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Date April 25, 1983
Abstract

The complexity of children's linguistic constructions in conversation during the transition from single-word to multiword speech was measured in six conditions produced by manipulating the adult interaction variables, familiarity, attention, and conversational control. Subjects were four children, ages 1;9 to 2;3, and their mothers. The children's constructions were categorized according to three levels of complexity (single words, vertical constructions, horizontal constructions), in four tasks (high attention, low attention, high control, low control), during dialogues with their mothers, then with strangers. While their proportion of complex to less complex constructions was not related to adult familiarity or attention, children produced significantly more complex constructions (p = .005) when they controlled the conversation. Further analyses of the children's frequency of constructions demonstrated that the children talked more to their mothers than to strangers, and more given high adult attention than low adult attention. These findings have important implications for clinical language sampling and therapy procedures.
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Acknowledgements

Many people have provided criticism, assistance, and encouragement over the course of this research. I am deeply indebted to Daniel, Joni, Milly, Cory, and their mothers for volunteering their time to participate in this study. In addition, I would like to thank Carolyn Johnson, David Ingram, Malcolm Greig, Wendy Duke, Marshall Chasin, and Robert Stirling for providing critical advice and encouragement, and for assisting with taping sessions, research design, and statistics. Finally, a special thank-you to Harold Janzen for helpful criticism at all phases of the study, for typing, and for unfailing support.
The Transition to Syntax: Influences on Children's Constructional Complexity

Young children learning to talk begin by using one word at a time. Then sometime before their second birthday, the first two word utterances appear. These word combinations are viewed as the first "sentences" and the beginning of syntax.

The transition from isolated single words, or holophrases, to syntactic two word sentences is not abrupt, however. Structured language emerges gradually, and as I hope to demonstrate in this paper, children produce constructions, or structured language, prior to syntax. A model is proposed to describe the stages in constructional complexity from isolated single words to early two to three word sentences.

While children's constructions develop from simple to complex, constructions of different levels of complexity can co-exist in their speech at this period (for example, a child may use some two word sentences along with some single-word utterances). In this study, factors that influence the immediate complexity of children's constructions are considered. Specifically, the short term effects of adult behaviours and manners of interacting with children are investigated by setting up different types of communicative situations and measuring the proportional complexity of children's constructions in each condition. While long term effects cannot be resolved from these measures, the adult behaviours that are related to immediate changes in children's
The question of why children move from single words to syntactic constructions, and the process through which this occurs has been widely discussed in the language acquisition literature. An important observation is that this transition does not occur suddenly, or in isolation from the people, routines, and situations of children's daily environments. The first syntactic two-word utterances are often preceded by unanalyzed or formulaic phrases, or two-word combinations with one element being a contentless place-holder. These are similar in form to the evolving two-word sentences (see, for example, Dore, Franklin, Miller & Ramer, 1976; Lock, 1980). Once syntactic two-word utterances make their appearance, they represent only a small proportion of children's total output for a considerable period of time. Furthermore, there is growing evidence that children's language is already structured prior to the emergence of syntactic utterances (Bates, 1976; Bloom, 1976; Scollon, 1976). Syntax does not represent the beginning of structure in children's language, but rather the acquisition of a new structural means of encoding pragmatic functions and semantic relationships which were previously, and continue simultaneously to be, encoded through other nonsyntactic structures. It can be argued that this formal structural means of referring to two or more things or to relationships between things is more efficient than previous construction types and therefore more powerful. Increased communicative power provides an impetus for syntactic development.
Children's language learning is embedded in context. Children acquire language through interaction with other people, and each utterance is an integral part of the event in which it occurs. Language is used to get things done, to make social contact, and to communicate meanings. These functions are served by different linguistic structures at different stages of development. Lock (1980) cites an example of some constructions used by a child named Matthew. Deciding he wanted out of his highchair, Matthew used language for the function of getting his mother to lift him out. He communicated his desire to get down by whining, struggling, and reaching, and saying "down," then by using two single word utterances in succession: "mommy." "down." At a later stage he might have used a two word utterance: "mommy down." In each case his language accomplishes the same purpose (getting down from his chair), and communicates the same meaning or proposition ("Mommy, I want you to get me down"), but the structural way of encoding the meaning changes. I will argue that to understand how and why these structures evolve, we need to examine the discourse in which they occur, and the conversational constraints acting upon children and their partners.

The role that adults play as they interact with children in a conversation can have a major influence on discourse and on conversational constraints. This research addresses the question of what adult behaviours or attitudes alter the nature of the discourse, and whether there is any relationship between these adult behaviours and
the complexity of constructions children will choose to use to encode meanings. In other words, are children at the onset of the two word stage more likely to produce syntactic constructions rather than single words when adults interact with them in a certain way?

To investigate this question, I will first review relevant issues which have been discussed in the language acquisition literature. These issues include: the influence of the input language on children's language acquisition, the role of context in language acquisition, the role of conversational constraints and discourse devices, topic-comment structures, and the transition to syntax. I will then discuss Scollon's (1976) model of multiword development and propose some revisions and extensions to this model. Finally, I will report a study based on this revised model, in which behaviours of coparticipating adults are varied along the parameters of familiarity, attention and control, and children's tendency to use syntactic or nonsyntactic constructions in each of these different interaction conditions is measured.
Chapter One: Review of Current Issues

Influence of Caretakers' Speech on Children's Language Development

Until recently, language acquisition was assumed to occur primarily through the operation of a powerful innate "Language Acquisition Device". It seemed that adult speech was so rapid, complex and disfluent that an inexperienced language learner could not possibly extract the necessary grammatical concepts from it without a biological predisposition for language learning.

Over the last decade, this assumption has been challenged in a great number of studies (see Snow 1977a and 1979 for a discussion). A major finding is that adults speak differently to children than they do to one another. These studies "revealed that the speech addressed to children aged 18 to 36 months was much simpler and much more grammatical than the speech addressed to adults" (Snow, 1979, p. 364). Furthermore, speech adjustments that result in a simplified language environment are not produced only by mothers, but also by men, women who are not mothers, and children as young as four years who interact with one-and-a-half to three year-olds. We can assume that, at least within a middle-class EuroAmerican culture, such speech is available to language learning children. As Cross points out, "most, if not all, young children have access to a highly specialized speech register that is sensitive to their communicative immaturity" (1977, p. 152).

The characteristics of caretakers' speech to children have been enumerated in detail elsewhere (see Andersen 1975, Berko Gleason & Weintraub 1978; Cross, 1977). Snow succinctly summarizes the findings.
of the descriptive studies:

The broad outlines of mothers' speech to children—that it is simple and redundant, that it contains many questions, many imperatives, few co- or subordinations, and few disfluencies, and that it is pitched higher and has an exaggerated intonation pattern—are quite well established. (1977a, p. 36)

Thus it appears that a major result of caretaker speech modifications is a simple, well-formed, redundant input language.

Does this specialized caretaker register in fact help children acquire language? There is some evidence that the syntactic structure of caretaker output is not necessarily finely-tuned to children's linguistic levels (Ervin-Tripp & Miller, 1977; Gelman & Shatz, 1977; Newport, Gleitman & Gleitman, 1977), and that parents don't modify their their speech for the purpose of teaching language (Newport et al., 1977). Cross failed "to find significant differences in the syntactic quality of the inputs to groups of children acquiring syntax at different rates" (1978, p. 207), so her results do not support the view that children who are making rapid progress receive "inputs that are syntactically simpler and better formed than children developing more slowly" (1978, p. 207). Snow reports that "no high correlation exists between the child's linguistic level and most measures of the syntactic complexity of maternal input" (1979, p. 371). So it appears that fine-tuning of input language syntax to children's developmental levels is not a crucial factor in children's rate of syntactic acquisition. But while fine-tuning may not be necessary, the general simplification typical of caretaker speech might still have the effect of bringing the structure of language within children's processing range (Cross, 1978).
Some investigators have claimed that 'deficient' input can have negative effects on children's language development. There is evidence that input insufficiently adapted to the complexity level children can process can hinder language development (Hess & Shipman, 1965). Nelson (1973) suggests that language acquisition may be slower if the input is not matched to children's cognitive style. And Newport, Gleitman and Gleitman (1975) suggest that maternal unintelligibility is negatively correlated to children's rate of linguistic development.

While the relationship between syntactic adjustments in the input language and children's rate of syntactic acquisition is equivocal, a firm relationship between semantic and discourse characteristics of the input language and children's rate of linguistic development has been proposed in a number of studies. Adults talking to young children greatly restrict the semantic content of their speech. "Mothers limit their utterances to the present tense, to concrete nouns, to comments on what the child is doing and on what is happening around the child" (Snow, 1979, p. 370). Adults also use certain discourse devices more frequently when talking to children, such as attention-getters, probes as to the effectiveness of the conversation (Snow, 1977a), expansions, and repetitions (Cross, 1977; Newport et al., 1977).

Snow points out that "semantic interpretability and relevance are the crucial features in facilitating language acquisition" (1979, p. 375), a point of view which is also supported by Cross (1978). The relationship between specific discourse devices and language level has also been
discussed in studies by Cross (1977; 1978) and Newport et al. (1977). Newport et al. propose that "deictic usage might help build vocabulary, expansions might help build syntax and repetition might influence both to the extent that it could allow rehearsal or comparison among forms" (1977, p. 129), and they cite results which partially support this position. Another important characteristic of caretaker speech is that references tend to be limited to the here-and-now. Cross notes that "the vast majority of the expressions the child hears encode events that are perceptually, cognitively and semantically available and salient to the child" (1977, p.169). While no causal relationship between caretakers' semantic or discourse characteristics and children's rate of linguistic acquisition has been clearly established, evidence that specific characteristics have a facilitative effect continues to accumulate (for example, Newport et al.'s (1977) correlation of mother's yes/no questions with children's use of auxiliaries, and of mothers' deixis with children's noun inflections).

While the causal relationship has not been proven, it is clear that adults' semantic, pragmatic, discourse, and possibly syntactic modifications can have long term influences on children's language learning. Long term influences are generally measured in terms of a growth score for the child (from language maturity at time 1 to language maturity at time 2) as correlated with characteristics of mother's language at time 1. The relationship of mothers' speech to rate of acquisition is summarized by Cross:
Mothers of accelerated children provided an input that contained greater proportions of expansions, expansion-like utterances, and semantic extensions than did mothers of children developing more slowly. They also used more partial repetitions and sequences which combine repetitions with expansions and extensions of the child's preceding utterances. They produced far fewer utterances that were new to the discourse. Their speech appeared to perceptually more salient and analyzable; it contained fewer unintelligible and disfluent utterances and fewer run-on sentences, a lower level of preverbal complexity, and fewer utterances per conversational turn. (1978, p. 214)

As well as the relationship between input language features and rate of language acquisition, another question of interest has been that of the role of children's feedback in eliciting modifications characteristic of the caretaker register or linguistic style (see von Raffler-Engel & Rea, 1980 for a discussion and review of recent research on this topic). There has been an increasing awareness that children play an active role in language acquisition, and this has led to widespread support for the "interaction hypothesis", a view that children and adults influence each other's immediate speech style within the moment-by-moment unfolding of discourse (Berko Gleason, 1977; Lieven, 1978; Snow, 1979). However, features of caretaker—child interactions that have a specific immediate effect on children's output within the discourse have not been isolated from the more general inventory of modifications characteristic of such interactions. Identification of these features — the goal of this study — may be an essential step on the way to understanding long term effects of verbal interactions on language development.

Context and Language Functions

In this section "context" will be defined, its relationship to semantic and syntactic categories discussed, and its influence on
language acquisition considered. The relationship between context and language use will also be reviewed, along with some specific examples of language functions used by children. Children's utterances are imbedded in context, so to analyze the complexity of constructions, how they evolve, and whether an adult coparticipant's behaviour influences them, it is essential to review this literature. Similarly, language functions are expressed via more or less complex constructions depending on context and other coparticipant-based factors which I hope to elucidate in this study.

Context includes the immediate physical environment and the verbal environment of the communicative act, as well as the social and psychological world in which the language user is operating (Ochs, 1979). Each of these levels of context simultaneously influences speakers and hearers, affecting the formulation as well as the interpretation of their communicative acts.

Aspects of the immediate physical environment or setting, which affect communication include the identity and characteristics of the speaker, hearer, and co-present others, the location, the activity, and the inanimate objects present. These factors filtered through the perception or world views of the conversational participants indirectly influence the discourse.

The conversation itself provides the verbal environment, or linguistic context, which is also filtered through the perceptions of each speaker-hearer. Aspects of the verbal environment that influence communicative acts include choice of code (language, dialect, register), choice of
speech event (joke, interview, etc.), and location of the utterance within the discourse (topic-initial, response, etc.) (Ochs, 1979).

The social and psychological world of the language user functions as context. Successful communication involves mutual understanding of conventional routines and depends on the speaker-hearer's ability to extract the underlying social meanings of utterances. Communication depends on both within-situation context (such as the speaker-hearer's awareness of status relationships and roles of coparticipants, familiarity with politeness routines, etc.), and extrasituational context ("awareness of and assumptions about objects, events, and states of affairs outside the interactional setting, and how these affect how language is used and understood" (Ochs, 1979, p. 4)).

Shields emphasizes the importance of what she calls "interpersonal cohesion" which involves:

some conception, however elementary, that the perceptual and interactional field is shared, that previous experience can be remembered and brought into play, and there is some agreement on what is here called the latent context which frames the actual situation." (1978, p. 317)

Each of these variables plays a role in comprehension and production of utterances within conversations. Ochs sums up the breadth of influence of context:

It includes, minimally, language users' beliefs and assumptions about temporal, spatial, and social settings; prior, ongoing, and future actions (verbal, nonverbal), and the state of knowledge and attentiveness of those participating in the social interaction at hand. (1979, p. 5)

Furthermore, because context is an integral part of every speech act, utterances cannot be extracted from their context for analysis.
without a distortion or loss of information. (cf. Bruner, 1975)

How is context, in all its forms, related to specific dimensions of linguistic competence such as syntax or semantics? Lieven (1978) notes that before assigning a young child's utterance to any particular syntactic or semantic category, it is always necessary to know the context in which that utterance occurs. Adults depend very much on context in interpreting or analyzing children's utterances. Moerk (1977) claims that there is a close interdependence of communicative structures and objective environmental structures. Ochs (1979) adds that the set of shared background assumptions affects every dimension of language, including the syntax, semantics, lexicon, and phonology. The ability to interpret the context and to adjust utterances to fit the context is an integral part of communicative competence.

Linguistic and situational context can be altered in ways that influence children's acquisition of communicative competence. It is clear that caretakers limit their talk to children to situations which are accessible to the children; that is, the "here-and-now" which is a minimally opaque context (Bruner, 1978). This is particularly true when the child is very young. In a study of a mother's speech to her child between eight and twenty weeks of age, Sylvester-Bradley and Trevarthen (1978) found that 83.4% of all the references in the mother's speech were to the child, or to the child's body, clothes, or general psychic state. The mother reflected back the baby's own state, moods, facial expressions, and actions as they happened. Snow (1977b) proposes that changes in mothers' input language is
related to babies' increasing abilities to function as conversational partners.

For whatever reason caretakers encode their own and their children's behavior as it is proceeding, as well as static environmental relationships, this has the effect of relating context to linguistic structures in a transparent way, and simplifies the task of learning language. Moerk points out that "in this manner she (the mother) models for her child the pairing of actions /perceptions/ conceptualizations and their linguistic codes, while both phenomena hold the attention of the child" (1977, p. 179).

Bates (1976) views the relationship between context and language learning from a slightly different perspective. She states that "the eventual commerce of propositions is first carried out with an exchange of concrete objects or an indication of visible events. Words as symbolic vehicles with corresponding referents are then inserted into the prepared performative structures" (p. 72). She feels that "initially, the child does not understand or objectify the special vehicle-referent relationship with which adults link words and things" (p. 90), but rather all sign relations are procedures for acting on things or participating in events. That is, the first words used are highly dependent on immediate context, especially ongoing action events. These first words may be equivalent to what other investigators call sensorimotor morphemes (Carter, 1978) or Phonetically Consistent Forms (Dore et al., 1976) which are not used independent of particular action or interaction contexts.
Children acquiring competence at this level of using words as performatives then move towards using words to convey propositions. Initially construction and interpretation of these propositions require a great deal of reliance on contextual cues; for example, children may signify topics by gazing at objects about which they are making comments. At a later step in development children wrestle with a more abstract level of context, that of shared background assumptions and linguistic conventions. They begin to realize that a here-and-now context cannot always be assumed, and that coparticipants do not necessarily have access to all the same background information as the speaker. At this level children are learning about "presuppositions"; which information they can assume coparticipants know and therefore does not need to be explicitly marked linguistically, and which information needs to be explicitly marked or introduced. As Bates points out:

> It should be clear at this point that pragmatic factors are not a sort of overlaid system, applied late in sentence derivation and late in language acquisition. The topic-comment, presupposition-proposition relationship can be a powerful factor in explaining the mapping system for any given language, and in explaining the way that children acquire the mapping system." (1976, p. 211)

Context can also be examined on the basis of its relationship to language use. The study of "the systematic use of language in context" (Ochs, 1979, p. 7) is known as "pragmatics" (one definition of this ill-defined area), and includes investigation of "the many ways in which context enters into the expression and understanding of propositions by language users in a particular community" (Ochs, 1979, p. 1). Shuger states that "text is always systematically related to
the context" (1978, p. 228), and points out that it is this systematic relationship that makes language learnable.

Children learn to use language to get things done. Pragmatic information to be expressed includes the speaker's pragmatic intention, the status relationships of coparticipants, the speaker's attitude towards information being communicated, the topic and comment, and the presuppositions (that is, the background conditions necessary for an utterance to be understood). (See Bates, 1976; Bates & MacWhinney, 1979). In communicating an intention or getting something done, Wells points out that "the same purpose can be achieved in linguistically more or less complex ways" (1978, p. 457). For example, a function such as getting someone's attention might be conveyed at a linguistically simple level, such as through a nonverbal channel or via a single word, or it might be encoded in a linguistically more advanced structure such as a two word syntactic utterance or a grammatically complete sentence.

Keenan and Schieffelin (1976) also discuss attention-getting. In particular, they investigate the means by which children draw a coparticipant's attention to referents located in either physical space or in memory space. To locate a referent in physical space, children can use nonverbal and/or verbal behaviours. Nonverbal means include looking at the object, holding it, reaching for it, offering it, pointing at it, or touching it. The drawback to using nonverbal attention-getters is that they are effective only when the listener is already visually attending to the speaker. Verbal
means include the use of notice verbs such as "look," "see," expressive particles ("oh," "hey"), deictic particles ("that"), and descriptive or identifying noun phrases ("my car"). Because nonverbal devices depend heavily upon immediate context, lack of adult attention results in communicative inefficiency which may motivate the child to replace nonverbal means with verbal means of drawing attention to objects and events. This factor of adult attention, and its relationship to children's constructional complexity, is one of the factors investigated in this study.

Conversational Constraints and Discourse Devices

It is commonly acknowledged that language learning takes place within conversations (Berko Gleason, 1977; Bruner, 1978; Cross, 1977; Dore, 1979; Garvey & Hogan, 1973; Keenan, 1977; Keenan & Schieffelin, 1976; Lieven, 1978; Ochs, Schieffelin & Platt, 1979; Shields, 1978, 1980; Shugar, 1978; Snow, 1977a, 1977b, 1979). Thus, by examining the nature of conversation, we can make some inferences about how children learn language. For example, obtaining a coparticipant's attention is a function fundamental to conversation and the necessity of carrying out this function efficiently may lead to the emergence of more complex constructions in children's speech. Other conversational functions such as taking turns, introducing topics, maintaining topics, and referring back to previous discourse may also lead to this development, and conversational competence in these areas will certainly result in increased conversational "control" as well.
Conversation is reciprocal; adults talking to children both communicate specific information and receive information, and the same two-way flow occurs for children. In order for a conversation to be successful, the participants must follow turn-taking rules, establish a joint frame of reference, provide information that is relevant to their listener, and establish some commonality of information. These conversational skills in turn depend on the more basic ability to simply keep the conversation going. As young children are not yet proficient at following the rules of conversation or holding up their end of the dialogue, the burden of sustaining the conversation falls on the coparticipant adult.

The fact that caretakers in our culture treat children as conversational partners, along with the conversational constraints created by interacting with unskilled language users, results in speech adjustments that are thought to be ideal for children learning language. For instance, Snow (1977b) reports that getting children to take their turns in the conversation is a primary goal of mothers, and to this end they will follow-up on any conversational opener children make, filling in for them if necessary, or repeat and alter their own utterances in order to elicit a response. She also notes that while mothers will accept almost any infant behaviour as a conversational turn (including yawns, burps, sneezes, and vocalizations), they become much more stringent in what they will accept as their children get older.

Mothers' desire to communicate reciprocally with their children, which underlies their use of the conversational mode, may well be a crucial factor in limiting the topics discussed and the semantic and syntactic complexity in mothers' speech. (p. 20)
Because caretakers adhere to the turn-taking rules of conversation, "a large proportion of maternal utterances are responses to child utterances, and almost all maternal utterances are directly preceded and followed by child utterances" (Snow, 1979, p. 372). Cross (1977) notes that young language learning children average just under two utterances per turn. She points out that "the provision of less than two maternal utterances between conversational turns may enhance the perceptual salience to the child of the linguistic information contained in any single utterance" (p. 171). In addition, this ratio of mother to child utterances indicates "that the child is being given ample opportunity to practice the skills that he is acquiring" (p. 171). Furthermore, the fact that conversing adults and children are often focused on and talking about the same thing at the same time makes it particularly likely that children will hear an adult expression of a meaning just when they are entertaining that meaning. Thus the relationship between context, meaning, and form is clarified for the child through conversation.

Initially coparticipant adults take on the primary responsibility for ensuring that conversations continue, and are successful. Adults impose a turn-taking structure on dialogues, ensure that their utterances are relevant to children by limiting topics to children's immediate environments, and use verbal and nonverbal means to establish a joint focus of attention. Then as children begin to take their turns appropriately and acquire other conversational skills, caretaker speech is adjusted to complement this increasing competence. At this level,
caretakers use fewer utterances per turn (Cross, 1978) and make extensive use of repair mechanisms when children have communicative difficulty (Keenan & Schieffelin, 1976). They also use questions and repetitions as discourse devices. Questions can be used to check understanding, to direct attention, or to make a response obligatory thus maintaining a turn-taking structure (Ervin-Tripp & Miller, 1977; Ochs et al., 1979). Repetitions can also be used to confirm understanding or to establish that particular information can be considered "given" (Keenan, 1977). Typically, adults control the conversation just enough to maintain children's communicative success, although some adults are not as skillful as others.

Children master turn-taking early and are adequate turn-takers by eighteen months (Lieven, 1978; Snow, 1977b). The ability to establish joint focus of attention and to introduce discourse topics, on the other hand, are complex skills which gradually develop over an extended period of time. As pointed out previously, Keenan and Schieffelin (1976) describe the means whereby children locate a referent in physical or memory space; they also diagram a dynamic model for establishing discourse topics. They represent this as an interactional process, including attention-getting, adequately clear articulation, identification of referents in the discourse topic, and identification of semantic relations between those referents on the part of the speaker, and positive rather than negative feedback from the hearer for each of these components (p. 353). Ochs et al. (1979) extend this work to propositions conveyed through a sequence of two or more utterances.
The familiarity of the adult coparticipant to the child can influence how successful the child is in getting a topic established.

The amount of shared experience is critical in this reconstruction process. Someone who spends many hours a day knowing what the child has been doing can often understand an "out of context" utterance to a much greater extent than an investigator making infrequent visits. (Keenan & Schieffelin, 1976, p. 383)

I will return to this discussion of topics in the next section.

An area of discourse where children are slower to acquire competence is that of providing information relevant to their listener. When children limit their utterances to events in the here-and-now, adult coparticipants have a fairly good chance of understanding through contextual cues. However, more wide-ranging topics often cannot be interpreted unless children are able to tie their utterances into prior discourse and correctly separate information which can be presupposed from information that needs to be explicitly expressed.

Among the requirements of local discourse between a turn and its sequel are a series of obligatory and optional tying relations. The tying relations help the listener recognize the relation of what is new to what was said before. (Ervin-Tripp & Miller, 1977, p. 12)

As children begin to acquire these tying relations, they tend to first mark taken-for-granted information through discourse rather than through syntax, because syntactic markers such as relative clauses, definite articles, and relative clause nominalizations are late developments (Keenan, 1977). Through successful relating of present utterances to past and future discourse, commonality of information can be achieved.

One way children learn to produce cohesive discourse is through producing text conjointly with adults. At the one word stage, the
child "places his utterance in systematic and meaningful relations to the adult's utterances" (Shugar, 1978, p. 229). Ochs et al. hold a similar viewpoint: a child "may learn how to encode propositions by participating in a sequence in which she contributes a component of the proposition" (1979, p. 267). They cite interrogative-response pairs (which can be reinterpreted as argument-predicate constructions) as a common example of jointly-produced constructions.

**M**

(holding cookies) What's Mommy have

**Allison I**

Cookie

Cookie! O.K. Here's a cookie for you

(1979, p. 265 citing Bloom, 1973)

Ochs et al. claim that, "What's Mommy have? cookie" in this example is an interrogative-response pair in which Allison and her mother each contribute a portion of the proposition.

It is clear that children have much to learn about language, and that they learn a good deal of it in conversation, "the immediate and primary context for acquisition" (Dore, 1979, p. 337). In order to acquire communicative competence, children need to learn more than syntax and semantics; they also need to acquire proficiency in discourse. Adult interaction variables, such as amount of attention paid to children, control of the conversation, and assumptions of shared knowledge following from degree of familiarity may influence the discourse and
thereby children's use or development of language structures.

**Topic-Comment Structures**

It has been argued that most of children's first word combinations have a topic-comment or comment-topic structure. That is, their utterances encode propositions which involve mentioning a topic of interest, then making a comment about that topic, or in other situations, making a comment, then identifying the topic to which it refers. These two-part propositions can occur across utterances and speakers, or within single syntactic utterances. The role that the coparticipant adult plays in discourse can have a considerable immediate influence on how the child communicates topics and comments, with possible implications for future development.

Discourse consists of establishing topics and sustaining topics, and the speaker's goal within discourse is to make points (MacWhinney & Price, 1980). Keenan and Schieffelin define "discourse topic" as "the proposition (or set of propositions) about which the speaker is either providing or requesting new information" (1976, p.338). In continuous discourse, sequences of utterances may all have the same topic, or utterances may integrate claims or presuppositions of immediately prior utterances. When new topics are introduced, or old topics are reintroduced, the discourse becomes discontinuous. In these cases the topics are no longer linked—they do not draw on the previously established presuppositions—and the attention of the listener has to be redirected. See a discussion of these matters in Keenan and Schieffelin (1976).
Topics and comments differ on the dimension of informativeness. (Bates, 1976; Bates & MacWhinney, 1979; Greenfield & Zukow, 1978; Keenan & Schieffelin, 1976; MacWhinney & Price, 1980). In general, comments convey new or important information, whereas topics encode given, taken-for-granted, or redundant information. That which is certain is presupposed (the topic), and that which provides information reducing the uncertainty among possible alternatives is asserted (the comment) (Greenfield & Zukow, 1978).

While comments usually represent new information, and topics represent old, or given information, this is not necessarily so. Bates and MacWhinney point out that "topic selection is motivated by some combination of at least these three intentions: "giveness, perspective, and salience" (1979, p. 180). When elements of a proposition are of equivalent "giveness," speakers are likely to select the topic on the basis of either closeness to ego or inherent salience or attractiveness. Comment selection, on the other hand, "is determined by 'newness,' 'distance from ego' (the reciprocal of perspective taking), and 'salience'" (Bates & MacWhinney, 1979, p. 186).

At the single word stage, children because they can only say one word at a time, are limited to encoding either the topic of the comment in any utterance. Greenfield and Zukow (1978) state that children at the single word stage select the element of an event to encode for verbal expression on the basis of the "informativeness principle." Comments, as they provide new information, are more informative and thus more likely to be verbally encoded than topics, which can be presupposed.
(See Weisenburger (1976). She points out that children lexicalize constituents: that are the least redundant, that is, those that have not already been mentioned, or those that are not obvious in the situation.)

That which is new is also more likely to draw the child's attention.

Under the constraints of one word speech, when the child must encode either the topic or the comment, a decision to encode old, given information would require suppressing or ignoring the priorities established by the figure-ground and orienting mechanisms. (Bates, 1976, p.160)

So children's utterances prior to combinatorial speech are more likely to be comments than topics.

The problem with this strategy of stating single word comments is that an utterance will be interpretable as a comment only if the coparticipant is aware of the unstated topic to which it refers. When the comment has the same topic as the utterances in the immediately prior discourse, or when the topic is some object or event in the present situation to which the child is directing his or her attention, the coparticipant adult will likely be able to retrieve the topic. However, comments referring to wider-ranging events, such as those outside of the here-and-now, frequently result in communicative failure (Bates, 1976).

Through such communicative misfires, the child becomes aware that further topic specification is necessary. Bates gives the following example: "After repeated frustration in trying to make a one-word comment work, the child may be forced to encode material that he previously took for granted (e.g., BALL! BALL! BALL...GIVE!)" (1976, p.172). Children learn to topicalize information as they become
more able to predict the listener's needs rather than automatically assuming that their communicative partner has access to the same presuppositions that they do. As Bates and MacWhinney point out, the critical problem for children is "learning not to presuppose or take old information for granted when such information is not obvious to the listener's" (1979, p. 190).

Once the child becomes aware of the need to specify topics, however, topics and comments begin to compete for verbal expression.

Topicalization competes for channel access in order to ensure that the listener has sufficient information for comments to work. Foci or comments compete for channel access by virtue of their inherent importance, novelty or informativeness. (Bates, 1976, p. 174)

What structural options are open to the child? The child can encode the comment only, and risk misunderstanding on the listener's part. Or the child can forgo expressing new, exciting information by encoding the topic only. (Atkinson (1979) offers evidence that children do in fact sometimes state topics with no comment following, presumably for the purpose of establishing an object of shared attention.) Alternately, the comment (or in some cases, the topic) can be expressed verbally, while the topic (or comment) is indicated through gestural means. As Atkinson explains, however, pointing is not effective for references displaced from the here-and-now, or when the listener is not already attending. Also "it is impossible, using gesture alone, for a speaker to make clear whether he is directing his addressee's attention to some individual, some property of an individual, or the location occupied by an individual" (Atkinson, 1979, p. 235 citing Lyons, 1975).
Another possibility is encoding topics and comment through dialogue.

Bruner states that:

an enormous amount of the communicaiton is given to the managing of joint attention: achieving a common attentional focus and achieving some elaboration on the focus that begins increasingly toward the end of the child's first year to be in the form of joint topic-comment structuring. (1978, p. 252)

Either the coparticipant adult can follow-up the child's topic with a comment, or the child's comment can refer to the presuppositions of the adult's immediately prior utterance (which then acts as a topic). Both situations result in a jointly produced topic-comment structure. Greenfield and Zukow (1978) cite an example of a jointly produced topic-comment structure:

<table>
<thead>
<tr>
<th>Child</th>
<th>Adult</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOPIC</td>
<td>What are you doing with your shoe?</td>
</tr>
<tr>
<td>COMMENT</td>
<td>Off.</td>
</tr>
</tbody>
</table>

(p. 291)

In this example, the adult's question functions as a topic, and the child's utterance functions as a comment on this topic.

Children can also encode topics and comments across discourse in successive single word utterances. These sequences may but do not necessarily, include conversational interjections by the coparticipant adult. This particular strategy is discussed by Atkinson (1979), Bates (1976), Bloom (1976), Greenfield and Zukow (1978), Lock (1980), and Scollown (1976; 1979). Often this type of topic-comment (or
comment-topic) structure makes its appearance because of prior communicative failure. In Bates' (1976) previously mentioned example, the child who started with a one word comment ("Ball.") finally produced successive single-word utterances ("Ball. Ball. Ball. Give.") of the form comment-topic in order to get the idea across. In other instances, children may mention a topic, then wait for indications from adults that they are attending and understand the reference, before proceeding with the comment. Atkinson (1979) provides an example of this.

<table>
<thead>
<tr>
<th>Child</th>
<th>Adult</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOPIC</td>
<td>Mummy.</td>
</tr>
<tr>
<td>COMMENT</td>
<td>Gone.</td>
</tr>
</tbody>
</table>

As Atkinson phrases it,

a plausible candidate for the function of the initial mummy of the child is that of drawing the father's attention to the individual, and only when the child gets some feedback to indicate that his addressee is suitably attending does he go on and predicate something of mummy. (p. 236)

Bloom gives a number of examples of successive single word utterances in which no adult utterances intervene: "juice. more," "door. open" (both topic-comment structures), and "more. juice" (comment-topic) (1976, p. 46).

The strategy of producing successive single word utterances which express both the topic and the comment of a proposition across discourse,
then, represents a more advanced communicative level than the previously mentioned strategies. It is more advanced because both topic and comment can be expressed, rather than just one or the other, and because with this strategy the child is no longer dependent on inefficient nonverbal means of conveying topics or comments. In addition, the child does not have to rely on the coparticipant adult to provide half of the proposition as in joint topic-comment structures. An argument can be made that it is precisely the communicative requirement of specifying both topic and comment that propels children from single word speech into producing their first multiword constructions, the successive single word utterances labelled "vertical constructions" by Scollon (1976). I have used his term to refer to these constructions throughout this paper.

A final way that children express topics and comments is within the bounds of a single utterance. These two word (or more than two word) utterances are often viewed as the first syntactic utterances, because by producing two words together as a unit, the child formally recognizes the structural relationship between them. This formalization represents a more advanced level of expressing topics and comments than producing successive single word utterances. Some evidence for this is that two word syntactic utterances appear later than vertical constructions (Lock, 1980; Scollon, 1976), and initially are produced only with a struggle. Scollon (1976), in his analysis of Brenda's speech, gives several examples showing that her struggle to produce her first two word utterances often resulted in phonetic simplifications to the point of unintelligibility. Other evidences of difficulty that he cites
are the great number of repetitions associated with early syntactic
(horizontal) constructions, and the fact that they are often embedded
in vertical constructions. Scollon (1976; 1979) gives a number of
examples of early syntactic (horizontal) constructions, for example
"Ron talk" and "drink soup" (p. 167).

Once children begin putting two words together in a single syntactic
utterance, how will they order the topic and comment?\(^1\) This question has
been addressed by Atkinson (1979), Bates (1976), Bates and MacWhinney
(1979), and Greenfield and Zukow (1978). Atkinson (1979) takes the
position that children's utterances automatically assume the order
topic-comment. He explains this on the basis of the "naturalness" of
first identifying what you are going to talk about, then mentioning
what you are going to say about it. He implies that putting the topic
in first position may be a universal ordering principle across languages.
This whole question has been widely discussed in the general linguistics
literature.

Greenfield and Zukow (1978) concur with Atkinson to a certain extent.
They claim that a child's sensorimotor structuring of an event has a
topic-comment order. They explain this to mean that the most basic
and primary form of a topic is an entity, whereas the most basic form

\(^1\)Note that early two word utterances are not necessarily of the form
topic-comment or comment-topic. The child may just make a two word
comment without explicitly stating the topic, or use a two word
utterance to establish a topic, without including a comment. See Lock
(1982) for a discussion. Note also that there is some disagreement
about whether two word topic-comment structures are syntactic. Givón
(1979) refers to these as "loose pragmatic structures" as opposed to
"tight syntactic structures." See Givon for further discussion of this
point.
of a comment is change of state. As a change of state cannot be perceived without first perceiving the entity that is undergoing the change, the basic order (of how children view events, or act out events) is topic-comment. However, they point out that informativeness has an effect on how topics and comments are ordered at a linguistic level. That which is more informative is likely to be stated first. Greenfield and Zukow suggest that topic-comment sequences will be more common than comment-topic sequences, as this is the basic cognitive order, but that comment-only utterances will occur more often than topic-only utterances, because they are more informative.  

Bates points out that there are two conflicting demands on the child producing two-word utterances:

1. Encode the comment first, isomorphic relation to its attention value.
2. Suppress the attention priorities and encode the topic first, to prepare the listener for the comment. (1976, p: 175)

Semantic or syntactic constraints of the language (e.g., agent then action) can also influence ordering of elements within utterances. However, Bates and MacWhinney (1979) suggest that unless these constraints are clearly evident in the adult input language, early ordering strategies are more likely to be based on pragmatic factors. They state that initialization is presumably based on recognition of the listener's needs, while comment initialization is based on the salience and/or newness of information from the child's perspective. Hence we can

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2Note that Greenfield and Zukow are primarily interested in single word utterances, and successions of single word utterances. Thus their comments may not be fully applicable to two word syntactic constructions.
predict that the earliest pragmatic ordering will be: comment-topic. Later, when the children have become aware of the need to actively specify topics for the listener, they may switch to a topic-comment ordering. (p. 190)

Bates and MacWhinney found that the results of their research supported these predictions. When children first encode a proposition, they comment-front, but if there is a communicative misfire, the children often reorder the elements to produce a topic-comment structure. Thus, because of communicative misfires, the child becomes aware that the listener's perspective is different from his or her own and abandons the comment-fronting in order to produce topic-comment ordered utterances, which are more appropriate to the listener's needs. In order to do this, the child needs to learn to suppress the tendency of "blurting out the novel or interesting information first, and adding other units on in decreasing order of interest" (Bates, 1976, p. 174).

I have argued here that learning to express topics as well as comments represents an important stage of children's communicative development. While topic selection often just involves topic continuation (Bates & MacWhinney, 1979), children must also learn how to establish new topics in discourse. What does this entail?

Basically the child has to inform the listener that there is something that he or she wants to talk about, then specify this topic sufficiently for it to be identified (MacWhinney & Price, 1980). Keenan and Schieffelin (1976) have investigated this question of how topics are established and have proposed four prerequisite steps for establishing a topic in discourse.
Step 1: The speaker must secure the attention of the listener.
Step 2: The speaker must articulate his utterance clearly.
Step 3: The speaker must provide sufficient information for the listener to identify objects, etc., included in the discourse topic.
Step 4: The speaker must provide sufficient information for the listener to reconstruct the semantic relations obtaining between referents in the discourse topic. (p. 350)

Children can succeed at each of these steps in a variety of ways.

Establishing a topic can be as simple as holding up an object or repeating a previous utterance (Keenan, 1977) or as complex as the summons-answer routines described by Garvey and Hogan (1973). However, children just beginning to use word combinations are limited in the types of topics they can establish successfully. "Before the age of three, children experience enormous difficulty in getting 'real-world' non-situated events, individuals, etc., established as a discourse topic" (Keenan & Schieffelin, 1976, p. 371). For a more comprehensive discussion of topics, see Keenan and Schieffelin (1976).

Children progress through each level of learning to communicate topics and comments of propositions largely through interaction with their caretakers. Clearly, the adult's role in dialogue has an important influence on this aspect of communicative development, but the mechanics of this interaction are not well-defined.

Snow (1979) and Cross (1977) both hold that the caretaker is constrained to talk about what the child talks about, and thus takes the role of responding to child-initiated topics. Snow states that "a very common pattern is for the child to introduce a topic, and for the mother to make a comment on that topic, or for the child to introduce a topic and make a comment, and for the mother to then expand that comment"
According to Snow and Cross, this tendency of caretakers to follow-up on child-initiated topics is what enables them to provide such semantically relevant and interpretable input to children.

Keenan and Schieffelin's (1976) point of view seems to directly conflict with that of Snow (1979) and Cross (1977). They see topic establishment as a gradually acquired skill and emphasize the number of steps the child has to successfully complete in order to initiate a topic. They also point out the difficulty children have in getting most types of topics established, and accord much of the responsibility for setting topics to the adult involved in the interaction. "In many of the interactions between adults and children, for example, the adult controls the direction of the conversation by repeatedly initiating discourse topics which the child is then expected to respond to" (Keenan & Schieffelin, 1976, p. 380). The question-answer tactic as employed by adults is an example of this. So it is not clear to what extent children control the direction of conversation and while it seems that child control may positively affect communicative development, this is not clear either.

Another way adult behaviour can influence how children encode topics and comments stems from the effect of adults' attentiveness to children within discourse. Atkinson (1979) points out that children can effectively use nonverbal means of introducing topics if the coparticipant adult is already paying attention. Thus children who interact with attentive adults may experience more communicative success, with positive effects for acquisition. On the other hand, he notes, a gesture combined
with a single word may not get the idea across to inattentive adults, so adult inattention might act as an impetus for children to produce a more complex multiword construction. For instance, children may state a one-word topic, wait for feedback from adults that they are attending, then go on to make a comment. However, once children are capable of producing horizontal constructions, interaction with attentive adults may be helpful in that the children don't have to produce successive single word utterances to check whether the adults are attending, but are free to produce multiword syntactic utterances instead. Thus adult attention may have different influences on the discourse at different stages of children's development.

The familiarity of coparticipant adults may also influence how children participate in the discourse. Keenan and Schieffelin (1976) suggest that when an adult listener is not intimate with a child, that the child has to work harder to accomplish each of the steps in getting a topic established. This seems plausible, as nonfamiliar adults are less likely to share the same set of presuppositions as children might share with their parents, and thus would have more difficulty retrieving the child's references or topics. This seems to be the case in a conversation between Catherine Snow and Meredith, an 18-month-old.

C: Bandaid
E: Where's your bandaid?
C: Bandaid
E: Do you have a bandaid?
C: Bandaid
E: Did you fall down and hurt yourself?
   (Mother enters)
C: Bandaid
M: Who gave you the bandaid?
C: Nurse
M: Where did she put it?
C: Arm
(Dore, 1979, p.340)

Nonfamiliar adults may also comprehend less of what children say simply because of lack of familiarity with these children's phonological systems. With both of these factors operating, children wishing to communicate specific information are likely to use less developmentally advanced strategies of conveying the topic and comment with strangers than they would with familiar adults.

A final way in which adult behaviour might influence children's communicative development is in the formulation of joint topic-comment structures, as discussed earlier. It can be argued that before children are competent to produce topic-comment propositions verbally, they learn about propositional structure through dialogue, and are given the opportunity to practise encoding propositions jointly with an adult. These jointly-encoded propositions may be a precursor to vertical constructions in children's speech.

In this study, I investigate the influence of adult attention, control of the conversation, and familiarity on children's communicative behaviour. I will return to this discussion of the effects
The Transition to Syntax

The appearance of syntactic utterances in children's speech is attributed to a variety of developments: higher level processing (e.g., number of units held in memory), removal of performance constraints (possibly at the motor-speech level), cognitive development (that is, from the sensorimotor stage to a higher symbolic level), and semantic development (that is, children begin to encode semantic relationships) (Bates, 1976; Bloom, 1976; Dore, 1979; Lock, 1980; Scollon, 1976). In considering children's increasing ability to encode both topics and comments within propositions, it also becomes clear that aspects of pragmatic development and children's early use of syntax are interdependent (Bates, 1976).

As children begin to communicate more complex ideas and relationships between ideas, it can be hypothesized that single words are no longer adequate to get their intended meaning across within discourse, so this semantic and cognitive development could provide the impetus for developing two word syntactic constructions. At the same time this development could become possible because of the removal of previous processing and performance constraints, and the actual expression of syntactic constructions could be facilitated by the nature of the interaction within the discourse. The encoding of both topic and comment in an utterance is an example of an early syntactic construction.

Taking an approach based on those of Bates (1976), Branigan (1976), Dore (1979), Lock (1980), and Scollon (1976), I argue here, however, that children do not move directly from isolated single words to
syntactic constructions, and that their language is already structured prior to the emergence of two word syntactic utterances. Children communicate combinatorial meanings in propositions using gestures paired with words, and vertical constructions before syntax. These constructions are structured but not syntactic. They are also highly dependent on the discourse and place a heavy burden of interpretation on the coparticipant in the discourse, so are often less efficient. Bates (1976) points out that the syntactic system arises through an interaction between semantics and pragmatics, and suggests that,

pragmatic and semantic structures will appear first in language development. Through his efforts to map these structures onto a limited, linear channel, the child will gradually acquire syntactic structures and/or transformations as solutions to the mapping problem (p. 162).

It can be argued that early two word utterances are not syntactic, and that the appearance of grammatical inflections and adult-like grammatical categories (noun, verb, etc.) represent the actual beginning of syntax. However, Bloom defines syntax as, "the arrangement of words in an utterance, relative to each other - an arrangement of words that is determined by the relationship among them" (1976, p. 37), and Griffiths (1979) concurs with this point of view. He states that the earliest syntactic constructions are two words long, and can be viewed as sentences if, "a single intonation contour spans both words;" and if, "the component words occur independently and in other combinations" (p. 105). This approach taken by Bloom and Griffiths, among others, is the approach I am taking as well. Early two word utterances can be viewed as syntactic because the two words are structurally related to each other, and are combined according to rules of the child's grammar.
Furthermore, assumptions should not be made about children's language on the basis of adult grammatical categories.

How can sequential, or vertical constructions be differentiated from syntactic, or horizontal constructions? Scollon (1976) describes four defining characteristics of vertical constructions. Each word is grouped under a separate intonation contour, a pause greater than three-fifths of a second intervenes between each word, each word can occur independently, and the two or more words in the construction show an appropriate semantic connection. Others who have discussed the phenomena of vertical constructions agree with most of these characteristics. Bloom (1976) and Garman (1979) suggest that each word in the construction may have relatively equal stress as well. See Table 1 for a comparison of definitions of vertical constructions as defined by different investigators.

Various types of vertical constructions have been categorized. Bloom and Lahey (1978) distinguish between chained successive utterances where each successive utterance is paired with a successive movement, and wholistic successive utterances where utterances are not tied to particular movements or shifts in context. Scollon (1976) defines four types of vertical constructions on the basis of presence or absence of word repetition, and intervention of adult utterances. Greenfield and Zukow (1978), and Rodgers (1976) also differentiate between sequences in which an adult speaker intervenes, and those which

Branigan argues that each word in the sequence does not have a full terminal pitch fall. However, he defines his sequential single word utterances on the basis of a much shorter pause than does Scollon.
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>successive single word utterances</td>
<td>sequential single word utterances</td>
<td>sequences of single word utterances</td>
<td>vertical constructions (series of one word utterances)</td>
<td>word successions</td>
<td>successions of holophrases</td>
<td></td>
</tr>
<tr>
<td>falling pitch</td>
<td>terminal intonation contour only on final word in sequence</td>
<td>intonation different than in &quot;combinatorial speech&quot;</td>
<td>each morpheme grouped under separate intonation contour</td>
<td>separate intonation contour for each word</td>
<td></td>
<td></td>
</tr>
<tr>
<td>intervening pause</td>
<td>pause between 400 &amp; 1100 msec.</td>
<td>intervening pause</td>
<td>intervening pause</td>
<td>intervening pause</td>
<td>usually intervening pause</td>
<td></td>
</tr>
<tr>
<td>share topic &amp; context</td>
<td>encode semantic relations</td>
<td>appropriate semantic connection between words</td>
<td>encodes two aspects of a single event</td>
<td>unitary topic and context</td>
<td>thematic unity</td>
<td></td>
</tr>
<tr>
<td>relatively equal stress on the 2 words</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>utterance-type prosodic features of stress</td>
<td></td>
</tr>
</tbody>
</table>

- do not usually appear in inverted order
which are intact. I discuss the categorization of vertical construction types in greater detail, with emphasis on Scollon's (1976) model in particular, in the next section.

Children's presyntactic utterances can be considered to be linguistically structured for a number of reasons. Griffiths points out that,

the two earliest ways in which separately significant components enter into single communicative acts are the combination of intonation patterns with sequences of sounds and the combination of a gesture and an utterance (1979, p. 118).

So he views children's utterances as being structured in some sense, even prior to the use of vertical constructions. Shugar notes that, "before the child is able to put together two or more words spontaneously, he is already connecting his utterances to those of other speakers in a structurally meaningful way" (1978, p. 250), a point which is also made by Lock:

One-word utterances have no sentential structure, but they occur within structured acts. In other words, one-word utterances are structured, but the word is only a part of a greater structure, the act in which it is produced. (1980, p. 182)

Lock considers children's communicative behaviour to be structured from the age of one year and claims that, "the one-word and two-word stages differ only in the form in which that structure is realized" (1980, p. 182). He relates the child's previously acquired ability to combine gestures to the learning of syntax:

the processes underlying the child's ability to combine his gestures is the same process as that responsible for his being able to combine his words; and that similarly the roots of grammar go back beyond the two word period. (1980, p. 181)

Bloom (1976) argues that because vertical constructions are not
syntactic, they cannot be considered "linguistically structured" but nevertheless feels that a relationship between a succession of words can be attributed when they occur without a shift in topic, and suggests that these successions of single word utterances are, "evidence of the child's awareness of relationships among aspects of the situation and his obvious inability to code these relationships linguistically" (p. 54). Branigan (1976) found in one child's speech that only the final utterance in a vertical construction has a full terminal pitch fall, and argues that this shows that the component utterances of vertical constructions are not independently planned. Scollon (1976) points out that the phonetic regression which occurs in vertical constructions indicates that words making up constructions are not merely accidental juxtapositions.

Bloom (1976), Branigan (1976), Scollon (1976), and Griffiths (1979), among others, have noted that vertical constructions are a phenomenon which appears at the end of the single word period, just prior to, and overlapping with, early syntactic constructions. Thus the use of vertical constructions can be seen as a transition from single word speech to the use of syntactic constructions. This transition is characterized by functional continuity (Griffiths, 1979). Semantic relations are initially encoded in successions of single words then

\[4\text{Unlike Bloom, I do not equate "linguistically structured" with "syntactic," and as I have argued above, I feel that many nonsyntactic sequences of words (vertical constructions) are linguistically structured.}\]
later as syntactic two word utterances (Branigan, 1976; Bloom, 1976; Bloom & Lahey, 1978). The child first using a syntactic construction is acquiring a new, less context-dependent form for communicating the same meaning he or she can already express via a vertical construction.

The question of interest in this study is which, if any, adult coparticipant behaviours are likely to facilitate the child's use of syntactic rather than vertical constructions, and vertical constructions rather than isolated single words. Can an adult interacting with a child influence the transition to syntax? While I examine only the immediate effects of particular coparticipant behaviours on children's constructional complexity, implications for syntactic development over the long term are also discussed.

The Model

Returning to the description of vertical constructions touched on previously, Scollon (1976) defines vertical constructions as sequences of single words which have a semantic connection, but with each word having a separate intonation contour, and being separated by a pause greater than three-fifths of a second. Each word can also occur independently; that is, outside of a vertical construction (see Table 1).

Children begin to use vertical constructions after they are well into the single-word stage, but prior to their use of horizontal (syntactic) constructions. As their language develops, they continue

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5 All references to Scollon in this section are to his book, Conversations with a One Year Old (1976), unless otherwise noted.
to use vertical constructions along side of emerging horizontal constructions. Scollon defines horizontal constructions as follows: the two words are grouped under the same intonation contour, a pause of less than three-fifths of a second intervenes, each word can occur independently, and there is a semantic relationship between the words. Thus vertical constructions are differentiated from horizontal constructions on the basis of a longer pause between words and terminal intonation contours on each component word (but see Branigan, 1976).

Scollon describes four types of vertical constructions. Type A is the basic vertical construction. It includes two one word utterances in close succession with silence before and after. They are not linked in intonation contour, but there is a definite semantic connection between the words, and the words together form a single speech act. Type B is like Type A in all ways except that either or both words may be repeated. Type C differs from Type A only in that the speech of another speaker intervenes between the two components of the construction. However, neither word is repeated. Type D is a combination of Type B and Type C. Any of the words may be repeated, and there is intervention by another speaker.

As Scollon points out, Type D vertical constructions are the weakest case and it is doubtful whether some Type D's are in fact constructions. Type A constructions provide the strongest evidence that the child is

---

Scollon, in defining horizontal constructions, uses "word" and "morpheme" interchangeably. I assume this is because free morphemes (words) and bound morphemes (inflections) were not yet differentiated in his subject's speech, so in my discussion here, I will only refer to "words" as being components in constructions.
communicating related components of a proposition. Scollon also
attributes a developmental order, claiming that Type D constructions
are the first vertical constructions to emerge in a child's speech
(and the repetitions and adult interventions, as well as the frequency
of communicative failure, show how difficult it is for the child to
communicate related ideas at this point), while Type A constructions
appear last. Scollon (1979, p. 222) offers the following diagram:

<table>
<thead>
<tr>
<th>(- repetition)</th>
<th>(+ repetition)</th>
<th>(- discourse)</th>
<th>(+ discourse)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
</tr>
</tbody>
</table>

As he says, "the elimination of repetition in the production of vertical
constructions is a later development. The freedom from dependency on
intervening discourse is also a later development" (p. 222). So there
is a developmental convergence on Type A.

Scollon claims that a child's ability to use vertical constructions,
and then horizontal constructions, develops in the context of conversations.
The use of repetition, and the dependence on intervening discourse are
examples of how the use of constructions is embedded in conversation.
Nor does the role of discourse end with the emergence of horizontal
constructions. Children continue to use vertical constructions as
well as horizontal constructions and, in fact, many horizontal constructions
are themselves components of larger vertical constructions. The
following is an example from Scollon (1979):

<table>
<thead>
<tr>
<th>Brenda</th>
<th>Context</th>
</tr>
</thead>
<tbody>
<tr>
<td>writing</td>
<td>Brenda is being read a story about a</td>
</tr>
<tr>
<td>writing</td>
<td>boy learning to write, and she turns</td>
</tr>
<tr>
<td>read dat</td>
<td>the pages to get to this picture.</td>
</tr>
</tbody>
</table>
While Scollon was one of the first to investigate vertical constructions, and his description and classification of this phenomenon is useful, there are certain limitations to the model he has described.

One serious problem is that Scollon's study involved only a single subject, a little girl named Brenda. Scollon's definitions and descriptions of vertical and horizontal constructions are based solely on transcriptions made of Brenda's speech from age 1;0.2 to 2;0.12. Moreover, Brenda was exposed to a variety of languages and dialects throughout this period, including Standard English, Hawaiian English, Japanese Hawaiian English, Japanese, and Chinese. Therefore it is important to ask whether Scollon's findings can be generalized to other children's acquisition of English. Use of vertical constructions cannot be recognized as a normal stage in language acquisition on the basis of data from a single child. However, descriptions of a similar, if not identical phenomenon have been arrived at separately by other researchers though not described in the same detail (see Bloom's (1976) successive single-word utterances, and Branigan's (1976) sequential single-word utterances, for example), but again most of these were single subject studies. Taken together, there is good support for vertical constructions as a transitional phenomenon, but there is little information about the orderly progression from one vertical construction type to another that Scollon suggests.

Scollon's study was longitudinal, covering a period of one year. However, during this year there were two two-month gaps, and one
four-month gap during which no data were collected. Because of these gaps at crucial points in the acquisition of vertical and horizontal constructions, it is not always possible to trace the development of each type of construction, or to establish a clear order of acquisition. In Scollon's data, for example, the development of construction types B to A and D to C appeared to be parallel developments.

Another important problem is the lack of a cohesive model. Scollon describes single-word speech, the use of vertical constructions, and the use of horizontal constructions as chronological stages, and he briefly mentions a later development in which Brenda uses horizontal constructions as components in larger vertical constructions, but he does not integrate each of these stages within a larger model or lay out a strict developmental progression from less complex to more complex constructions. He also suggests that there is some overlap in the types of constructions used at any point, but does not attempt to relate the occurrence of specific constructions to situational variables.

Scollon's categorizations meet the criterion of observational adequacy (that is, Brenda's output is accurately described), but it can be questioned whether they meet the criterion of descriptive adequacy (that is, of making predictive generalizations). His concept of "constructions" and their division into various types is arrived at as a description of Brenda's linguistic behaviour; thus the definitions are not a priori but are derived following analysis of the data. It would be circular to reapply these definitions to
the same data from which they were derived in order to explain linguistic behaviours. While a number of different investigators' results converge on this set of structures, the formulation of a more comprehensive, descriptive model awaits replication of Scollon's preliminary work, integration with these other findings, and extension to a wider population.

In this study, I attempt to fulfill three goals. The main goal, which goes beyond Scollon's work, is to show which of the situational variables familiarity, attention, and conversational control have an immediate influence on children's constructional complexity. Secondary goals on the way to this main goal, are to clarify Scollon's levels, restating them in a stricter developmental progression, and to attempt to replicate Scollon's findings on a somewhat larger population.

The model includes three types of verbal behaviour, nonparticipating single words, vertical constructions, and horizontal constructions. Each type of construction evolves gradually. The construction types and levels have been recast below in a clear (strict) developmental progression, with the least complex construction type emerging first followed by increasingly more complex types. While some of the definitions are recapitulations of Scollon's original definitions, the construction types have been relabelled to match the developmental sequence.
Level 1: Nonparticipating single words. Holophrases with non-strong semantic links to words preceding or following. May be an isolated word, or a word repeated several times (and each repetition is counted as a separate speech act).

Level 2: Vertical Constructions. One word utterances in succession, which have a semantic connection, but which are not linked under one intonation contour.

Type I (Type D): Vertical construction in which any of the words may be repeated and another person's speech intervenes.
Type II (Type C): Vertical construction in which neither word is repeated, but the speech of another person intervenes.
Type III (Type B): Vertical construction in which either or both words are repeated, but no other speech intervenes.
Type IV (Type A): Two one word utterances in close succession, forming a single speech act. No repetition or intervening speech.
Type V: Three or more successive one word utterances forming a speech act, and with any combination of repetition and intervening speech.\(^7\)

Level 3: Horizontal Constructions. Two or more words with an appropriate semantic connection, and grouped under one intonation contour, with no pauses greater than three-fifths of a second between words, and with no intervening utterances by other speakers. Words making up the horizontal construction also occur independently elsewhere.

Type VI: Horizontal constructions with repetitions of any participating words immediately prior to uttering the horizontal construction, except for exact or more complete prior repetitions. The prior identical word is not a repetition if it can be determined from the context that it is clearly part of a separate speech act.
Type VII: Horizontal constructions with no prior repetitions.

Level 4: Horizontal-vertical constructions. Vertical constructions containing horizontal constructions as elements.

Type VIII: Horizontal-vertical constructions with repetitions and/or intervening speech.
Type IX: Horizontal-vertical constructions with no repetitions or intervening utterances.

While I am proposing that construction types emerge in children's

\(^7\)Scollon's label in brackets.

\(^8\)This type of vertical construction may actually appear later than this.
speech in the order described above, earlier construction types typically coexist with later developments as discussed previously. For example, a child may use some Type IV constructions, but the majority of his or her speech may still consist of nonparticipating single words. The question of interest is what motivates use of more or less complex constructions.

The hypotheses examined in this study are:

Hypothesis 1: The complexity of a child's constructions in terms of relative numbers of single-word utterances, vertical constructions, and horizontal constructions will not be affected by familiarity of the coparticipant adult.

Hypothesis 2: The complexity of a child's constructions in terms of relative numbers of single-word utterances, vertical constructions, and horizontal constructions will not be affected by the amount of attention the coparticipant adult gives to the child.

Hypothesis 3: The complexity of a child's constructions in terms of relative numbers of single-word utterances, vertical constructions, and horizontal constructions will not be affected by the amount of control the coparticipant adult has over the discourse.

While it is beyond the scope of the present study, this model of the emergence of multiword speech awaits further testing on a larger sample of children, using a longitudinal approach to verify the developmental sequence.
Chapter Two: Method

Subjects. Subjects in this study were four middle-class children learning English as their first language, and their mothers. Two of the children were boys and two were girls. They ranged in age from 1;8 to 2;2 at the time of the pretest session, and from 1;10 to 2;3 at the last session. Three of the children were first-born, and the fourth child had an older brother.

The children were selected from a group of volunteer subjects to participate in the study on the basis that each of them was just entering the two word stage of language use and it was determined that they had roughly equivalent language levels. Language levels were measured in a pretest by a) the Reynell Developmental Language Scale (RDLS), Experimental Edition, expressive and receptive portions, b) mean length of utterance in words (MLU) in spontaneous play, and c) parental report. On the receptive portion of the RDLS, age-equivalent scores ranged from 2;1 to 2;6, and on the expressive portion, age-equivalent scores ranged from 2;0 to 2;4. MLU's ranged from 1.10 to 1.43. Parents of each of the children reported that their child had just begun to put words together to form two word sentences within the previous month. On the basis of these test results, it can be seen that the four children were at a similar stage of linguistic maturity. See Table 2.

The mothers of the children were all native speakers of English. Each of the mothers had two or more years of education subsequent to
<table>
<thead>
<tr>
<th>Child</th>
<th>Daniel</th>
<th>Joni</th>
<th>Milly&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Cory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age at Pretest</td>
<td>1;8.19</td>
<td>1;10.9</td>
<td>2;1.20</td>
<td>2;2.28</td>
</tr>
<tr>
<td>Age at end of study</td>
<td>1;10.1</td>
<td>1;10.19</td>
<td>2;2.9</td>
<td>2;3.28</td>
</tr>
<tr>
<td>Sex</td>
<td>M</td>
<td>F</td>
<td>F</td>
<td>M</td>
</tr>
<tr>
<td>MLU (words)</td>
<td>1.10&lt;sup&gt;b&lt;/sup&gt;</td>
<td>1.143</td>
<td>1.24</td>
<td>1.37</td>
</tr>
<tr>
<td>RDLS Comprehension &quot;A&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Raw Score</td>
<td>24</td>
<td>20</td>
<td>25</td>
<td>17</td>
</tr>
<tr>
<td>Age equivalent</td>
<td>2;6</td>
<td>2;2</td>
<td>2;5</td>
<td>2;1</td>
</tr>
<tr>
<td>Standard Score</td>
<td>3.0</td>
<td>1.5</td>
<td>0.5</td>
<td>-0.5</td>
</tr>
<tr>
<td>RDLS Expressive</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Raw Score</td>
<td>20</td>
<td>22</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>Age Equivalent</td>
<td>2;0</td>
<td>2;0</td>
<td>2;2</td>
<td>2;4</td>
</tr>
<tr>
<td>Standard Score</td>
<td>1.0</td>
<td>0.9</td>
<td>-0.2</td>
<td>0.2</td>
</tr>
</tbody>
</table>

<sup>a</sup>has an older brother. The older children were first-borns.
<sup>b</sup>MLU calculated on a second sample taken at age 1;9.10.

High school. Three of the mothers were fulltime parents, and the fourth worked outside the home on a part-time basis.

Data Collection. Each mother-child dyad participated first in a pretest conducted in their home which consisted of the administration of a standardized test (the RDLS), collection of a language sample, and a parent interview. Subsequent to this, each mother and child participated in two one-hour data-collecting sessions which were audiotaped and videotaped in a clinical observation room at the university. Each child's initial session involved interacting with his/her own mother, and the second session involved interacting with a stranger, who was the mother of one of the other children participating.
in the study.

Adult-child interactions were videotaped with the JVC Vidstar 6700 video cassette recording system and sessions were monitored from a separate room via closed circuit T.V. An additional audiotaped recording was made using a Sony Mono TC-106 reel to reel recorder, Ampex 631 quarter inch polyester audiotapes, and a Sony F-500 Dynamic microphone.

Each data collecting session consisted of four twelve-minute segments or "tasks". The remaining twelve minutes of each session were used for instructing the adult coparticipant, adjusting equipment, and collecting additional data that was not used in the final analysis.

The first twelve minute segment, Task 1, was designed to elicit a high level of adult attention to the child and as natural as possible adult/child interaction and conversation, given the circumstances. Adults were instructed to play with the child as they normally would. (See Appendix I for the task instructions given to the adult subjects.)

During the next twelve minutes, Task 2, a second adult entered the room and interviewed the coparticipant adult, while the child continued playing with the toys. The purpose of the interview was to elicit a low level of adult attention to the child by providing the adult coparticipant with a distraction. In each adult's first session, she was interviewed about her child's developmental history, and in the second session each adult was asked general questions about raising children. Task 2 was the only portion of the session which involved the presence of a third person in the room.

During the third twelve minutes, Task 3, each adult was given a
complex toy and asked to verbally instruct the child how to use it. This teaching task was designed to elicit high adult control of the conversation. In each subject's first session, the toy used was a pegboard with various pieces that could be put together to make a village. In the second session, subjects used a magnetic board with variously shaped coloured pieces that fit together to make animals.

In the final twelve minutes, Task 4, the adults were instructed to allow the child to play freely with the toys and to follow the child's lead in play. The purpose of this situation was to elicit a sample of low adult control of the conversation.

Session one, in which each child interacted with his/her own mother, and session two, in which each child interacted with a stranger both followed the same format.

Therefore Tasks 1 and 2 yielded the situational (independent) variables of high and low attention respectively, and Tasks 3 and 4 yielded the situational variables of high and low control. Each child's initial session with his/her own mother in its entirety was the high familiarity condition, and the second entire session with a stranger was the low familiarity condition. Thus a high and a low level of each of the three variables of interest -- attention, control, and familiarity -- was elicited. See Table 3.

Transcription and Coding. Data were transcribed from the audio and videotapes in a fairly narrow phonetic transcription, and transcriptions included three levels of stress and detailed contextual notes. When semantically related words occurred in succession in the text, utterances
were considered to be separate if there was a terminal pitch fall on each word, and if there was an intervening pause of at least three-fifths of a second. Other characteristics that supported a categorization of "separate utterance" included intervention of the coparticipant adult's speech, and primary stress on each word.

The linguistic and situational context was also carefully considered, to interpret the meaning of utterances and to determine semantic relatedness. If two or more words were judged to be semantically related, they were coded as a construction, and if judged unrelated, each word was coded as a nonparticipating single-word. The specific criteria used in coding nonparticipating single-words, vertical constructions, horizontal constructions, and horizontal-vertical constructions are given in the Model section of Chapter One, page 48.
Chapter Three: Results

Analysis is based on all counted utterances for each child. The number of counted utterances ranged from 184 utterances from Joni in session II to 737 utterances from Daniel in session I. The mean number of utterances obtained per session was 402. These utterances were assigned to the three levels of construction complexity defined previously. The few horizontal-vertical constructions that occurred were grouped with the horizontal constructions. The maximum amount of data discarded on the basis of unintelligibility or nonlinguistic status for any child in any session was 10%, although as little as 1.5% was discarded in some instances.

Data were analyzed using a 2x2x2x3x4 factorial design (high familiarity vs. low familiarity X high attention vs. low attention X high control vs low control X three levels of construction complexity X 4 children) to determine whether there was a relationship between high and low attention, control, and familiarity conditions and the children's complexity or frequency of utterances. A computer program^10 was used to form and analyze multiway frequency tables, an approach which involves fitting a log-linear model to the cell frequencies in order to obtain a description of the relationships between the factors of the table. Well-fitting models were obtained by including all statistically significant relationships. The strength of each

particular relationship was then determined by comparing the fit of a model including that relationship with fit of one excluding it, using the likelihood ratio chi square.

Table 4 is a five-dimensional table relating the variables familiarity, attention, and control to three levels of construction complexity for four children. Analyses were carried out relating these variables to the children's construction complexity, and also to their absolute frequency of contructions.

Complexity of Utterances

Table 5 gives the number of constructions at each level of complexity produced by all the children in the high and low familiarity conditions. The influence of familiarity on children's construction complexity was not significant, but the trend was for children to use a greater proportion of horizontal constructions to vertical constructions with strangers, and a greater proportion of vertical constructions to single words with their own mothers (see Table 6).

The influence of high or low attention on the complexity of children's constructions was not significant. Table 7 gives the number of constructions at each level of complexity produced by all the children in the high and low attention conditions. While children used considerably more utterances in the high attention than in the low attention condition, they did not use a proportionately greater amount of more complex constructions (vertical and horizontal) than less complex single word utterances.

In the analysis of the attention variable, all the control data was omitted from the models, and in the analysis of control, all the attention data was omitted.
Table 4
Total Number of Constructions Coded for Each Child by Task (High Attention, Low Attention, High Control, Low Control), Session (High Familiarity, Low Familiarity) and Construction Complexity (1,2,3)

<table>
<thead>
<tr>
<th>Child</th>
<th>Construction Complexity</th>
<th>Attention</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daniel</td>
<td>1</td>
<td>176</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>16</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>36</td>
<td>3</td>
</tr>
<tr>
<td>Joni</td>
<td>1</td>
<td>85</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>27</td>
<td>0</td>
</tr>
<tr>
<td>Milly</td>
<td>1</td>
<td>56</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>12</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>42</td>
<td>11</td>
</tr>
<tr>
<td>Cory</td>
<td>1</td>
<td>34</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>64</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td></td>
<td>152</td>
<td>63</td>
</tr>
<tr>
<td></td>
<td></td>
<td>16</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>15</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>19</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>14</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td></td>
<td>23</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>40</td>
<td>47</td>
</tr>
<tr>
<td></td>
<td></td>
<td>41</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>48</td>
<td>8</td>
</tr>
</tbody>
</table>

Note: Construction complexity goes from 1: least complex to 3: most complex, with 1: single words
2: vertical constructions
3: horizontal and horizontal-vertical constructions
Table 5
Marginal Table of Familiarity by Construction Complexity: Number of constructions at each level of complexity produced by all the children for high and low values of the variable.

<table>
<thead>
<tr>
<th>Construction Complexity</th>
<th>Familiarity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High</td>
</tr>
<tr>
<td>Single Words</td>
<td>982</td>
</tr>
<tr>
<td>Vertical Constructions</td>
<td>119</td>
</tr>
<tr>
<td>Horizontal Constructions</td>
<td>537</td>
</tr>
</tbody>
</table>

The influence of high or low control of the discourse by the adult speaker was highly significant ($X^2 (10.36, 2) = .006 (p < 0.01)$) in the direction predicted. See Table 8, which gives the number of constructions at each level of complexity produced by all the children in the high and low control conditions, and Table 6 for models compared to determine strength of effect. In the high control condition, the children used seven vertical constructions for every 100 single word utterances, and 55 horizontal constructions for every 100 single word utterances, whereas in the low control condition, the children used 15 vertical constructions and 59 horizontal constructions for every 100 single-word utterances. Thus the grammatical constructions of the four children were significantly more complex in the low adult control condition than in the high adult control condition. Of note is the observation that the children more than doubled their proportion of vertical constructions to single word utterances under the low control condition, compared to the high control condition.
Table 6
Strength of Effects in the Model to Fit Data on Relationship of Familiarity, Attention, and Control to Children's Construction Complexity

<table>
<thead>
<tr>
<th>Complexity by variable(s)</th>
<th>Term of interest</th>
<th>Models compared</th>
<th>df</th>
<th>( \text{LRX}^2 )</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>familiarity</td>
<td>CF</td>
<td>KHAF, KHAC</td>
<td>2</td>
<td>5.51</td>
<td>0.06</td>
</tr>
<tr>
<td></td>
<td></td>
<td>KHAF, KHAC, CF</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>attention</td>
<td>CH</td>
<td>KHF, KFC</td>
<td>2</td>
<td>2.89</td>
<td>0.23</td>
</tr>
<tr>
<td></td>
<td></td>
<td>KHF, KFC, CH</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>control</td>
<td>CH</td>
<td>KHF, KFC</td>
<td>2</td>
<td>10.36</td>
<td>0.006</td>
</tr>
<tr>
<td></td>
<td></td>
<td>KHF, KFC, CH</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>familiarity, attention</td>
<td>CFH</td>
<td>KHF, KHC, KFC</td>
<td>2</td>
<td>1.83</td>
<td>0.40</td>
</tr>
<tr>
<td></td>
<td></td>
<td>KHF, KHC, KFC, CFH</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>familiarity, control</td>
<td>CFH</td>
<td>KHF, KHC, KFC</td>
<td>2</td>
<td>0.43</td>
<td>0.80</td>
</tr>
<tr>
<td></td>
<td></td>
<td>KHF, KHC, KFC, CFH</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Abbreviations: H = High - Low
A = Attention - Control
F = Familiarity
C = Complexity
K = Child

a attention data only
b control data only

Table 7
Marginal Table of Attention by Construction Complexity: Number of constructions at each level complexity produced for high and low values of the variable

<table>
<thead>
<tr>
<th>Construction Complexity</th>
<th>Attention</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>Single Words</td>
<td>586</td>
<td>174</td>
</tr>
<tr>
<td>Vertical Constructions</td>
<td>63</td>
<td>12</td>
</tr>
<tr>
<td>Horizontal Constructions</td>
<td>286</td>
<td>122</td>
</tr>
</tbody>
</table>
Table 8
Marginal Table of Control by Construction Complexity: Number of constructions at each level of complexity produced for high and low values of the variable

<table>
<thead>
<tr>
<th>Construction Complexity</th>
<th>Control</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High</td>
<td>Low</td>
<td></td>
</tr>
<tr>
<td>Single Words</td>
<td>481</td>
<td>462</td>
<td></td>
</tr>
<tr>
<td>Vertical Constructions</td>
<td>35</td>
<td>68</td>
<td></td>
</tr>
<tr>
<td>Horizontal Constructions</td>
<td>264</td>
<td>271</td>
<td></td>
</tr>
</tbody>
</table>

Frequency of Utterances

While an important area of investigation was the proportion of more complex utterances to less complex utterances under various conditions, another question of interest was the overall frequency with which children produced each type of construction under each condition.

One analysis was of the total number of multi-word constructions (including vertical constructions, horizontal constructions, and horizontal-vertical constructions) produced by the children in high versus low familiarity, attention, and control conditions. Table 9 is the data table analyzed.

Table 9
Total Number of Multi-word Constructions (Vertical, Horizontal, & Horizontal-Vertical) Produced by Each Child in each Condition.

<table>
<thead>
<tr>
<th>Child</th>
<th>High Familiarity</th>
<th>Low Familiarity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Attention</td>
<td>Control</td>
</tr>
<tr>
<td></td>
<td>high</td>
<td>low</td>
</tr>
<tr>
<td>Daniel</td>
<td>52</td>
<td>3</td>
</tr>
<tr>
<td>Joni</td>
<td>35</td>
<td>0</td>
</tr>
<tr>
<td>Milly</td>
<td>54</td>
<td>15</td>
</tr>
<tr>
<td>Cory</td>
<td>67</td>
<td>38</td>
</tr>
</tbody>
</table>
For familiarity, the results were highly significant ($X^2 (32.70, 1) = 0.1 \text{E}-07 \ (p<0.01)$) that children used more multi-word constructions when interacting with their mothers than when interacting with strangers. See Table 10 for models compared and strength of effect values. For attention and control, results were also significant ($X^2 (80.38, 1) = 0.0 \ (p<0.01)$). Across all the children, more multi-word constructions were used in the high attention than in the low attention condition, and in the low control than in the high control condition. When the frequency of constructions results for high and low attention and control were examined separately, for mothers and strangers, the same direction of effects was observed, and was significant ($X^2 (9.13, 1) = 0.002 \ (p<0.01)$).

An analysis of the frequency of horizontal constructions used in the various conditions (Table 11) showed that for the familiarity condition, children used significantly more horizontal constructions with their own mothers than with strangers ($X^2 (18.26, 1) = 0.2 \text{E}-04 \ (p<0.01)$).

Strength of effects are given in Table 10. This result is highly significant in the direction predicted. The result for attention and control is also significant ($X^2 (47.72, 1) = 0.5 \text{E}-11 \ (p<0.01)$).

Children used more horizontal constructions in the high attention than in the low attention condition and somewhat more horizontal constructions in the low control condition than in the high control condition, as predicted. When the effects of attention and control are examined separately for mothers and strangers, the results are significant.

\footnote{In the analyses of frequency of utterances, attention and control were examined together, thus a significance level can only be assigned for these two conditions when considered together. However, the direction of effects for attention and control have been recovered separately.}
$X^2 (6.81, 1) = 0.009 \ (p<0.01)$ in the directions predicted except that with strangers, children produced more horizontal constructions in the high control condition than in the low control condition (opposite direction of result predicted).

Table 10
Strength of Effects in the Model to Fit Frequency Data: Children's Number of Multi-word, Horizontal, Vertical, Single Word, and Total Constructions in Familiarity, Attention and Control Conditions

<table>
<thead>
<tr>
<th>Variable(s)</th>
<th>term of interest</th>
<th>models compared</th>
<th>constructions counted</th>
<th>df</th>
<th>$LRX^2$</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>familiarity</td>
<td>HAK</td>
<td>Multiwd</td>
<td>1</td>
<td>32.70</td>
<td>0.1E-07</td>
<td></td>
</tr>
<tr>
<td></td>
<td>HAK, F</td>
<td>Horiz</td>
<td>1</td>
<td>18.26</td>
<td>0.2E-04</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Vert</td>
<td>1</td>
<td>20.63</td>
<td>0.5E-05</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>S-wd</td>
<td>1</td>
<td>40.17</td>
<td>0.2E-09</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>1</td>
<td>72.66</td>
<td>0.1E-16</td>
<td></td>
</tr>
<tr>
<td>attention</td>
<td>HA</td>
<td>Multiwd</td>
<td>1</td>
<td>80.38</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td>and control</td>
<td></td>
<td>Horiz</td>
<td>1</td>
<td>47.72</td>
<td>0.5E-11</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Vert</td>
<td>1</td>
<td>39.76</td>
<td>0.2E-09</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>S-wd</td>
<td>1</td>
<td>127.14</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>1</td>
<td>205.78</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td>familiarity,</td>
<td>HAK, HFK, AFK</td>
<td>Multiwd</td>
<td>1</td>
<td>9.13</td>
<td>0.002</td>
<td></td>
</tr>
<tr>
<td>attention</td>
<td></td>
<td>Horiz</td>
<td>1</td>
<td>6.81</td>
<td>0.009</td>
<td></td>
</tr>
<tr>
<td>and control</td>
<td></td>
<td>Vert</td>
<td>1</td>
<td>1.72</td>
<td>0.19</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>S-wd</td>
<td>1</td>
<td>13.69</td>
<td>0.2E-03</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>1</td>
<td></td>
<td>0.4E-06</td>
<td></td>
</tr>
</tbody>
</table>

Note. Abbreviations:  
H = High - Low  
A = Attention - Control  
F = Familiarity  
C = Complexity  
K = Child
<table>
<thead>
<tr>
<th>Child</th>
<th>High Familiarity</th>
<th></th>
<th>Low Familiarity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Attention high</td>
<td>Control high</td>
<td>Attention high</td>
</tr>
<tr>
<td></td>
<td>low</td>
<td>low</td>
<td>low</td>
</tr>
<tr>
<td>Daniel</td>
<td>36</td>
<td>27</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>22</td>
<td>6</td>
</tr>
<tr>
<td>Joni</td>
<td>27</td>
<td>20</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>33</td>
<td>12</td>
</tr>
<tr>
<td>Milly</td>
<td>42</td>
<td>34</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>36</td>
<td>47</td>
</tr>
<tr>
<td>Cory</td>
<td>64</td>
<td>72</td>
<td>48</td>
</tr>
<tr>
<td></td>
<td>35</td>
<td>75</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>40</td>
</tr>
</tbody>
</table>

I also analyzed the frequency of vertical constructions used in each condition. Table 12 was analyzed. For the familiarity condition, significantly more vertical constructions were used with mothers than with strangers \( (X^2 (20.63, 1) = 0.6 \text{ E-05} (p<0.01)) \). For attention and control, results were also significant \( (X^2 (39.76, 1) = 0.0 \text{ E-09} (p<0.01)) \). These results were in the direction predicted for control, but opposite to the direction predicted for attention. The children used more vertical constructions in the high attention condition than in the low attention condition, and more vertical constructions in the low control condition than in the high control condition. The attention and control results, when examined separately for mothers and strangers, are not significant.

An examination of the frequency of single word utterances (see Table 13 and Table 10) showed that children used a significantly greater number of single word utterances with their own mothers than
Table 12
Total Number of Vertical Constructions
Produced by Each Child in each Condition

| Child | High Familiarity |   | Low Familiarity |   |
|-------|------------------|--|--|------------------|--|
|       | Attention high   | low | Control high    | low |                   |
| Daniel| 16               | 0   | 7              | 29  |                   |
| Joni  | 8                | 0   | 4              | 11  |                   |
| Milly | 12               | 4   | 9              | 6   |                   |
| Cory  | 3                | 3   | 3              | 4   |                   |

Table 13
Total Number of Single Word Constructions
Produced by Each Child in each Condition

| Child | High Familiarity |   | Low Familiarity |   |
|-------|------------------|--|--|------------------|--|
|       | Attention high   | low | Control high    | low |                   |
|       | high low         |     | high low        |     |                   |
| Daniel| 228              | 48  | 192             | 171 |                   |
| Joni  | 120              | 4   | .84             | 122 |                   |
| Milly | 110              | 28  | 69              | 93  |                   |
| Cory  | 101              | 51  | 104             | 113 |                   |

with strangers. They also used significantly more single word utterances in the high attention condition than in the low attention condition in the high attention condition than in the low attention condition, but about the same number of single word utterances in the high and the low control conditions.

From the above results, it appears that children may simply be more
verbose under certain conditions. The influence of familiarity, attention, and control on verbosity was examined by comparing the total number of constructions of all types (including single word utterances) that the children produced in different situations. See Table 14. Children produced significantly more constructions ($X^2 (72.66, 1) = 0.1 \times 10^{-16} (p<0.01)$), when interacting with their own mothers than with strangers. They produced more than three times as many constructions in the high attention condition than in the low attention condition, but only slightly more constructions in the low control than in the high control condition. The verbosity for attention and control conditions was similar when results for mothers and strangers were examined separately, except for a slight trend for children to talk to strangers more in the high control condition than in the low control condition.

Table 14
Total Number of Constructions of all Types
Produced by Each Child in each Condition

<table>
<thead>
<tr>
<th>Child</th>
<th>High Familiarity</th>
<th>Low Familiarity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Attention high</td>
<td>Low</td>
</tr>
<tr>
<td>Daniel</td>
<td>228 48</td>
<td>192 171</td>
</tr>
<tr>
<td>Joni</td>
<td>120 4</td>
<td>84 122</td>
</tr>
<tr>
<td>Milly</td>
<td>110 28</td>
<td>69 93</td>
</tr>
<tr>
<td>Cory</td>
<td>101 51</td>
<td>104 113</td>
</tr>
</tbody>
</table>
Chapter Four: Discussion

In this study, I investigated whether the complexity of children's constructions during the transition to multiword utterances is related to adult interaction variables, specifically, whether or not (1) the adult is attending to the child, (2) the adult controls or leads the conversation, and (3) the adult is a stranger or the mother. I defined three levels of children's utterance complexity, ranging from single words to vertical constructions to horizontal constructions (least to most complex), then measured the relative proportions of these construction types in the differing adult interaction conditions.

Given this method of measuring children's speech complexity as a relative proportion of construction types, there is not sufficient evidence to reject the hypothesis that the complexity of a child's constructions will not be affected by the familiarity of the coparticipant adult. In other words, the assumption that children use a higher proportion of complex constructions with their own mothers than they do with strangers is not supported.

Similarly, the hypothesis that the complexity of a child's constructions will not be affected by the amount of attention the coparticipant adult gives the child cannot be rejected. We cannot assume that children form more complex constructions when someone is paying full attention to them than when they first have to capture someone's attention.

On the other hand, the hypothesis that the complexity of a child's constructions will not be affected by the amount of control the adult
has over the conversation can be rejected on the basis of this study.
My results show that a child uses a significantly higher proportion of complex constructions when he/she controls the conversation than when the adult controls the conversation.

**Familiarity**

The result that the familiarity of an adult interlocutor was not shown to influence the child's complexity is interesting, given research findings discussed previously: that mothers tailor their speech for their children and that children's style and rate of language learning may be influenced by this linguistic interaction with their mothers. It seems plausible that children might use more complex speech with their own mothers because they share a larger background of knowledge than with a stranger; thus there would be fewer difficulties in setting, defining, or maintaining topics, and because of the reduction in these conversational pressures, the children would have more opportunity to form more complex utterances (see Keenan & Schieffelin, 1976). Another assumption is that each mother would understand her own child's articulation and idiosyncratic vocabulary better than a stranger would, and this would reduce performance pressure, enabling the child to concentrate on forming more complex constructions. We could also suppose that the mother, knowing her child's production capabilities better than a stranger would, might provide more openings for the child to use his or her highest level constructions.
The results suggest that these factors either have no effect on children at this developmental stage, or are counterbalanced by competing pressures. For example, perhaps children, when talking with their mothers, assume that their mothers understand most of what they say, so they feel little need to elaborate on their utterances and produce more complex constructions; whereas with strangers, they may be aware of the lack of shared background knowledge, so they expand their utterances in a struggle to achieve understanding. There is some support for this explanation in the child language literature. In describing the discourse context of children's syntactic growth, Ervin-Tripp (1977) has tried to identify "bursts of syntax," instances when the child's production goes beyond that predicted by the rules governing preceding texts. In her study, one determinant of such bursts of syntax (similar in an important way to the situationally elevated construction complexity described in my study) was "misunderstandings which pressure explicitness" (Ervin-Tripp, 1977, p. 17). It would be interesting to discover in precisely what ways children at this young age (2 - 2 1/2 years) do adjust their speech to strangers.

Alternatively, the complexity of children's constructions may not be affected by the familiarity of the adults they are talking to. Perhaps they don't try to overcome the barrier of lack of shared knowledge by using more complex, informative constructions to strangers, nor to overcome the stranger's difficulty in understanding their
pronunciation by using more easily understood single words. And perhaps the strangers in this study (who were, of course, also mothers) were just as capable as the children's own mothers at reducing communicative pressures, and structuring the interaction so that the children had many opportunities to use complex constructions. This possibility is supported by findings reported in the language input literature (for example, Snow, 1972).

The nearly significant (p=0.06) result that children use proportionately more horizontal constructions with strangers and proportionately more vertical constructions with their own mothers suggests that there may be some differences in children's speech related to familiarity of the adult, however. Do children perform at their highest level of expressive competence with strangers in an attempt to achieve communication? Do they use more vertical constructions with their mothers because this is how they learn to put words together in the first place, and interaction with a familiar adult better facilitates this learning process? A more fine-grained analysis is needed in order to untangle the various influences of mothers and strangers on children's constructional complexity.

Attention

The nonsignificant result for attention also warrants discussion. As Atkinson (1979) proposes, if an adult is already paying attention, a child could effectively use a nonverbal means of introducing a topic, then follow-up with a single word comment, whereas with an inattentive
adult, the child might be forced to also state the topic in order to
get the adult's attention, thereby producing a more complex vertical
construction. So we could assume that inattention stimulates the use
of more complex constructions. On the other hand, at a more advanced
stage of development, interaction with a more attentive adult may
eliminate the need to produce successive single words in order to
check that the adult is listening, thus freeing the child to produce
a more complex horizontal construction. So in this way, increased
attention could stimulate the use of more complex constructions.

Neither of these suppositions is supported by the results of this
study. This may be due to lack of sensitivity in the measures (for
example, opposite influences may have cancelled each other out,
producing no effect), or coparticipant attention might not have a
significant influence on children's constructional complexity. For
example, adult comprehension of the child's utterance, or the
degree of comprehension that the child assumes the adult has, rather
than adult attention, may be the significant factor that would
account for Atkinson's observations.

In this study, the particular situation that was used to obtain
adult inattention may have reduced the effect of attention on construction
complexity by distracting the adults so much that the children's usual
ploys for attracting attention went unnoticed. The women seemed to
view the interviewing situation as important, so many of the children's
single word attention-getters were ignored, or responded to nonverbally.
When the adult subject did turn to the child, for example at a break in the adult conversation, I observed that the children tended to "blurt out" more complex constructions. This suggests that an analysis of the distribution of construction types, rather than just the overall frequency, would be an interesting analysis to perform on these data. Also, most of the children seemed to give up on conversing with the adult after a few unsuccessful attempts, so that there was much less talking in this situation. Of the utterances that were produced, many were play monologues.

Control

The results of this study, significant to $p = 0.005$, showed that the children used proportionately more complex constructions in the low adult control situation than in the high adult control situation. This suggests that when children are permitted to "lead" or "control" the direction of an interaction while the adult acts as a facilitator, more complex language is likely to emerge than in structured play dominated by the adult.

The notion of "control" is difficult to define or describe, however. In this study "control" has an operational definition: the social and linguistic behaviours that emerge in the coparticipant adult when told to follow (the child's) lead, and let him or her choose each toy and how it should be played with (low control), compared to the adult's behaviour when told to teach a child how to use a complex, unfamiliar toy and encouraged to teach by explaining verbally rather than by demonstration (high control). In each of these situations
the roles of the adult and child are different on the basis of how much power each person has in defining the situation and the direction of the conversation, and yet we still don't know the specific variables that comprise "control" within an interaction.

A participant in a conversational interaction has more control when he or she talks more, introduces many of the topics, and is able to elicit responses from the other participant that are relevant to previous remarks. Conversely, a person has less control when he or she talks less, responds to the other person's topics rather than introducing topics, and is unable to elicit relevant remarks from the other speaker. I would propose that the ideal language learning situation is one in which the conversational control is shared or alternated between participants, because then children can learn from more experienced speakers, while also having an opportunity to try out conversational techniques themselves. This alternation of conversational control seems to be typical of the interactions between mothers and their young children. The language input literature provides substantial evidence that mothers tend to let their children lead both the activity and the conversation in a free play setting, and that this noncontrolling quality is positively correlated with the child's language growth (for example, Nelson, 1973). Complementing such interactions are conversations in which the mother's primary purpose is to teach or direct the child's behaviour (the situation I attempted to duplicate experimentally in my "high control" task).
In these interactions, the mother is obviously in control of both activity and talk.

Whatever the components of control are, the question remains: why do more complex language structures emerge when the child has greater linguistic and situational control? Sociolinguistic research suggests that conversational control is related to social power. A child who can introduce a topic that someone responds to, or give an instruction that someone carries out, is able to control his or her environment by manipulating other people. This evidence of personal power must be reinforcing to the child, providing motivation to obtain more of it by becoming more competent at language, the means of obtaining this power. It follows then, that a situation involving low adult control and high child control of the conversation would facilitate the use of more complex language structures by the child.

Another possible explanation draws on the notions of "social speech" versus "collective monologue" (Piaget, 1959). In a previous unpublished case study (Lapadat, 1977), I found that a child at the same level of development (just entering the multiword stage) typically produced longer, more grammatically complex utterances when "talking to herself" than when actively involved in a two-way conversation. While it is difficult to objectively separate monologue or collective monologue utterances from social utterances on the basis of utterance characteristics or situational differences, I also informally observed a trend in the present study for children to
formulate longer, often unintelligible, utterances while apparently "talking to themselves" (for example, not making eye contact, playing unilaterally with a toy, not waiting for a response to their utterances). One way to interpret this is to suppose that when adults becomes less controlling and less involved in conversations, children are freed from some of the demands of social speech, such as turn-taking, or making comments relevant to the established topic. Thus they can direct more attention to length or grammatical complexity. Or perhaps as adults relinquish control, children receive less feedback about whether or not the listener understands their messages, so are less likely to use simple constructions or to break down and repeat parts of longer constructions. However, this contradicts research findings that children use prior adult utterances in dialogues as a "scaffold," allowing them to produce longer and more complex utterances than those predicted by their own production rules (Ervin-Tripp, 1977).

Children produce a greater proportion of more complex constructions when they are directing the conversation and the action and the adult coparticipant is less controlling. Further investigation is needed to determine whether more complex speech occurs in this situation because it is being socially reinforced, or because the nature of the situation reduces other communicative pressures on children, freeing them to concentrate on grammatical complexity. Or the explanation may lie in factors that I have not addressed here.
Frequency

The count of the frequency with which children spoke in the different conditions showed that the children talked much more to their own mothers than to strangers, and more in the high attention condition than in the low attention condition. Their amount of speech was not significantly different in the high control condition than in the low control condition. While the degree of familiarity and attention did not significantly influence the complexity of children's constructions in this study, children produced significantly more speech in high familiarity and high attention situations. These results have interesting implications.

I suspect that the children talked more in these situations for the same reasons that I previously discussed with respect to more complex constructions in these same situations (for example, greater background of shared knowledge, necessity for establishing same object of shared attention, etc. See pp. 67-71). Although the proportionate complexity of constructions did not change, just talking more means that the children actually produced a significantly greater number of the more complex vertical and horizontal constructions in the high familiarity and high attention conditions than in the corresponding low familiarity and low attention conditions. Thus the children had more opportunity to practice producing more complex constructions when talking to their mothers, and when someone was paying attention to them.

Another interesting trend was that children talked to strangers
somewhat more in the high adult control condition than under low adult control; in particular, they produced more horizontal constructions. This is contrary to the general trend for children to talk slightly more in the low control condition than in the high control condition and also contrary to the highly significant result that children used more complex constructions in the low control condition.

Perhaps children at this age are reluctant to talk to strangers, so that if they are permitted to direct the conversation (low control), they tend rather to ignore the stranger and not talk at all. On the other hand, they are sociable enough that if the stranger carries the burden of the conversation (high control), they will take a passive conversational role, and respond to direct questions etc.

The finding that children tend to use their most complex construction type (horizontal) with strangers matches Berko Gleason's (1975) observation that children use more complex speech to strangers. Two explanations for this follow. One possibility is that children have some awareness that the stranger will be more difficult to communicate with, so they function at their highest level of grammatical competence in order to get their message across. The other, almost directly contradictory, explanation is that children receive or interpret less of the feedback from strangers, so they do not simplify or breakdown their messages until they receive confirmation of understanding as they would with a familiar person.

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13 Berko Gleason (1973) observes that the first sociolinguistic choice children make, at about one year, is to speak or not to speak, with the latter related to unfamiliarity.
Implications

I will now discuss the clinical and theoretical implications of some of these results.

This study shows that differences in adult interaction styles influence children's output in particular conversational settings, either by affecting the proportionate complexity, or by increasing or decreasing the overall amount of speech. The findings also support Scollon's (1976; 1979) claim that children go through a stage of producing vertical constructions as they make the transition from single words to grammatical constructions.

The result that children use more complex utterances when given more control of the interaction has important implications for our understanding of the acquisition of language. The availability of this type of conversational interaction in which the adult takes a more passive, facilitative role may have a long term effect on the child's rate of language learning (Nelson, 1973). Certainly it appears that in at least some situations, open-ended, facilitative interactions lead to higher level language use in the child than do structured, teaching types of interactions. Furthermore, while I have not determined the components of control here, it seems the functional value of talking, what a person can get done, or what kind of response he or she can elicit with language, is related to constructional complexity in language learning.¹⁴

The following clinical implications for a child at this developmental

---

¹⁴In this study, the contrived "low control" condition, in which adults were asked to follow the child's lead, elicited a great number of linguistically and situationally contingent responses from the adults, and resulted in more complex language from the child.
level can be drawn. A clinician will probably obtain a language sample closer to the child's constructional or grammatical level of competence by using a "low adult control" type of sampling procedure. This could be influenced by the degree of familiarity of the coparticipant adult, however. Language therapy which increases the child's control, either by allowing the child to lead in play, or by providing choices about selection and ordering of other events, will probably result in increased constructional complexity during that conversation. It is not certain whether rate of acquisition over the long term will be affected.

The result that children talk more in high familiarity and high attention conditions than in low familiarity and low attention conditions, producing a correspondingly greater number of vertical and horizontal constructions, suggests that children's rate of learning how to produce multiword constructions or grammatical constructions may be differentially affected according to whether a familiar person is available for the child to talk to, and whether someone gives the child their full attention during the conversation. This does not necessarily follow, however, as for example, amount of practice may not be correlated with rate of learning. Confirmation of this claim awaits further investigation. In addition, optimal amount of interaction in different conditions can only be guessed at. How many minutes of "high attention interaction" a day is best: fifteen minutes, an hour, five hours? And does it make any difference whether the familiar person is the child's parent, a daycare worker, an older sibling, or a peer? Nelson (1973) notes
that children's language growth is positively correlated with amount of time spent with adults, but negatively correlated with amount of time spent with other children. Also, the optimum configuration of adult interaction variables could vary radically depending on the child's level of development.

The clinical implication, then, is that for a child just entering the multiword stage, daily one-to-one linguistic interaction with an attentive, familiar adult would provide an opportunity for the child to practice his or her highest level constructions with a possible long term effect on rate of grammatical development.

The reasons why children go through a period of producing vertical constructions in their transition from single words to syntactic constructions have been outlined in Chapter One, and they will not be reiterated here. All of the children in this study used vertical constructions, and in high proportions, particularly in certain situations. This suggests that while not necessarily universal, the stage of using vertical constructions may be quite common and widespread. Clinically, this has the implication that for language delayed children at the one word stage, development of vertical constructions may be a valid therapy goal, preceding the goal of putting two or more words together into "sentences", and clinicians should know how to recognize them.

For Further Research

In the above discussion, I have pointed out a number of issues that
could be clarified through further investigation. I would like to discuss here a few remaining important areas for additional research.

A major question concerns the long-term effect of adult interaction variables on children's language development. This study shows that control is related to constructional complexity within the immediate interactional situation, but I cannot make any claims about the effect of control over the long term (but see Nelson, 1973). A longitudinal approach is required to trace effects of any particular adult interaction variable on any particular aspect of language development. In this study I have just examined the influence of three adult interaction variables (familiarity, attention, and control) on one aspect of language development (constructional complexity) in one environment (a university clinic) and at one stage of development. A more meaningful interpretation of my results will be possible once more is known about these other facets.

Another problem concerns the actual sequence of development once a child begins to move from using single words to using multiword constructions. I have proposed a model consisting of ordered levels to establish the theoretical framework of this study, but longitudinal data for a number of children are needed to establish the validity of the model. While with studies such as this we can begin to answer the question of how children move from one level to the next, finally making the transition to syntax, supplementary in-depth analyses of interaction sequences are also essential to round out the picture.

A final question of interest involves the motivation for using constructions of a particular level of complexity. Throughout this
study, I made an assumption that children take a "build-up" approach to constructions. That is, I supposed that they try a message at a less complex level (for example, single word) and then, when the co-participant does not understand or follow through, they provide more information by using a more constructionally complex utterance (for example, vertical or horizontal construction). Or I thought that children may try a message at a simpler level as a step in building up to or formulating a more complex construction. This is commonly reported in the child language literature. An example of this build-up process from my data follows:

<table>
<thead>
<tr>
<th>Daniel</th>
<th>M. (Stranger)</th>
</tr>
</thead>
<tbody>
<tr>
<td>V II</td>
<td></td>
</tr>
<tr>
<td>1. out.</td>
<td>out.</td>
</tr>
<tr>
<td>2. that.</td>
<td></td>
</tr>
<tr>
<td>H:VI</td>
<td>3. out that.</td>
</tr>
</tbody>
</table>

(Daniel is holding a box of building discs on his lap.)

However, another process, which I shall call "break-down" also appeared in the data. It seemed that often children began by stating an idea using a complex construction, then faced with noncomprehension on the part of the adult (perhaps because of poorer articulation in longer utterances), they broke the utterance down into component parts, repeating the message as a vertical construction or as single words until they received some indication of understanding from the adult, or gave up trying. An example follows:
The appearance of these break-down sequences suggest that children may sometimes be forced to communicate at a simpler level because of communicative constraints (for example, poor articulation or lack of shared experience). It follows that once these constraints are removed, they would tend to talk at a complexity level approaching their level of competence.

In order to discover the process children go through to construct particular utterances, we must examine constructions embedded within their linguistic and situational contexts. Build-up and break-down sequences may coexist with other processes, and by describing and testing these processes along with coparticipant interaction variables, we will be able to explain how and why children move from single words to syntactic constructions.
References

Andersen, E.S. A selected bibliography on language input to young children. *Papers and Reports on Child Language Development*, 1975, 9, 75-86.


Reference Note

   (Available from 1913 St. John St., Regina, Saskatchewan).
Addenda


Appendix One
Instructions (for mothers)

Task 1 (free play, high attention)

"Now I'm going to leave you and (ch's name) in this room for about 10 or 15 minutes, just to get used to the situation. I'm interested in the kind of language (ch's name) uses as he/she talks, so what I want you to do is just play with (ch's name) as you normally would so I can hear the way he/she usually talks. There's a box of toys there that you can use. Wendy will be in in 15 minutes to ask you a few questions."

Task 2 (free play, low attention: interview)

"Now I'd like to ask you a few questions. If there are any that you'd prefer not to answer, you don't have to."

INTERVIEW QUESTIONS

Task 3 (free play, high control: teaching task)

"Here's a toy I'd like you to use for the next 15 minutes. It's a village, and these pegs and blocks can be put together to make houses, trees, and people, and there are also cars and a train. I'd like you to teach (ch's name) how to use it. If possible, try to get him/her to put the pieces together him/herself, rather than doing it for him/her. I'll be back in 15 minutes."

Task 4 (free play, low control: child-directed games)

"Now I'd like you and (ch's name) to play together with the other toys again. What I am particularly interested in now, is seeing the ways in which (ch's name) will play with these toys, and the kinds of games he/she will make up. If possible, I would like you to follow (ch's name)'s lead, and let him/her choose each toy, and how it should be played with. I'll be back in 15 minutes, and at that point we'll finish up."
Instructions (for non-mothers)

Task 1 (free play, high attention)

"Now I'm going to leave you and (ch's name) in this room for 10 or 15 minutes to give you a chance to get to know each other. I'm interested in the kind of language (ch's name) uses, so I'd like you to play with (ch's name) the way you normally play with children, so I can hear the way he/she usually talks. You can use that box of toys there. Wendy will be in in 15 minutes to ask you a few questions."

Task 2 (free play, low attention: interview)

"Now I'd like to ask you a few questions. If there any that you'd prefer not to answer, you don't have to."

INTERVIEW QUESTIONS

Task 3 (free play, high control: teaching task)

"Here's a toy I'd like you to use for the next 15 minutes. It's a magnetic board and different kinds of animals can be made using the coloured blocks. I'd like you to teach (ch's name) how to make some of these animals. If possible, try to get him/her to put the pieces together him/herself, rather than doing it for him/her. If you want, you can use these 2 pieces to stand the board upright. I'll be back in 15 minutes."

Task 4 (free play, low control: child-directed games)

"Now I'd like you and (ch's name) to play together with the other toys again. What I'm particularly interested in now is seeing the ways in which (ch's name) will decide to play with these toys, and the kinds of games he/she will make up. If possible, I would like you to follow (ch's name)'s lead, and let him/her choose each toy and how it should be played with. I'll be back in 15 minutes, and at that point we'll finish up."