the speech act context. Three principles of clause order were identified: act saliency, order of mention, and derivational complexity. Commands and other control acts were expressed in the first clause, serial events in the past or future were expressed sequentially, and simultaneous events frequently, but not always, had the main clause first. From the beginning, less telic and more stative verbs were subordinated, and modals, catenatives, and imperatives used in utterances about intentions occurred only in main clauses, making a clear differentiation between main and subordinate clause forms.

INTRODUCTION

> Investigator: You were going to show me your room weren't you?
> Child: Quickly, before a witch gets me. [leads I to room]
> (HS 2;10)

The marking of temporal relationships appears to be one of the more difficult feats of the toddler's language development. Although the first sequencing conjunctions appear before two years of age, changes continue into the school years. These changes appear not merely to be based on semantic differentiation; they reflect shifts in the organization of discourse. This study addresses the differences in pragmatic context which affect clause order, choice of sequencing conjunctions and the verb forms within conjoined clauses in the period between two and eight.

Temporality. The development of marking of temporal relationships is a slow process. Time perception is more conceptual, less visible than spatial perception, less available to comparison and consensus; even older second language learners are slower to learn time than space language (Lightbown, 1978).

In using a scheme for discussion of the conceptual content of temporal markers, Weist (1986) relied on the distinctions of Reichenbach (1947) between speech time (time of speaking), event time (time relative to speech time established for the specific situation talked about), and reference time (the temporal context of the event). According to Weist, when children begin to mark the past or future event time in speaking, reference time is not yet established. That is, the child distinguishes not-present (not co-occurring with speech time)

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before precisely locating an event relative to some identification system or relative to another event. At the next stage, Weist argues, reference time has to coincide with event time, for instance, when a child says "We saw Grandma yesterday," "yesterday" establishes a reference time, but it corresponds to the event time indicated by past tense.

Eventually, two different times besides speech time can be indicated; an event can be located relative to an external time identification system (after Monday) and/or to another event (e.g., after dinner; on Monday, after we finish). In a longitudinal study of answers to *when* questions, Ervin-Tripp (1970) noted that some children begin with time identification responses and some with relative event responses. These seem to be different interpretations of *when* or appropriate replies to these questions.

All temporal conjunctions relate one event to another, either sequentially or simultaneously. One event is the reference time for the other. Weist's argument helps us to see why temporal answers to temporal questions are acquired so late (Ervin-Tripp, 1970; Tyack & Ingram, 1977) in comparison to other *wh-* questions—they call for reference time responses. In Weist's view, the onset of a three-time system with speech time, event time, and reference time distinguished may be related to knowledge of scripts for familiar events.

Conjunctions. Clancy, Jacobsen, and Silva (1976) examined early conversations in longitudinal data in four languages from the standpoint of underlying semantic relations between clauses. They found that the conceptual underpinnings of clause relations preceded their overt marking with conjunctions. In examining clause semantic relations whether or not there were conjunctions, they found a common order of development in the four languages. They noted that coordination and antithesis occurred very early, followed by causality and sequential relations (*first, then*), then conditionality, followed by simultaneity (*while*) and order contrasts (*after*), and finally *before*, which was last in each language. They pointed out that *when* was often used with the meaning of either *while* or *after* though it often preceded them. The above dates give the earliest occurrences they reported. Note that their cases included phrase-conjoining and prepositional uses, not merely clause relations.

A study of the connectives of five English-speaking children from the Ervin-Miller longitudinal corpus essentially replicated the Clancy, Jacobsen, and Miller order for each child with only one difference, even though the former only included explicitly marked cohesion of similar syntactic type. Ervin-Tripp reported (1978) that the order of development was first addition (*and, too, also*), then sequence (*then*), causality (*so, because*), adversative contrast (*but, though*), and next conditionals (*if*). The earliest connectives joined small segments, such as nouns, then phrases and finally larger units. The first types of conjoining occurred within single turns by the child (except for *because* which starts dialogic). Next, children began to use connectives between their own utterances. By MLU Stage IV (MLU roughly 3.50) it was possible to conjoin across turns, to tie back to the child's own earlier turn or to tie onto the partner's speech. This extension first occurred with *and*, and the variety of units was enlarged to include clauses. The full range of development had already occurred with *and* by the time

other connectives appeared with the syntactic compass and discourse cohesion range of *and* (Ervin-Tripp 1978). This order is not surprising; we would expect that the demands of producing longer utterances and of marking them would tax productive skills, and that fast processing of the speech of others in time to do an add-on would be an advanced skill. Bloom, Lahey, Hood, Lifter & Fiess (1980) gave a very detailed report on connectives at two to three years of age, a period after connectives already have begun to appear in the speech of some children. They reported a similar order, though in half the children causality preceded, and in half followed sequential connectives, and they found adversatives later than the other studies, perhaps because they used a criterion of productivity that makes measures even more sensitive to situational sampling. They also looked at the semantic relations between clauses apart from the particular connective, and found on the average that temporal preceded causal relations by about a month. As reported also in the Ervin-Tripp study, cohesion across partner turns was of especially high frequency with *because*, and indeed, Bloom et al. found this was included in the first productive use for all the children, whereas other connectives were more often productive within the child's turns.

Most of the research on temporal conjunctions has been focused on *before* and *after*, and most have been concerned with factors in comprehension. For a review see Natsopoulos and Abadzi (1986). Clark's pioneering work (1970, 1971) on *before* and *after* involved both comprehension and production experiments and the analysis of spontaneous speech data. She proposed three explanatory principles for her findings: order of mention, derivational simplicity, and choice of theme. Order of mention is the principle of "talking about events in the original order of occurrence." Derivational simplicity is an argument based on transformational-generative grammar, according to which subordinate clauses which precede a matrix clause are harder to process than those which follow. Choice of theme is simply the selection of one of two events as the first to talk about. She did not elaborate the factors in thematic choice, but it is not identical to selection of matrix clause.

She found that children used coordinated clauses which follow order of mention first, subordinates following the matrix next, and sentence-initial subordinate clauses later. She showed no reversals in the expected order of clause types, but since her data collection did not begin until 3;3 she did not have onset data for the earlier complex sentences.

Clark found that the youngest children's narratives about sequence had *and* as the connector, later *and then* or *and so*; she believed that they were meant to indicate temporal sequence. "The first purely temporal conjunction to appear in most of the protocols was *when*" (Clark, 1970:283).

When Ferreiro and Sinclair (1971) elicited descriptions, starting with the second of two events, they found that four-year-olds—the youngest children in their study—could not report such reversed narratives at all, supporting the notion that order of mention is fundamental to narrative production. They proposed accordingly that four-year-olds "regard the two events as two separate entities, neither of which constitutes a reference point for the other" (p. 45).

Clark also enacted events and asked a *when* question about one of the events, hoping the child would use the other event for reference time. When children began to give clause responses, some appeared to use *before* undifferentiated for order. Clark found that the children answering a *when* question about a first event most often used *before*; however, some children also used *before* when asked about the second event. Questions about a second event produced more hesitations than questions about a first event, as if it were more difficult to go back in time to talk about what had preceded. Clark interpreted her findings to support a semantic theory under which *before* is the positive, hence easier or earlier form of order contrast to acquire. She found parallel results for both her elicitation and comprehension experiments in which paired narrative clauses were used.

Clark's finding about order of mention has been replicated many times (Feagans, 1980; Ferreiro and Sinclair, 1971; French and Brown, 1977; Hatch, 1971; Johnson, 1975; Kayra-Stuart, 1980; Trosberg, 1982). Children in comprehension studies were given past-tense narrative sentences with temporal clauses; they were then asked to make dolls perform the actions (i.e., to act as if the narrative had been a planning proposal for future action). Clark and others found that in such a situation, children did the events in the order they were mentioned, more often than not, regardless of connective. When given sequences of actions to perform (what we will call chained or serial directives), order of mention also dominates. However, if there was a logical or event-prototypic relation between the clauses, this might allow deviation from order of mention (French and Brown, 1977; Keller-Cohen, 1987).

Verb types. Since verbs within the clauses may refer to either states/relations, durative acts, or more punctual acts, the types of temporal relations between them which the conjunctions indicate are slightly different. The prototypic, neat case of clear succession is of two punctual acts, where one is complete before the other begins, as in, for example, "She came in before I left." In the case of two statives or two duratives, there can be overlap so the succession is less obvious, as in "She sewed when it was raining." We can talk as if there is simultaneity when one state or durative event may nest the other (i.e., precede and follow) as in "We went to the city when I was a little girl." The onset or offset also may be simultaneous or the activities may be simply overlapping, as in "You wash while I sweep." Because in our naturalistic texts we do not know the temporal details of the events, it may be impossible for us to do the fine-grained analysis which would extricate unambiguously which of these conceptual alternatives is intended in all cases.

A conceptual framework we have found valuable in this work is provided by Vendler (1967) who proposed a classification scheme for verbs. He divided them between *stative* and *dynamic* verbs, as is commonly done. Stative verbs like "be nervous," "own/have," "desire/want/like" and "believe/know" though they indicate enduring states are not marked by progressive aspect. These situations remain stable unless something happens to change them. Dynamic verbs refer to situations which must be maintained by continued input.

In Vendler's scheme, the division of dynamic verbs is between *atelic* or *activity* verbs and *telic* verbs. Activity verbs refer to pure action, which has no plausible end point, and can go on as long as the actor wishes. Progressives are common, as in "he was hiking for five hours." Telic verbs are divided by Vendler into two types: *accomplishment* and *achievement*. Accomplishment verbs refer to actions which can take a long time but reach an end point, such as "he's writing an article" or "he made a chair." The possibility of asking "how long did it take to finish?" shows that "finish" refers to an accomplishment. (For an activity verb, one should ask not "when did you finish" but "when did you stop.") In contrast, achievement verbs refer to punctual events like "break," "stop," "reach the top," "recognize," "see," and "start," all of which normally are expressed without progressives because the event has short duration. One cannot, says Vendler, ask how long such events took, but rather when they occurred.

While the prototypic verbs for each category may be divided by progressive/ nonprogressive usage, it is sometimes possible to shift structural marking from the stative to the activity classification or from achievement to accomplishment by use of the progressive form, as in "I was smashing the vase," which suggests taking the time to reduce the vase to chips.

Tense and aspect marking. In studying conjunctions which indicate succession or simultaneity, we implicate the verbs in each clause, which may be marked for the properties of duration or punctual action which are related to these temporal attributes. Bronckart and Sinclair (1973) claimed that children are sensitive to durative qualities in actions, and in French marked activity verbs with the present tense even for actions already completed, more often selecting past tenses for telic verbs. In English, children make use of progressives to mark durative events (but not iterated actions) by three (McShane & Whittaker, 1988). In a study of children's descriptions of actions using the contrast of telic and activity verbs, Harner (1981) found that children three to seven used two to three times more progressives for durative activities at all ages, even using the progressive for durative past events more often than the simple past tense, although at least a third of the time they used the simple past. Progressives, however, are not used for statives either in English or in Japanese (Bloom, Lifter and Hafitz, 1980; Cziko and Koda, 1987), and future progressives are used very rarely for future events (Harner, 1981).

Effects of speech acts on temporal clauses. The pragmatic context of temporal clauses has been largely ignored in the production and comprehension research until recently. In production research, investigators have traditionally used acted out events to elicit speech and have been surprised at the infrequency of spontaneous subordinate temporal clauses; in fact, children tend to describe two foregrounded narrative events as simply coordinates. In comprehension studies, the most widely used method has been to present children verbally with two events—often of an arbitrary relation—combined with a temporal connective, as in *Before the boy patted the dog, he jumped the gate*. Children are then expected to interpret

such narrative clauses and to act them out as if they were commands.

Silva (1983:18-20) has discussed in detail the lack of contextual relevance in studies of *before* and *after*. In her critique, Silva emphasizes that these connectives "do not primarily order events in time; their principal function is to situate one event with respect to another, events which may and usually do have some inherent connection...*Before* and *after* clauses, especially when they describe events out of order, are not used in discourse to describe ongoing process, and are thus inappropriate for having children perform a sequence of actions as they must do in object manipulation tasks." As Stevenson and Pollitt (1987) have further pointed out,

> The sentences are in fact describing events that are only going to happen when the children act them out; the events will only take place in the future. This seems to be a clear violation of felicity conditions; the sentences are quite inappropriate for the experimental contexts. This unnatural use of past tense may well account for the errors children make (p. 535).

Some studies (Amidon and Carey 1972) have used comprehension of two joined commands rather than two narrative clauses, but these were arbitrary in the selection of matrix and subordinated acts. Amidon and Carey found the coordinate format (*first, last*) easier than subordinate clause connectives in these pragmatically abnormal conditions. Stevenson and Pollitt suggest that the omissions of the subordinate clause action in Amidon and Carey's data may be because the children saw the subordinate clause as a time marker rather than as an action they were supposed to perform. Crain (1982), on the other hand, made use of the backgrounding feature of the subordinate clause. He asked children what they wanted to do, then backgrounded that act, as in: *Before you move a blue plane, move a red plane.* In this way, he was able to decrease order of mention responses. At 4;6 to 5;0, 79% performed the action indicated in the main clause of this type of utterance first, despite the unusualness of directions that were out of order.

Stevenson and Pollitt went a step further. They simplified the action to be carried out by the child by using the subordinate clause for a bounding event or reference event to cue a single act to be performed by the child, as in *Before the train stops, move the red car*. They found that the pragmatically appropriate commands in both the Crain study and their new procedure (compared to Clark's procedure) resulted in better performance among younger children on commands contradicting order of mention. Only for their youngest group (2;11-3;1) was performance random. In neither of the procedures that used commands in pragmatically possible contexts was there an order-of-mention effect.

Crain (1982) devised a method to elicit temporal connectives by questioning children about a game of timing in a pragmatic context making complex justifications and explanations appropriate. These were expressed as generics, or as narratives about the recent past. He was able to elicit *when/while* or *before* utterances in this way, the younger children preferring the first forms. Examples of the sentences he elicited in this way are as follows:

Child 3;10: Because the clock goes, when you wait the clock stops right when you are going.

Child 4;11: I got it through the basket before it runned out.

He found *after* contexts tend also to permit *when*, consistent with the Clancy et al. finding that *after* meanings first occurred with *when* form.

Silva (1983) used a more traditional elicitation method to obtain narrative clauses. She displayed four pictures in a cartoon sequence to adults, and to children from 4;10 to 11;11. The frequency of subordinate conjunctions increased with age, the youngest children having frequent coordinate forms like *first..then*. She found that in these narratives based on pictures, adults produced primarily telic verbs in the *when* clauses, and that these clauses were indeterminate as to sequence or simultaneity with respect to the main action. The younger children's *when* clauses were more likely to have activity verbs. *Before* and *after* were infrequent in both child and adult stories, especially as clause conjunctions, with *after* more common than *before*. Silva (1983, p. 97) explains this difference as due to the greater pragmatic simplicity of *after* clauses, which tend to restate old information.

Gerhardt (1988, p. 339) made a strong argument for the use of a discourse-based approach to research on such forms. She argued that "a discourse approach not only offers a fuller functional description of the factors governing the use of these forms, but the relevant semantic categories (such as aspect and tense) themselves become motivated in discourse-pragmatic terms.... A discourse approach sheds light on the problem of how meanings are represented for the child...[and] offers a partial solution to the problem of context: how to define the situation which the child's speech is sensitive to...The differential patterning of the target grammatical items along with other relevant items is used to determine the governing context."

Thus, many formal choices are reflective of activity and genre contexts (e.g., Gee & Savasir, 1985) and of speech act contexts. The speech acts to be categorized include acts such as reporting past events and directing others. In the case of prototypic narratives, the speaker reports a sequence of events typically as a series of sentences or clauses. During recall, the child's focus of attention shifts from event to event and we expect a series of verb phrases with full tense and aspect in each narrative clause. In unconstrained narrative contexts, we expect to find "then" and relatively little subordination.

The news in narratives is more likely to be in telic events than in activities, more likely to be in activities than in states. When children come to talk in narratives about both telic events and states, we expect that a young child's focus will be on the more telic actions, which will be preferred for the main clause; the statives will more often be found in subordinate clauses marked with temporal conjunctions. From the point of view of focus we expect the most simple organization will call for a cline from stative to activity or durative verb to

accomplishment to achievement verbs, with the most telic more often in the main clause and the least telic in the subordinate clause. According to this point of view, what the child is most interested in is change, and therefore more punctate verbs.

On the other hand, in the case of requests or offers, or questions, the child's focus will be on the central intended act. Temporality will be an issue only if there is a series of intended acts, or insofar as the boundary-defining, co-occurring, or enabling conditions are to be attended to in relation to the core act. Future marking in English involves an elaboration of the verb phrase with subtle indicators of modality and intention (Gee and Savasir, 1985). Verb phrases will be so fully elaborated only for the focal events indicated in the speech act, not in the subordinate bounding or conditioning clauses, which may appear to function more like prepositional phrases, and will be of less interest, and secondary in both order and verb phrase elaboration. Indeed, the earliest occurrence of temporal definition for control acts might be in relatively formulaic prepositional phrases such as "after lunch."

We intend to make the speech act context a major issue. Our distinction between two major speech act contexts is made because we believe that there is a difference between them in their prototypic realization. In sequential narrative the child's attention is on at least two events, whereas in the request or offer the child's focal attention is on the one future act. These differences will have consequences for the order of clauses, for the degree of verb phrase elaboration, and for the types of conjunctions selected.

In the sequential narrative we expect coordination, similar verb marking on each clause, and a tendency to order of mention. In requests, offers, or questions we expect an elaborated or intention-marked verb (imperative or modal) in the first or topical clause, followed by a subordinate clause with a present tense verb, with no commitment to order of mention.

There are acts which deviate from these prototypes. For example, in some narrative utterances, only one telic event may be in focus, with backgrounding information about concurrent activities or states. We assume these will be subordinated. In some commands, several serial acts are in view, so that coordinate sequencing, order of mention, and full verb elaboration may occur just as in long narratives. And whenever one type is used at the service of another, the issues of focus and foregrounding change. For example, narrative clauses can be used to justify a request or prohibition or to answer a question.

The purpose of this study is to test these differences in clause order, connective choice, and verb elaboration in relation to the range of speech acts which occur in natural contexts.

METHOD

Samples. Two naturalistic English samples were employed. The first was the 1961 Miller-Ervin Longitudinal Corpus of six children aged 1;10 to 3;8. These children varied according to level of language maturity at the beginning and end of the study. Only four of these

children used a substantial numbers of temporal conjunctions. The earliest appeared at 2;2, but they were not frequent until after three years of age. The second sample was the 1976 Ervin-Tripp Family Corpus of five families each with two or three children between the ages of two and eight.

Procedure. The Miller-Ervin Longitudinal Corpus was obtained in the traditional way, typical of the studies done in the early sixties. In the beginning, children were seen every week. In the fourth year, visits occurred at five month intervals. Wick Miller interacted with the children in their homes so as to elicit forms he was interested in for the development of syntax and morphology. He used toys, questions to provoke certain types of structures, and instructions to talk (e.g., "Ask L ...."). Mothers sometimes were also involved in the talk. The largest of the texts were obtained from peer play involving two of the children at 3;1/3;3 and 3;6/3;8. The transcriptions were also typical of the child language research of the era. Because of the focus on grammatical rather than conversational features, the text transcription was relatively sparse with respect to context and with respect to many conversational details of the text.

In contrast, the Ervin-Tripp Family Corpus was composed entirely of natural family interactions in the home, including interactions with visiting peers and experimenters Participants include mothers, fathers, and older and younger siblings. The children in the family samples were predominantly three- and four-year-olds. Activities varied in different families, and included spontaneous play, food preparation, and mealtimes. Examples of temporal clauses came primarily from four-year-olds, but there were some cases from older siblings and friends between ages five and eight. The data were both audio- and videotaped, allowing for the study of the context and discourse.

Transcriptions of both corpora were made shortly after the time of recording and entered into the computer.

ANALYTIC CATEGORIES

Inclusion of data. Certain utterances with temporal conjunctions did not provide enough information for analysis, or did not appear to come from the child's own construction. These included many replies and incomplete utterances. Replies occur when one partner produces a clause—sometimes these are questions—and the second finishes the utterance with a conjunction and a second clause. The first question below provokes as reply a planning statement, the second a nested narrative, and the third a command.

(1) I: When are you going to sit up?
C: Soon as I do this! (2;5 SM)

(2) I: When did you live in Berkeley?
C: When I was a little tiny girl baby. (2;9 SM)

(3) I: You were going to show me your room, weren't you?
C: Quickly, before a witch gets me! [leads I to room] (2;10 HS)

In addition to canonical time questions (1) and (2), other questions and comments could provoke temporal clauses within replies (3). Three-part dialogue, in which the first clause of the child is separated from the second clause by a check question of the adult, resulted in complex discontinuous sentences which were included when they are child-constructed. The three items above were only partially child-produced so they were omitted from the statistical analysis. There is a directive implied in (3) but we set a higher standard, an explicit verb.

(4) I: What are airplanes for?
C: To ride in, and go up in the sky, and..and..and land in a balloon.
I: Hm?
C: And land in a balloon and go up in a sky in a airplane.
I: Go up in the sky in the airplane?
C: And then we get off and land in a sky in a balloon. (3;8 LF)

(5) K: I'm not going to eat any of them.
J: You're not gonna eat any of them?
K: Yeah! When Adam and Elly come home. (6;2 N1)

Examples (4) and (5) are marginal cases which could be argued for inclusion or exclusion. The final utterance in (4) is a single clause beginning with a temporal conjunction. The adult's questions provoke rephrasings and re-orderings, the child appearing to treat the adult's last rephrasing as the first clause of a compound sentence. We did include (4) and (5) but not the examples (1), (2), and (3).

What is included in various analyses in this paper depends on the constraints required. For clause order we included only non-imitated, two-clause statements or replies and only cases where clause order was not externally constrained. For the analysis of conjunctions, we included cases where the child chose the conjunction, even if the first clause occurred in a different turn, as in (5). Instances which contained a conjunction but only one clause or an elliptical clause as in (1), (2), and (3) were judged too incomplete for analysis, since it wasn't possible to look at the verb features of the missing clause. For all verbs, the Vendler categories were applied.

Speech Act Types. The speech act analysis was empirically derived. The database for the codes was all utterances with temporal conjunctions, not all utterances. These utterances were retrieved from the computer texts with context, and examples were grouped to establish speech act categories. The analytic categories below were first developed from the data in the

Miller-Ervin texts, reported in Bocaz and Ervin-Tripp (1987), and later the categories were applied to the older children. We noticed that there was a gross division between general statements, reports about past events, and future-oriented directives or plans. Within these types, some cases had only two clauses, some three or more, and there was a difference between reports of successive events and overlapping or simultaneous events.

Planning. A description of future events affecting third parties, or assertions of what will happen or what the speaker commits him- or herself to do, alone or as joint action.

(6) I'm going to make a garbage can, when I'm all through with the train lid. (3;0 HS)

(7) C: First we paint.
I: OK We'll paint. Paint with the chalk first, OK?
C: And then read. (3;0 CL)

(8) First we put the hat on, then we will ready go. (2;2 CR)

Nested Control Acts. The child's utterance is a request, order, permission, or offer for action by the addressee, to be concurrent with another activity or state.

(9) You listen while I read (3;3 LF)

Bounded Control Acts. Request, order, permission, or offer for action by the addressee to occur before or after another action or state. The test is whether "before" or "after" could be substituted for the connective used, to mark one boundary of the proposed event.

(10) Can I have your worm when you get finished? (3;1 SM)

Chained Directives. Requests, directions, or plans involving a series of coordinate actions by the addressee (such as recipes, route directions).

(11) You put this in there, then you throw it, and make something out of it, see? (3;1 HS)

Sequential Narratives. Sequences of two or more specific events are reported which have already occurred or are fantasies. They are not necessarily marked for past time.

(12) Paula put oatmeal in it, then put the water. (3;1 CR)

Nested Narratives. Background orienting information is supplied which provides a context for simultaneous report of past events, customary actions, or fantasies. These are usually personal histories.

(13) I: How did you burn your finger?
C: In the stove. When I was matching a stove, I burned my finger. (2;9 SM)

Generics. Atemporal generalizations which characterize action schemas or how things work in general, without being limited to a specific occasion. May include imaginative play. Usually in the simple present (Gerhardt & Savasir, 1986).

(14) That's what you do when you're in a grocery store. (3:6 SM)

Descriptions. Characterization of the particular current state of affairs independent of persuasion, planning, generalizations, or reporting past events. These occur in describing ongoing action in role play, feelings, and motives.

(15) It's getting fluffy. I can't wait until we have it. (6;2 NI11-1)

The seven categories which we developed for the younger children did not work as well for the samples from the older children. The older children presented us with additional purposes. For example, they talked about their present mental state, as in (15). They engaged in fantasy play, using the present tense to recreate reality:

(16) When I lie down—when I bend over my back hurts [playing doctor]. (4;4 BO5)

(17) I'm really a silly thing. I sleep under water while the crocodiles eat me all up. (4;3 BO3)

(18) Sometimes Batman and Robin sleep when they're in their batmobile. (4;9 NI11-1).

To accommodate these sample differences with age, we developed the category, Descriptions, and classified examples (16), (17), and (18) as Generics even though they had a different quality than the generics of the younger children.

Upon examining how we identified the above intuitively derived categories, we noticed that there was a system. There were three dimensions which appeared to us to be salient differences between interaction types:

(a) Past/Future/Atemporal event time (e.g., Narrative/Planning/Generics);

(b) Actors: Future events with hearer as actor/others as actors (Directive/Planning), and

(c) Successive or simultaneous reference time (Nesting).

Certain other distinctions were not used as generally. We distinguished serial or chained control acts but not chained planning or chained narratives, though we could have.

Coder agreement on a sample of these categories was 81%. Almost all the disagreements concerned cases where one coder chose Planning, and the other Generic or Control Act.

RESULTS AND DISCUSSION

Speech Acts. The frequency of different speech acts is shown in Table 1. The contrasts in both age and interactional contexts for the two samples result in some differences in the types of talk obtained in the two samples. The largest number of temporal conjunctions from the younger children came from the peer interaction texts which were obtained from 3;1 to 3;8. Possibly there would have been more at earlier ages had we obtained younger peer material. The older children produced relatively more Narrative and Planning clauses and fewer Control Acts with temporal conjunctions.

TABLE 1
Frequency of Temporal Conjunctions
According to Child Initiation, Incompletion or Reply of Utterance[ab]

	2 to 3 years old				4 to 7 years old			
Categories	Init	Incom	Reply	%	Init	Incom	Reply	%
Planning	23	2	6	24%	40	3	3	32%
Nested Control	9	0	0	9	5	0	0	4
Bounded Control	19	1	0	20	11	1	0	9
Seq. Narrative	11	2	1	11	32	2	1	26
Nested Narrative	10	1	1	10	8	0	1	6
Generics	14	7	1	15	17	0	0	14
Chained Control Act	8	2	1	8	4	0	0	3
Description	0	0	0	0	4	0	0	3
Questions	3	0	0	3	3	0	0	2
Total	97	15	10	100	124	6	5	99

a. *Incomplete* are those lacking two verbs, either elliptical matrix or noun phrase complements, including those that are replies.

b. *Replies* listed here are those in which the partner's dialogue stimulates the last clause of the pair, with the temporal conjunction (other than *when* questions). In some cases these appear to be collaborative utterances.

Note: The fourth and eighth columns, which are percentages, are based only on the first column of data, from which other analyses derive.

There was speech act layering in the older sample, as more elaborated genres developed. One type of act could be embedded in another, as one act became a means to another. In the following example, a Control Act, a request, incorporates two narrative clauses (a description of past circumstances) within a relative clause:

(19) Could we have--could I have one of those pieces of white paper that you had when Miss Ellen was here? (3;6 SM)

Here we see two parts: "Could we have paper" and "You had the paper when Miss Ellen was here." These are united by the mechanism of the relative clause. In this case, the narrative clauses simply serve to specify what is wanted.

In the above case, both the control act and the narrative are explicit. The older children's utterances sometimes used one type of act as a means to another goal; a Narrative, as in the following example, might be a means of implicit challenge, refusal or history as a justification. This is formed as two narrative clauses:

(20) Cause I was here before Catherine was. (5;6 CA3)

In the following example, a past or indirect generic and possibly a warning (a control act) is incorporated into a Narrative. This is a creative rendition of Maurice Sendak's story *Where the Wild Things Are*. It also involves a more advanced form, a conditional.

(21) And if they see a girl one...Every time they...ev...they told Max, every time he saw one, then he had to watch, then they knew it was a nice one, but...whenever he saw a boy one, then those were the bad ones. (4;7 FL11)

In the following example, a warning is embedded in planning regarding fantasy future events.

(22) Okay, it's time to shift it, so everyone watch out cause you're gonna bump when you shift. [pretend airplane ride]. (4;2 JA2)

(23) There. So the people won't get wet. That's why they have this—the roof—so when it rains they (sure) won't (blame us). [building model village]. (4;2 JA2)

In the last example, there is a generic explanation keyed to planning what will happen in the future.

Age changes in speech acts. The definitions of speech functions relied on three criteria: event time, actor, and temporal relation of events. We were also able to examine these factors as they corresponded to the text before and after and to the videotaped context in the older children in making coding decisions. As speech events and genres became elaborated, we relied less on the above formal criteria. For example, one episode included what was not a personal narrative, but the Cinderella story cued by a book. Since the book was present, the speaker could produce a narrative about the familiar tale known from the past, a narrative about the present picture, or a narrative about pictures to come. In the Cinderella narration, past, present, and future tenses all appeared.

(24) She--she putted--she changed her into her dress, and then she went to the ball. (5;0 BO6)

(25) It's the stroke of midnight and she has to go home. Then the magic spell will be broken. And she'll have to walk home because when she gets—when she gets down the stairs, all of her (stuff) will be broken. (5;0 BO6)

Here, then, the definition of Narrative does not derive from the criterion of past tense usage by the child, but from the occurrence of the event time in the past or the fantasy past, regardless of surface tense.

The criterion which distinguished Control Acts from Planning was a focus on the addressee as opposed to other actors in talking about future events. The control acts in the younger sample were easy to recognize because they took conventional forms: imperatives, permission requests, polite requests. But as the older children negotiated play plans, they often defined the partner's as well as their own activities on a par. That is, the planning was more complex, less often focused on getting the partner to do one desired act. There was more negotiating of complex scenarios in which the act of each was only part of a larger scheme.

Gee and Savasir (1985) have defined the difference between two "activity-types" which they call Planning and Enactment. Planning is oriented to a more distant future, to self-initiated events (first person), doll play scenarios (third person), and a predicted or proposed course of actions rather than to immediate actions. These differences seem to correspond somewhat to the contrast we have drawn between Planning and Control Acts. The contrast seemed harder to draw in the older sample, as the directions to partners might be inserted within a longer series, or chain, of planning clauses:

(26) I need a little bit of cheese. And then I stir it up. Then you'll eat it. (4;9 N11-1)

(27) I will read it to you. After you read it to me I'll read it to you. OK? (5;0 BO6)

In addition, there were cases of planning talk which co-occurred with actions, making them hard to interpret as directives:

(28) [while constructing a tinker toy plane] Let me do it. How (xx) this, do this, and put, take that off these and put another thing on. [gives partner stick to form a seat] Then we're gonna stick it down. (4;11 BO1)

Thus changes with age occurred in the complexity of organization of functions as well as in their relative frequency as seen in Table 1.

Order of mention. Because of the prominent role of order of mention in previous research, we examined the clauses and tested their relation to event order. It has often been said that clauses of young children follow event order. We tried changing the order, preceding them with *before*, *after* and *while* to see if any sequence was apparent. Since we often did not know the original events, in many cases the event time was ambiguous.

Those without any clear event sequence were classified as ambiguous in Table 2. The clause order followed event order in these data in all Sequential Narrative clause pairs, all Chained Control Acts (which look like recipes), and most sequential Planning, especially in examples with three or more clauses.

(29) And then we can come and then we can sponge it again, and then we could dry it, and we can keep on doing the same thing over again. (4;11 BO2-2)

Where there are three or more clauses referring to actions with the same actor, clause order follows event order.

TABLE 2
Order of Mention and Order of Events (percentages)

	In Event Order		In Reverse Order		Ambig		Con/Matrixa first		Con/Matrixa last		Totals	
Age group	Y %	O %	Y %	O %	Y %	O %	Y %	O %	Y %	O %	Y %	O %
Planning	74	85	9	5	17	10	–	–	–	–	23	40
Nested Control[a]	–	–	–	–	–	–	89	80	11	20	9	5
Bounded Control[b]	42	54	48	37	10	9	84	71	16	29	19	11
Narr. Seq.	45	78	0	0	54	22	–	–	–	–	11	32
Nested Narr.	–	–	–	–	–	–	70	75	30	25	10	8
Generics	21	18	7	6	72	76	64	76	36	24	14	17
Chained Control	50	75	0	0	50	25	–	–	–	–	8	4
Description	–	25	–	0	–	25	–	50	–	25	0	4
Questions	0	33	67	33	33	33	100	67	0	33	3	3

a. Control act clause or, in the case of nesting, the matrix clause.

b. If both control act (or matrix/subordinate) order and clause order in relation to event sequence are assessed, each pair is listed twice.

But the Order of Mention principle is not uniform. It is different according to the speech act in which the temporal clause appears. It did not work very well for certain serial events, namely those cases of Control Acts involving sequences of events. In our younger sample there were many Nested and Bounded Control Acts—these together were the dominant category in the younger sample. In the case of Bounded Control Acts, where there is information about another action which will precede or follow—i.e., will situate the control act temporally—this situating information usually followed the control act, regardless of event order. The first clause was usually the control act, for both younger and older speakers, whether the device was a clause or phrase.

(30) Bring them when you are all through with lunch. (2;11 HS)

(31) Take your toys out, take the other toys out after lunch. (2;11 HS)

The order of events is not the determinant in (30), nor is it for prepositional bounding in (31). Are these prepositions precursors of temporal clauses? Is "Can I go outside after lunch?" a precursor for "Can I go outside after we finish the pictures?" We observed temporal clauses develop in four children in the younger longitudinal sample after a period with none. In three, there had been at least one temporal preposition found in earlier months in our texts. The children in both age groups primarily produced the control act first, before the subordinate clause. The temporal clause which provided the bounding information was usually mentioned later, regardless of the temporal order of the events referred to.

(32) Can we play outside after they take our picture?
[11 lines later]: Can we...after we have our pictures, can we play with Justin? (4;5 FL7)

In this correction, control act first is replaced with initial event first as a tactic.

In Planning, order of mention was much more powerful. The exceptions contained "I want" and therefore looked more like Control Acts. *I want...* is one of the earliest forms of Control Act in our developmental studies (Ervin-Tripp & Gordon 1986). We had counted these as Planning rather than Control Act cases because the actor was not the hearer.

(33) I: Here's another sheep. Look, here's one, two what?
C: No, I want to count them, when they are right here. (3;6 SM)

(34) I don't want my mom to see this either, when my mom comes. (5;6 CA4-1)

In all but one of the nine cases of Control Acts in which the control act clause does not come first, event order is followed, as in serial planning. In the older children, the deviations from the control act first pattern occur in three cases with initial *after* clauses, in one with an initial *before* clause, and in one with a more complex construction:

(35) Whoever wants some candy when I'm finished can have some. (4;5 FL18-1)

The results indicate that in control acts, the clause concerning the act is dominant, but an alternative order is possible: event order. In older children, the alternative order is related to the development of more explicit order-marking conjunctions such as "before" and "after." We could call the priority or salience of the control act "act salience." It may be related to Clark's (1970) idea of "choice of theme" for the first clause.

Derivational simplicity. Clark (1970) argued that the derivational simplicity principle would predict that matrix clauses should come first. She proposed the developmental order (P and then Q) > (P sub Q) > (sub P, Q). She found in her spontaneous speech data that indeed in no case did subordinate clauses appear in first position before they appeared in second position.

If we use only temporally marked conjunctions, we did not have the same findings for the first two stages. In one child in our study, all three patterns were present at the start. Four children in our longitudinal study developed temporal conjunctions after a period without

them, so we observed their onset. In only one child of the four did the first clause take the form of marked temporal conjoining predicted by Clark. He used a *first...then* pattern for a year for Planning and Narratives before adding *when...then* for Planning, and a Control Act + *when* clause in the same sample.

(36) First we put the hat on, then we will ready go. (2;2 CR)

(37) C: When Al comes back, then I tell him ..(garbled)
I: When Al comes back, then what?
C: And, and then I tell him this is a guinea pig. (3;1 CR)

(38) Don't let Brad knock it down when he wakes up. (3;1 CR)

The other three children in the longitudinal sample began temporal marking of clauses with a *while* clause in second position, (one Narrative, two Control Acts).

(39) You can do this while I do that. (2;6 SM)

(40) It was lost last night while I was sleeping. (3;0 LF)

(41) You listen while I read. (3;1 LF)

(42) You do this now while I do this (3;0 CL)

In our samples it was not uncommon to find two or three early patterns in adjacent samples, as in (37) and (38), and (42) and (43).

(43) After you been in your house, then I can have my turn. (3;1 CL)

In such data, one assumes that slightly larger samples or different contexts for each child could easily alter the findings. Since in all cases, the subordination patterns began at or before 3, it is unlikely that Clark saw their onset in her sample after 3;3. In any case, temporal conjunctions are rare enough in early samples to make estimates of order unreliable without quite large samples with a lot of peer play. We believe that peer play sampling is important since a large proportion of the temporal conjunctions began during Planning speech, which was of high frequency in peer play. The solution of Bloom and her colleagues (1980) of setting a certain frequency standard of productivity does not solve the problem of different findings from different situational samples even within adult-child interaction.

It is clear from our data that speech act type makes a difference, and since speech acts change with activities and genres, larger differences must obtain depending on contexts sampled. We have seen that matrix-first order is typical of Control Acts. But Table 3 shows us that this order is not true for all types of speech acts, or for all types of conjunctions. In Planning, subordinate-first is more typical.

In younger children, 78%, and in the older children, 91% of the unambiguous Planning clauses reflected event order. Many Planning utterances begin with *when* as though the initial

TABLE 3
Position of Subordinate Clause According to Conjunction and Speech Act

	Conjunction											
	when		while		before		after		until		Number	Percent
Speech Act	1	2	1	2	1	2	1	2	1	2	Pairs	Second
Planning	16	7	-	1	-	6	4	-	-	1	35	43%
Nested Control	1	4	1	8	-	-	-	-	-	-	14	86%
Bounded Control	4	11	-	-	1	2	3	2	-	3	23	78%
Seq. Narrative	9	-	-	-	-	2	-	-	-	2	14	29%
Nested Narrative	6	10	-	2	-	-	-	-	-	-	18	67%
Generics	12	13	-	1	-	-	-	-	-	-	26	54%
Chained Control	-	-	-	-	-	-	-	-	-	-	0	0%
Description	-	1	-	-	-	-	-	-	-	1	2	100%
Questions	1	2	-	-	-	-	-	2	-	-	6	83%
Number Pairs	97		13		11		11		7		138	59%*
Percent Second	49%		92%		91%		36%		100%			

* **Note:** Only pairs of clauses related by these specific conjunctions were included. Table 4 shows the distribution including coordinate clauses.

subordinate clause sets up prior event conditions first. Others begin with an *after* clause. In each of the cases with a subordinate clause first, the clause sequence follows order of mention. All cases which do not follow order of mention have the subordinate clause second.

In the following example, the child starts with the typical case, following order of mention. He then finishes with the subordinate clause, possibly forced by the conversion from a Planning assertion to a Question, in which subordinations typically are in second position:

(44) After we have our station wagon, we're gonna buy...uh...we're gonna buy what, Mommy, after our station wagon? (3;1 HS)

The following cases show how the selection of subordinate clause relates to the assumptions from the preceding discourse, to topicalization. In Planning discourse order of mention is reflected in the subordination of the precondition clause in first position. There is a logical sequence involved in each case. These are similar to the preposed *when* clauses in Sequential Narrative in the older children in Silva's (1983) data.

(45) I: I'm all through. Are you all through?
C: When I eat my cookie, then I'll be all through. (2;10 HS)

(46) Eat that sandwich, too. (to I.) Eat other (?) that sandwich. I have to finish this one first. When I finish this, then I'll eat this. (2;11 HS)

(47) I want him on my coffee table. I want to undo him. He is going to be on my chair. When you put him on my coffee table, I'll take him apart. (3;1 SM)

(48) S: Adam, let me play with your Aquaman. When I bring my Superman—toy I will..my Superman toy doll, then I'll stay then I'll play with you. (4;10 N17-1)

(49) We'll make your leg better in one minute. It'll make a hole in your foot and then you can get the glass out. And after it comes out, call me, and um, then we'll come and um and and um cast it back in. (5;0 BO5-1)

The last example is a complicated sequence of Planning which includes Control Acts within the Planning clauses. The basic sequence follows event order, resulting in a reversal of the normal sequence for Bounded Control Acts, so that a subordinate clause precedes an imperative.

Clark proposed that younger children would have a stronger tendency to place subordinate clauses second. This was only moderately true—in the younger children 67% of subordinate clauses were second, in the older 58%. But again, this finding must be qualified by speech act. In Planning and in Nested Narratives the younger children put more subordinate clauses first than the older children. In Planning we can assume this is due to the influence of order of mention. In Nested Narratives order of mention is absent, so the derivational complexity issue should have its greatest effect, but in Nested Narratives a quarter of the subordinate clauses were in first position. One of the children in the younger group produced four Nested Narratives, all starting with *when* clauses. We conclude that derivational complexity is not a very strong factor.

Function marking in verb phrases. For the purposes of this analysis, we have distinguished affixes of tense and aspect which are called *simple* on Table 4 from various verb phrase changes arising from function marking which we have called *elaboration*: modals, catenatives, imperatives. We found evidence that from the very beginning children make a distinction between coordinate and subordinate temporal clauses. Clauses introduced by *then* are essentially coordinate in the usage of the children. Most clauses introduced by *then* or *and then* had the same function marking of the verb as the other clauses. This was true regardless of age or speech act type. In contrast, subordinate clause verb phrases were typically simple. In Table 4 this result can be examined, and it can be seen that most of the sentences linked by *(and) then* have similar levels of elaboration on each verb. For the sentences with a *then* conjunction, the predominant pattern was two simple verbs—two present tenses, or two past tenses typically.

In Planning, and in Bounded or Chained Control Acts there were also cases where both verbs were marked with a modal or imperative or other function indicator, or where only one was. Further, there were instances of *when ...then* in which the *when* clause had a simple verb and the *then* clause had a marked verb.

TABLE 4
Verb Elaboration in Temporally Conjoined Clause Pairs (percentages)

Conjunction	Subordinate Conjunctions[a]				Coordinate (Then)				
Main Verb	Elaborated[b]		Simple[c]		Elaborated		Simple		
Secondary Verb[d]	Elab	Simple	Elab	Simple	Elab	Simple	Elab	Simple	Total
Planning	0%	54%	0%	3%	19%	8%	6%	10%	63
Nested Control	0	64	0	36	0	0	-	0	14
Bounded Control	0	86	0	4	7	4	-	0	28[e]
Seq. Narrative	0	5	2	21	2	-	2	64	42
Nested Narrative	6	11	6	78	0	0	-	0	18
Generics	3	19	0	71	0	3	-	3	31
Chained Control	0	0	0	0	9	33	-	58	12
Description	0	25	0	75	0	0	-	0	4
Questions	-	50	-	50	-	-	-	-	6

a. Subordinate conjunctions are *when*, *while*, *before*, *after*, and *until*.

b. *Elaborated* here includes verb phrase elaboration by modal auxiliaries, catenatives, *wanna*, *gotta*, *hafta*, *let's*, and imperatives.

c. *Simple* includes present tense (including second person), past tense, progressives, participles and negatives.

d. A secondary verb is the verb in the clause following the subordinate conjunction, or in a second clause following *then* if there is no subordinate clause preceding.

e. Some cases were omitted because verb marking was inaudible.

(50) Ring the doorbell and then you could go in. (4;2 JA2)

(51) Well first we put a movie camera in, then we put a little bit of soup in. Then we put a table in. (4;11 BO3)

(52) When I bring my Superman..Cap..toy..I will..my Superman toy doll, then I'll stay, then I'll play with you. (4;10 N17-1)

The specific type of verb phrase elaboration was different according to the functional categories. Let us look first at Control Acts and Planning. In these utterances there are markers of the future, such as *gonna, will*, or of possibility, such as *can* and *could*, or markers of interactional function such as imperatives and *wanna*. In the case of series such as serial directives or planning for serial events, connected by *then*, these types of verb phrase elaboration might occur in each clause. Surprisingly, the chained directives were not chains of imperatives, but of simple verbs: *You X, you Y, and then you Z.* Subordinate temporal clauses contained only a simple present in these types of utterances. The conjunctions for these clauses included *before, after, until* and *when*.

When we examined the distribution of imperatives, and of *can, could, would, will, gonna, have to, got to, might, may, need to, want to* and *let*, we found that in the whole data set for Planning and Control Acts there were only two elaborated verb phrases in subordinate

clauses. These were by older children, *could* following *before*, and *want to* following *when*. On the other hand, there were many speakers who used an elaborated verb phrase following *then*. The most frequent elaborations were modals: *will, can*, and *could*. The only form showing approximately equal distribution between matrix clauses and *then* clauses was *will*; *gonna* appeared primarily in matrix clauses, and exclusively so for the younger sample. In children of this age, Gee and Savasir (1985) pointed out, *gonna* can have an assertive, sometimes even adversarial connotation, and tends to be used to talk about the speaker's plans, so it might well mark the focus of attention in the matrix clause.

In simple Planning and in Control Acts, regardless of the elaboration of the verb of the main clause, the subordinate clause verbs were simple.

(53) Don't let Brad knock it down when he wakes up. (3;1 CR)

(54) So long ago, and when I grow up and you grow up, we'll be the bosses. Hah! (4;3 BO2-2)

In Generics and Narratives, while the subordinate is also usually simple, the main verb is too—present tense in the Generics, past tense in the Narratives. These contrasts make it very clear that there is a distinction between subordination and coordination from the beginning of complex sentences.

Verb type within clauses. What led us to identify some narratives as nested was the indication that a narrative event was simultaneous with some orienting or background feature. Nested Narratives most often contained *when* clauses. We applied the Vendler (1967) categories to the verbs in each pair and found that the verbs in these subordinate clauses were always more stative and less telic than the verbs in the main clause. With the exception of (59), all of the Nested Narratives either had achievement matrix verbs or stative subordinate verbs.

(55) When I was sick, I couldn't have any birthday cake. (2;9 SM)

(56) I hated it when I had to stay after school. (7;5 CA)

Sometimes the verbs in the subordinate clause referred to an activity rather than to a state. In such cases the main verb was more telic, and the subordinate verb was more often marked as progressive.

(57) When I was walking down the street, I saw this piece of glass and picked it up. (5;0 BO5)

In examples such as (57) the reference time was reported in the progressive verb and the event time in the simple past. The reverse relation is theoretically possible. We can say "I was walking down the street when I saw this piece of glass and picked it up" or "I was lighting the stove when I got burnt." Novelists do these tricks sometimes, with the effect of

pushing news into the background, making us insiders. But the children never did this.

TABLE 5
Verb types, Clause types, and Speech Acts with Progressive Aspect

	Activity		Accomplish		Achieve		Total Verbs
	Y	O	Y	O	Y	O	
Main clause	1	-	-	-	-	-	221
Subordinate Clause or *then* Clause	7	3	2	1	-	-	138
While	4	1	-	-	-	-	13
When	2	1	1	1	-	-	97
Then	1	1	1	-	-	-	96[a]
Nested Control Act	3	1	-	-	-	-	28[b]
Nested Narrative	3	1	-	1	-	-	36
Sequential Narrative	2	1	2	-	-	-	86

a. Both verbs are counted here because there are two clauses.

b. Including 13 cases of (when)...then and then...(when).

Progressives. In addition to the relationship between subordination and absence of verb phrase elaboration, we noticed a relationship between subordination and use of the progressive suffix. There were fourteen occurrences of the progressives in complex sentences, primarily in the younger speakers. For the children under four, while nearly always demanded a progressive when it was possible. Table 5 shows the distribution of progressives which are almost completely limited to subordinate clauses in Nested Narratives, Nested Control Acts, and Sequential Narratives.

(58) People have to keep quiet while I'm doing this. (3;6 SM)

But the uses of the progressive are more complex in the older children.

(59) And he went and he was scared of the fire. Then he was trying to jump out the window. (4;7 NI2)

In (59) the addition of *trying* allows an achievement verb to be turned into an activity, its duration emphasized with the progressive. There were no progressives in cases classified as Generics, as Planning, or as Bounded or Chained control acts.

Typical speech acts. One of our purposes in this study was to find the formal outcome which is likely if an experimenter creates settings which elicit particular speech acts. Some of these

features are implicit in the earlier results, but are summarized here.

Planning clauses typically referred to sequential or logically conditioned events. They consisted of a subordinate clause with a present tense verb, followed by a matrix clause with an elaborated verb phrase, in the order of the future events.

(60) And when get through playing with these, I'll play with something else. (2;8 SM)

Subordinate clauses usually had a different subject than matrix clauses, and more stative verbs. First person subjects were usually in the matrix clause.

A third of the Planning cases involved coordinate clauses with at least one elaborated verb. Since the older children had more detailed plans, these sequential coordinated clauses were more frequent with age. In some dialogues, turns of over six clauses occurred.

(61) J: I'll get this one if you'll get this one.
K: And then we can come and then we can sponge it again. And then we could dry it, and we can keep on doing the same thing over again, we can sweep it and we can keep on sweeping until we finish and finally when we finish we'll.. (4;11)
J: We'll dry it.(4:3 BO2-2)

Nested and Bounded Control Acts began with the elaborated control act, followed by the subordinate clause, regardless of its temporal or logical relation to the control act. In half the cases the subordinate event was to be prior to the matrix event, as in the following:

(62) Can I have your worm when you get finished? (3;1 SM)

Generics were identified by the use of the present tense in both clauses. Progressive aspect was not used in generics. In a third of the cases, the subordinate clause preceded, usually to preserve logical or event order:

(63) When I lie down—when I bend over, my back hurts [doctor play]. (4;4 BO5)

(64) Well, sometimes when people have a sore throat they upchuck. (4;2 J2)

A typical Sequential Narrative simply linked two coordinated past tense clauses with and then, but the older children were able to complicate the rhythm of the action by the use of subordinate clauses to describe some of the action:

(65) When the water springed on it, it went back up, and then just back and forth.(4;11 BO3).

In the above example, there is first the description of a single action-response, with the cause subordinated in the *when* clause. The repetitive, rhythmic part of the event is segregated into

a coordinate and *then* clause. The distinct syntactic treatment captures the difference in the event.

(66) He waited till, till I could come. (2;7 SM)

(67) It was squash, and when um..and um..the fixers fixed the tin man...before the wicked witch could um fight the tin man. (4;11 BO3)

Types of conjunctions. The order of development of conjunctions appears in our data to be similar to the order reported in Clancy, Jacobsen, and Silva (1976): *then* for coordination, *when* undifferentiated for succession and simultaneity, and eventually *after* and *before* added for succession. In the younger sample, there were two favorite conjunctions: *when*, and *then*, and two second-level favorites, *while* and *after* (Table 7). *While* appears very early in our data because it is important in control acts, though not so frequent in other contexts.

TABLE 6
Ages of First Use of Temporal Conjunctions According to Speech Acts
(in order of appearance)

	then	while	when	until	before	after	Utterances
Planning	2;2	4;3	2;7	-	3;8	3;0	63
Nested Control	-	2;5	3;0	-	-	-	14
Bounded Cont.	2;7	-	2;9	2;9	2;9	3;0	30
Seq. Narr.	2;11	-	2;11	2;7	4;11	-	43
Nested Narr.	-	3;0	2;9	-	-	-	18
Generics	3;1	4;3	2;11	-	-	-	31
Chained Cont.	3;1	-	-	-	-	-	12
Description	4;7	-	4;11	6;2	-	-	4
Questions	4;2	-	3;7	-	-	2;11	6

Conjunctions differed markedly across speech acts, as can be seen in Tables 6 and 7. Had we not examined our data in terms of speech acts, we would have had the surprising result that *then* is used more by older children and *when* by younger children! The paradox of this difference is explained by the much greater length and elaboration of Narrative and Planning sequences in the collaborative play of the older children. For Sequential Narratives, the great favorite was *then*. The first example was in a "*first...then" construction at 2;2 in Planning. Then* was the favorite for instances of serial events: Chained Control Acts and Planning. *While* first appeared in Nested Control Acts at 2;5, and was used more by the younger children than later. Typically, these cases involve a child's directives to another person about what to do while the speaker is carrying out an activity. It was used only once by an older child in Planning in this sample, probably because Planning was typically of sequential events. *When* first appeared at 2;7 in Planning, and was the most all-purpose temporal

TABLE 7
Frequency of Conjunctions according to Conversational Function

		then	when	while	before	after	until	Total*
Planning	Y	12	12	-	2	2	-	23
	O	24	11	1	4	2	1	40
Nested Cont.	Y	-	2	7	-	-	-	9
	O	-	3	2	-	-	-	5
Bounded Cont.	Y	5	13	-	1	1	1	19
	O	2	2	-	2	4	2	11
Seq. Narr.	Y	8	3	-	-	-	1	11
	O	24	6	-	2	-	1	32
Nested Narr.	Y	-	9	1	-	-	-	10
	O	-	7	1	-	-	-	8
Generics	Y	3	12	-	-	-	-	14
	O	5	13	1	-	-	-	17
Chained Cont.	Y	7	-	-	-	-	-	7
	O	4	-	-	-	-	-	4
Description	Y	-	-	-	-	-	-	-
	O	2	1	-	-	-	1	4
Question	Y	-	1	-	-	2	-	3
	O	1	2	-	-	-	-	3
Total	Y	35	52	8	3	5	2	105
	O	62	45	5	8	6	5	131

* **Note:** The totals are for number of utterances containing temporal conjunctions.
Many contained several conjunctions, so the row sum is not equal to the total utterances.

conjunction. It was common in Planning, Bounded Control Acts, Generics, and Nested Narratives. *When* appeared in Bounded Control Acts with the meaning of *after*. The earliest use of *after* as a form was as a preposition, and it was common in Bounded Control Acts like finish after lunch. We found good examples of both *before* and *after* used as conjunctions quite early in Bounded Control Acts and Planning at 2;9 and 3;0. Their absence from early texts reported by others may be due to the emphasis on narratives when data are collected by adult elicitation, since they are most frequent in Control Acts and Planning. *Till* was used even earlier, at 2;7, but was infrequent.

Some of the earlier studies give examples that can be re-examined in terms of the speech act they seem to realize. Weist mentioned the earliest *when* in his Polish data, at 2;8 in a

Planning utterance. Clancy, Jacobsen and Silva found that when temporal marking began, *then* preceded *when*, at 1.7 in a Chained Directive. Their earliest *when* examples are Generics at 2.0 and 2.4, with a sequential or causal meaning. In all the languages, simultaneity was expressed later than sequence. The examples they give are in an Italian Nested Narrative with *when* at 2;8, and a Turkish Generic with *while* at 3;4. As to *before* and *after*, they argue that *after* begins first. The examples give a Bounded Control Act in English with *after* at 3;5 and an elicited Generic in Italian with *before* at 3;4. We report these ages to show how unreliable the data are on the issue of age of first occurrence. The type of speech activity is absolutely crucial in altering the probability of forms and most texts do not have the type of peer play which maximizes these forms in Planning.

Complexity. There were a few indications of future embedding of temporal clauses into larger structures. Already in the younger speakers can be found a relative clause containing a temporal clause:

(68) Could we have..could I have one of those pieces of white paper that you had (xxx) when Miss Ellen was here? (3;6 SM)

In causals:

(69) I could walk on the rocks, cause I had shoes on last night, when father was here. (3;1 CR)

(70) And she'll [Cinderella] have to walk home because when she gets...when she gets down the stairs, all of her (stuff) will be broken. (5;0 BO6)

And conditionals:

(71) Then—after we dry it, we...it will be if it's still if it's still, um, wet we can just let it dry, huh? (4;3 BO2-2)

CONCLUSIONS

By categorizing our data according to the interactional/semantic function of the utterances, we have identified distinct patterns in the evolution of temporal clauses. The two principles which have been used to account for early temporal clause use—order of mention and derivational complexity—are not equally salient in all functions. Order of mention, or surface order corresponding to event order, is most evident in Narration, Chained Control Acts, and in Planning. Generics are only moderately reflective of event order, and Bounded Control Acts display a conflicting principle: control act primacy.

The second principle, derivational complexity, predicts that a matrix clause will precede subordinate clauses. There was wide variation in this feature, ranging from low conformity in

Narratives and Planning to higher conformity in Nested Control Acts and Nested Narratives. Since the order of mention principle is not an issue in nesting, the matrix-first principle can dominate. That is to say that order of mention is more important in sequential acts, and derivational complexity in nested acts. We have found a third principle, act salience, which dominates Bounded and Nested Control Acts, on the basis of a motivational principle stronger than mere derivational complexity alone, since it often overwhelms event order as a determining principle.

What these data suggest is that the relative importance of these three principles varies according to the purposes of the communication. When there is a strong focus on a control act, the principle of control act salience is strongest; when a focal act is absent and there is a serial tale to tell, order of mention is strongest. The principle of derivational complexity is in evidence only in the absence of the other principles, namely when simultaneous events are being discussed.

There is another issue raised by these data: what determines subordination? In the Control Act data it is clear that the act is the matrix. In Nested Narratives, the more stative and less telic verb was subordinated. In each pair, either the subordinate verb was stative or the matrix verb was an achievement (punctual) verb, or both. In Planning, subordinate clauses were less often in the first person—about the speaker—than matrix clauses, and more often had stative verbs. In Planning and Control Acts, the matrix verb was marked by modals, catenatives, or imperative, but the subordinate clause verb was almost always unmarked. There also seems to be a factor of conversational focus and continuity which determines what is in the matrix clause, which became especially apparent in Generics.

The categorization by speech acts made salient special tense, aspect, and marking patterns not visible in pooled data. The patterns we have reported here were found in both the younger and older samples of children. The changes with age were relatively minor, so we conclude that the patterns here are fundamental in early use of temporal clauses. Most would not have been discernible without a speech act analysis first.

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