Second Language (English) Acquisition Strategies of Children and Adults: a Cross-Sectional Study.

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SECOND LANGUAGE (ENGLISH) ACQUISITION STRATEGIES OF
CHILDREN AND ADULTS:
A CROSS-SECTIONAL STUDY

A Dissertation

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

in
The Program in Linguistics

by
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May, 1975
To
NIRMAL
RAJAT
and
ARCHANA
ACKNOWLEDGMENT

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ABSTRACT

The purpose of this study was to ascertain empirically whether children learning a first or second language and adults learning a second language use similar strategies. 198 foreign adults and 16 foreign children (with different linguistic and cultural backgrounds), who had been in the United States from a few weeks to two years, were administered tests to evaluate their comprehension of the syntactic structures involved in the Easy/Eager distinction, the non-identity condition in pronominalization, and Ask/Tell distinction. In addition, Negatives, Wh-questions, and some Inflections were productively elicited from the children in an experimental setting.

A statistical analysis of the data was performed on an IBM/360 computer and product moment correlations were calculated for all the performance variables and other variables such as age, period of 'exposure' to English in home country and the United States etc. For adults, no correlations were found between age or period of 'exposure' to English, and any of the performance variables. For example, the Primitive Rule Users, Intermediates, and Passers on the Easy/Eager Test had almost the same mean age, the same mean period of 'exposure' to English in their home countries, and in the United
States. Similarly, no relationship was found between the subjects' native languages and their strategies in decoding the structures studied. Perhaps interference from one's first language is most operative at the phonological level where the necessary automatization of articulatory habits becomes difficult, though perhaps not impossible, beyond a certain age. At the level of syntax, where higher level cognitive processes are involved, there should be little interference.

The results on the Easy/Eager Test show that native children, foreign children, and foreign adults appear to be using similar strategies: with increasing competence in decoding this type of structure all these groups have a strong tendency to expect and seek the marked form of the adjective, i.e., the form that indicates that deep structure relations have undergone transformation. The results on Pronominalization and Ask/Tell support this finding of "essential" similarity in the processing strategies of these three groups.

Foreign children's competence in Negation was found to be parallel to their competence in Wh-questions, as in the case of native children. Similarly, in their performance on Inflections, the foreign children exhibited the same pattern of overgeneralization and probabilistic performance as has been found in the speech of
native learners of English.

For adults we have data only on comprehension and, if we can generalize from strategies of perception to strategies of learning, these data provide support for the hypothesis of "essential" similarity between the processes of first and second language acquisition in the case of the structures studied.

The results of this study have important implications for the methods of teaching foreign languages. An overemphasis on "correctness" in the early stages serves no useful purpose and might even interfere with the natural process of language learning. As in the case of native learners of English, the systematic 'errors' of the foreign learners also will automatically disappear as their system approaches the target system more closely. Similarly, as in the case of native learners of English, drills of patterns and structures that don't fit into the growing system of the foreign learner are not likely to have any effect on his learning; if overdone, these drills might lead to a rigidity which defeats the very purpose of teaching a foreign language as an instrument of communication.
INTRODUCTION

The purpose of this study is to ascertain empirically whether children learning a first or a second language, and adults learning a second language, use similar strategies. Of late there has been a great deal of speculation about this primarily as a result of research in first language acquisition. It seems that children acquire their first language through a certain amount of exposure, filtering what they hear in such a way that it fits in with their growing system which, in spite of large differences in their ambient linguistic environments, seems to grow in a particular sequence among children learning the same language, and at a higher level of abstraction, among children learning different languages (Brown 1973b). If we reject the nativist interpretation, which merely discourages further enquiry, then this similarity could be attributed to the use of similar 'Operating Principles' or strategies of learning (Slobin 1973). There does not appear to be any logical reason or real evidence that children and adults learning a second language use any different strategies or processes. On the contrary in fact (Ravem 1968; Dato 1971; Cook 1973). French (1949)
observed a striking similarity in the errors committed by American, British and foreign students. Many researchers have reported that a large number of adult learners' syntactic errors are not traceable to their native languages (Richards 1971; Ervin-Tripp 1970b; George 1972; Burt and Kiparsky 1972).

The present study has been undertaken to investigate empirically the strategies of children and adults learning English as a Second Language. 16 foreign children and 196 foreign adults who had been in the United States from a few weeks to two years were administered tests to ascertain their comprehension of some selected aspects of English syntax which have been the subject of extensive study in First Language Acquisition research. Both children and adults were administered tests on their comprehension of the syntactic structures involved in the Easy/Eager distinction, non-identity condition in pronominalization, and Ask/Tell distinction. In addition, Negatives, Wh-questions, and some Inflections were productively elicited from the children in an experimental setting. The children were interviewed individually, and the approach to interviewing was what may be termed 'Clinical' or Piagetian; in other words, every child was treated in a way considered most suitable for him. The adults were given these tests in groups in their regular classes in the English Language and Orientation
Program at Louisiana State University, Baton Rouge.

The general approach of the present study is to apply the findings of current research on the acquisition of English as a first language to study the processes of learning English as a second language. To provide a secure basis for comparison, an effort was made to utilize the methods and materials employed in first language research. However, in most cases various modifications had to be made to suit the different conditions of this study. The following is a partial list of the sources consulted for methods and materials on various aspects of developmental syntax which form the subject of this study:

**General:** Brown (1973b); Slobin (ed.) (1967); Ferguson and Slobin (eds.) (1973); Brown (1970); Gardner and Lambert (1972); Slobin (ed.)(1971).


**Negation:** Klima 1964; Bellugi 1965, 1967; Ervin 1964a; Klima and Bellugi 1966; McNeill and McNeill 1968.

**Wh-questions:** Brown 1968a; Bellugi 1965, 1967; Cazden 1967; Ervin 1964a; Gruber 1967; Klima and Bellugi 1966; Weir 1962.

The plan of the work is as follows: the first two chapters discuss the current approaches (psychological and linguistic) to the study of language acquisition, and the goals, methods and achievements of the ongoing research in the field, with a view to bringing the issues involved into a sharp focus. The third chapter outlines the current findings and speculations about the acquisition strategies of the native learners in the case of a few aspects of English syntax as indicated above. Chapter four discusses the theoretical basis of the hypothesis of similarity between the strategies of first and second language acquisition. Chapter five reports the results of the present study about the performance and strategies of foreign children and adults and compares them with the performance and strategies of native learners of English (as outlined in Chapter 3). The final chapter summarizes the findings of the present study and discusses their implications for the methods of teaching foreign languages.
CHAPTER I

APPROACHES TO THE STUDY OF LANGUAGE ACQUISITION

How children learn language has long fascinated the scholar and the curious layman alike. The earliest known attempt to understand the phenomenon, as reported by Herodotus, was made in about 600 B.C., when the Egyptian king Psametichus ordered two children to be brought up in a speechless environment to find out which language they would speak first. Since the first word the children reportedly spoke was bekos, the Phrygian word for "bread", the king declared Phrygian to be an older language than Egyptian. (Rawlinson 1880:2–3) The underlying assumption is that the oldest language is innate and will develop automatically if there is no environmental interference. Thus, though language is believed to be innate, the importance of the environment is also recognized because, unless the child is isolated, he will supposedly learn the language spoken in his environment.

A similar experiment was performed by King Frederick II (1192/93–1250) who had some children brought up from birth in complete silence in order to ascertain what language they would speak. But the experiment failed because all the children died. (Masson 1957)
In spite of a continuing interest in the subject, the question of how language is acquired remains unanswered. However, during the last two decades, because of intensive research activity in this area, the issues involved have been brought into a sharper focus though the final answer still remains as elusive as ever.

Currently, there are three different approaches to the explanation of language acquisition: Associationist, Process, and Content. The table on pp. 7-8 shows the positions of the proponents of these three approaches on different aspects of the question, including their general philosophical and psychological orientations.

**The Associationist Approach**

As pointed out by Kendler (1968), S-R Associationism is not a unitary concept "with a set of clearcut assumptions that have determinate empirical consequences." (p.388) It is actually a group of competing theories with the various theorists differing "about a wide variety of issues varying from the definition of the stimulus and response to the principles that govern associative formation and strengthening." (p.389)

However loose the term may be, it is still a useful label for the many theorists like Mowrer (1954), Osgood (1957, 1963, 1968, 1971), Skinner (1957), and Staats (1963, 1968, 1971) who have tried to deal with language behavior utilizing the principles of classical and operant conditioning. There are, however, a great many differences among them, with most theorists constantly shifting or modifying their
### Approaches to the Study of Language Acquisition

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<thead>
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#### Theorists

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#### Issues

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<td>Merely define the form and scope of physical response</td>
<td>General cognitive but species-specific information processing structures</td>
<td>Specific language processing structures incorporating linguistic universals</td>
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<tr>
<td>Uniqueness</td>
<td>Language behavior continuous with other human and animal behavior</td>
<td>Language unique to man but within man integrated with his other behaviors</td>
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<td>Language independent</td>
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<td>No mental constructs postulated</td>
<td>Mental constructs postulated but tied to observables or at least theoretically derivable from them</td>
<td>Mental constructs linked to linguistic constructs postulated; not necessarily tied to observable behavior</td>
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<tr>
<td>Research strategy</td>
<td>Understand simple phenomena first; then study complex phenomena</td>
<td>Complex to simple</td>
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This table is partly based on Steinberg (1971:490) and Reber (1973:316)
positions. Osgood (1971), for example, has gradually moved so far from the other Associationists that Reber (1973: 311) is led to observe that, "In many ways, the neo-behaviorism of Osgood (see especially 1971) and the mentalism of Katz (1964), Fodor (1966), and Bever (1968, 1970a, 1970b) and others are closer together than any of the disputants cares to admit."

The basic assumptions of the Associationist position are that all behavior, both overt and mediating, is a function of previous experience, i.e., previously experienced stimuli and previously executed responses; and that association between stimuli and responses takes place through contiguity. Because of these two assumptions the Associationists concentrate on the experimental manipulation of behavior (through the varying of stimuli), to the exclusion of the subject's prior experience and heredity. This being so, the biological component of behavior is relegated to a subsidiary position: the neurology and physiology of any organism simply define the scope and form of the physical response. Further, the Associationists hold that there is nothing unique about language behavior; it is governed by the same principles as underlie all other forms of behavior, animal or human.

Concentrating as the Associationists do on externally observable behavior, they make no distinction between competence and performance and, consequently, between language (as an abstract system) and speech: the domain of their studies is simply speech or performance.

In their description of language acquisition, the Associationists do
not draw upon any linguistic models to characterize the nature of what is learned but rather let their interpretation of how it is learned determine the characterization of what is learned. For them, language learning is primarily a formation of associations—between words and their referents, and between words uttered in a sequence, as in a sentence or a phrase. There is, of course, a great deal of stereotyped language behavior that would fit this model of learning. For instance, there is always a fairly large number of collocations and cliches in circulation which are highly stable and predictable; and everybody uses some well-practised phrases in his speech wherever they fit in, and they fit in because of the repetitive nature of a large number of our activities and situations.

The conclusion of the Associationists from this observation that all speech was a matter of mere left-to-right associations was not incompatible with the taxonomic model of the Bloomfieldian school. Though the Bloomfieldians postulated a hierarchy of levels in their model of linguistic description yet, within each level, it was simply a matter of units combining in certain patterns to form units at the next higher level. Thus, phonemes combine to form morphemes which, in turn, combine to form words, which combine to form sentences. This model supports the view that language acquisition involves solely the learning of units and their arrangements, which process could very plausibly be explained as the formation of associations.
Now, if the formation of a sentence is viewed as the result of left-to-right associations or dependencies, then it fits neatly into the model of a sequence treated as a chain. In the learning of a chain each response is under the control of an external stimulus, but after some learning has taken place the preceding responses act as stimuli to the next response. Lashley (1951) pointed out that this model was grossly inadequate; an overall organizational schemata had to be postulated to account for most skilled performance.¹

However, Lashley's warnings did not stop the Associationists from adopting the Markov probability model (derived from the work of information theorists in the field of communication) as a description of language behavior. Of course, any language corpus will show some statistically stable characteristics like probabilities of occurrence of certain parts of speech and transitional probabilities between them, but these characteristics of language treated as product have no necessary connection with language considered as process. There is some evidence that left-to-right habits do occur and do have an

¹In the case of human speech the situation is even more complex. Lenneberg (1967) cites evidence to show that in the production of speech physiological events, which precede acoustic events, may be twice as long as the duration of acoustic events. He concludes that "the sequential arrangements of muscular events require preplanning with anticipation of later events; therefore, the occurrence of some events is contingent upon other events yet to come, which may be adduced as proof that sequencing on a neuromuscular level is not accomplished by an associative mechanism." (p.120)
effect on recall (Coleman 1963), but that is not a significant aspect of language behavior. More importantly, language is hierarchically organized, and the decisions at the higher levels determine the selections at the lower level where, if a well-rehearsed phrase or some other sequence of units is available and appropriate, it will be reeled off, showing a left-to-right dependency at that level. (Miller, Galanter, and Pribram 1960) But as Lenneberg(1967)\(^1\) points out, even for the utterance of a single speech sound a very complex neural schema is needed so that the various muscles will initiate their movements at the right moment (accurate to milliseconds) to produce the necessary sound.

The culmination of the Associationist position on language acquisition was Skinner's *Verbal Behavior*, published in 1957, the year in which also appeared Chomsky's *Syntactic Structures* presenting the Transformational-Generative model of language, a model which forcefully drew attention to the complexity of language and the fundamental inadequacy of the Bloomfieldian model in describing it. In his review of Skinner's *Verbal Behavior* Chomsky (1959) points out that the "questions to which Skinner has addressed his speculations are hopelessly premature. It is futile to inquire into the causation of verbal behavior until much more is known about the specific character of this behavior; and there is little point in speculating about the process

\(^1\)See footnote on page 11
of acquisition without much better understanding of what is acquired." (p.55) Chomsky further accuses Skinner of unjustifiably extending the terms borrowed from experimental psychology so that they lose their objective meaning 'and take over the full vagueness of ordinary language," with the result that "if we take his terms in their literal meaning, the description covers almost no aspect of verbal behavior, and if we take them metaphorically, the description offers no improvement over various traditional formulations." (p.54) Commenting on the inadequacy of S-R Associationism in explaining language behavior, Fodor (1965: 73) points out that "a striking feature of linguistic behavior is its freedom from the control of specifiable local stimuli or independently identifiable drive states. In typical situations, what is said may have no obvious correlation with conditions in the immediate locality of the speaker or with his recent history of deprivation or reward."

Consider the learning problem involved if it is assumed that the child learns the positions of words in sentences according to their left-to-right transitional probabilities in his experience. According to Miller, Galanter, and Pribram (1960: 147) "the child would have to hear about $3 \times 10^{20}$ sentences per second in order to be exposed to all the information necessary . . . to produce sentences according to these left-to-right rules of grammar, and that is on the assumption of a childhood 100 years long with no interruptions for sleeping, eating etc., and perfect retention of every string of twenty words
after one presentation!" The criticism, though somewhat over-stated, is essentially valid. Braine (1963a) has attempted to meet this kind of objection by postulating contextual generalization; however, as he himself admits, his theory is limited in scope, being merely confined to the explanation of learning 'kernel' sentences. (cf. Chomsky 1957) McNeill (1968) points out that though Braine's concept of contextual generalization "avoids assuming that sentences consist of nothing more than simple left-to-right transitions" it suffers from two other limitations: first, contextual generalization leads merely to a structure that can be represented by phrase-structure grammar; second, it is a phrase-structure grammar that excludes the possibility of grammatical transformations and also lacks the property of recursion--a property which provides a major justification of phrase-structure grammars over left-to-right or finite state grammars. (pp.408,410) Therefore, it is a limited sort of phrase-structure grammar and falls far short of explaining the learning of word-order with any adequacy. The Associationist position in its extreme form has been given up by most theorists on language acquisition, except perhaps by Skinner and Staats.

The Content Approach

The 'Content' position in regard to language acquisition is that a child must be born with an innate "knowledge" of linguistic universals; otherwise, it would be difficult to explain his rapid acquisition of such a
complex system even though exposed to a very "degenerate" sample of it in his environment. According to Chomsky (1965: 27), the child "approaches the data with the assumption that they are drawn from a language of a certain antecedently well-defined type, his problem being to determine which of the (humanly) possible languages is that of the community in which he is placed. Language learning would be impossible unless this were the case." Again, Chomsky and Halle (1968) argue that it is obvious that "there must be a rich system of a priori properties to account for the fact that every normal child acquires an extremely intricate and abstract grammar, the properties of which are much undetermined by the available data" and that this acquisition process takes place "with great speed, under conditions that are far from ideal, and . . . [with] little significant variation among children who may differ greatly in intelligence and experience." (p.4) And therefore there is little hope "that much of the structure of language can be learned by an organism initially uninformed as to its general character." (Chomsky 1965: 57-58)

Following Chomsky many other linguists have argued for the innateness of deep structures in syntax on the ground that these structures raise "profound difficulties for any theory of language learning," since "by definition, the base structures of a language are not themselves possible utterances in the language" and hence are not available to the child as models for either imitation or selective
reinforcement.¹ (Fodor 1966: 112)

The 'Content' Approach has been attacked on a number of grounds. Chomsky's assumption that what the child learns is roughly analogous to the system of rules which appear in a Transformational-Generative grammar is open to serious question. There seems to be no empirical evidence in support of this; nobody knows yet what kind of a grammar a speaker carries in his head. There is a great deal of force in Derwing's (1973: 69) argument that "... if grammars of the Chomskyan sort cannot be learned by any means presently known, such grammars simply cannot be accepted as plausible or realistic models of any actual psychological entity or process." In other words, a linguistic description is not necessarily a mental reality.

Morton (1970a) questions two assumptions of Chomsky that language is complex and that the child learns it quickly: "Complex compared to what? Quickly compared to learning what?" (p.85) Morton points out that it is not possible to "make direct comparison of the complexity of language with that of other structures which have to be acquired," because "No one has yet analyzed pattern recognition or sensori-motor

¹However, Bowerman (1973: 175) finds that almost all the rules "needed for generating children's constructions could be derived directly from the surface strings modeled by parents. Whenever a large discrepancy exists between the underlying and surface structure representations of utterances, children usually follow the model provided by the surface structure."
co-ordination in sufficient detail." (p. 86) Then he goes on to demon-
strate that even the "identification of solid objects is not elementary," and that "when the task is analyzed in detail we are made aware of the complexity of the operations required." (p. 90)

Fraser (1966) questions McNeill's suggestion that the acquisition of syntax by children is very rapid, taking them "approximately thirty months, from the age of one and a half to the age of four."

Fraser convincingly argues that the starting point can easily be advanced to one year and that development continues beyond the age of six. He concludes that "with very little effort [we have] more than doubled the time a child is supposed to acquire language. Clearly further extensions could be argued at either end." (pp. 117-118)

Brown (1973b: 30) points out that the "full development story of the understanding of the co-ordinating forms seems to extend as far as early adolescence." After a comprehensive survey of the research in language acquisition from age five onward, Palermo and Molfese (1972: 422) reach the conclusion that there is a "steady development of linguistic form [including syntax] from age 5 to adolescence."

Language acquisition may not be so fast after all.

Nobody has, as yet, defined clearly what the specific content of the Language Acquisition Device (LAD) might be, though there are a few very tentative and highly speculative proposals about it. (Chomsky 1965, Katz 1966, McNeill 1966b) McNeill (1966b) and many other adherents of the position believe that the child has innate "knowledge"
of the base-structure rules, with the further implication that all
languages have the same base rules. The difficulty with this position
is that, currently, linguistic theory is in a fluid state and the nature of
these base structure is being fiercely debated. Bach, McCawley,
Fillmore, Lakoff (all in Bach and Harms, 1968), and many others
have questioned the distinction between syntax and semantics at the
base structure level. They have proposed that the base structures
are semantic in nature. Typically, Fillmore (1968: 88) maintains
that an autonomous level of syntactic deep structure "is an artificial
intermediate level between the empirically discoverable 'semantic
deep structure' and the observationally accessible surface structure,
a level the properties of which have more to do with the methodologi­
cal commitments of grammarians than with the nature of human
languages."

The various deep semantic structures that have been proposed
look more like cognitive universals rather than linguistic universals.

As Osgood (1971: 519) puts it cogently:

The still dominant view among generative linguists seems to be
that surface forms of sentences are transforms of deeper forms
which are themselves sentential in nature. Originally these deeper
structures were thought to be 'kernel' sentences of active,
declarative form; during the past decade they have gradually
become more abstract, but still forms of sentences. The implica­
tion of the very recent work on presupposition, as well as my
own little demonstration, would seem to be that what is
'transformed' into a surface sentence is not another 'sentence'
(hyper or otherwise) but rather a momentary cognitive state
which is not linguistic at all yet has its own complex semantic
structure.
Fodor, Bever and Garrett (1974) seem to be in essential agreement with Osgood. According to them speech starts with "a representation which formally characterizes the speaker's communicative intent; and . . . ends with a surface form. The first is presumed to be at least as abstract a representation as linguistic semantics provides for sentences and to be in the language [of the brain] in which central data processing occurs." (p.434) They further warn that it is "premature to indulge in psycholinguistic speculation about the innateness of any particular set of base-structure rules" the reason being that

... there is an intricate problem of adjudicating between the claims of the base component, the lexicon, and the transformational component in general linguistic theory. Roughly, grammars that employ very powerful transformational components use relatively simple lexicons and permit very abstract base structures generated by a relatively small number of base-structure rules; conversely, systems that use highly elaborated lexicons characteristically assume that the base tree of a sentence is rather closely related to its surface tree, and hence that the base component must be rich enough to specify a relatively large number of types of structure." (Fodor, Bever, and Garrett, 1974: 482-83)

But the question is by what criteria are the linguists going to decide upon these questions that will make their answers psychologically valid? The data of the Transformational-Generative grammarians are their fine spun intuitions and the justifying criteria of their descriptions simplicity and generality. Saporta (1965: 99) is typical in asserting that the "grammar of a language is precisely the simplest set of rules for accounting for the utterances in the language" and that
"such a position involves the strongest possible claim about the psychological validity of the formulation." But are simplicity and generality of a grammar valid criteria for determining its psychological reality? How linguistic rules are stored in the brain and how they are retrieved for the perception and production of speech are empirical questions which, obviously, cannot be solved except through observation and experiment. Moreover, these criteria of simplicity and generality relate, as pointed out by Derwing (1973), only to the storage aspect of linguistic information, ignoring completely the problem of retrieval which is no less important. Therefore, "the most efficient storage-retrieval system is not the one which minimizes storage, but the one which adopts the optimal trade-off between economy of description (storage), on the one hand, and degree of abstraction (or ease of retrieval) on the other." However, even if we strike the "ideal degree of balance in this respect" the empirical question remains unsolved "since there is no reason to think that the language learner must necessarily be maximally efficient either." (p.154) Also, there is no reason to believe that man's brain is adapted to economic storage: "Man's brain is an evolutionary outcome and there is no reason to believe that the evolutionary process is subject to the logical canons of parsimony and elegance. On the contrary in fact."(Boomer 1970: 75)

The question boils down to this: Is it logical to assert that a grammar that has been based on the intuitions of a speaker, and is
maximally simple and general, is in some way lodged in the brains of the speakers of a language and used for the perception and production of speech? The answer, obviously, is that it is not logical at all.

Chomsky's position that language acquisition by the child and grammar-construction by the linguist are "essentially" similar activities—both involving hypothesis-construction and hypothesis-testing—has many serious shortcomings as a plausible explanation of the phenomenon. As Donaldson (1966) has pointed out, there are a great many differences between the two situations: first, the linguist possesses a developed linguistic and cognitive competence and has a broader range of data and skills at his command whereas the child is extremely limited in these respects; second, the child is not describing linguistic competence but acquiring it, and it is not at all clear how he can use the very tool that he is shaping. In other words, the two situations would seem to be "essentially" dissimilar.

McCawley (1968) has observed that Chomsky's model treats the acquisition of language by children as having two phases: the first phase consisting in the collection of data and the second in the construction of a grammar. But, clearly, the child doesn't acquire a language in this way: he is "continually in the process of constructing and revising his grammar." At every stage of the learning process the child possesses a grammar and remembers little of the data from which he formulated it. When he is presented with new facts which his grammar does not cover fully yet, he modifies it. (p.560) In other words, the
child is continuously modifying or refining his grammar in the light of new data whereas the linguist, typically, begins with a more or less full range of data before starting the construction of a grammar.

Braine (1971) raises another serious objection against Chomsky's hypothesis-testing model of language acquisition on the ground that, for such a model to work, it is essential that the input should be non-noisy, that is, all the learner's questions must be answered correctly; wrong feedback, even in a single instance, can seriously disrupt the process of hypothesis formation and hypothesis testing.¹ Also, the learner needs examples of what a sentence is not (and he has to be told definitely that it is a negative example), to be able to avoid an overinclusive grammar i.e., a grammar that generates all the correct sentences but also generates many deviant strings. It is highly questionable that children do indeed receive a non-noisy input or any kind of negative information required by the model. Therefore, human beings must have a way of discovering the structure of an "impure" set of strings without the benefit of negative information. The hypothesis-testing model simply won't work in these circumstances.

The Process Approach

The 'Process' Approach to language acquisition subscribes to the view that language is species-specific (i.e., there is an innate biological basis of language acquisition which consists in cognitive

¹See also Miller (1970); and Bruner, Goodnow, and Austin (1956)
predispositions to process input in certain specific ways peculiar to man), but denies that it is task-specific within man. It agrees with the 'Content' Approach that the product of language acquisition is a hierarchically organized generative mechanism (and not merely left-to-right dependencies as the Associationists hold), but does not concur that that generative mechanism is identical with the linguist's grammar. Chomsky's grammar purports to characterize the competence of the ideal speaker-hearer of a language, the actual performance postulated to be dependent upon the factors of finite memory, physical condition of the speaker, and other performance factors. But the proponents of the 'Process' Approach maintain that performance factors are not subsidiary but crucial in determining the nature of linguistic competence. Bever (1970b), for instance, rejects the TGG (Transformational-Generative Grammar) assumption that "actual speech behavior is some regular function of the abstract linguistic structure isolated in linguistic investigations." (p.280) He argues that "Grammatical structure 'is' the language [in a psychologically real sense] only given the child's intellectual environment provided by a society and the process of physiological and cognitive development, which are the basis for language behavior." He further asserts that "linguistic structure is itself partly determined by the learning and behavioral processes that are involved in acquiring and implementing that structure." (p.281) Fodor, Bever, and Garrett (1974), after a careful study of experimental psycholinguistics reach
the conclusion that, in theories of language behavior, performance factors are fully as substantive as a formal characterization of competence i.e., linguistic description.

The point of departure for the 'Process' Approach is Chomsky's nativism. Anastasi (1958: 80) observes pertinently that "To prove that behavior is unlearned i.e., not learned, is a negative finding, which furnishes no positive information. It does not in itself tell us how the behavior develops. To call such unlearned behavior 'instinctive', 'innate', or 'hereditary' simply obfuscates the problem, because these terms seem to suggest positive explanations or active processes, whereas in this case they are being used only as synonyms for the negative term 'unlearned'." Hebb, Lambert, and Tucker (1971: 213) point out that it is false to assert as Chomsky does that "not knowing what role learning plays in language development is a sufficient reason to suppose that it does not occur. . . . If it is difficult to show how learning determines universal grammar, it is even more difficult to show how heredity does."

Currently, largely because of the work of Lenneberg (1967), there is little argument about the innate basis of language acquisition and its species-specificity. The point at issue is whether language is task-specific, that is, unique within man and different in nature from other human behavior.

The 'Process' theorists deny the task-specificity of language and maintain that language development is subordinate to, and dependent
on, general cognitive development. Of course, the human organism
must have the capacity to symbolize aspects of reality, store and
process those symbols and symbol-systems; however, that does not
imply any specific innate linguistic capacity, but only a general capac-
ity to perceive, store and process information.

Chomskyans, however, maintain that language behavior is
task-specific and independent of the growth of other behaviors.
McNeill (1970) has brought the 'Content' position into sharper focus
through his distinctions between weak, strong and erratic linguistic
universals. He denies that there are any weak linguistic universals
which he defines as "the reflection in language of a universal cognitive
ability." (p.73) He maintains that the human ability to express
grammatical relations is biologically unique and therefore "some part
of this ability must be specifically linguistic and results in strong or,
at least, erratic linguistic universals." (p.75) A strong linguistic
universal, according to McNeill, "is a reflection of a specific
linguistic ability and may not be a reflection of a cognitive ability at
all. The cognitive universal, if it has anything to do with the linguistic
one, is a necessary but not a sufficient cause of the strong linguistic
universal. It is not sufficient because a linguistic ability is necessary
as well." (p.74) An erratic universal, the concept of which McNeill
arrived at on the basis of an observation by Braine (1970), "has two
sufficient causes and therefore no necessary ones. Either the cogni-
tive category of an object or a linguistic ability can cause a word to
become a noun." (p.75)

Sinclair-de-Zwart (1969) quotes studies comparing the reactions of normal children to Piaget-type tests with those of deaf-mute children (who have intact sensori-motor "schemes" but have not acquired language), with the reactions of blind children (who have severe sensori-motor deficits but have acquired spoken language). The results of these studies show that "deaf children acquire the elementary logical operations with only a slight retardation as compared to normal children," whereas "the same tests are only solved by blind children, on the average, four years later than by normal." (pp.321-322) According to her, the obvious conclusion is that verbal acquisitions cannot compensate for sensorial deficit, "and action-learning is necessary before blind children reach an operational level comparable to that of the normal and the deaf." (p.322) She also found that teaching the language used by a group of 'conserving' children in describing simple objects (i.e., comparative terms, differentiated terms and co-ordinated description of a difference in two dimensions) to 'non-conserving' children did not lead to their acquiring conservation. Her conclusion is that language is not the source of logic but is, on the contrary, structured by logic.

Fodor, Bever, and Garrett (1974) challenge this conclusion and maintain that "If language development is paced primarily by the maturation of language-specific mechanisms, then the natural prediction is that it should be relatively unaffected by training in
non-linguistic, cognitive skills and vice [sic] versa. There is nothing in Sinclair's observations . . . which suggests that this prediction is false."
(p.467) However, they concede that at the moment there is no decisive evidence to support either of the views and a serious preference for the one or the other would be "largely dogmatic." But Lenneberg (1967: 374) cites a great deal of evidence to support "that cognitive function is a more basic and primary process than language, and that the dependence-relationship of language upon cognition is incomparably stronger than vice versa." Fillenbaum (1971) points out that even Chomsky believes that "there is no better or more promising way to explore the essential and distinctive properties of human intelligence than through the detailed investigation of the structure of this unique human possession." (Chomsky 1968)

Fillenbaum concludes that this claim "seems to argue for an intimate relation between linguistic and other cognitive capacities." (p.261)

But a more basic question is why postulate innate linguistic structures in the first instance? Chomsky postulated these to account for the child's presumably rapid acquisition of a highly abstract and complex system of grammatical rules on the basis of limited and "degenerate" data. (The S-R paradigm, assuming an empty organism, had proved woefully inadequate to explain it.) We have seen that the matter of speed and the characterization of what is acquired are open questions. Let us take a look at the child's ambient linguistic environment to determine what kind of input he receives. Shipley, Smith, and
Gleitman (1969) observe that the linguistic environment of children is not the buzzing confusion as has been assumed by Chomsky because children impose structure and order on it through selective listening. And this selective listening or filtering "need imply very little in the way of prior linguistic knowledge. Long sentences, sentences that begin in an unfamiliar way, can perhaps be ignored. There is little doubt, in addition, that the mother does some filtering of her own: lexically and constructionally complex requests are unlikely to lead to any overt response from the child and mothers surely know this. Convenience dictates that we provide children with a simplified linguistic situation. To this extent the child's linguistic environment is not the total, indefinitely variable, corpus of adult speech, nor a haphazard sample of that total." (p.338)

Drach, et al. (1969) compared adult-adult speech with adult-child speech and found a striking difference between the two, the sentences addressed to the children being shorter, spoken more slowly, and syntactically less complex. Shatz and Gelman (1973: 34) found that "Four-year olds adjust their language in response to their listener's receiving capacities. The younger their listener, the greater the tendency to use short, simple utterances and to make efforts to attract and sustain attention. These adjustments lead to the conclusion that young children have rudimentary skill in communication. The nature of the adjustments suggests that young speaker and very young listener interact to produce a linguistic environment favorable to the process
of language acquisition." It is an important finding, particularly in view of the increasingly widely held belief that the speech of older children plays an important role in language acquisition by younger children.

If we now assume, as the proponents of the 'Process' Approach do, that the child is not an empty organism but has a rich, innate, species-specific cognitive structure and then look at the process of language acquisition within the child's total cognitive development, the need for postulating specific innate linguistic structures vanishes. And there is no positive evidence for any specific linguistic structures in the human brain. After a careful consideration of the available evidence Lenneberg (1967: 72) reaches the conclusion that "In general, it is not possible to assign any specific neuro-anatomic structure to the capacity for language. However, this capacity may be due to the structural innovations on a molecular level. Language is probably due to the peculiar way in which the various parts of the brain work together or, in other words, to its peculiar function."

Chomsky's theory of language acquisition explains little and does not appear to be amenable to an empirical test. The 'Process' Approach is preferable, first, because it makes fewer assumptions about the child's innate capacities and second, because only a learning process approach can hope to explain language acquisition as a special case of some more general theory of human learning. To accept
Chomsky's position would be to abandon all hope of ever explaining language acquisition.

The psycholinguists with the 'Process' orientation have not yet found an answer to the question of how language is acquired by children. They aren't likely to find it in the near future either: research in the area has merely scratched the surface of the problem so far. An answer to the question requires a formal characterization of what is learned, and an empirical description of the learning process that could lead to a language competence so characterized. But it is not at all clear, on theoretical grounds, from which end we should start the investigation. Should the linguists' formal description of language be accepted as something internalized by the speaker and lodged somewhere in his brain to be used as occasion demands, and the psychologists called upon to explain how it could have got there? There does not seem to be any logical justification for such a procedure. Among other things, how can we assert the psychological reality of a description arrived at using the criteria of simplicity and generality; and further, how shall we decide which one of the competing linguistic models is the one that represents the competence of the speaker? What criteria shall we use in making our choice?

Then, should we begin with one of the current learning theories and determine what, in terms of that theory, can be learned by the child and characterize that as language? This approach, too, has
problems of the same magnitude as the first one. For instance, the characterization of language emerging from how it is learned under the S-R Associationist paradigm is a highly inadequate description of what the speaker of a language knows. Lenneberg (1967: 275) expresses this dilemma of research in language acquisition very aptly: "The problems involved in language development cannot be understood in the absence of an analysis of language; and it is quite possible that the proper understanding of language structure is dependent upon empirical investigations into the acquisition process."

In the circumstances the only feasible approach, and this is the approach of the 'Process' theorists, is a constant going back and forth between linguistic descriptions and theories of language learning; and to constantly modify the one or the other in the light of research findings till, hopefully, we arrive at a linguistic description that is psychologically real.

Out of the many competing linguistic descriptions within the general framework of Transformational-Generative Grammar, the one finding favor with many researchers in the field of language acquisition is some version of Fillmore's Case Grammar (Slobin 1973) which dispenses with an autonomous syntactic base but, instead, postulates a semantic base. Brown (1973a, 1973b) has found case grammar more adequate in the description of children's growing competence at various stages. However, all the current linguistic
models are tentative proposals which have not yet led to a comprehensive description of any language. Equally tentative are the various proposals about how language (whatever it is) is acquired (Hebb, Lambert, and Tucker 1971; Braine 1971; Osgood 1971; Slobin 1973).¹

To sum up, out of the three approaches to the explanation of language acquisition—Associationist, Process, and Content—the 'Process' Approach seems to be the most promising. As is shown in the table on pp.7-8, many theorists who began either as Associationists, or as the upholders of the 'Content' Approach, have gradually gravitated towards the 'Process' Approach; however, we are still far from understanding the process of language acquisition.

Out of the various competing models of language description Fillmore's Case Grammar model, or some variation of a Generative Semantic model seems to be becoming more and more popular. There is a broad consensus that the model of language description must be generative, with preferably a semantic base. However, the questions of the nature and number of the base structure rules, transformational rules, and the size of the lexicon remain unresolved. Again, so far only the broadest outlines of the Generative Semantic models are available.

Thus all research about language acquisition faces this dilemma:

¹See pp.48-52
to discover how language is acquired we must first know what
language is. We don't. Similarly, to describe language we must
first know how it is learned and used by the speakers in perception
and production.1 Again, we don't know.

To highlight this dilemma, and the current inadequacy of
psychological theories of language acquisition and linguistic models,
Osgood (1968) calls his attempt to give a psychological explanation
of language behavior (an explanation that takes account of the
linguists' current characterization of language) a "Wedding of
Insufficiencies". Though that paper was written seven years ago,
the title, in spite of the ever accelerating pace of research in the
area, is as applicable as ever to all attempts at a psychological
explanation of language acquisition.

1 Language has no existence or meaning outside the minds of the
speakers except in a very trivial sense. Language substance cannot
be treated as having an autonomous and independent existence as
physical phenomena and objects.
CHAPTER II

CURRENT RESEARCH IN FIRST LANGUAGE ACQUISITION

Goals and Methods

When the current interest in child language acquisition gathered momentum in the early sixties\(^1\), the emphasis was on taxonomic description. In the best tradition of the Bloomfieldian school, the various researchers accorded child language an independent status, and described it in terms of its own categories and classes instead of trying to fit it into an adult model, as if it were an imperfect and partial version of the adult language. A number of such studies were carried out and they all seem to have found essentially similar classes in child language\(^2\); thus, Braine's (1963b) pivots and X-words, Miller and Ervin's (1964) operators and non-operators, and Brown

\(^1\) Blumenthal (1970) gives a concise summary of most previous work.

\(^2\) All the specific studies cited in this paper (with the exception of Bowerman 1973) deal with the acquisition of English. Only Brown (1973b) and Slobin (1973) report findings based on a corpus that includes other languages besides English.
and Fraser's (1963) functors and contentives are different terms for
the two classes found in children's language. These classes were
arrived at on the basis of purely formal criteria (i.e., privileges
of occurrence); they are merely summaries of performance though
presumably capable of predicting the yet-unproduced utterances of
the child. However, these studies did not explicitly discuss how
the child might have acquired this system though Braine (1963a) did
try, unsuccessfully, to explain it within the general framework of
the S–R paradigm.

When Chomsky's (1957, 1965) Transformational-Generative
model of linguistic description more or less superseded the taxonom-
ic model, researchers in the field began to cast their descriptions of
child language in the newer mold (first in that of Syntactic Structures,
and later in that of Aspects of the Theory of Syntax). Child language
now began to be described in terms of phrase-structure and trans-
formational rules and, what is more important, the new model
permitted a simple and very elegant description of syntactic develop-
ment in terms of the increasing complexity of base structure and
transformational rules underlying child speech. (Brown, Cazden,
and Bellugi 1969; Klima and Bellugi 1966)

Later, when Chomsky's Aspects model was attacked by many
linguists (Bach and Harms 1968), who rejected his distinction between
syntactic and semantic components at the deep level, and maintained
that the base structures are semantic in nature, the child language researchers also found that a purely syntactic description (after the Aspects model) of child language was grossly inadequate. (Bloom 1970, Bowerman 1973) For instance, Bowerman (1973: 196) observes that "children may construct their early sentences out of semantic rather than syntactic building blocks" and stresses the need of a "theoretical framework which permits the semantic functions of sentence constituents to be explicitly formulated."

Thus, descriptions of child language so far seem to have kept pace with advances in linguistic theory; however, we are fast reaching a stage in child language research when it may begin to have an important influence on model construction in linguistics.

The purpose behind all this research activity is a detailed description of the structure of child language at various stages with a view to discovering the child's processing strategies and finally constructing a language acquisition model. Needless to say that the latter goal lies in a rather distant future.

There are two types of studies\(^1\) of native language acquisition: longitudinal and cross-sectional. The longitudinal studies, typically, start with a few children (three or even fewer) whose spontaneous utterances in various situations (such as during play with other

\(^1\)See footnote 2 on p. 34
children, or in interaction with their parents and other adults), are recorded at regular intervals. The purpose, of course, is to write grammars describing the children's competence at various stages to discover the rate and direction of their changing linguistic competence. Such are the studies of Bellugi (1965, 1967); Braine (1963b); Brown and Bellugi (1964); Brown, Cazden, and Bellugi (1969); Brown and Fraser (1963); Cazden (1967); McNeill (1966a, 1966b); Miller, W.R., (1964a, 1964b); Miller, W.R., and Ervin (1964); Bloom (1970); Bowerman (1973) etc. However, since a child's grammar develops so rapidly that a description of the total repertoire of his rules becomes unwieldy in a relatively short period of time, most of these studies confine themselves to a small segment of the linguistic system, such as Negation (Bellugi 1967; Klima and Bellugi 1966; McNeill and McNeill 1968), or Wh-questions (Brown 1968a) etc. Only Brown attempted the task of writing a grammar for each of three children (Adam, Eve, and Sarah) included in his study, at each of the five stages (defined in terms of the Mean Utterance Length increasing from 1.75 to 4.00 morphemes). He wrote 15 annotated grammars of about 50 pages each which, he observes, "not more than half-a-dozen people in the world have the knowledge, the patience, and the interest to read; nay, not so many as half-a-dozen." (Brown 1973b: 57)

However, these descriptions are not concerned with the way a
child processes sentences in production or perception, or the way a child processes the linguistic input to develop his system of rules.

They are merely a description of a child's linguistic "knowledge", "knowledge inferred, of course, from sentences spoken, the settings in which they are spoken, and from signs of comprehension or incomprehension of sentences spoken by others." (Brown 1973b: 58)

The cross-sectional studies, typically, study the comprehension of a particular syntactic structure on the part of a relatively large group of children of different ages, in an experimental setting. The methods used are Elicited Imitation (Clay 1971; Fraser, Bellugi, and Brown 1963; Osser, Wang and Zaid 1969; Rodd and Braine 1971 etc.), or the presentation of a structured task to the child and then evaluating his comprehension of the language-task relations (Chomsky, C., 1969; Kessel 1970; Cromer 1970, 1972, 1974; Fraser, Bellugi, and Brown 1963; Slobin 1966; Turner and Rommetveit 1967 etc.), or making the child play a role in imitation of an adult or child model, which role playing is supposedly equivalent to a child's judgement of grammaticality (Brown 1968b; de Villiers and de Villiers 1972). The study of spontaneous speech suffers from the drawback that it is contingent upon the social situation and the child's interest and other needs at the moment; thus, the child may not spontaneously produce a given syntactic structure when the investigator happens to be present even though he may be perfectly capable of doing so.
Chomsky's concept of competence as the 'linguistic grammar' arrived at through a study of a speaker's intuitions of grammaticality has come under a great deal of criticism. For one thing, judging grammaticality of sentences is itself language behavior or language performance; therefore, intuitions of grammaticality cannot be considered as direct behavioral reflections of linguistic knowledge: "... actually such judgments [of grammaticality] are also performances ..." (Cowan 1970: 17) Brown (1973b: 413) also expresses a similar view: "Judgments of syntactic correctness and the setting right of incorrect sentences will not, I think, prove to be a royal road to the child's knowledge (or linguistic competence) but simply another performance." Bever (1970b: 345) speculates that the "behavior of producing linguistically relevant intuitions may introduce properties which are sui generis and which appear in no other kind of language behavior." Essentially similarly Brown (1973b: 413) thinks that "there are multiple 'levels' of knowledge of

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1 See Derwing (1973) pp. 259–296 for a fuller discussion.

2 "Intuition" of a speaker, in this context, means the knowledge which comes without instruction and is outside of awareness; this knowledge forms the basis of a speaker's ability to speak and understand his language fluently, and to make judgements regarding structure or meaning of sentences.

"Intuitions", or "intuitions of grammaticality", or "judgements of grammaticality" are all used, in this paper, to mean a speaker's "intuitive judgements of grammaticality".
structure, as revealed by various kinds of performance, and that there is no clear reason to enthrone any one of these as the child's true competence. Some aspects of linguistic knowledge, as revealed in regularities of spontaneous speech, will not, I suspect, ever attain the judgmental level in the naive speaker. . . . Beyond the level of judgment and correction is the level of rule formulation, and this is a level attained only by people who study linguistics."

However, these 'multiple levels' as Brown calls them, must share a common factor among themselves. As Fodor, Bever, and Garrett (1974: 12) express it: " . . . by and large, someone who can speak a language can understand it, and vice versa. Granted that there is some level at which perceptual and motor systems are distinct (one speaks with one's mouth, not with one's ears), the tendency of perceptual and motor capacities to covary suggests that we ought not represent them as distinct vis-a-vis the concepts they employ." Comprehension and production, surely, may be considered fairly closely related. Intuitions of grammaticality, the psychology of which is so little understood, are in a different category. Whereas almost all members of a speech community can speak and understand the language, it is not at all certain that all, or even a majority of them, are equally capable of consistently judging grammaticality of sentences. Most of the evidence of intuitions of grammaticality comes from linguists, and some studies show that the intuitions of the naive
speakers differ materially from those of linguists; for instance, Spencer (1973: 67) found that nonlinguists "agreed among themselves on over 80% of the . . . [sentences he presented to them] but agreed with the linguists' judgments in only half the sentences." Householder (1973) also questions the general validity of a grammar based on linguists' intuitions of grammaticality. Thus, it would seem that any conclusions about linguistic competence drawn from a study of judgments of grammaticality will have only a very doubtful status.

The Question of Sequence in Language Acquisition

After a survey of the current research in child language in 12 languages Brown (1973a) found that the "constructions in Stage I [arbitrarily defined as the stage when the child's Mean Length of Utterance, M L U, is between 1 and 2 morphemes] are limited semantically to a single rather small set of relations" and that the "only expressive or syntactic devices employed are the combinations of the semantically related forms under one sentence contour and, where relevant in the model language, correct word order." These semantic relations of Stage I speech are the "relations or propositions concerning the sensory-motor world, and seem to represent the linguistic expression of the sensory-motor intelligence." (p.101) This assumption, that development of semantic intention precedes
grammatical development, underlies most current work on child language development. (Bloom 1970; Bowerman 1973; Brown 1973a, 1973b; Slobin 1973)

Now, if there is a similarity in the order of development of semantic intentions across languages and cultures, what about the order of acquisition of grammatical knowledge? According to Brown (1973b: 408), "the order of acquisition of linguistic knowledge will prove to be invariant across children learning one language and, at a higher level of abstraction, across children learning any language..." If it indeed is true that the order of acquisition of grammatical knowledge is invariant\(^1\) among children learning a particular language it would be a remarkable finding in view of the enormous differences\(^2\) that must exist in the environments of these children, and obviously this finding has an important bearing on processing strategies and acquisition models.

\(^1\) Bloom (1970) and Nelson (1973) stress the differences. Bloom (1970: 227) observes that the emerging grammars which she proposed for the three children whom she studied had "substantive differences" which "must reflect the importance of individual differences in the interaction between cognitive function and experience, which could not be assumed to be the same for any two children." Nelson (1973: 114), while agreeing that children utilize a limited number of strategies in learning a language, points out that "variations in pre-verbal cognitive organization, in language, in family patterns, and in physical environment will interact to produce a variety of different acquisition patterns in terms of both direction and rate characteristics."

\(^2\) But see quote from Hebb, Lambert, and Tucker (1971) on p.131
But what determines this presumably invariant order of acquisition? Brown (1973b), basing his conclusions primarily on the acquisition order of 14 'grammatical' morphemes by three children, biblically named Adam, Eve, and Sarah, finds no relation between the frequency of linguistic forms and constructions in parental speech and the child's order of acquisition. (p.362) Of course, if a form or a construction is not heard at all, it will not be learned. At the same time the child may learn some forms or constructions if their frequency in his environment is very high, but such forms may not be assimilated into his growing system except at the appropriate time. In the meantime he may continue to use them as unanalyzed routines, in a partially modified form perhaps.

Brown (1973b) speculates that perhaps both "semantic and grammatical cumulative complexity are important determinants of acquisition order" though he thinks that "the two are often confounded." (p.407) He admits that, there being no general theory of semantic complexity, there is no way in which complexity values can be assigned to "independent unitary meanings". For determining grammatical complexity Brown used the Jacobs and Rosenbaum (1968) Transformational Grammar of English. But he avoids the error of earlier psycholinguistic research that used a grammatical complexity measure based on the number of transformational rules, as if all transformations were equivalent. He avoids this untenable
assumption through his psycholinguistic concept of cumulative complexity. In this cumulative sense of complexity "a construction $x+y$ may be regarded as more complex than either $x$ or $y$ because it involves everything in either of the constructions alone plus something more." (p.407)

Slobin (1973) suggests a very ingenious method of teasing apart semantic and syntactic factors. According to him, it is cognitive development that sets the pace for the development of linguistic intentions. From a study of the available data he finds that the "rate and order of development of the semantic notions expressed by language are fairly constant across languages, regardless of the formal means of expression employed." Therefore, there will be a lag "between the appearance of a communicative intention and the mastery of the conventional linguistic form which the child's native language offers for the realization of that intention." And this lag, which would vary from language to language, will be determined by "the psycholinguistic complexity of the formal means used by a particular language to express the intention under consideration." (p.187) He suggests that one method of comparing formal devices used to express the same semantic intentions in different languages would be to study bilingual children. In the analysis of a test case he finds that a child acquiring both Serbo-Croatian and Hungarian learned the Hungarian locative expressions earlier than those of
Serbo-Croatian. Why? Because "the Hungarian means of locative expression is simpler: the locative marker is always at the end of the noun only, always unambiguously and consistently indicates both position and direction to or from." He concludes that this example "demonstrates—at the very least—that a system which can be described by a small set of consistent and regular rules is easier to learn than one less consistent and regular—even by children under the age of two." (pp. 188-189)

General Characterizations of Language Development

Progression from the simple to the complex

Both Brown and Slobin seem to reach a similar conclusion: linguistic development consists in a progression from the simple to the complex, though Brown measures complexity within a particular grammatical system whereas Slobin's concepts of simplicity and complexity are more general. Slobin (1973) elaborates his concept in one of the 'Operating Principles' which he postulates for children learning their native languages. This 'Operating Principle', designated F, states: "Avoid Exceptions." And from this principle Slobin derives two universals:

Universal F1: The following stages of linguistic marking of a semantic notion are typically observed: (1) no marking, (2) appropriate marking in limited cases, (3) overgeneralization of marking (often accompanied by redundant marking), (4) full adult system.
Universal F2: Rules applicable to larger classes are developed before rules relating to their subdivisions, and general rules are learned before rules for special cases.

(p. 205)

Brown and Hanlon (1970: 203) mean essentially the same thing when they say that children prefer "a small number of rules of maximal generality." It is this preference that accounts for children's tendency to overregularize, a phenomenon noted by almost every observer of child language.

Process of differentiation

Child language development has also been very aptly described as a process of differentiation, a process that seems to operate at all levels: phonological, syntactic and semantic (Jakobson 1941; McNeill 1970; Lenneberg 1967; Brown and Bellugi 1964; Brown 1973a, 1973b). According to Lenneberg (1967) the "ontogenetic development of 'phrase-structuring' is a differentiation process of grammatical categories", a similar process obtaining in the child's semantic development; for example, "any motor vehicle may at first be labelled by the single term car until the referents are subdivided" gradually "and the full vocabulary established." In phonology "Global sound-patterns become differentiated further and further until the phonemic inventory of a natural language is present." (p.294) For Lenneberg the process of differentiation is the "hallmark of all development," (p.295) and he finds it in the child's transformational
development also. Brown and Bellugi (1964) write in a similar vein: "The very intricate simultaneous differentiation and integration that constitute the evolution of the noun phrase is more reminiscent of the biological development of an embryo than it is of a conditioned reflex." (p.99) Almost a decade later, with his semantic orientation, Brown (1973a: 102) finds the evolution of the noun phrase looking "as if semantic cells of finite set of types were dividing and combining and then redviding and recombining in ways common to the species."

Description of child language development as a process of differentiation is very elegant and fairly accurate. But it should be noted that it is only a description and not an explanation. Most available studies of child language are descriptive in nature: they describe the child's linguistic competence at various levels using the currently available linguistic models (with all their inadequacies, a question with which we are not concerned at the moment). The ultimate purpose behind all this activity is to explain the process of language acquisition; however, not much progress seems to have been made in this direction. There are some scattered speculations regarding some general processes; for instance, Ervin (1964a)

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1 It is transformations—"transformations from the physically given(surface) to the abstract (deep) schemata"—which enable us to perceive similarities "between patterns which do not have any topological invariant qualities." (Lenneberg 1967: 298-299)
reaches the conclusion that syntactical development "cannot rest on imitation" but is primarily due to the child's "building by analogy of classes and rules . . . under the influence of listening to adults." (p.405)

Some Models of First Language Acquisition

Currently, there seems to be a general consensus that the child possesses a rule system, however idiosyncratic, at each stage of his linguistic development. But the question is how does he arrive at it? Is it through analogical formation? Or is it through the abstraction of regularities in the speech that he hears? If the latter, as seems to have been accepted by the majority of researchers in the field, the problem of an accurate description of the process still remains. Given a particular linguistic input, how does the child abstract its relevant features and relate them to the corresponding features of his environment? As pointed out earlier there are a few tentative proposals in this regard:

(A) Hebb, Lambert, and Tucker (1971) postulate that the child is endowed with an innate capacity for auditory analysis and for simultaneously dealing with distinct representative processes, verbal and non-verbal. In addition to this hereditary endowment, the child is assumed to possess certain capacities for perceptual learning, generalization and abstraction (verbal as well as non-verbal). These
capacities determine the special modes of human learning (including language). These modes are: (a) latent learning, including latent perceptual learning, without any discernible primary or secondary reinforcement, (b) "a form of one-trial learning without reinforcement that can be called simply the acquisition of information."(p.216)

Representative (or cognitive or mediating) processes form a hierarchy from a vivid and specific primary level to increasingly more abstract higher levels, all the different representations (or percepts) of a familiar object at various levels being associated:

A child seeing a chair would perceive not only its parts but also the chair as a whole (second-order cognition), and perhaps also as simply a thing or object (third- or higher-order cognition): as an obstacle, as something to lean against or hide behind, and so on. The perception of another child throwing a stone would include part-perceptions of the movements and the object involved, and also the higher order cognition of throwing, as well as possibly the even higher one of doing something (a very abstract conception indeed). Both the abstract idea of a thing, an object, a something, and the parallel idea of an action or activity, or something happening, are of first importance for understanding language . . . .

(pp. 217-218)

They think that with this model they can clarify a number of current problems in language acquisition such as "what the 'competence' is that a child possesses before he can talk, what imitation does and does not do in learning to talk, the generalized mastery of plurals, the basis of transformation between active and passive voices, and the question of 'nounness' . . . ." (p.218)
(B) Osgood (1971) suggests that among "the innately given of human cognitive abilities would undoubtedly be: (1) the gestalt-like tendencies to establish perceptual entities in terms of such principles as common fate, qualitative sensory similarity, sensory proximity, and contour completeness of continuity; (2) the tendency to organize behavior, both perceptuo-motor and linguistic, hierarchically in terms of levels of units-within-units-within-units; (3) the tendency to organize or differentiate the units within each level componentially, so that a large number of alternatives can be differentiated in terms of a relatively small number of elements or features." Given these innate abilities, Osgood believes that his representational mediational theory can handle "symbolic processes in general and meaning in particular within an S-R Associationistic model." (p. 522) It should be noted that his emphasis is on the semantic aspect of language rather than on the syntactic.

(C) Braine (1971) proposes a model which has "two principal components: a scanner which receives the input sentences; and a memory component which accumulates the features of sentences noticed by the scanner." The memory component consists of "an ordered series of intermediate memory stores, the last of which is the permanent store which contains the rules or pattern properties which are finally learned." Properties of sentences are first held in an intermediate store and, if these properties are encountered by
the scanner again and again, they are moved progressively through 
the intermediate stores till they reach the permanent store; proper-
ties which are not met with frequently get lost from the intermediate 
stores after a period of time. This "built-in decay characteristic" 
of the intermediate stores ensures that random deviations from 
grammaticalness, though perceived, will not have any effect on the 
final grammar, and that "general properties of the input corpus will 
tend to be learned more readily than specific properties." (p. 169)

Braine concurs with Chomsky that "there must be a relation 
between linguistic universals and the human faculties involved in 
language learning." (p. 178) He thinks that some formal universals 
due to the nature of the operations of the model and other formal 
universals and "perhaps also some substantive universals" reflecting 
"property-detecting perceptual mechanisms are built into the 
scanner itself;" for instance, "the mechanisms for detecting 
positional and co-occurrence relations . . . can reasonably be said 
to be built into the learner . . ." but "in the form of a mechanism, 
not in the form of an 'innate idea'." (p. 178)

(D) According to Slobin (1973), for a child to be able to construct 
a grammar, "(1) he must be able to cognize the physical and social 
events which are encoded in language, and (2) he must be able to 
process, organize and store linguistic information." (p. 176) In 
addition, Slobin takes as given what he calls "language-definitional"
universals, that is, a shared definition between adults and children of the form and function of language: "Everywhere language consists of utterances performing a universal set of communicative functions, . . . expressing a universal set of underlying semantic relations, and using a universal set of formal means." (p.179) He considers these definitional universals to be strong linguistic universals (cf. McNeill 1970), i.e., basic linguistic capacities which must be assumed before he can deal with the question of the child's strategies for processing language. According to him, "the pace-setter in linguistic growth is the child's cognitive growth as opposed to an autonomous linguistic development which can then reflect back on cognition." (p.184) He concludes that while there can be disagreement "about the extent to which this process of developing grammars requires a richly detailed innate language faculty, there can be no doubt that the process requires a richly structured and active child mind." (p.208)

In all these proposals there is a consensus that the child does not come to the language acquisition task as a tabula rasa but does possess some species-specific capacities for perceiving, processing and storing information, verbal and non-verbal. But so far, apart from some speculation, there is no definite knowledge of just what those capacities are, and how they interact with the input, verbal and non-verbal, so that the child ends up possessing a highly complex linguistic system.
On the Role of Some Factors Governing Language Acquisition

Current research in first language acquisition has increased our understanding of some of the strategies that children use (Slobin 1973; Chomsky, C., 1969); the roles of imitation, practice, and the amount of exposure in language acquisition.

**Imitation**

Cazden (1972) says that the "general question of how child development is at once independent of adult behavior and simultaneously dependent on it is not unique to language. In all aspects of development, children behave in uniquely childish ways because they are children, and yet they are influenced (some would say 'shaped') toward the standards of behavior in their community." (p.91) She believes that "at most, imitation guarantees that the child's language system will converge, in superficial forms, on the language of his speech community. But it cannot account for the child's acquisition of the system of which these forms are the external expression." (p. 93) Cazden seems to be interpreting imitation very narrowly, in the sense of exact topographical matching or mimicry. But that is surely not the case. Zimmerman and Rosenthal (1974), after a survey of the literature on vicarious rule learning, reach the conclusion that "a child can, through observation alone, acquire patterns which span a wide diversity of specific tasks." And what appears to be imitated is "a rule-governed pattern or 'template'
which constrains the selection of specific components without specifying their exact character." (p.36) Thus, it would seem that imitation can lead to the learning of rules.

However, there is a great deal of evidence that a child's imitations are not grammatically progressive, and that the child does filter imitations through his productive grammatical system. (Slobin and Welsh 1968; Rodd and Braine 1971; Jordan and Robinson 1972) For instance, this is what Rodd and Braine conclude from their study of children's imitations of syntactic constructions:

"... the child's spontaneous imitation is an active process of assimilating and reorganizing the adult utterance, and reproducing it in accord... with his current grammatical competence." (p.441)

Jordan and Robinson (1972) used elicited imitation to investigate the grammar of working and middle class pre-school children and found that "when asked to repeat back sentences with verb forms found to be used by children of their own social class the verb forms were altered to produce those with which they were familiar. This led to the conclusion that the child does filter imitations through his own grammatical productive system as proposed by Slobin and Welsh (1968)." (p. 122)

It would seem that in the early stages, at least, imitation is not an important process by which children acquire syntax. Children produce utterances in accordance with their own rule system and resist
any adult attempts at correcting their language (Braine, 1971). In any case Brown, Cazden and Bellugi (1969) find that parents attend more to the truth value of their children's speech rather than to its syntactic well-formedness "which renders mildly paradoxical the fact that the usual product of such a training schedule is an adult whose speech is highly grammatical but not notably truthful."
(pp. 70-71)

Hebb, Lambert and Tucker (1971: 218) point out that imitation must play some part in a child's learning of his language because the child invariably "ends up with the vocabulary, accent and other speech mannerisms of his social group. The apparent contradiction is resolved when we see that the imitation itself, the overt motor speech, depends on the the prior perceptual learning. In this sense, the child can imitate only what is already within his competence; in the early stages at least the imitation is more a product of learning than a mechanism of learning. Later, direct imitation may occur and be an important means of improving speech . . . ."

However, it should be noted that most studies of imitation have been concerned with what the child immediately attempts to imitate. Obviously, this approach leaves out of account an important part of a child's imitative behavior: a child may reproduce something that he has heard after varying intervals of time. But at present there does not seem to be any method of dealing with this kind of behavior.
Practice

Does practice help in the acquisition of a first language? Elkind (1967) emphasizes that children engage in a great deal of spontaneous repetitions by themselves. In language learning, repetitions are often in the form of play, without any communicative, inquisitive or regulatory purpose. As a matter of fact as Weir (1962) points out from a study of the bedtime monologs of her two-year-old son, a great deal of this verbal play consists in the repetition of nonsense sequences. However, a child's repetitions are not exact repetitions but appear to be like "substitution exercises" of the kind linguists prepare for people learning a foreign language. (Weir 1962)

Cazden (1972) also emphasizes that in this verbal play\(^1\) the child is repeating behavior that is natural to his own stage of development, not imposed bits of behavior that conform to adult norms. Such spontaneous practice may play an important role in the integration of units of behavior into larger hierarchical structures. However, any imposed practice, as in pattern drills in second language teaching, is not likely to accomplish much. Brown, Cazden and Bellugi (1969: 152) offer this view about the utility of practising or hearing unconnected sentences: "It seems likely that the many kinds of grammatical exchange in discourse will prove to be the richest

\(^1\) See also Valentine (1942) and Chukovsky (1963)
data available to the child in his search for a grammar. It may be as difficult to derive a grammar from hearing unconnected static sentences as it would be to derive the invariance of quantity and number from simply looking at liquids in containers and objects in space. The changes produced by pouring back and forth and by gathering together and spreading apart are the data that most strongly suggest the conservation of quantity and number. We suspect that the changes sentences undergo as they shuttle between persons in conversation are, similarly, the data that most clearly expose the underlying structure of language . . . ."

Amount of exposure

How much exposure is needed for a child to learn a language?

Friedlander (1971) has some interesting data about a bilingual situation in which a child was exposed to different frequencies of two languages. Friedlander describes the role of one father's speech in his child's bilingual development. Although this father contributed only 4% of all utterances spoken within earshot of his infant, he was responsible for almost 25% of the utterances directed to the baby herself.

This difference between the personal and total language environments is important in practice as well as theory. It happens that the Jones father . . . set out to teach his baby Spanish by speaking only Spanish in her presence. According to the sampling information on infant-directed utterances the baby heard about one-third as much Spanish from the father as she
heard English from the mother. Though there are no formal tests on which such judgments can be made, observation by tape recorder and by visits to the home when the child was 22 months old suggest that she was almost as fluent in her use of and response to Spanish as she was to English. It is certainly noteworthy that the father obtained this actualization of his bilingual objectives while occupying so small percentage . . . of the infant's total language samples when she was 18 months old.

(Friedlander 1971)¹

It would seem, then, that the child acquires a language through a certain amount of exposure, (apparently varying within wide limits), in the sense of active interaction, as mere exposure to TV programs has not been found to be effective. The child seems to filter what he hears in such a way that it fits in with his growing system. At a certain level of abstraction as yet undefined, that system seems to grow in a particular fashion across languages and cultures, and seems to be impervious to attempts to force its pace or direction. If we reject a nativist explanation, as we must, we have to enquire into what causes this invariance. Is it because the nature of our processing strategies, the nature of the linguistic system, and the nature of reality that we wish to embody in language severely constrain the order in which language can be mastered? Of course, all these factors are interrelated: the nature of language is to a certain extent determined by human capacities which also constrain what we can perceive of reality and hence embody in language.

¹ Cited by Cazden (1972) p.111
It would seem, therefore, that given a particular linguistic system it will be our cognitive capacities and processing strategies that will determine the order of acquisition of language. And it is to these processing strategies, hypothesized in some small segments of the English linguistic system and relevant to the purposes of this study, that we turn in the next chapter.
CHAPTER III

SOME ASPECTS OF DEVELOPMENTAL SYNTAX

As pointed out earlier, recent research in the acquisition of English as a first language has concerned itself with a number of aspects of the English linguistic system, with the purpose of discovering the sequence in which the native children learn them and the strategies they use. The following sections describe briefly the findings of that research in the case of a few selected constructions.

Easy/Eager

In the now very familiar sentences

(1) John is eager to please
and (2) John is easy to please

the first is easy to understand because the surface structure maintains the order of deep level relations. But in the second sentence this order has been reversed so that John, though still the surface subject, is now object of the verb please at the deep level. The correct interpretation of this sentence is a more complex task and requires more syntactic knowledge than that of the first.
Chomsky C. (1969) hypothesized that children acquiring English as their native language will learn to interpret the first sentence correctly, earlier than the second. Many other researchers have also noted that children have more difficulty with constructions in which word order differs from the standard. For instance, Luria and Yudovich (1959), Fraser, Bellugi and Brown (1963), Turner and Rommetveit (1967), and Slobin (1966) have all noted the tendency of children to interpret a passive sentence incorrectly, as if the standard order of words had been maintained.

Chomsky's subjects ranged in age from 5 years to 10. She tested their comprehension of the sentence "Is this doll easy to see or hard to see?" in the presence of a blindfolded doll placed on a table in front of the child. After this specific initial question, more open questioning was used, as in a Piagetian interview, to evaluate the child's comprehension of language-task relations.

Chomsky's conclusion was that "almost all 5-year-olds answered incorrectly, and all 9-year-olds answered correctly. The 6s, 7s, and 8s were mixed." (p.27) Her overall conclusion, based upon her findings about children's growing competence in three other structures, was that there was "considerable variation in rate of acquisition in different children together with a common, shared order of acquisition." (p.121)

Two researchers, Kessel (1970) and Cromer (1970), have
challenged Chomsky's methodology in this task. Kessel pointed out that the blindfold was too conspicuous to be ignored by the younger children as irrelevant, hence their poor performance. Further, Kessel noted that Chomsky did not test comprehension of superficially similar sentences in which the deep and surface structures are the same and, therefore, she had no basis for comparison.

In his study of children's comprehension of the Easy/Eager type of sentences, Cromer (1970) tried to overcome the shortcomings of Chomsky's methodology. He held nouns and verbs constant but varied the adjectives, such as easy and eager, which determined the relation of the deep and surface structure subjects. Cromer used four adjectives that required the surface subject of the sentence to be interpreted as the deep structure subject also (e.g., The wolf is happy to bite); four adjectives that required the surface subject to be interpreted as the object of the infinitive verb (e.g., The wolf is easy to bite); four adjectives that made the sentences ambiguous (e.g., The wolf is nice to bite). He called the first type of adjective as 'S' (subject) adjective, the second type as 'O'(other), and the third type as 'A' (ambiguous). One of the stated purposes of his study was to ascertain whether the acquisition of a new adjective and its classification . . . depend upon a wide acquaintance with the new adjective (its semantic properties, hearing it in several
contexts), or [whether] . . . part of its properties can be inferred from the limited experience of hearing it in one decisive frame . . . ." (p. 399) For this purpose, after the test proper, he presented two nonsense words (in the adjective position) put in a decisive syntactic frame i.e., a frame that showed unambiguously whether the nonsense adjective was of the 'S' (subject) type or 'O' (other) type:

\begin{align*}
\text{He's feeling very risp.} \\
\text{Chewing the rose was larsp.}
\end{align*}

These two sentences were presented along with pictures showing the situations involved. Cromer, then, tested his subjects' classification of these nonsense words by presenting these nonsense words in the same frame as the other adjectives in the task (i.e., The wolf/duck is _____ to bite). He found that the 'Passers' i.e., the children who had interpreted correctly all the test sentences, had also succeeded in learning the correct classification of the two nonsense words. He concluded from this that "the child need only hear a new adjective once in a single differentiating frame in order to assign correctly his interpretation of future uses of that word in other frames where that word alone serves as the guide for the correct interpretation (i.e., recovery of correct deep structure)." (p. 407)

However, a study of his table showing the number of mistakes made on each word by children giving mixed answers ("Intermediates")
seems to point in a different direction. The number of mistakes that his subjects made on two of the adjectives, tasty and fun, was 11 each, whereas it was 7 on hard and 8 on easy. This is not a small difference. Though the children had been tested for their comprehension of these adjectives before the test, they obviously failed to understand them in the context of the frame used by Cromer and they failed more often in the case of these two adjectives than in the case of the other two with which they were presumably more familiar. (Shall we say with their semantic properties or with their syntactic privileges of occurrence?)

To anticipate the results of the present study, my own results with foreign children and adults show a similar pattern of errors on the 'O' adjectives as can be seen in table 1. This raises the question of whether the correct understanding of this structure is a function of syntactic knowledge or simply a knowledge of the meanings of these words. That a much larger number of subjects make mistakes on these two words than on hard and easy would tend to suggest that they know the syntactic structure, but when less familiar words are used, they make mistakes. What can we conclude from this? Do those who make mistakes only on these two words know the structure or not? I would suggest that they do. One piece of evidence is to be found in their interpretations of the ambiguous adjectives. Do they interpret the 'A' (ambiguous)
TABLE 1

Number of Errors made on each 'O' Adjective by Children and Adults Learning English as a Second Language

<table>
<thead>
<tr>
<th></th>
<th>Tasty</th>
<th>Fun</th>
<th>Easy</th>
<th>Hard</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Children</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All Children (16)</td>
<td>12</td>
<td>12</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>Intermediates (5)</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td><strong>Adults</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All Adults (198)</td>
<td>124</td>
<td>117</td>
<td>76</td>
<td>70</td>
</tr>
<tr>
<td>Intermediates (99)</td>
<td>56</td>
<td>53</td>
<td>19</td>
<td>16</td>
</tr>
</tbody>
</table>

adjectives as 'S' (subject) or 'O' (object)? If 'O', then they are obviously aware of the possibility of the non-identity between the surface and deep structure subjects. But what is more important is their minds are oriented towards looking for just that non-identity, because even when both interpretations are possible they choose the 'O' interpretation much more frequently than the 'S' interpretation. Then the only reason they misinterpret tasty and fun would appear

1 In this paper 'O' adjectives will be referred to as 'Object' adjectives as being more appropriate.
to be that they do not have a knowledge of the semantic properties of these words. Now, there are 27 adults who made mistakes only on these two words, one or the other, or both. An analysis of their interpretations of 'A' (ambiguous) adjectives shows that their 'O' (object) interpretations (61) are three times their 'S' (subject) interpretations (20). Should they be credited with the syntactic knowledge of this structure? I think they should be. Cromer does not give a detailed count of the interpretations of 'A' adjectives made by his subjects but does state that whereas 17 out of 18 Primitive Rule Users (i.e., those who invariably chose the surface subject as being also the deep subject) gave surface subject as deep subject for all four ambiguous adjectives, only 7 out of 17 Intermediates, and none of the Passers, did. These results also clearly show that with increasing familiarity with the structure there is an increased tendency to make an 'O' interpretation.

Cambon and Sinclair (1974) also stress the importance of semantic factors in the interpretation of such sentences. They wondered whether the younger children interpret these sentences incorrectly only because they attribute a strong interpretive value to the standard word order in the surface structure of a sentence or whether some other factors (i.e., semantic) were also involved.

They repeated Chomsky's experiment with French children.
Their results corresponded with those of Chomsky to the extent that it was only from 8 years onwards that the majority of their subjects answered all questions correctly. However, they found that 67% of their 5 year olds gave correct answers as against Chomsky's 22%. They found that many of these children who say "La poupée est difficile à voir," when her eyes are blindfolded, say the same thing even when she has the scarf around her mouth and chin, or when she is covered with the scarf except for her head. They infer from this that the children "do not consider the doll as having difficulty in seeing others, but that they consider the doll 'difficile à voir' for an observer if the doll is partly covered. These children made us wonder about the semantic interpretation of the verb 'to see' --could it mean something like 'perceiving the total object clearly' or even 'knowing what is the color of the eyes, the hair, the type of dress etc., of a person'" (p.136) Discrepancy between their results and those of Chomsky could thus be due to Chomsky's having counted a certain number of these answers as incorrect, since the children did not explicitly state their meaning.

Also, whereas Chomsky had found a regular increase of correct responses with age, they found a decrease for the 6-year-olds, followed by an increase at 7 and 8. They explain these results in terms of Piaget's cognitive psychology: "Cognitive development often follows a course in which the child at first is capable of applying a
specific thought pattern to a limited area of problems. When his
cognitive processes develop, his thought patterns will encompass
ever-widening contents and thereby enter into conflict with other
patterns. This conflict, which in reality is a sign of progress, may
temporarily result in apparent regression." (p.136) They main-
tain that the correct answers given by the 8 year old subjects are
not of the same quality as those given by the youngest children:
the latter's correct answer may be the result of more limited
reasoning capacity and the older child's the result of a much more
powerful cognitive process which "consciously eliminates factors
instead of simply ignoring them." (p.137) It would seem, then,
that in all research of this type mere quantitative precision is not
enough; it must be combined with sensitivity to the quality of the
data if the conclusions are to have any general validity. This need
of combining sensitiveness to quality with quantitative precision was
stressed by one of the early practitioners of the 'Numbers Game'
(i.e., the statistical method): "The statistical method was needed to
give bearings . . . but personal observation to give life to statistics
. . . the figures or facts may be correct enough in themselves, but
they may mislead from want of these properties or from lack of
colour." (Charles Booth in a letter; cited by Hopkins 1973: 30-31)

The general conclusion of Cambon and Sinclair is that the
nature of the progressive control over this syntactic structure is
"more complex and less straightforward than Chomsky's results led us to suppose. Explanatory hypotheses on the nature of this process cannot be constructed on purely linguistic criteria, but have to take into account what we already know about cognitive development in general." (pp. 139-140; emphasis mine)

Cromer (1972) carried out another experiment in which he tried to teach children "nonsense" words by putting them in differentiating frames, in the setting of a puppet show:

I am always *ipsy* to read to you.
I find that for me to tell you the time is *narcious*.

When the children were tested on these nonsense words put in a neutral frame that gave no clue to the deep structure relations, children at different developmental levels were found to be using different strategies in interpreting these sentences. Of the children who did not use fixed strategies, i.e., treating every adjective as either 'S' or 'O', only those children who had performed correctly on all adult words succeeded in the new task; the other groups performed merely at chance level. However, even these 'Passers' performed better on 'O' adjectives than on 'S' adjectives.

On the basis of these results Cromer speculates about the possibility of a language-learning principle related to the marked/unmarked distinction in natural languages. Briefly, his argument goes as follows:
Since Chomsky (1965) first proposed the idea, many linguists believe that language acquisition is made possible only because the child is born equipped with a "knowledge" of linguistic universals. The marked/unmarked contrast in natural languages is a universal of a high degree of generality; it is applicable to all aspects of language: phonological, grammatical and semantic. (Greenberg 1966)

Miller and McNeill (1969) propose that the unmarked features are those which are produced by a speaker as a matter of course, without requiring any special decision on his part; also, the unmarked features are unspecified in the base structure of the sentences.

Now, since children seem to begin the acquisition of language with the base structure without using any transformations at the early stages, they should first acquire the universally unmarked features of language, and only later begin to use marked forms. 'S' (subject) and 'O' (object) type of adjectives may be considered as 'marked' classes since they both provide special additional information as to sentence structure, in contrast to the 'A' (ambiguous) adjectives.

Since children do not have any transformational rules at the beginning stages, they should treat all sentences of this type on the basis of an untransformed deep structure; in other words, they should treat all adjectives as 'S' adjectives.

Now the question is why the performance of Passers in Cromer's 1972 study was better on 'O' type than on 'S' type of nonsense words
when equal information had been supplied about both. Cromer's answer is that "marking both forms which indicate a contrast, when only one need be marked, proves confusing for children acquiring language." (p.75) He cites a study by McNeill, Yukawa and McNeill (1971) as providing evidence for this conclusion. However, this kind of evidence, based on a single study of limited scope, is at best suggestive and cannot be legitimately used as decisive in resolving substantive questions.

In still another study, in which he used a picture card technique, Cromer (1974) made a comparison between the performance of native children and adults on learning the Easy/Eager distinction in the case of new words (i.e., nonsense words). All the subjects were first classified into the categories of Primitive Rule Users, Intermediates, and Passers, on the basis of their performance on the test sentences presented to them earlier. Then the new words were presented. The method consisted in showing a picture to the subject and then twice reading the new word in a differentiating frame; and then, after putting the picture face down, presenting the new word in a neutral frame (i.e., The wolf/duck is ___ to bite), and then asking who was the doer of action represented by the infinitive verb. This is essentially the same method that he had used in his 1970 study. The results showed that only high IQ children and high IQ adults (all among Passers) could perform better
than chance on new words. However, on analyzing the strategies used by children and adults, he thought he found evidence of a language specific ability in children but not in adults. He attributed the inability of the lower IQ children to learn the new words to the nature of the task which, he thought, was more like that used in a concept formation experiment than like a natural language learning situation. Endowed as they are with a specific language learning ability, all children, irrespective of their IQ, should be able to learn a language in a natural language learning situation. And that is what did happen in the earlier experiments (1972, 1970) in which all "Passers" had been able to learn the new words, no matter what their IQ. But since this did not happen in this experiment (Cromer 1974) it must have been because the situation was not like a natural language learning situation!

Cromer's conclusion about a specific language learning ability in children but not in adults is based on a hypothesized relationship between children's strategies and the marked/unmarked contrast as a linguistic universal. In his 1972 study he had found that marking the 'O' adjective facilitated learning as the children expect "the marked form to indicate that transformation of deep structure relations had occurred." (Cromer 1972: 13) They have thus an 'O'-orientation toward all new words, i.e., a tendency to treat the sentences in which they occur as having had their deep
structure relations transformed. This orientation is supposedly the result of applying linguistic universals to language acquisition and in children this is a specific language learning ability. Now comes the clincher: "... it was the "Passers" who on both types of task made the greatest use of the 'O'-rule (35.7% in the puppet show task [1972] and 30.8% in the present [1974] experiment).

More startling is the fact that no adult ever made use of this type of strategy ...; however, a sizable percentage of adults (42.1%) behaved like the youngest children and simply showed the named animal [i.e., the surface subject] as the actor for all sentences."

(1974: 13)

Two points need to be made about Cromer's position. First, if only the high IQ Passers learned the new words in his 1974 experiment using a picture card technique, whereas all Passers (including those with low IQ) had done so in the experiment using a puppet show (1972), is he justified in concluding that the picture card technique is more like a concept formation experiment?¹

This is like assuming what he is trying to prove. Moreover, he forgets that in his 1970 experiment, in which also he used a technique similar to the picture card technique, all Passers, irrespective of

¹ In any case, can the parameters of a natural language situation or of a concept formation experiment situation be defined with any degree of precision?
their IQ, had learned the nonsense words correctly. But because that would be a piece of negative evidence he disregards it. This is typical of a great deal of current research in the behavioral and social sciences, which research, according to Ritchie (1973: 453) is "directed towards piling up positive instances" with little interest taken in "what can be learned from negative instances. Indeed the craving for positive instances often becomes so strong that we are tempted to increase the vagueness of our basic ideas... so that we can protect ourselves from discovering anything but positive instances."¹ In using these notions of natural language learning situation and concept formation experiment situation as an afterthought, Cromer appears to have been guilty of this protective vagueness.

Second, the reason he denies a specific language learning ability to adults is that they don't use the 'O'-rule. However, in the sample of foreign adults in the present study, all the Passers overwhelmingly apply the 'O'-rule strategy to the Ambiguous adjectives. Applying the 'O'-rule even when there is a choice shows a stronger 'O'-orientation than when one applies it because one must. What conclusion is to be drawn from this? Not that these foreign adults

¹ See also Ritchie (1965)
possess a specific language learning ability, but only that there may not be such a thing as a specific language learning ability.

Ask/Tell/Promise

Chomsky, C. (1969) points out that in sentences with the following surface structure

\[ NP_1 \ V \ NP_2 \ to \ inf. \ vb \]

John told Bill to go

NP\(_2\) serves as the subject of the infinitive verb. In other words, in general it is the object of the main verb that serves as the subject of the infinitive complement verb. This rule has a very general applicability in English, and holds for almost all verbs which take the complement constructions similar to the one above: persuade, encourage, order, permit, allow, urge, advise, entice, force, select, compel, require etc. This rule is based on the Minimum Distance Principle (M D P)

\(^1\) formulated by Rosenbaum (1970), as

\(^1\) Broadly, the Minimum Distance Principle states that the deleted initial noun phrase of the complement is identical to that noun phrase of the main sentence that is least distant from it, distance being defined "in terms of the underlying phrase structure itself by making reference to the number of branches in the path which separates the NP nodes in the main sentence from the initial NP node in the complement." (Rosenbaum 1970: 26) In the case of the type of sentence we are considering, distance may be treated, for all practical purposes, as physical distance in the surface structure.
a general principle governing the deletion of the complement subject in the surface structure of embedded sentences.

There are, however, a few verbs that constitute an exception to this very general rule: promise, and ask, as illustrated in the following two sentences:

John promised Bill to leave.

I asked him what to do.

In these two sentences the listener must construe NP₁ to be the subject of the infinitive verb, in violation of the MDP (Minimum Distance Principle). In the case of ask the situation is even more complicated because when it means 'request' or 'command' it is governed by the MDP:

I asked him not to make a noise.

Chomsky hypothesized that children will learn the interpretation of sentences that violate the MDP later than those that conform to it and, further, that they will learn the interpretation of sentences containing a verb with two conflicting syntactic structures associated with it (e.g., ask) later than those which have only one syntactic structure associated with it (e.g., promise).

Among her subjects, Chomsky found a systematic developmental trend suggesting that the children do not correctly comprehend sentences involving both promise and the MDP until they are about 8 years old. At the earliest stage the children applied the MDP to
all sentences with the surface structure under consideration. Next, when they became aware of exceptions to this principle, they made mistakes with sentences that followed the MDP as well as with those that did not. In the third stage they made no errors with verbs that follow the MDP but continued to mix their responses to the exceptions. Only at the fourth stage did they perform correctly in all cases. Though there was considerable variation in the rate of acquisition in different children, the sequence of achieving the stages was orderly and nontransitive.

Chomsky found similar results when ask and tell were used in another experimental task, ask being used both as a command and as a question. As had been predicted by Chomsky, the comprehension of promise, which consistently violated the MDP, always preceded the comprehension of ask, which is inconsistent with respect to this rule.

Kelleher (1973), however, was unable to replicate Chomsky's findings. Though she found that the general pattern of her results, as that of Chomsky's, is one of "gradual improvement with age," she also found that some children in her study succeeded with ask but failed with promise. She observes: "Since Chomsky's children generalize tell and the children in this study generalize promise and ask, there appears to be no reason to accept the MDP as an internalized rule for all children . . . and no reason to accept
Kelleher also undertook to teach the constructions that the various children had failed and found that they learned those constructions with ease and rapidity. She remarks that these results should embarrass the maturation hypothesis of language acquisition or at least show that "maturation is necessary but not sufficient and children may go quite some time after the maturation point without developing the specific construction. If this is the case, then environmental variables become very interesting and important." (p.37)

Kelleher maintains that the stages "which represent the orderly sequential development that a child goes through while acquiring mastery of his language appear to be more numerous, more complicated and less well-defined than had been proposed previously." (p.38; emphasis mine) This conclusion is in line with that of Cambon and Sinclair (1974) referred to earlier on pp. 68-69.

Pronominalization

In English, normally the structure of the sentence does not restrict a pronoun's reference but permits the pronoun either an identity or non-identity relationship with the co-occurring NP, depending upon context and situation. However, there are cases
in which sentence structure does restrict the pronoun's reference.

This restriction is always to a non-identity relationship: "We do not find Ss [i.e., sentences] in which the pronoun's reference is restricted on the basis of structure to an identity relationship."

(Chomsky 1969: 19) For instance, in the sentence

He knew that John was going to win the race

the pronoun cannot refer to John but must refer to someone else outside the sentence.

However, it is difficult to characterize the conditions under which non-identity restriction applies. Ross (1967), who has treated this question in detail, reached the conclusion that a satisfactory account covering all occurrences still remains to be worked out. But "roughly we can say that a pronoun which precedes the NP in S [i.e., sentence] . . . is restricted to nonidentity when in main clause . . . but not when in a subordinate clause . . . ." (Chomsky, C., 1969: 20)

In her study Chomsky investigated the question of the age of onset of this awareness of a non-identity restriction on pronominal reference. She had 15 sentences divided into three different structures: (1) Pronoun in the main clause, and preceding the NP (e.g., He found out that Mickey won the race); (2) Pronoun in the subordinate clause, and preceding the NP (e.g., After he got the candy Mickey left); (3) Pronoun in subordinate clause, and
following the NP (e.g., Mickey said he was hungry for a big dinner).

Only in type (1) does the non-identity restriction apply; in the other two types there is no restriction on reference.

Chomsky found that with very few exceptions, children above 5 years 6 months in her sample had learned the construction, and children below that age had not. The rapidity and uniformity with which this construction is acquired "may be related to the more basic nature of the principle of pronominalization in the language in general, as contrasted with our other constructions which depend on particular lexical items." She speculates that the "basic principles of the language may be acquired more uniformly across children, perhaps at a certain level of maturation, whereas the more specialized constructions vary more with the individual." (Chomsky, C., 1969: 116)

It is significant to note that Kelleher (1973:38) found that the "three syntactic structures involving lexical items of particular complexities were taught and easily learnt by most of the children in a short period of time and do not appear to be dependent on maturational level. The pronominalization construction which was of a different syntactic complexity was not so successfully learned."

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1 See also p.133 below
Negation

Negation in English is a very complex system; the following linguistic facts about negation cover only those aspects of it as are relevant to an understanding of its development in children in the early stages.

The negative or Neg can be considered a morpheme that combines with other parts of a sentence to constitute negation in the sentence; its usual surface expression is no or not. In English the negative morpheme occurs most commonly in conjunction with auxiliary verbs with which it may optionally be contracted in speech. The negative element cannot be attached to the main verbs (except in the case of 'have' which can function both as a main verb and as an auxiliary). Therefore, in the absence of an auxiliary verb in an affirmative sentence an empty morpheme do is introduced to carry the negative morpheme as well as the tense marker. In the presence of the negative morpheme embedded in the auxiliary or do, the indeterminate form of the pronoun (e.g., some) is changed to the indefinite (e.g., any). Instead of being embedded in the auxiliary, the negative can also be combined with a pronoun or an adverb as in no one, nothing, never, or with a determiner as in no more, no books, and so on; however, this cannot occur along with auxiliary negation but is an alternative. Thus, negation can occur with auxiliary verbs, adverbs and indefinite pronouns, but generally
only once in a simple sentence; it occurs as early as possible in the sentence as determined by the surface structure order of words.

**Development of negation in children:** At the first stage (as defined by Brown in terms of Mean Utterance Length), the negative occurs as a sentence modifier in the speech of children. It is placed either at the beginning or at the end of the speech unit (which at that stage may be one or two words strung together without any auxiliaries or inflections):

- No sit there
- No play that
- No . . . wipe finger
- Wear mitten no
- More . . . no
- Not a teddy bear

(Klima and Bellugi 1966)

Negation at this first stage does not disturb the internal structure of the sentence, if indeed there is any at this stage. No and not seem to be used interchangeably.

At the second stage (cf. Brown 1973b) the number of negative forms rises dramatically. Whereas during the first stage there were only two simple forms of negation, now there are seven different types. Some are a carry over from the first stage, others are more complex than the negatives of the first stage but not yet
well-formed (e.g., I no want envelope); however, a few appear to be well-formed:

I can't see you.

I don't want him.

But these sentences, though superficially correct, lack the internal structure of adult grammar; the auxiliaries can and do occur always combined with the negative element and never alone. Therefore, can't and don't, at this stage, appear to be unanalyzed or prefabricated routines, and are restricted to non-progressive verbs.

At the third stage, there is a fundamental change in the child's grammar, and can and other modal auxiliaries appear functionally in his speech, independent of negatives and interrogatives. Negation begins to be embedded in the auxiliary verbs but it is not until much later that the complex relation of negative and indefinite is established. On the way to mastering this system the children pass through a stage of producing double negatives for which there are, at least in most middle class families, no adult models. The process of development of double negatives goes somewhat like this. At stage three the children negate a sentence such as I want some as I don't want some. At a later stage the indeterminate form of the pronoun (some) disappears from the negative sentences and is replaced by the negative counterpart none; the result is a sentence like I don't want none. This phenomenon, as McNeill (1970) notes,
reveals the autonomy of child grammar and the creativity of the process by which it is acquired.

It may be noted that in the development of child speech there are no clear-cut stages; there is always a residue of elements of systems at earlier stages and each stage can be described as a co-existence of the rules of an earlier stage and a new and emerging system. (Klima and Bellugi, 1966) Brown (1973b: 257) also notes that there is "a considerable period, varying in length with the particular morpheme, in which production-where-required is probabilistic. This is a fact that does not accord well with the notion that the acquisition of grammar is a matter of acquisition of rules, since the rules in a generative grammar either apply or do not apply. One would expect rule acquisition to be sudden."

**Wh-questions**

A Wh interrogative word may be looked upon as a kind of a dummy element standing in place of a particular constituent of a sentence. The derivation of a Wh-question begins in the phrase structure with the selection of the abstract interrogative morpheme. Then, for the constituent which is to be specified in a well-formed answer, a dummy element PRO is selected rather than some

1PRO is a symbol to indicate indeterminate noun phrases (e.g., somebody or something), adverbials of time and place and manner etc., (e.g., sometime, somewhere, somehow) etc.
particular noun phrase, adverbial etc. The base structure derivation terminates in underlying strings of the following type:

Maria+past+find+wh-PRO(NP)+ in the library+yesterday.

Maria+past+find+the book+ wh-PRO(Adv-place)+ yesterday.

Maria+past+ find+the book+ in the library+ wh-PRO(Adv-time).

The Wh-questions are derived from these underlying strings by applying two transformations: preposing the dummy element, and transposing the order of the subject noun phrase and the first member of the auxiliary or the empty do. The dummy elements are replaced by the appropriate interrogative Wh words by morphophonemic rules. For example, wh-PRO(NP), wh-PRO(Adv-place) and wh-PRO(Adv-time) are replaced by who or what, when and where, respectively.

Development of Wh-questions in child speech: At stage one, the Wh-questions produced are confined to a few rigid routines which do not possess the internal structure of the adult system. These questions are some version of What dat? and Where he go? (At this stage auxiliary verbs, prepositions, conjunctions, and inflections are all missing from child speech). Though mothers produced a large number of other Wh-questions, the children confined themselves to these two; as a matter of fact, What dat? was their most frequent question. (Brown 1968a)
At stage three, when the auxiliary verb emerges independently of the negatives, the children begin to form Yes/No questions according to the adult model, i.e., with an inversion of the auxiliary or do, and the subject NP. (At stage one and two the Yes/No question is produced merely with a rising intonation).

However, at this stage, the children also produce "a kind of Wh-question which is neither the occasional [e.g., You want what?], nor the normal form, but an 'ungrammatical' creation that lies midway between them." (Brown 1968a: 284) For example,

What he wants?

How he opened it?

Brown, Cazden and Bellugi (1969) call this construction a "hypothetical intermediate," a structure derived at an intermediate stage of adult grammar.

In these sentences the Wh word has been preposed but the inversion between the subject noun phrase and auxiliary has not taken place. There are few adult models for these sentences, at least in the majority of middle class families; therefore, these constructions are truly creative. As noted above, the children at this stage are producing perfectly correct Yes/No questions with the appropriate inversion of the subject NP and the auxiliary. Why don't they apply this inversion to the Wh-questions? Perhaps Brown's concept of cumulative complexity (Brown 1973b) can be used to explain it: the
complexity of applying the two rules simultaneously is greater than the simple sum of the complexity of each and, therefore, simultaneous application of both rules requires a higher level of cognitive development. However, in the case of foreign children (learning English as a second language) also it is found that they too, even though older, pass through a similar stage. (See pp.125-127)

**Inflections**

There are a number of studies of developmental morphology which have attempted to lay down the sequence in which children acquire control over various inflectional markers of plural, possessive and tense etc. Brown (1973b) gives a comprehensive overview of the whole field.

In the case of the three children, Adam, Eve and Sarah, the subjects of a longitudinal study conducted by Brown and his associates, Brown found a more or less similar order of acquisition of 14 grammatical morphemes of English: present progressive, in, on, plural, past irregular, possessive, uncontractible copula, articles, past regular, third person regular, third person irregular, uncontractible auxiliary, contractible copula, and contractible auxiliary. (Brown 1973b: 274) Acquisition is defined by Brown in terms of the children's applying the particular inflection or auxiliary in obligatory contexts 90% of the time. This is because
Brown finds that the process of acquisition is not sudden (as it would presumably be if it were merely a matter of learning rules), but slow and cumulative. Therefore, it is not a matter of all or none, but of the degree of control the child has over a particular inflectional marker and, as such, the acceptable degree of control has to be defined precisely.

Commenting on his findings, Brown (1973b: 272) says that the "development order of the fourteen morphemes is quite amazingly constant across these three unacquainted American children." He speculates that there must be some factor or factors which "caused these grammatical morphemes to evolve in an approximately consistent order in these children." He also observes that whereas the order of development is fairly constant, the rate of development varies widely; and also that chronological age alone is a poor index of development, but age in conjunction with M L U (Mean Length of Utterance) is a better predictor than M L U alone. Brown finds general support for his order in the work of other researchers like Menyuk (1969), Leopold (1949), Miller and Ervin (1964), Brown and Fraser (1963), and de Villiers and de Villiers (1973).

Studies of Menyuk and de Villiers and de Villiers, being cross-sectional, are particularly interesting. Menyuk, however, does not consider all these fourteen morphemes. But de Villiers and de Villiers do, and their results seem to support those of Brown.
As Brown remarks: "Thanks to the de Villiers it has been made clear that we have a developmental phenomenon of substantial generality." (ibid., p. 274)

The de Villiers used 2 methods to determine the order of acquisition of the 14 grammatical morphemes. The second method, the method that is of interest to us here, consisted in ranking the averages of the summed percentages for each morpheme across all children. Their study has one or two interesting outcomes. First, the rank order correlation between age of child and their second order is .68, while that between M L U and the same order is .92; this means that M L U is a better predictor of child performance than age. Second, their assumptions underlying order II receive some support in as much as their results agree with those of a longitudinal study. These assumptions are that "morphemes have similar growth curves and maintain roughly the same relative ranking at each M L U value." (de Villiers and de Villiers 1973: 270-271)

The study of the acquisition of inflections by children has also increased our understanding of the way children acquire language in general. As a matter of fact it was studies in morphology that first highlighted the fact that children do not acquire language through imitation of adult forms. They seem to acquire it through a process of learning rules which are very general at first, and
then gradually become more and more differentiated till they approximate the adult system. Berko (1958) was probably among the first to show that children's ability to mark the plural, the possessive, and the tense depends upon their 'knowing' rules which they can apply even to synthetic words they could not possibly have heard before. In the case of the plural and the possessive, for instance, the children chose the inflectional marking correctly in accordance with the phonological rule of voice assimilation that operates in English for plurals and possessives. Anisfeld and Gordon (1968) have further clarified the way this rule operates in English by demonstrating that it is stored in the minds of the speakers as a set of distinctive features. Therefore, if a speaker of English is forced to choose between two new plural forms neither of which is correct, he will prefer the one that more closely resembles the correct form as a complex of distinctive features.

Brown (1973b: 291) found that the children's level of performance in applying rules to nonsense or synthetic words is lower than in applying them to real words. This could be due to many reasons. "Some real-stem plurals may be stored as such even though others are created by rule. No synthetic word plurals can be stored as such . . . . It is also possible that the synthetic stem poses a problem in its own right, since it is a novel phonetic sequence which the child must integrate whereas real stems would already exist.
as integrated units."

It has been found that children overgeneralize their rules: they apply them to all members of a category to begin with and only gradually learn the exceptions. Ervin (1964a) found that all the children between 2 and 4 years whom she studied regularized the plural for foot and man; they said man-mans, foot-foots or feet-feets. What she found a little surprising was that even highly practiced familiar forms were temporarily changed in form by overgeneralization of new patterns. Slobin calls this phenomenon "inflectional imperialism" for which he finds abundant examples in the speech of children learning Russian as a native language.

In the case of past tense inflections Ervin found that in the earlier texts that she had collected there was a predominance of irregular forms. This was probably due to the fact that most common verbs are irregular in their inflections: come, go, do, buy etc. When, however, the children had learned the regular past inflection they extended it first to these highly practiced forms and produced buyed, comed, doed; and sometimes even to irregular patterns, e.g., tooken. This tendency of children to overgeneralize and overregularize is the most widely noted aspect of child speech. Almost every researcher in the field has noticed some examples of analogical formation and over-extension of regular principles.
CHAPTER IV

SIMILARITIES BETWEEN PROCESSES OF
FIRST AND SECOND LANGUAGE ACQUISITION:
SOME THEORETICAL CONSIDERATIONS

If we turn our attention to second language acquisition we have
to ask ourselves whether the processing strategies of the learners
are similar to those employed in first language learning and, further,
whether they differ for children and adults. Now, there is some
evidence to support the view that children (up to about the age of
10 to 12 years, that is, before they reach the age of formal operations
as defined by Piaget), when exposed to a second language in a
natural environment, learn it very quickly, presumably by the same
mechanism as is involved in the learning of a native language. There
are a few empirical studies (Dato 1971; Ravem 1969; Dulay and
Burt 1972) which show a systematic patterning in the acquisition
of a second language by children. What is more important, these
studies show that the kinds of 'errors' these children make are
similar to those which native children make. This would seem to
indicate that, in learning a second language, the children might be
employing the same strategies as they employ in learning their first language. Of course, the two learning situations are very different: with a child's first language, the linguistic experience is a totally new phenomenon for him; in the case of learning a second language the child already has a linguistic system at his disposal.

Observation has shown that in the case of children learning a second language, the stage of telegraphic speech is either absent or of such short duration that it may very easily be missed. One

1 Telegraphic speech denotes speech that is largely made up of nouns and verbs (with a few adjectives and adverbs) and lacking prepositions, conjunctions, articles, inflections, and auxiliary verbs. It is a very apt characterization of the early utterances of children acquiring their native language. However, it is a purely descriptive term and does not have any implications about the 'process' that leads to the production of such speech.

2 This statement is based on my general observation of foreign children learning English in a natural environment in various kindergartens around the L S U (Louisiana State University) Campus. One child (name: D--) was visited at regular intervals (every three weeks) for about a period of five months. His age was 4 years and 11 months on his arrival in the United States. The boy was left-handed, bright and alert and spoke creole French; his mother spoke only French though the father spoke English also. He joined school in the last week of January 1973. I paid a number of visits to the school in February just to get acquainted. Close observation of his behavior in various situations showed that he had no comprehension of English, but was able to participate in various activities by merely imitating the actions of his fellow students. For example, on first March I requested his teacher to issue the following command after the children had assembled in the classroom after the playground hour: "Will all the girls please go out and wash up?" The command was uttered distinctly and clearly, particularly the crucial word 'girls'. At the command the girls got up and filed out of the room, and D-- followed them!

It was at the end of March that D-- uttered his first word of
possible explanation is that, as the span of short term memory increases with age, the relatively older children's earliest English. The event created a mild sensation among the teachers, who were watching him as closely as I was. While in the playground, he had pointed to a dog and said, "Look! Look! Dog!" Another word that he had learned, as reported by the teacher, was the first name of the most mischievous boy in the class because the teacher was always calling upon that boy to stop doing whatever particular brand of mischief he might have been indulging in at the moment. This "telegraphic" phase lasted only about three weeks and I didn't get enough opportunity of hearing single words or the name to determine in what contexts and in what sense he was using the words or the name.

On my visit to school on 24th April, 1973 I found D— very much at home in English as well as in the school. He was chattering and playing with other children, and apparently understood practically everything addressed to him by the teacher. His speech contained a large number of fairly well-formed sentences. Here are a few examples:

What house?  
This is a house?  
Put it in here?  
This is what?

(He is forming his questions with a rising intonation, without inverting the auxiliary and the subject noun phrase. The last question is what Brown (1968a) calls an "occasional" Wh-question)

Here are a few more examples:

No, give me this.  
This is not a car;  
Don't know what that is.

It is remarkable that within three months of his arrival in the United States D— should be using such sentences. It takes native learners a much longer period to reach this stage. D— was not observed to utter a single word of English during the first two months of his attendance at school. But when he did start speaking he was speaking fairly well-formed sentences: he had clearly been internalizing a great deal from the very beginning. However, in the
utterances are longer than the younger native learner's at the same stage of development. It has been noted that after a certain stage, with an increasing span of memory, children start adding functors to their utterances rather than more lexical items. There is no apparent reason why they should do so (Brown 1973b). They are perfectly understood by those near them (i.e., parents and siblings etc.) even without the functors many of which are, in any case, redundant (de Villiers and de Villiers 1973).

Evidence from available studies shows that children seem to be making use of the same strategies in learning a second language as they do in learning their first. This can be seen from the kinds of systematic 'errors' they make through overgeneralization and over-regularization. Ravem (1969: 184) finds that "language acquisition beginning, speech seems to have been inhibited by a number of factors: an unfamiliar and alien milieu, combined with the possibility of being able to play and participate in most school activities without speaking. This sudden breaking out of fairly well-formed speech was observed in another child (at another school) who was also observed from February to April 1973. The general observation of teachers in this matter is in conformity with this tentative conclusion that when these foreign children start speaking English they start with fairly well-formed sentences complete with auxiliaries and inflections. Of course it is not being implied that they have mastered the grammar involved in these sentences many of which, as the study progressed, were shown to be unanalyzed routines. But one thing is clear: these older children learn English relatively fast; and because of an increased memory span, the period of "telegraphic speech" is of a very short duration in their linguistic development.

1 See quote on pp. 98-99
in an environment where no formal instruction is given seems to be a creative process not unlike that of first language acquisition."

Since, according to available evidence (Dulay and Burt 1972), the children's construction of a new linguistic system appears to be largely independent of the native linguistic system, their previous linguistic background is not relevant. Moreover, even in the case of the adult, the claim of interference by his native language in learning a second language is not really borne out by evidence or experience except at the phonological level where an automatization of new habits of articulation seems to be difficult, though not perhaps impossible, to attain beyond a certain age (Braine 1971). Many researchers have reported that a large number of adult learners' syntactic errors are not traceable to their native languages (Richards 1971; Ervin-Tripp 1970a; George 1972; Burt and Kiparsky 1972).

There is now an increasing body of opinion shaped by the accumulating evidence that learning a native tongue by the child and learning a second language by the adult are not "essentially" different processes. This is not a new idea but was proposed by Palmer (1917) over half a century ago. He maintained that we were all endowed by nature with the capacity for assimilating language and that this capacity remained available to us in a latent state after the acquisition of a primary language. The adult was seen as capable of learning a foreign language as a child. Corder (1967) is of the
view that nobody has yet shown "that the process of learning a second language is of a fundamentally different nature from the process of primary acquisition." Therefore, he proposes as a working hypothesis "that some at least of the strategies adopted by the learner of a second language are substantially the same as those by which a first language is acquired." (p. 164) After a study of the comprehension of certain sentence types by native children and foreign adults, Cook (1973) reaches the conclusion that there appear to be "similarities between the ways that native children and foreign adults understand sentences at different stages of development," but she cautions about the interpretation of her findings as evidence for similarities of learning, adding that further "research is needed to establish whether the learning strategies as well as the perceptual strategies are similar." (p. 27) She concludes the paper by affirming that modern research suggests that there are no clear differences between adults and children in the way they tackle language:

D. Palermo and H. Howe (1970) have demonstrated that adults approached an experimental learning situation in the same way that children learn the past tense inflection in English; W. Stolz and J. Tiffany (1972) showed that the characteristic differences between the word associations of children and adults could be cancelled out by giving the adults unfamiliar words; the present research shows similarities between syntactic comprehension in foreign adults and native children. At the moment there seems to be no certain evidence to show that adults are different from children in language learning, once the other attributes of the adult such as increased memory span have been cancelled out. (p. 28)
We could adopt, then, as a working hypothesis that at various stages of his learning English the adult also has a self contained and internally consistent system. The systematic nature of his errors also suggests that he might be learning a second language through a continuous refinement of a total system and not merely building it up brick by brick. Like the child, he also might be constantly constructing and modifying a series of grammars to conform more closely to the system he is trying to master. Among others, Nemser (1971), Selinker (1972), and Reibel (1971) have emphasized the need of studying these systems of the adults at various stages as important for understanding the processes of language learning.

However, there is one thing that needs explanation. How is it that practically all children succeed in learning either a first or a second language well whereas a large number of adults fail to do so in spite of excellent exposure to the language (in the sense of having it spoken all around them). Perhaps the explanation lies in motivation. Brown (1973b: 412) wonders why children bring their speech into line with adult models in the absence of any selection pressures and speculates that perhaps "the human species is programmed at a certain period in its life to operate in this fashion on linguistic input. Linguistic input would be defined by the universal properties of language. And the period of progressive rule extraction would correspond to Lenneberg's (1967) proposed 'critical
period.' It may be chiefly adults who learn a new language in terms of selection pressures." Nida (1971) thinks that the levelling off process in second language in the case of adults involves three different socio-psychological elements in various combinations and proportions: (1) intellectual fatigue (a more sophisticated way of speaking about people being mentally lazy), (2) no feeling for the need of greater identification with the surrounding community, and (3) the conviction that further effort will not produce compensatory results." (p.63) Lambert and his co-workers have found that "integrative motivation" leads to greater proficiency in a foreign language than an "instrumental motivation." Lambert (1972: 291) is of the view that

... an individual successfully acquiring a second language gradually adopts various aspects of behaviour which characterize members of another linguistic-cultural group. The learner's ethnocentric tendencies, his attitudes toward the other group, and his orientation toward language learning are believed to regulate or control his motivation to learn and ultimately his success or failure in mastering the new language. His orientation is thought of as being "instrumental" in form if the purposes of language study reflect the more utilitarian value of linguistic achievement, such as getting ahead in one's occupation if he masters the language, and "integrative" if the student is oriented to learn more about the other cultural community as if he desired to belong to or become a potential member of the other group.
CHAPTER V

THE PRESENT STUDY

The present study was undertaken to test the hypothesis of similarity between the processes of learning English as a first and second language by children and adults. The overall approach is the application of the findings of current research on the acquisition of English as a first language to the study of the acquisition of English as a second language. Chapter III outlined some aspects of the English syntax and the findings of current research about how they appear to be acquired developmentally by native children. This is a cross-sectional study and, therefore, the emphasis is on studying the strategies of the learners rather than establishing a sequential order of learning.

An Empirical Investigation of the Strategies of Children Learning English as a Second Language

Sixteen foreign children were the subjects in this study. They were all enrolled at the University Terrace Elementary School, just
off the L S U Campus, their parents, father or mother or both, being students at L S U (Louisiana State University). Thus, socio-economically, they constituted a fairly homogeneous group. The school did not have any IQ records but the children were carefully screened for any possible physical or mental defects before being included in the study. This was done on the basis of the teachers' reports and the interviews the investigator had with the children before the start of the study. Only one girl was found to have a slight hearing defect and she was excluded; all the others appeared to be normal, alert, and well-motivated to learn as behaves the children of student-parents.

There were 7 girls and 9 boys; they spoke 8 languages among themselves: Spanish 5, Malaysian 4, Urdu 2, French 1, Arabic 1, Indonesian 1, Thai 1, Philippino 1. Their ages ranged from 65 months to 111 months, with a mean of 85.31 (SD=13.50). The age at which they joined the school ranged from 37 months to 87 months, with a mean of 63.13 (SD=12.41). The period of these children's stay in the United States prior to their joining school was not considered relevant for the purposes of this study because (as reported by the parents in answer to a questionnaire)¹ these children did not come into contact with English-speaking children or adults.

¹See Appendix on p. 180
at home, where they normally used their native languages. All the children were bilingual in that they spoke two languages. The normal pattern was that the children used English at school and their native language at home. In some cases parents encouraged their children to use English even at home but in the majority of cases the mothers, not being fluent speakers of English, preferred (fortunately!) to speak in their native tongues to their children, thus preserving their bilingualism. No tests were administered to ascertain the extent of their bilingualism, but the parents' answers to the questionnaire mentioned above indicated that all the children were able to use their native languages with proficiency.

A number of visits were paid to the school before the data used in this study were collected. During these visits the investigator took his tape recorder with him and allowed the children to play with it. The children enjoyed themselves immensely, speaking, whistling or making other noises into the microphone and then hearing these played back. This and the casually given information that the investigator's bag was bulging with toys and pictures with which he wanted to play with the children, made them only too eager to participate.

The testing was done in the Conference Room in the library. Though the children were interviewed individually, the investigator found it helpful to have one or two other children also present.
These other children were sometimes those who had already been interviewed or other children not included in the study. This strategy put the children at ease by creating an informal atmosphere. The various tests were administered to each child in two or sometimes even three different sessions to ensure continuing alertness and interest on their part. These different sessions took place sometimes on the same day and sometimes on different days. All the testing was done during the first three weeks of May 1974.

The general approach to interviewing was what might be called 'clinical': each child was treated in the way best suited to him and the sequence of testing was determined by what seemed to have attracted the attention of the child. For instance, if the child picked up Mickey (the mouse), or Pluto (the pup) for playing with it, he was given the Pronominalization Test first in which these toys were used, and so on. The responses of the children were not recorded until the investigator felt sure that the child had understood what was required and was making a valid response. However, in the very nature of things this is a subjective judgement. The children were allowed to play for a short time after each test and, at the slightest appearance of signs of fatigue or flagging interest, the session was terminated with a 'promise' that the game would be continued next day or the day after.

All the sessions were recorded on a Hitachi Cassette Tape
Recorder (Model TRQ-296) using SONY C-120 High Fidelity Cassette Tapes that were later transcribed. This was in addition to the written record of the children's responses made on the spot. The tapes served as a check on the written record. The written record was absolutely essential because in many cases a child's response consisted in pointing, or nodding, or shaking his head.

**Easy/Eager**

The child was shown two line drawings, one of which showed a wolf biting a duck, and the other the duck biting the wolf. The sentence *The wolf bites the duck* was uttered and the child asked *Who is biting?* Most children replied correctly to this question. However, if a child hesitated (perhaps because of the inanity of the question!) the answer was supplied immediately by the investigator. Depending upon the situation, some children were given some other examples to make clear to them what they were required to do. For example, the sentence *The book is difficult to read* was presented and the child asked *Who reads the book?* If the child hesitated it was explained to him that obviously somebody, not mentioned in the sentence, reads the book. Another sentence used for this purpose was *So-and-so (name of any other child who happened to be present) is easy to beat.* This sentence helped to relax the atmosphere and the child approached the task in the spirit of playing a challenging game. Then the following sentences (adapted
from Cromer 1970) were presented:

1. The duck bites the wolf.
2. The wolf is happy to bite.
3. The duck is quick to bite.
4. The wolf is tasty to bite.
5. The duck is easy to bite.
6. The wolf is eager to bite.
7. The wolf is hard to bite.
8. The duck is glad to bite.
9. The duck is fun to bite.
10. The wolf is bad to bite.
11. The duck is horrible to bite.
12. The wolf is nice to bite.
13. The duck is unpleasant to bite.

Results: In this group of children (as can be seen in Table 2 on page 106) there are no Passers i.e., those whose responses are all correct. Seven clearly fall into the category of Primitive Rule Users i.e., those who use the fixed strategy of treating the subject noun phrase in the surface structure as the deep structure subject also. Three clearly fall into the Intermediate category: their answers are mixed; they mostly make errors on the 'S' (subject) adjectives, and they interpret the 'A' (ambiguous) adjectives mostly
TABLE 2
Means of Children's Scores on Easy/Eager Test

<table>
<thead>
<tr>
<th></th>
<th>Primitive Group (11)</th>
<th>Intermediate Group (5)</th>
<th>Total (16)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total score (13)</td>
<td>9.00</td>
<td>9.80</td>
<td>9.28</td>
</tr>
<tr>
<td>'O' errors (5)</td>
<td>3.90</td>
<td>1.60</td>
<td>3.19</td>
</tr>
<tr>
<td>'S' errors (4)</td>
<td>0.09</td>
<td>1.60</td>
<td>0.56</td>
</tr>
</tbody>
</table>

Interpretations of 'A' adjectives:

<table>
<thead>
<tr>
<th></th>
<th>'S' Interpretations (3)</th>
<th>'O' Interpretations (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>'S' Interpretations (3)</td>
<td>2.81</td>
<td>0.60</td>
</tr>
<tr>
<td>'O' Interpretations (3)</td>
<td>0.18</td>
<td>2.40</td>
</tr>
</tbody>
</table>

as 'O' (object) adjectives. Two others may also be included in this category because, even though they are making errors on the 'O' adjectives, their interpretation of 'A' adjectives is predominantly 'O'; in other words, they are fluctuating between 'O'-orientation and 'S'-orientation. The remaining four make only 'O' errors, though they get one or two 'O' adjectives right also; however, their interpretations of 'A' adjectives are always 'S' interpretations. Therefore, they logically belong to the Primitive group because of their more or less fixed strategy. Thus we have 11 children in the Primitive group, and 5 in the Intermediate group.
Though the mean scores of the two groups of children are almost equal, there is a great difference in the kinds of errors they make and their interpretations of 'A' (ambiguous) adjectives. Whereas the Primitive group seems to have a fixed strategy, the Intermediate group is fluctuating in their approach to these sentences. Though the Intermediate group make an equal number of mean errors on both the 'S' (subject) and 'O' (object) adjectives, their interpretations of 'A' adjectives are predominantly 'O'.

Product moment correlations were calculated for all the variables in the children's data on an IBM/360 Computer using the Statistical Analysis System. The number of subjects being very small, correlations were not run for the two groups of Primitives and Intermediates separately. Below are some relevant correlations:

\[ r \text{'O' error, 'S' interpretation} = .64 \quad (p \text{ less than } .007) \]

\[ r \text{'S' error, 'O' interpretation} = .59 \quad (p \text{ less than } .02) \]

\[ r \text{'O' error, 'S' error} = -0.82 \quad (p \text{ less than } .0002) \]

We can see from these correlations that those who make errors on 'O' adjectives (e.g., easy etc.), treating them as if they were 'S' adjectives, have a strong tendency to interpret the 'A' adjectives also as 'S' adjectives. In other words, they are 'S'-oriented. 'S'-orientation is a sign of lack of understanding of the structure because the 'S'-oriented subject simply selects the named
animal, who is in the surface subject position, as the doer of the action: he has not yet become aware of the possibility that the surface subject need not always be the deep structure subject also.

Similarly, those who make errors on 'S' adjectives (e.g., happy etc.), treating them as if they were 'O' adjectives, have a strong tendency to interpret the 'A' adjectives as 'O' adjectives. These subjects do not have a fixed strategy, but use a flexible approach. However, having become aware of the possibility that the surface subject need not also be the deep structure subject, they have a tendency to overshoot the mark and misinterpret some 'S' adjectives also which, be it noted, they were getting right at an earlier stage.

The high negative correlation between 'O' errors and 'S' errors further supports the classification of these subjects into the categories of the 'O'-oriented and the 'S'-oriented.

Two children on whom developmental data are available show a dramatic change in their strategy from 'S' to 'O', which is in perfect accord with the findings in native language (English) acquisition. This is clearly shown in Table 3 on page 109. The child Y's score has increased from 8 to 10, but that of J has dropped from 11 to 10. This regression accords well with the findings of Cambon and Sinclair (1974) discussed on pp. 67-68. The important thing to notice is that now these children are making
TABLE 3

Two Children’s Development from the Primitive to the Intermediate Category

<table>
<thead>
<tr>
<th></th>
<th>Child Y</th>
<th></th>
<th>Child J</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>March 20</td>
<td>May 3</td>
<td>March 20</td>
<td>May 3</td>
</tr>
<tr>
<td>Total score (13)</td>
<td>8</td>
<td>10</td>
<td>11</td>
<td>10</td>
</tr>
<tr>
<td>'O' errors (5)</td>
<td>5</td>
<td>0</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>'S' errors (4)</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Interpretations of 'A' adjectives</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>'O' interpretations (3)</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>'S' interpretations (3)</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

'S' errors and interpreting the 'A' adjectives as 'O' rather than 'S'.
Making 'O' interpretations is a sign of progress in syntactic knowledge, as it would appear from the finding of research in the acquisition of English as a first language.

This is highly suggestive evidence that children learning English as a second language may be using the same processes of learning it as the children acquiring it as a native language.

Table 4 (p. 110) which gives the means of children's interpretations of 'A' adjectives, shows the expected pattern for two
### TABLE 4

Means of Children's Interpretations of Ambiguous Adjectives

<table>
<thead>
<tr>
<th></th>
<th>Primitive (5)</th>
<th>Intermediate (11)</th>
<th>Total (16)</th>
</tr>
</thead>
<tbody>
<tr>
<td>'S'</td>
<td>'O'</td>
<td>'S'</td>
<td>'O'</td>
</tr>
<tr>
<td>Bad</td>
<td>10</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>Horrible</td>
<td>11</td>
<td>0</td>
<td>11</td>
</tr>
<tr>
<td>Nice</td>
<td>10</td>
<td>1</td>
<td>13</td>
</tr>
</tbody>
</table>

Adjectives, horrible and bad but not for nice. Why should the Intermediate group interpret nice as an 'S' adjective more often than an 'O' adjective? Perhaps the explanation lies in the probabilistic\(^1\) nature of language learning. Possibly, in the environment of these children nice had been used more often as an 'S' adjective than as an 'O' adjective.

Table 5(p.111) shows the number of errors the children made on each adjective. The number of mistakes made on fun and tasty

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\(^1\) The phenomenon of probabilistic learning is well-known in psychology. In a task that involved the learning of an artificial grammar, Reber (1967) has demonstrated that his subjects responded to the statistical nature of the stimulus array that he presented to them.
### TABLE 5

Children's Total Errors on each Adjective in the Easy/Eager Test

<table>
<thead>
<tr>
<th></th>
<th>Primitive (5)</th>
<th>Intermediate (11)</th>
<th>Total (16)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>'O' Adjectives</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tasty</td>
<td>9</td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td>Easy</td>
<td>8</td>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td>Hard</td>
<td>8</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Fun</td>
<td>10</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>Unpleasant</td>
<td>8</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>43</td>
<td>8</td>
<td>51</td>
</tr>
</tbody>
</table>

|                |               |                   |            |
| **'S' Adjectives** |             |                   |            |
| Happy          | 0             | 2                 | 2          |
| Quick          | 0             | 3                 | 3          |
| Eager          | 1             | 2                 | 3          |
| Glad           | 0             | 1                 | 1          |
| **Total**      | 1             | 8                 | 9          |

is somewhat larger than on the other adjectives. As discussed earlier (p. 63 ff.), this could be due to an unfamiliarity with the semantic properties of these two words rather than to a lack of
knowledge of the syntactic structure involved. This impression is confirmed when we find that the Intermediates, despite their 'O'-orientation, misinterpret these two 'O' adjectives more often than the others.

No significant correlation was found between the age of the child and his total score on this test, 'O' errors, 'S' errors, 'O' interpretations or 'S' interpretations of the ambiguous adjectives. The negative correlation between the period of exposure to English and 'O' errors just misses significance: \( r = -0.48 \) (p less than .058).
Perhaps the reason for this lack of significant correlations is the smallness of the sample.

The above results show one thing very clearly. All these children, irrespective of their native languages, seem to approach the task of interpreting this Easy/Eager type of sentence in the same way as the native children. The five children in the Intermediate group represent four languages: Spanish, Japanese, Malaysian and Urdu. And there are seven different languages represented in the Primitive group: Spanish, Malaysian, Urdu, Thai, French, Arabic and Philippino.

Pronominalization

The child was seated on a table and was presented two toys representing Mickey (the mouse), and Pluto (the pup). He was told
their names and was encouraged to play with them. Then some sentences, such as the following, were presented and questions asked of him:

Mickey says he is hungry.

Who is hungry?

It was explained to the child that all the following conversation will be about Mickey and Pluto. After it was made sure that they understood the task, the following 15 sentences\(^1\) were presented in a random order:

1. Pluto thinks he knows everything.
2. He found out that Mickey won the race.
3. After he got the candy, Mickey left.
4. Before he went out Pluto had a glass of milk.
5. He didn't know why Pluto was so sad.
6. Mickey closed his eyes when he sat down.
7. He was glad that Mickey got the candy.
8. If he wins the race Pluto will be happy.
9. He was five years old when Pluto broke his leg.
10. Mickey said he was hungry for a big dinner.
11. When he was seven, Mickey learned to throw a ball.

---

\(^1\)These sentences are from Chomsky (1969); the procedure adopted is also essentially like hers.
12. He thinks Pluto knows how to swim.

13. Mickey knew he was going to be late.

14. When he changed schools, Pluto was 8 years old.

15. Pluto thinks he's going to win the race.

After the presentation of each sentence a question (of the form Who knows everything? Who found out? etc.,) was asked to ascertain whom, the child thought, 'he' referred to. The child sometimes merely pointed to a toy, and sometimes uttered the name of the animal as an answer. However, his responses were recorded only after it was made certain that it was a valid response and not merely a random pointing at one or the other toy.

In her study Chomsky (1969) ignored the responses of her subjects except in the case of the 5 crucial sentences (numbers 2, 5, 7, 9, and 12) in which non-identity between the pronoun and the co-occurring noun phrase was required by the structure of the sentence. In the other ten sentences both and identity and non-identity interpretation would be correct from a purely structural point of view. But the native speakers, as judged by the responses of a few informants, put a predominantly identity interpretation on the other ten sentences, in the absence of any special contextual clues. Therefore, it is interesting to note that foreign children and adults have a strong tendency to interpret a pronoun, when it precedes the noun phrase in the sentence, as a non-identity pronoun.
TABLE 6

Mean Scores of Children on Pronominalization

<table>
<thead>
<tr>
<th></th>
<th>Primitive (11)</th>
<th>Intermediate (5)</th>
<th>Total (16)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Correct (5)</td>
<td>3.55</td>
<td>3.60</td>
<td>3.56</td>
</tr>
<tr>
<td>Optional non-identity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>interpretations (10)</td>
<td>3.09</td>
<td>3.60</td>
<td>3.26</td>
</tr>
<tr>
<td>Pronoun preceding (5)</td>
<td>2.09</td>
<td>2.20</td>
<td>2.13</td>
</tr>
<tr>
<td>Pronoun following (5)</td>
<td>1.00</td>
<td>1.40</td>
<td>1.13</td>
</tr>
</tbody>
</table>

All the non-identity pronouns occur in this type of construction only.  

Results: Mean scores of children on pronominalization are shown in Table 6. Both the Primitive Rule Users and the Intermediates (designated as such on the basis of their performance and strategies in the Easy/Eager test) seem to perform alike on this test, using the same strategy. The mean score of the mandatory non-identity interpretations (out of 5) is almost equal to the optional non-identity interpretations made (out of 10); and the number of non-identity interpretations of the 'preceding' pronouns is double that of the 'following'.

1 The rough rule, in English, is that a pronoun which precedes the NP in a sentence is restricted to non-identity when in a main clause but not when in a subordinate clause.
There is a high correlation between the correct score and the score on optional non-identity interpretations: $r = 0.64$ ($p$ less than .007). The correlation between optional non-identity interpretations and 'preceding' pronouns is even higher: $r = 0.91$ ($p$ less than .0001).

However, there is no correlation between the children's score on pronominalization and the Easy/Eager test. Moreover, there is apparently no difference between the performance of the Primitive Rule Users and Intermediates on this test. It would seem that the two tests measure different aspects of linguistic competence. Perhaps pronominalization measures a more general linguistic ability as Chomsky (1969) speculates. This was partly confirmed by Kelleher's (1973) findings because she found it difficult to teach pronominalization to those children who had been unable to perform well on this test. Therefore, because a more general kind of linguistic ability seems to be involved, there is greater uniformity in strategies and performance of the children on this test than on the Easy/Eager test. The Easy/Eager test, according to this reasoning, measured something more particular and, therefore, resulted in a greater diversity in strategies and performance.
Ask/Tell

In this test twelve sets of drawings, each set containing two drawings, were used. Each set was presented to the child along with a sentence containing the verb ask or tell, and the child was asked to pick or point to the drawing that seemed to fit the sentence. The following sentences, presented in a random order, were used:

1. The boy asks the girl which shoes to wear.
2. The girl asks the boy what to paint.
3. The boy asks the girl which bird to feed.
4. The boy asks the girl which pencil to sharpen.
5. The boy asks the girl what toothpaste to use.
6. The boy asks the girl which book to read.
7. The girl tells the boy which chair to sit on.
8. The girl tells the boy which picture to move.
9. The boy tells the girl which toy to play with.
10. The boy tells the girl which flowers to pick.
11. The boy tells the girl which fruit to eat.
12. The girl tells the boy which juice to drink.

---

1 Adapted from Kessel (1970)
Results: The results of the Ask/Tell test are as below (Table 7):

<table>
<thead>
<tr>
<th></th>
<th>Primitive (11)</th>
<th>Intermediate (5)</th>
<th>Total (16)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ask</td>
<td>2.81</td>
<td>3.60</td>
<td>3.06</td>
</tr>
<tr>
<td>Tell</td>
<td>4.18</td>
<td>3.60</td>
<td>4.00</td>
</tr>
</tbody>
</table>

The performance of the Intermediates is better on Ask than that of the Primitives who do much better on Tell than on Ask. The reason is simple. The Primitives are again using a fixed strategy: they seem to be applying the MDP (Minimum Distance Principle) indiscriminately; they have not yet learned that some lexical items (i.e., Ask, Promise) require a violation of this general principle. In the Easy/Eager test also they had used a fixed strategy which consisted in treating the surface structure subject as the deep structure subject also: they had not yet learned that some lexical items (easy etc.) require a violation of this general strategy. The Intermediates, on the other hand, having become aware of exceptions to a general rule in one segment of language, also show an awareness of exceptions in other segments. Therefore, though semantic knowledge of particular lexical items seems to be involved in these two structures, a more general competence is also involved, i.e.,
the awareness that rules may have exceptions. It would appear as if once the learner becomes aware of exceptions in one segment of language he begins to anticipate them in other segments of language also. That would suggest a process of differentiation in the learner's linguistic system that is pervasive and not merely confined to any one part. However, Kelleher's (1973) success in being able to teach these two structures (Easy/Eager, and Ask/Tell) seems to suggest that these two structures involve particular knowledge rather than general. However, we can resolve this apparent contradiction by recognizing that a general awareness of the possibility of exceptions to rules accelerates the process of learning those exceptions in all segments of language. In other words, the learning of the particular is governed by the development of more general abilities.

This is a cross-sectional study and the sample included children who had been at school in Baton Rouge for varying periods of time and whose ages when starting school here were also different. In these circumstances, there was no external measure such as age or period of exposure to English, against which their developing competence in English could be sequentially ordered, as had been done by de Villiers and de Villiers (1973) in the case of native learners of English. Nevertheless product moment correlations were calculated
for all the variables involved. Given below are some of the relevant
correlations:

<table>
<thead>
<tr>
<th>Correlations Between</th>
<th>Age</th>
<th>Exposure to English</th>
<th>ABEXP $^1$</th>
</tr>
</thead>
<tbody>
<tr>
<td>And</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Score on</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Easy/Eager</td>
<td>0.29*</td>
<td>0.54</td>
<td>0.53</td>
</tr>
<tr>
<td>(p &lt; .28)</td>
<td>(p &lt; .03)</td>
<td>(p &lt; .03)</td>
<td></td>
</tr>
<tr>
<td>Pronominalization</td>
<td>0.69</td>
<td>0.34*</td>
<td>0.60</td>
</tr>
<tr>
<td>(p &lt; .004)</td>
<td>(p &lt; .19)</td>
<td>(p &lt; .01)</td>
<td></td>
</tr>
<tr>
<td>Ask/Tell</td>
<td>0.42*</td>
<td>0.59</td>
<td>0.58</td>
</tr>
<tr>
<td>(p &lt; .10)</td>
<td>(p &lt; .02)</td>
<td>(p &lt; .05)</td>
<td></td>
</tr>
<tr>
<td>Total score on all</td>
<td>0.63</td>
<td>0.67</td>
<td>0.76</td>
</tr>
<tr>
<td>three constructions</td>
<td>(p &lt; .008)</td>
<td>(p &lt; .005)</td>
<td>(p &lt; .0009)</td>
</tr>
</tbody>
</table>

$^1$ABEXP is a measure obtained by multiplying the period (in months) of a child's exposure to English (abbreviated as EXP), with his age (also in months) at the beginning of that exposure (abbreviated as AB). It has been noted by many observers, including the present writer, that children at the age of five or six acquire a foreign language much more quickly than younger children. Perhaps this would be true up to the beginning of the age of Formal Operations (cf. Piaget 1952), or perhaps a little earlier than that. In order to test this conjecture through quantification was this measure devised. The assumption is that with increasing age (at least up to a certain point which needs to be established empirically) the learning process would be accelerated; in other words, age might have a multiplicative effect on learning. If so, this measure would be a more accurate predictor of children's performance than either age or exposure to English alone.

* Not significant
The score on pronominalization correlates best with age, and has a very low correlation with the period of exposure to English. This would seem to indicate that pronominalization measures an ability that is general and is relatively more dependent on maturation than on learning. The scores on Ask/Tell and Easy/Eager have very low correlations with age and much higher with exposure to English. This would indicate that these syntactic structures involve the particular and, therefore, depend more on actual learning which, in fact, has been demonstrated by Kelleher (1973). The special measure \textit{ABEXP}, which combines the effects of both age and exposure to English, has a high correlation with all the four performance variables and is, thus, a more accurate predictor of children’s performance in all these constructions. This seems to be a promising way of studying the linguistic development of children in cross-sectional studies when there are no uniform external measures available.

\textbf{Negation}

In the test for negation the task to be performed by the children was modelled for them. An affirmative sentence was uttered and its negative was supplied immediately. More examples were given till the child understood the task. The negative sentences were uttered with some emphasis so as to give them the color of

\footnotesize{\textsuperscript{1} See p. 133 \textsuperscript{2} See p. 80 \textsuperscript{3} See p. 80}
disagreement. Children like to play at being contrary, and they quickly caught on to the spirit of the game and made negatives of the sentences presented with emphasis. The following sentences, presented in a random order, were used:

1. The doll will break.
2. The baby is crying.
3. The boy wants a cookie.
4. He went outside.
5. The dog can bark.
6. She wants some toys.
7. Somebody is coming in.
8. The girl asked someone.
9. I am afraid of nothing.
10. I can give him none.
11. I have more toys.
12. He has everything.

A tabulation of the data showed that for these children, on the whole, the negative element is no longer external to the sentence but has become internal and precedes the predicate or the verb phrase. Most of these children can insert the negative element correctly after the modals and the copula, as can be seen from the examples below:
The doll will not/won't break. (11)
The baby is not crying. (13)
The dog can't bark. (12)

They also use do for purposes of negation, but seem to be unable to make the other necessary changes required by its use. For instance, in the case of the past tense, they retain the past marker on the main verb and also add it to do:

He didn't went outside. (10)

However, it is possible that the suppletive form of the past tense is an unanalysed form for them because, in the case of another sentence involving past tense, 7 of them produced the following sentence:

The girl didn't ask/aks someone. (None said didn't asked)

In using do in the present tense they generally fail to mark do for the third person singular subject. For instance, 10 of them produced the following sentence:

The boy don't want a cookie.

But they don't have any problem with do in the case of first and second persons:

1 The figures in parentheses indicate the number of children making a particular response.
I don't have more toys.  (5)
I don't have/got no (more) toys.₁  (8)

This last example brings out another aspect of these children's performance: they have not yet mastered the complex relationship between the indefinite and the negative and, therefore, produce sentences of the following types frequently:

I can't give him none.  (12)
I can't give him some.  (3)
I am not afraid of nothing²  (10)
The girl didn't ask someone.  (7)

One of the 5 Spanish children in the sample didn't use double negatives at all, and the others were not using them with any greater frequency than the rest of children. If there had been any interference from their native language (Spanish), then the number of double negatives in their speech should have been much higher.

Additional examples:

She don't want some toys.  (6)
She don't want no toys.  (3)

₁ In these examples the slash (/) separates two alternative forms and the parentheses enclose optional elements.

² Only one child substituted anything for nothing in this sentence.
Somebody is not coming in. (4)
Nobody is coming in. (2)

**Wh-questions**

The child was requested to ask some specified questions, involving the use of *Wh* words, from a doll that had been placed on the table, along with other toys and materials, at the beginning of the interview. The following sentences, presented in a random order, were used:

1. Ask the doll what she wants.
2. Ask the doll where she put it.
3. Ask the doll when she'll do it.
4. Ask the doll how she got it.
5. Ask the doll why she went.
6. Ask the doll what she can do.
7. Ask the doll what the boy is doing.
8. Ask the doll why she doesn't help.

What the child was required to do was modelled for him. To make the task more interesting for him, he was encouraged to ask questions in a playful mood, in a tone of exasperation or anger, as if the doll were not behaving as expected. Care was taken to see that the performance did not become mechanical. Therefore, there were frequent interruptions, and conversations during this part of
the test.

As mentioned earlier (p. 86) Brown (1968a) found that children at stage three produce a kind of Wh-question in which, though the Wh word has been preposed, inversion of the subject noun phrase and the auxiliary has not taken place. In the present data we find that these foreign children also produce a large number of Wh-questions of the "hypothetical intermediate" type referred to above:

How you got it? (8)
What the boy is doing? (11)

However, in many instances the children are able to make the necessary inversion also:

What do you want? (8)
Why do/did you went?1 (7)
Where did you put it? (7)

In the case of the last sentence, it is difficult to interpret the significance of its 'surface correctness' as put does not carry any marker in the past tense. However, on the basis of the children's performance on the rest of the sentences, it is safe to assume that the 'surface' correctness doesn't automatically imply mastery of the grammar involved.

1 As in the case of the negative, the past tense marker on the main verb has been retained and added to do also.
Thus, according to their performance in the Negatives and Wh-questions, these children could be considered to be at stage three as defined by Brown in terms of Mean Utterance Length. Klima and Bellugi (1966) also use these stages in describing native children's developmental acquisition of the negative. In other words, the performance of these children on one test is a fairly accurate predictor of their performance on the other, almost exactly as in the case of children learning English as a native language.

That stages of growth of children learning English as a first and second language are so similar would seem to suggest a certain measure of similarity in the processes by which they are acquiring the language. Admittedly, the evidence is somewhat scanty; however, it is fairly clearcut and would support the hypothesis of "essential" similarity in the processes of learning English as a first and second language.

Inflections

The children in the study were presented a few words, real and imaginary, for pluralization along with suitable line-drawings. In the case of nonsense words, the line-drawings were of strange animal shapes and objects similar to those used by Berko (1958). The following frame was used for presenting the words and pictures:
Here is a (noun). Here are two . . . .

The child was expected to complete the sentence with the plural of the word. The following real and nonsense words were used: dog, dress, man, soap,1 foot, sheep, woman, leaf, child, mouse, glass; nonsense words: wug, gutch, kazh, tor, lun, niz, kra, tass, heaf. (The nonsense words are from Berko 1958). In addition, there were a few other sentence frames to test for possessives, comparatives, superlatives, and past tense. Some examples are given below:

For possessives

This bicycle belongs to John. Whose bicycle is it? It is . . . .

This is a niz who has a hat. It is the . . . . hat. Now there are two nizzlies. They both have hats. Whose hats are they? They are . . . . hats.

For comparatives and superlatives

This cookie is not good. This cookie is good. This cookie is even . . . . And this cookie is the very . . . .

This child has lots of blocks. This child has even . . . . And this child has the . . . .

For past tense

The thief is stealing the jewels. These are the jewels that he . . . .

1 For soap the frame used was: This is soap; these are . . . .
The results show that quite often these children omit the plural inflection. When they do use it their performance is best with words that require /-z/ as the plural marker (for instance, the plural of dog was dogs for 13 of the 15 children). Their performance is poorest with words that require the /-Iz/ as the plural marker (for instance, the plural of dress was dresses for only 4, and for the other 11 it was simply dress). In the case of nonsense words, 7 children out of 11 pluralized wug, tor, and lun correctly to wugs, tors, and luns, but only one pluralized gutch and niz to gutches and nizzes, and only two pluralized kazh to kazhes. That they are able to pluralize nonsense words correctly at all shows that they operate with rules or use analogy; however, the fact that their performance on different types of inflections is not uniform would seem to indicate that their learning is probabilistic, i.e., a sort of statistical reflection of their experience with different types of inflections. This is further confirmed by the observation that their performance with respect to a particular inflection is better on familiar words than on nonsense words. Both these observations support Brown's findings as mentioned earlier on pages 90-91. It is remarkable that these foreign children, with different linguistic and cultural backgrounds, should be behaving so like the children learning English as a native language.

Now, in the case of a few familiar words like glass and dress,
only 4 out of 11 pluralized them to dresses and glasses. Does this mean that these forms are just stored as unanalyzed routines because the number of instances encountered by the children has not enabled them to extract a rule? If so, this would suggest the importance of frequency of items in the linguistic environment of children. If they were put in an environment in which they heard these words more often, it is very probable that they would learn this rule. Of course they have also to be in a state of 'readiness' to learn the rule, as determined by their current cognitive development and linguistic competence.¹ In recent child language research

¹ Cromer (1968: 218-219) summarizes this argument about 'readiness' very cogently. Though he is talking about first language acquisition, his remarks are equally applicable to children learning second languages: "... prior to the development of particular cognitive abilities, the child has been exposed to forms, structures, and words—some of them with a very high frequency—which he fails to acquire. For example, forms of the perfect tense are found in mothers' utterances from the earliest protocols, and though the child has a span sufficient to produce these and has the elements to do so at his disposal, he does not produce the perfect tense until after age 4:6. He has been barraged by a multitude of time words, but he does not use entire classes of these sometimes for years.

"On the other hand, once certain cognitive abilities have developed, we begin to find that the child uses forms he had previously been using only in particular limited ways to refer to and express new ideas .... Furthermore, once certain abilities have developed, we also find an active search for acquisition of new forms. Suddenly forms (and words!) which the child has been exposed to for years become a part of his own speech." (Cited by Slobin 1973: 186)
the role of environment has been unduly belittled, perhaps as a reaction to an earlier overemphasis on it by the proponents of the S-R paradigm of learning. However, each child has to learn the language from the particular sample of language he hears in his environment. If there are similarities in the sequence of learning it may be because there are similarities in the environment of children and their cognitive growth. As Hebb, Lambert and Tucker (1971: 215) point out, the "language-filled" environment of children has certain verbal uniformities, and is always uniform in other ways that are sometimes forgotten. Every normal child, in no matter what culture, will be exposed to the sound of the human voice, and to the coincidence of sensation from his own throat at the same time as he hears his own voice, in crying, coughing or vocalizing. . . . All children are cared for by an older female, fed and cleaned and . . . exposed to the facial expressions, intonations and petting that express affection. . . . They sleep in enclosed spaces . . . . They are exposed to the differences between human and nonhuman; and within the human class, to the male–female distinction. These examples of predictable features or "metaphysical constancies" . . . of the environment remind us that children in different families or in different societies do have experiences with much in common.

Both Nelson (1973) and Bloom (1970) have pointed out differences in the language acquisition patterns of different children. Nelson made a longitudinal study of the acquisition of the first 50 words by 18 children between one and two years of age. She found that "children differed in the functional type of vocabulary (referential or expressive) acquired and in the length of their initial speech units as well as in the content—the particular units they chose to
name. These differences were related to patterns of language acquisition; for example, referential speakers built larger vocabularies more quickly than did expressive speakers."

(Nelson 1973; page not numbered) She found a total of 356 different words in the pooled 50 word vocabularies of these 18 children. If every child had the same words the total would have been 50, and if every child had a completely idiosyncratic vocabulary the total would have been 900. Among these children she found greater agreement "on the first ten words than on later words ....

Nevertheless differences between the two function groups were observable even at the 10-word level ...." (Nelson 1973: 25)

The commonest words among the first ten were: Mommy (said by 15 children), Daddy (13), dog (11), hi (10), and ball (8).

Though Nelson's is a study in the development of children's semantic systems, it highlights an important general fact about children's acquisition of language—each child is somewhat different. There are many different routes to learning a language though, of course, this learning is guided by general cognitive abilities. If we consider the sequence of growth in linguistic competence at a relatively high level of abstraction we shall discover a certain similarity, but at a more specific and concrete level we should expect to find all kinds of dissimilarities and differences depending on particular conditions.
If the knowledge of language can be placed on a continuum from the general to the particular, then syntax can be considered more general than vocabulary, which is more specific. As Cazden (1972: 104) puts it, the acquisition of the general or universal aspects of language "should require less exposure to samples of speech, show less variability across children, and be reflected in a shorter learning period and fewer errors on the part of any one child. Conversely, acquisition of more language-specific knowledge . . . , should require more exposure, show greater variability across children, and be reflected in a longer learning period and more fluctuation and errors by each child."

Also, in most recent research perhaps a little too much has been made of the observation that language learning is a matter of learning rules and language production is a matter of constructing, through the application of those rules, novel utterances or sentences that the speaker could not have heard before. But mightn't language acquisition also involve learning fairly large chunks of language that are used as such even by the adult? There is no doubt that every sentence that we speak is, in some sense, new but this is true only at a highly theoretical level: a great deal of linguistic behavior is routinized, consisting of the use of well-rehearsed phrases and sentences. This is not to deny that the speaker knows rules, but only to suggest that our speech depends as much on use and practice
as on internalized "knowledge" of rules. The extent to which we
analyze and then put together what we speak depends upon our
purposes and mental capacities. The poet and the philosopher, in
their different ways, reach back to the roots of language, whereas
the truck driver next door will perhaps be functioning at a much
more routine level, using stereotyped expressions and phrases
and getting by with a minimal repertoire of oft used words and
sentence patterns. As Householder (1971: 21) points out

One fact which suggests that what we have stored is more like
a concordance than a dictionary [and rules] is the frequency
with which we call up, not single words, but whole sentences
and long phrases. . . . unquestionably we have this ability
[to produce and understand sentences which we have never
heard before], but the occasions on which we are called upon
to use it to the full are probably infrequent. Mostly we
improvise . . . sentences and paragraphs patched up from
older sentences and paragraphs, with an occasional daring
substitution of a single word here or there. When we write
artistic prose or verse (original not translated) a kind of
subconscious censor tries to prevent repetitions of bits more
than three or four words in length, but a concordance of one
man's spoken output for a year or two or even of a voluminous
writer's . . . written output might be instructive. Until we get
this, we can have no exact idea of the relative proportions of
originality and repetition.

Most observers of child language have noted that children over-
generalize. In this sample of children, on the whole, it was the
Intermediates (classified as such according to their performance
and strategies in the Easy/Eager test) who showed a tendency to
overgeneralize; they even added inflections to the already inflected
irregular forms: eatened, mostest, growned, stoled etc. The Primitives, numbering 11, produced just two such forms: mostest and feets; one other did produce the form "lotter" in the sense of more, but lot, though semantically marked, lacks a formal marking; therefore, it is not in exactly the same category as most or feet etc.

The Primitives' reluctance to add a regular inflection to an already inflected form becomes more significant when we discover that they have a large repertoire of such irregular forms. For instance, the following forms were almost exclusively produced by the Primitives: Women (1), Men (3), feet (2), and mice (3). In general these data seem to show that the Primitives have a lesser flexibility than the Intermediates, and quite a large proportion of their language behavior may be just prefabricated or unanalyzed routines, stored in the memory as such.

There is another bit of evidence in support of this inference. In the case of one child on whom developmental data are available, we find that five months earlier he was using the irregular comparative better, but at the time of this study better had given way to gooder; similarly, the earlier millions of blocks gave way to mostest. This scanty evidence does seem to suggest that children start by being rigid, but gradually become more flexible, adventurous and innovative. But perhaps personality differences
are also involved.

The strategy of the child at the Primitive level seems to be either rote production of an unanalyzed form or simply omission of a required marker; the strategy of the child at the Intermediate stage seems to be to oversupply markers. It is as if, having discovered the detachability of markers, they want to use them any and everywhere. They also come to expect the presence of markers. In the Easy/Eager sentences they look for the marked form; with the passage of years this habit or strategy doesn't seem to change. The adult also continues to expect and look for markers, implicit or explicit, as is shown by the adult Passers' interpretations of 'A' (ambiguous) adjectives in the Easy/Eager type of sentences. If this search for and anticipation of markers is the expression of a specific language learning ability, as Cromer (1972) suggests, the adults learning English as a second language, at least in this sample, are not devoid of it.
An Empirical Investigation of the Strategies of Adults Learning English as a Second Language

198 foreign adults were the subjects in this study. Their personal data are shown in Table 8 on page 142. All the subjects were enrolled in the English Orientation Program at Louisiana State University (Baton Rouge), a program that caters to the needs of foreign students who need further instruction in English before they can enter a college or university in the United States. A majority of them already possess at least one university degree from their home country and have come to the United States for higher professional training. Thus they constitute a fairly well-motivated group.

All these subjects were administered a test divided into three parts: the first part consisted of Easy/Eager type of sentences, the second part consisted of sentences on pronominalization. The sentences on these two tests were the same as had been administered to the children.\(^1\) The third part consisted of 30 sentences\(^2\) on Ask/Tell/Promise divided into five groups as follows: **Ask** (permission or question) (5); **Tell** (6); **Ask** (request or command) (7); Promise (6); Others (6). (The scores for **Ask** were later adjusted so that the tables that follow show the scores out of a total of six for each of the five groups).

\(^1\) See pp. 105, 113 – 114  
\(^2\) See Appendix B on p. 182
The test was administered to the subjects in their regular classes during the first three weeks of June, 1974. After the investigator was introduced to each class he made a short speech explaining the purpose of the test to motivate them and arouse their interest. The method of presenting instructions to them through a tape recorder was rejected as being unsuitable in this context. An impersonal approach as via taperecorded instructions might have failed to establish the proper rapport with them and their ensuing indifference could have frustrated the aims of the experiment. However, the investigator took care not to vary his speech or instructions too much in different classes.

The introductory statement was as below:

Friends, I am in the Linguistics Program at L S U, and am doing some research into the processes of learning English as a second language. It has long been a popular belief that learning a second language is very different from learning one's native language. But current research findings on processes of language acquisition throw serious doubt on this position, and seem to suggest that there may not be any great difference between the methods by which one learns one's native language and a foreign language. If this view is correct and is further supported by my research, it will have important implications for the methods of teaching foreign languages. Though you are enrolled in a very efficiently run program you must admit that there is always room for improvement. And therefore I am sure that I will have your co-operation. Please try to do your best in the test that I am going to give you even though it is not going to count toward your grade. Some of the sentences might appear to be so simple as to make you wonder how your performance on them could throw any light on the processes of learning a language. But I assure you that after the test when I explain their relevance you will find it very interesting.
After this introductory statement the test sheets were handed out and they were told in detail what they were required to do. They were also told that if there was any word or phrase, particularly in the first part of the test, that they did not understand, they should ask for its meaning before attempting that part of the test. Then they were allowed to proceed at their own speed; there was no time limit. Their personal data were collected from two sources: their records in the English Orientation Program, and their answers to the questionnaire administered by the investigator. The subjects were assured that all their replies were strictly confidential and that their names would not be used in any report or article meant for private circulation or publication.

Scoring was done in the same way as in the case of children. In the first part, each sentence, except those containing the ambiguous adjectives, was scored as correct or incorrect, and it was noted whether the error was in interpreting an 'S' (subject) adjective as 'O' (object) adjective, or vice versa. The interpretations of the three 'A' (ambiguous) adjectives were also recorded. In addition, a tabulation of errors on each adjective was made. In the second test (pronominalization), their correct score on the mandatory non-identity choices was noted as well as the number of optional non-identity choices made by them; the latter was further

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1 See Appendix C on p. 184
subdivided into two categories according to whether the pronoun
preceded or followed the co-occurring noun phrase. In the third
part, the score for each of the verbs was noted separately.

Simple statistics and product moment correlations were
calculated for all the variables\(^1\) involved on an IBM/360 computer
using the Statistical Analysis System. The subjects were grouped
in two different ways: according to their native languages, and
according to their performance and strategy in the Easy/Eager
test, the latter yielding three classes of Primitive Rule Users,
Intermediates, and Passers. The tables that follow present
the results according to both these groupings. Children's scores
are also shown for purposes of comparison.

Given below are some abbreviations used in the following
tables:

- **Primitive** = Primitive Rule Users
- **Inter** = Intermediates
- **OER** = Errors on 'O' adjectives
- **SER** = Errors on 'S' adjectives

---

\(^1\)There were 36 variables in all, and included the subjects' scores on TOEFL (Test of English As a Foreign Language), on "instrumental" and "integrative" motivations, ethnocentrism, authoritarianism etc. (cf. Gardner & Lambert, 1972). However, all those data await a fuller analysis at some later date. This study reports only the results that are immediately relevant to its purposes.
ONPT = 'O' interpretation of ambiguous adjectives
SNPT = 'S' interpretation of ambiguous adjectives
PRN = Correct mandatory non-identity choices
PND = Optional non-identity choices
PCD = Optional non-identity choices where the pronoun precedes the noun phrase
PFL = Optional non-identity choices where the pronoun follows the noun phrase
Ask(p) = Ask (permission, question)
Ask(r) = Ask (request, command)

**Easy/Eager**

The scores for Easy/Eager are shown in Table 9 on page 143.

What is remarkable in these results is the similarity of pattern between the children's scores and adults' (as a whole, as well as according to language groups). It is only in the interpretation of ambiguous adjectives that there is an appreciable difference between the children and the adults: the children predominantly make an 'S' interpretation of 'A' adjectives (mean=2.13 out of 3), whereas among the adults the 'O' and 'S' interpretations are almost equal ('S' = 1.48 and 'O' = 1.52). Only the Arabic group shows a similar pattern to that of children. The small number of children in the study and their relatively lower mean age (lower than that of the
TABLE 8

Personal Data of Adult Subjects

<table>
<thead>
<tr>
<th>Native Language</th>
<th>Age</th>
<th>Years of English in home country</th>
<th>Gap (in years) in study of English</th>
<th>Period of study of English in USA (in weeks)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spanish (98)</td>
<td>26.1</td>
<td>5.52</td>
<td>5.29</td>
<td>12.83</td>
</tr>
<tr>
<td>Persian (31)</td>
<td>24.13</td>
<td>7.26</td>
<td>2.58</td>
<td>8.29</td>
</tr>
<tr>
<td>Arabic (24)</td>
<td>30.08</td>
<td>6.56</td>
<td>6.60</td>
<td>17.56</td>
</tr>
<tr>
<td>Others* (45)</td>
<td>25.47</td>
<td>6.86</td>
<td>4.48</td>
<td>10.91</td>
</tr>
<tr>
<td>Total (198)</td>
<td>26.20</td>
<td>6.22</td>
<td>4.84</td>
<td>12.28</td>
</tr>
<tr>
<td>Primitive (56)</td>
<td>26.60</td>
<td>6.33</td>
<td>4.81</td>
<td>12.72</td>
</tr>
<tr>
<td>Inter (99)</td>
<td>25.98</td>
<td>6.25</td>
<td>4.70</td>
<td>12.00</td>
</tr>
<tr>
<td>Passers (43)</td>
<td>26.21</td>
<td>6.00</td>
<td>5.23</td>
<td>12.28</td>
</tr>
</tbody>
</table>

* The composition of this group is as follows: Portugese, 12; Thai, 16; Turkish, 5; Japanese, 7; Cambodian, 1; Chinese, 1; Italian, 1; French, 2.
### TABLE 9

Mean Scores of Children and Adults on Easy/Eager Test

<table>
<thead>
<tr>
<th></th>
<th>Total Score (13)</th>
<th>OER (5)</th>
<th>SER (4)</th>
<th>ONPT (3)</th>
<th>SNPT (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Children</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primitive (11)</td>
<td>9.00</td>
<td>3.90</td>
<td>0.09</td>
<td>0.18</td>
<td>2.81</td>
</tr>
<tr>
<td>Inter (5)</td>
<td>9.80</td>
<td>1.60</td>
<td>1.60</td>
<td>2.40</td>
<td>0.60</td>
</tr>
<tr>
<td>Total (16)</td>
<td>9.28</td>
<td>3.19</td>
<td>0.56</td>
<td>0.88</td>
<td>2.13</td>
</tr>
<tr>
<td><strong>Adults</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spanish (98)</td>
<td>10.22</td>
<td>2.12</td>
<td>0.67</td>
<td>1.60</td>
<td>1.48</td>
</tr>
<tr>
<td>Persian (31)</td>
<td>9.68</td>
<td>2.71</td>
<td>0.61</td>
<td>1.61</td>
<td>1.49</td>
</tr>
<tr>
<td>Arabic (24)</td>
<td>9.13</td>
<td>3.08</td>
<td>0.79</td>
<td>0.88</td>
<td>2.13</td>
</tr>
<tr>
<td>Others (45)</td>
<td>10.18</td>
<td>2.49</td>
<td>0.33</td>
<td>1.64</td>
<td>1.45</td>
</tr>
<tr>
<td>Total (198)</td>
<td>9.99</td>
<td>2.42</td>
<td>0.60</td>
<td>1.52</td>
<td>1.48</td>
</tr>
<tr>
<td>Primitive (56)</td>
<td>7.91</td>
<td>4.66</td>
<td>0.42</td>
<td>0.21</td>
<td>2.79</td>
</tr>
<tr>
<td>Inter (99)</td>
<td>10.16</td>
<td>1.97</td>
<td>0.87</td>
<td>1.85</td>
<td>1.15</td>
</tr>
<tr>
<td>Passers (43)</td>
<td>12.33</td>
<td>0.48</td>
<td>0.19</td>
<td>2.50</td>
<td>0.50</td>
</tr>
</tbody>
</table>
native speakers of English when they become aware of the 'O' interpretation), probably explains why the interpretation of 'A' adjectives by these children is predominantly an 'S' interpretation. However, in the total score on this test, and 'O' and 'S' errors, there is a remarkable similarity of pattern between children and adults: 'O' errors far exceed the 'S' errors.

If we look at the mean scores of interpretations of 'A' adjectives by the Primitive Rule Users, Intermediates and Passers, we find that the 'S' interpretations decrease and 'O' interpretations increase as we move from the Primitive Rule Users through the Intermediates to the Passers. Therefore, it is the differences in the strategies of approaching these sentences, determined by increasing competence in English, that accounts for these differences in performance rather than the fact of their different linguistic backgrounds. A breakdown of the linguistic backgrounds of the Passers, Primitive Rule Users and Intermediates is shown in Table 10 on page 145. A study of this reveals a similar pattern of performance on the Easy/Eager test for all the language groups. The Persian and Arabic group are somewhat lopsided in being more concentrated in the Primitive category. But the explanation for this lopsidedness probably lies in such factors as motivation, ethnocentrism, authoritarianism etc., (cf. Gardner and Lambert, 1972) rather than their linguistic background.
TABLE 10

Linguistic Background of Primitive Rule Users, Intermediates and Passers on the Easy/Eager Test

<table>
<thead>
<tr>
<th></th>
<th>Primitive Rule Users</th>
<th>Intermediates</th>
<th>Passers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(56)</td>
<td>(99)</td>
<td>(43)</td>
</tr>
<tr>
<td>Spanish</td>
<td>(98)</td>
<td>18</td>
<td>57</td>
</tr>
<tr>
<td>Persian</td>
<td>(31)</td>
<td>13</td>
<td>12</td>
</tr>
<tr>
<td>Arabic</td>
<td>(24)</td>
<td>13</td>
<td>9</td>
</tr>
<tr>
<td>Others</td>
<td>(45)</td>
<td>12</td>
<td>21</td>
</tr>
</tbody>
</table>

Table 11 on page 146 shows the product moment correlations between 'O' errors and 'S' errors, and between 'O' (object) interpretation and 'S' interpretation of 'A' adjectives. A glance at the table reveals a very interesting phenomenon. Both among children and adults, those who make 'O' errors are far less prone to make 'S' errors, and vice versa. Similarly, those who make 'S' interpretations of 'A' adjectives are not at all likely to make 'O' interpretations, and vice versa. In other words, both children and adults fall into two categories which may be designated 'O'-oriented and 'S'-oriented, according to the approach used in decoding sentences of this type. It is important to note that this division cuts across languages and cultures; no one linguistic group is more or less disposed in one or the other direction.
TABLE 11

Correlations Between 'O' and 'S' Errors; And Between 'O' and 'S' Interpretations Of 'A' Adjectives

<table>
<thead>
<tr>
<th>Group</th>
<th>Correlation between 'O' errors and 'S' errors</th>
<th>P less than</th>
<th>Correlation * between 'S' and 'O' Interpretations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children (16)</td>
<td>-0.82</td>
<td>.0002</td>
<td>-1.00</td>
</tr>
<tr>
<td>Adults</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spanish (98)</td>
<td>-0.52</td>
<td>.0001</td>
<td>-0.996</td>
</tr>
<tr>
<td>Persian (31)</td>
<td>-0.57</td>
<td>.002</td>
<td>-1.00</td>
</tr>
<tr>
<td>Arabic (24)</td>
<td>-0.56</td>
<td>.004</td>
<td>-1.00</td>
</tr>
<tr>
<td>Others (45)</td>
<td>-0.54</td>
<td>.001</td>
<td>-1.00</td>
</tr>
<tr>
<td>Primitive (56)</td>
<td>-0.96</td>
<td>.0001</td>
<td>-1.00</td>
</tr>
<tr>
<td>Inter (99)</td>
<td>-0.73</td>
<td>.0001</td>
<td>-1.00</td>
</tr>
<tr>
<td>Passers (43)</td>
<td>-1.00</td>
<td>.0001</td>
<td>-0.98</td>
</tr>
<tr>
<td>Total (Adults) (198)</td>
<td>-0.52</td>
<td>.0001</td>
<td>-0.998</td>
</tr>
</tbody>
</table>

* In this correlation p is less than .0001 in every case
Pronominalization

The mean scores of the adults on pronominalization are shown in Table 12 on page 148, and some product moment correlations in Table 13 on page 149. Except in the case of the Arabic group (who make fewer non-identity interpretations relative to their score on this test), and the Persian group (whose score on pronominalization is lower than that of the rest), there is a great similarity in the pattern of results for children and adults as a single group or as divided into language groups. What is even more striking is that out of the optional non-identity interpretations made, the 'preceding' (i.e., where the pronoun precedes the noun phrase) far exceed the 'following' (i.e., where the pronoun follows the noun phrase). This is true of the Arabic group also.

If we look at the results from the point of view of the subjects' classification into Primitive Rule Users, Intermediates and Passers in the Easy/Eager test, we again find an increase in scores from the Primitive (mean = 3.80) through the Intermediates (mean = 4.47) to the Passers (mean = 4.63).

The correlation between score of correct answers and the number of other optional non-identity choices varies widely, but that between optional non-identity choices and the 'preceding' pronoun is almost constant and very high. In other words, whenever both children and adults make a non-identity interpretation, the pronoun involved
TABLE 12
Mean Scores of Children and Adults on Pronominalization

<table>
<thead>
<tr>
<th></th>
<th>Mandatory non-identity choices (5)</th>
<th>Optional non-identity choices</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Preceding* (5)</td>
<td>Following** (5)</td>
<td>Total (10)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Children</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primitive (11)</td>
<td>3.55</td>
<td>2.09</td>
<td>1.00</td>
<td>3.09</td>
<td></td>
</tr>
<tr>
<td>Inter (5)</td>
<td>3.60</td>
<td>2.20</td>
<td>1.40</td>
<td>3.60</td>
<td></td>
</tr>
<tr>
<td>Total (16)</td>
<td>3.56</td>
<td>2.13</td>
<td>1.13</td>
<td>3.26</td>
<td></td>
</tr>
<tr>
<td>Adults</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spanish (98)</td>
<td>4.43</td>
<td>2.56</td>
<td>0.79</td>
<td>3.35</td>
<td></td>
</tr>
<tr>
<td>Persian (31)</td>
<td>3.87</td>
<td>2.52</td>
<td>0.90</td>
<td>3.42</td>
<td></td>
</tr>
<tr>
<td>Arabic (24)</td>
<td>4.24</td>
<td>1.44</td>
<td>0.44</td>
<td>1.88</td>
<td></td>
</tr>
<tr>
<td>Others (45)</td>
<td>4.43</td>
<td>1.95</td>
<td>0.54</td>
<td>2.52</td>
<td></td>
</tr>
<tr>
<td>Primitive (56)</td>
<td>3.80</td>
<td>2.36</td>
<td>1.00</td>
<td>3.36</td>
<td></td>
</tr>
<tr>
<td>Inter (99)</td>
<td>4.47</td>
<td>2.22</td>
<td>0.56</td>
<td>2.79</td>
<td></td>
</tr>
<tr>
<td>Passers (43)</td>
<td>4.63</td>
<td>2.30</td>
<td>0.65</td>
<td>2.95</td>
<td></td>
</tr>
<tr>
<td>Total (198)</td>
<td>4.32</td>
<td>2.28</td>
<td>0.71</td>
<td>2.99</td>
<td></td>
</tr>
</tbody>
</table>

* i.e., when the pronoun precedes the noun phrase

** i.e., when the pronoun follows the noun phrase
TABLE 13

Pronominalization Correlations

<table>
<thead>
<tr>
<th></th>
<th>( r_{PRN,PND} )</th>
<th>( p ) less than</th>
<th>( r_{PND,PCD} )</th>
<th>( r_{PCD,PFL} )</th>
<th>( p ) less than</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Children (16)</strong></td>
<td>0.64</td>
<td>.007</td>
<td>0.90</td>
<td>0.35**</td>
<td>0.18**</td>
</tr>
<tr>
<td><strong>Adults</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spanish (98)</td>
<td>0.25</td>
<td>.01</td>
<td>0.91</td>
<td>0.48</td>
<td>.0001</td>
</tr>
<tr>
<td>Persian (31)</td>
<td>0.51</td>
<td>.004</td>
<td>0.90</td>
<td>0.38</td>
<td>.03</td>
</tr>
<tr>
<td>Arabic (24)</td>
<td>0.43</td>
<td>.03</td>
<td>0.94</td>
<td>0.14**</td>
<td>.61**</td>
</tr>
<tr>
<td>Others (45)</td>
<td>0.25**</td>
<td>.09**</td>
<td>0.89</td>
<td>0.33</td>
<td>.03</td>
</tr>
<tr>
<td>Primitive (56)</td>
<td>0.50</td>
<td>.0002</td>
<td>0.90</td>
<td>0.50</td>
<td>.0002</td>
</tr>
<tr>
<td>Inter (99)</td>
<td>0.23</td>
<td>.02</td>
<td>0.91</td>
<td>0.35</td>
<td>.0006</td>
</tr>
<tr>
<td>Passers (43)</td>
<td>0.26**</td>
<td>.08**</td>
<td>0.93</td>
<td>0.42</td>
<td>.004</td>
</tr>
<tr>
<td><strong>Total (198)</strong></td>
<td>0.30</td>
<td>.0001</td>
<td>0.90</td>
<td>0.41</td>
<td>.0001</td>
</tr>
</tbody>
</table>

* All PCD, PND correlations are significant beyond \( p \) less than .0001

**Not significant
almost always precedes the noun phrase.

However, there is a great difference between the Primitive Rule Users and Passers in the correlation between the score on mandatory non-identity choices and the optional non-identity choices made. It would seem as if the Primitive Rule Users were again using a rigid strategy of attributing non-identity to any pronoun that happened to precede the noun phrase. The choices of the Passers, however, can be safely assumed to be based on understanding.

**Ask/Tell**

The mean scores of the subjects are shown in table 14 on page 151. A careful study of this table again shows that whereas the variation in the mean scores of the subjects grouped according to their linguistic background seems to be random, their scores grouped according to their performance on the Easy/Eager test show the same pattern as in pronominalization: there is a regular improvement in scores from the Primitive Rule Users to Passers. A look at the correlations below reveals a significant negative correlation between the Primitives' scores on Ask (permission) and Tell:

<table>
<thead>
<tr>
<th></th>
<th>Primitive</th>
<th>Inter</th>
<th>Passers</th>
</tr>
</thead>
<tbody>
<tr>
<td>$r_{\text{Ask}(p), \text{Tell}}$</td>
<td>-0.40</td>
<td></td>
<td>No Correlation</td>
</tr>
<tr>
<td>($p$ less than .004)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ask(p)</td>
<td>Tell</td>
<td>Ask(r)</td>
</tr>
<tr>
<td>------------------</td>
<td>--------</td>
<td>------</td>
<td>--------</td>
</tr>
<tr>
<td></td>
<td>(6)</td>
<td>(6)</td>
<td>(6)</td>
</tr>
<tr>
<td>Children</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primitive(11)</td>
<td>2.81</td>
<td>4.18</td>
<td></td>
</tr>
<tr>
<td>Inter (5)</td>
<td>3.60</td>
<td>3.60</td>
<td></td>
</tr>
<tr>
<td>Total (16)</td>
<td>3.06</td>
<td>4.00</td>
<td></td>
</tr>
<tr>
<td>Adults</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spanish (98)</td>
<td>4.60</td>
<td>4.98</td>
<td>5.69</td>
</tr>
<tr>
<td>Persian (31)</td>
<td>3.91</td>
<td>4.23</td>
<td>4.42</td>
</tr>
<tr>
<td>Arabic (24)</td>
<td>4.27</td>
<td>4.48</td>
<td>4.92</td>
</tr>
<tr>
<td>Others (45)</td>
<td>4.22</td>
<td>4.86</td>
<td>5.66</td>
</tr>
<tr>
<td>Primitive (56)</td>
<td>4.00</td>
<td>4.05</td>
<td>4.61</td>
</tr>
<tr>
<td>Inter (99)</td>
<td>4.43</td>
<td>4.92</td>
<td>5.63</td>
</tr>
<tr>
<td>Total (198)</td>
<td>4.35</td>
<td>4.77</td>
<td>4.83</td>
</tr>
</tbody>
</table>
This negative correlation shows that the Primitive Rule Users are again using a rigid strategy, that is, applying or violating the Minimum Distance Principle indiscriminately. The mean scores do not reveal the whole truth because some of the Primitive Rule Users generalized from Ask (p) to Tell i.e., violated the MDP for both Ask (p) and Tell; thus, they got correct answers on Ask (p) but went wrong on Tell. (This generalization from Ask (p) to Tell had also been found by Kelleher (1973) in her sample of children learning English as a first language. It seems as if this is true of foreign adults also). It is this fact that explains the Primitive Rule Users' almost equal mean scores on both Ask (p) and Tell (4.00 and 4.05 respectively). The Passers' mean scores are 4.68 and 5.40 respectively, and there is no correlation: their answers are based on understanding, and are not the result of a blind strategy.

It seems that the Easy/Eager test taps some important linguistic ability, an ability that consists in being able to recover deleted deep structure material. However, in this respect there are some similarities between the two tests. Both involve the ability to distinguish two modes of assigning an absent subject; and in both cases the learner seems to start by applying one general rule for subject assignment (the rules for Eager and Tell), and only later learns that the other type constitutes an exception. However, the learner can begin the other way about also i.e., generalize from Ask (p) to Tell.
CHAPTER VI

SUMMARY AND CONCLUSIONS

The purpose of this study was to ascertain, empirically, whether children learning a first or a second language, and adults learning a second language, use similar strategies. Sixteen foreign children and 198 foreign adults (with different linguistic and cultural backgrounds) who had been in the United States from a few weeks to two years were administered tests to ascertain their comprehension of Easy/Eager type of sentences, non-identity condition in pronominalization, and Ask/Tell distinction. In addition, Negatives, Wh-questions, and some Inflections were productively elicited from the children in an experimental setting.

This was a cross-sectional study and did not attempt to establish any sequence of learning English syntax based upon age or period of exposure to English. Perhaps only longitudinal studies could accomplish that purpose. Though cross-sectional studies in the acquisition of English as a first language have been used to establish a sequence of learning (Menyuk 1969; de Villiers and de Villiers 1973), they are based on the assumption that various aspects of
syntax have "similar growth curves and maintain roughly the same relative ranking at each M L U value." (de Villiers and de Villiers 1973: 270-271) So far the only support for this assumption has been in the very limited area of the 'grammatical morphemes' that constituted the subject matter of de Villiers' study. Cook (1973) in her cross-sectional study did posit a sequence for adult subjects learning English as a second language, according to the period of their exposure to English. Her findings must have been the result of fortuitous circumstances: the present study shows very clearly that in the case of adults with heterogeneous backgrounds 'period of exposure to English' doesn't have any definable meaning. The present study found no correlations between the subjects' performance scores on any of the tasks and age, period of exposure to English in their home country or in the United States, and the gap between their stopping the study of English in home country and starting it again in the United States. All these variables must interact in very complex ways as possible determinants of a learner's competence and, since we know little about the separate effects of each in the case of adults, trying to establish a sequence of learning is a hopeless task and, therefore, was not attempted.

The results show that some factors other than those mentioned determine the level of these subjects' competence in English. For example, the lower half of Table 8 on page 142 shows that the
Primitive Rule Users, Intermediates and Passers on Easy/Eager test have practically the same mean age, almost the same mean number of years of English in their home countries, and almost the same mean number of weeks of study of English in the United States. The only difference is in the means of the gap: Passers have a larger gap than the other two groups. If anything, this larger gap should have meant a slightly reduced competence in English, but we find that it is exactly the opposite. Obviously some other factors are at work, and in the case of such heterogeneous groups (and this applies to Cook's group also), measures such as 'exposure to English' have no validity because of the vast differences in the quality and quantity of that exposure in various countries.

The results on the Easy/Eager test show that native children, foreign children, and foreign adults can all be divided into three categories: Primitive Rule Users, who always interpret the surface subject to be the deep subject; Intermediates, who give mixed answers; and Passers, who perform correctly on all the sentences. In the case of native children there is a developmental sequence from the Primitive Rule Users, through the Intermediates, to the Passers. As discussed earlier, there being no uniform external measure available in the case of foreign children and adults, their performance could not be sequentially ordered. However, there appears to be a similarity in the processing strategies of the native learners
on the one hand, and foreign children and adults on the other. With increasing competence in the decoding of this type of structure all these groups have a tendency to expect and seek the marked form of the adjective i.e., the 'O' (object) form. This is clear from the Passers' predominantly 'O' interpretations of 'A' (ambiguous) adjectives. If we pause to consider it, it is indeed a very curious finding. When these Passers encounter 'S' or 'O' adjectives, they interpret them correctly as 'S' or 'O'; therefore, according to the laws of chance, their interpretations of 'A' adjectives should have been equally divided between 'O' and 'S' interpretations. But it is almost always an 'O' interpretation. Cromer (1972, 1974) argues that an 'O'-orientation is an indication of the utilization of a specific linguistic ability. However, his argument loses force when we discover that foreign adults also exhibit this ability. Obviously, this 'O'-orientation is the result of some general cognitive ability that doesn't atrophy with age.

Another point of similarity between the performance of native and foreign learners (both children and adults) was the difficulty they had with two particular adjectives: Fun and Tasty. This raises the more general question of whether the learning of this structure involves a mastery of its syntactic structure or whether it also involves the semantic knowledge of the particular adjectives. Perhaps it involves both, and as discussed on pp. 118-119 the
learning of the particular is accelerated in the presence of competence in the more general aspects of language.

In her test of pronominalization, Chomsky (1969) found that, with very few exceptions, children above 5 years 6 months in her sample had learned the conditions under which a non-identity relationship obtains between an NP and a co-occurring pronoun in the same sentence, whereas children below that age had not. Because of the rapidity and uniformity with which this construction is acquired, Chomsky speculated that perhaps the principle of pronominalization is more basic in language than the other constructions that she had studied. Kelleher's inability to teach this aspect of pronominalization to children who had performed poorly on it would also support this characterization of pronominalization as more basic.¹ The performance of the subjects in the present study (both children and adults) correlates well with their classification into the categories of Primitive Rule Users, Intermediates and Passers, with an increasing mean score from Primitives (3.80) to Passers (4.63). Since Chomsky found a positive correlation among her subjects on their performance in all three constructions, we might use their performance on one as an external measure to judge their performance on the others. It would seem then that with increasing competence in

¹ See p.133 for a brief statement of the assumption underlying this conclusion.
English, as revealed by their performance on Easy/Eager test, these children and adults show an increasing proficiency in pronominalization. 26 Primitive Rule Users out of 56 (46.6%), 64 Intermediates out of 99 (64%), and 28 Passers out of 43 (65.1%) had a perfect score on pronominalization. Thus, Primitive Rule Users fall into one category, and Intermediates and Passers into another. However, in the case of the Primitive Rule Users there is a high correlation between their score on mandatory non-identity choices and optional non-identity choices made by them ($r = 0.50$, $p$ less than .0002); therefore, even this 46.6% includes many who seem to have made their choices on the basis of position ('preceding') of the pronoun rather than on understanding. Thus, there appears to be a clear-cut line here between two groups, as in the case of native children.

Chomsky found among her subjects a gradual improvement, with age, in the mastering of Ask (p). Her subjects began to generalize from Tell to Ask (p), and only gradually learned that the latter constituted an exception to the Minimum Distance Principle$^1$. (In Kelleher’s 1973 sample the generalization was from Ask(p) to Tell$^2$.) Among these foreign children and adults, we again find an increasing mastery of this distinction as we pass from the Primitive Rule Users

$^1$See p. 75  
$^2$See pp. 77-78
to the Passers as shown in Table 14 on page 151. We even find that among the adult group there are many who generalize from \texttt{Ask (p)} to \texttt{Tell}. This would seem to show an almost exact duplication of native children's performance in all its intricacy and complexity.

We find evidence that children's competence in Negation is parallel to their competence in \texttt{Wh}-questions, as in the case of native children. This would suggest that their stages of growth might also be similar. In their performance on Inflections the foreign children exhibit almost the same pattern as the native children. Like the native learners they might begin with learning irregular forms but, when they induce a general rule, even highly practised irregular forms fall a victim to the 'imperialism' of the new rule. Also, their use of inflections is as probabilistic as that of the native children, and their performance on nonsense words has the same relationship to their performance on real words as in the case of native children.

All this evidence points in the same direction: children and adults learning English as a foreign language have much in common with native children learning English as a first language. In the case of adults we have data only on comprehension and, if we can generalize from strategies of perception to strategies of learning, these data provide support for the hypothesis of "essential" similarity of processes of first and second language acquisition in
the case of the structures studied. It is a moot question whether these results can be extrapolated to the other segments of language. However, one thing seems clear: the differences in the linguistic backgrounds of these subjects did not show up in their performance on any of the tests. Perhaps interference from one's first language is most operative at the phonological level where the necessary automatization of articulatory movements becomes difficult, though perhaps not impossible, beyond a certain age. At the level of syntax where higher level cognitive processes are involved, there should be little interference. At the levels in between there might or might not be any interference depending upon how general or particular those levels are.

It may be emphasized that the similarity being referred to above is a similarity of processing strategies, and not a similarity in the sequence of learning of syntax. The latter is not very securely established even in the case of children learning their first languages. There is an increasing amount of evidence that the stages of development might be more complex than had been thought,¹ and there might be wide differences among children.² As discussed earlier on pp. 58-59 a similar sequence could be result of similar cognitive development of children, the similarities in their environment, the

¹ See pp. 68-69, 78  
² See pp. 131 ff.
nature of language, and the nature of the reality that language seeks
to embody. At the same time there are bound to be differences
because each child is different and hears a different sample of
language from which he has to induce the rules of language.

In any case, children and adults learning English as a second
language cannot have the same sequence of learning English as the
native children. The reasons are obvious. The native children have
to wait for the semantic intention to develop before they can learn
the formal apparatus of language to express it. Older children and
adults learning a second language suffer no such handicap. For
them the order of learning may be determined entirely by the formal
complexity of the grammar.

The present study has shown some high correlations among the
various aspects of syntax studied. Now, among correlated
structures none should have a logical priority over the others; they
all might be learned simultaneously or, if there is a time lag, one
could attain mastery in any one first and the others should follow.
Therefore, it would be more fruitful to look at linguistic development
as if it had both a vertical and a horizontal dimension, so that as the
learner moves vertically upward, at each point he could learn a
related group of structures beginning with any one structure at that
level; in other words, for the structures at the same horizontal level
there need not be any particular sequence. The discovery of such
'psycholinguistically' correlated sets of syntactic structures or constructions should be one of the important fields of research in language acquisition.

To sum up, the evidence in this study is consistent with the hypothesis that learning English as a second language by children and adults is not "essentially" different from learning English as a native language. But that, of course, does not constitute proof of the hypothesis: that would require much more evidence than can be produced in a single study. However, there does not seem to be any real evidence that learning a second language is different from learning a first language. The belief that the process of learning a second language is different from that of learning a first was based on the, now no longer acceptable, taxonomic description of language as consisting of items in certain arrangements, and the S–R behaviorist explanation of its acquisition as a process of habit formation. This belief has endured so long because the taxonomic model and the habit theory of language acquisition are applicable, to a certain extent, at the phonological level where the differences between the native speakers and foreign learners are also the most noticeable. But now, with both the taxonomic model and S–R behaviorism having been, more or less, abandoned in psycholinguistic research as inadequate, there is no basis left for the belief that learning first and second languages is different. It is an
open question, to be settled by empirical research. The present
study has produced evidence about the "essential" similarity
between the processes of first and second language acquisition
(by children and adults) at the abstract level of a few syntactic
structures. The way is now open for further studies of this type.

The results of this study have important implications for the
methods of teaching foreign languages. For instance, it is doubt-
ful if it serves any useful purpose to demand superficial correctness
from the learners from the very beginning. During the period when
their system is still imperfect the learners are bound to over-
generalize and overregularize, which is all to the good because it
indicates that they are learning language in a natural and, therefore,
a most efficient way. There need be no fears that the erroneous
forms generated by overgeneralization will be difficult to eradicate
later. The children's example shows that when they have learned
a rule even the most highly practised forms are frequently the
first to go. Therefore, even in the case of the adult, these 'errors',
which are the inevitable products of an evolving system, will
disappear automatically as his system approaches the target system
more and more closely.

As in first language acquisition, repetition or drilling of isolated
grammatical structures is not likely to accomplish anything because
the learner's system may not be at a stage to be able to assimilate it. Children learning a first language filter out what does not fit in with their evolving competence. This is similar to what has been called 'readiness' to learn. Therefore only the practice of structures that are almost on the growing edge of a learner's evolving system can be useful. Also, as in first language acquisition, grammatically uniform but situationally random sentences can have little effect on the acquisition process. If these drills are overdone they might lead to a rigidity that defeats the very purpose of teaching a foreign language as an instrument of communication.

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1 See p. 130

2 See pp. 56–57

3 On the basis of the results of experiments involving retrieval of material from the memory, Pollio (1974: 255) reaches the conclusion that the "increase in speed and skill characteristic of highly practised retrieval performance is the result of learning a specific sequential structure, a structure purchased at the price of a decrease in flexibility and generality."
SELECTED BIBLIOGRAPHY


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APPENDIX A

Questionnaire Answered by Parents of Foreign Children Included in the Study

Name of the child: Date of Birth:

Date of child's arrival in the United States:

Date of child's joining school in the United States:

Father's Education: Country: Native tongue:

Mother's Education: Country: Native tongue:

Languages spoken at home:

Has the child remained continuously in the United States since his or her arrival?

If not, please state the periods when he or she was not in the United States, or any other English speaking country:

How often do you use English when speaking to your child? (Check one against both father and mother):

Father: Always _____ Frequently _____ Sometimes _____ Never _____

Mother: Always _____ Frequently _____ Sometimes _____ Never _____

How often does the child use English when speaking to you? (Check one against both father and mother):

Father: Always _____ Frequently _____ Sometimes _____ Never _____

Mother: Always _____ Frequently _____ Sometimes _____ Never _____

How often does your child play with English speaking children at home? (Check one)

Always _____ Frequently _____ Sometimes _____ Never _____
How often do you visit your American friends or are visited by them? (Check one)

Once a week ___________ Once every two weeks ___________

Once a month ___________ Less often ___________

For how many hours per week does your child watch television?

Do you try to teach English to your child at home?

If so, for how many hours per week?

Compared with other children of your child's age in your home country, how fluently does your child speak his or her mother tongue?

Check one Very Fluently _____ Moderately so _____ Poorly so _____ Doesn't speak the mother tongue at all _____

Check as many of the following as are appropriate why you want your child to learn English:

1. It will someday be useful in getting him a good job.

2. It will help him to make good friends more easily among English speaking people.

3. I feel that no one is really educated unless he is fluent in the English language.

4. It should enable him to think and behave as the Americans do.

5. One needs a good knowledge of at least one foreign language to win social recognition.

6. It will help him to understand better the American way of life.

Do you intend to settle permanently in the United States?

If not, when do you intend to go back to your country?
APPENDIX B

Sentences Used in the Ask/Tell/Promise Test for Adults

1. John persuaded Bill to consult a doctor.
2. The boy asked the girl to keep quiet.
3. The girl told the boy which chair to sit on.
4. John persuaded Bill to lend him money.
5. The boy asked the girl which shoes to wear.
6. John promised Bill to work hard.
7. The girl told the boy which picture to move.
8. The boy asked the girl to put on new shoes.
9. The boy forced the girl to wash the dishes.
10. The girl asked the boy what to paint.
11. The boy promised the girl to wash the dishes.
12. The girl asked the boy to stop shouting.
13. John advised Bill to work hard.
14. The boy asked the girl which bird to feed.
15. John promised Bill to return quickly.
16. The boy asked the girl to go back to the class.
17. John forced Bill to work late.
18. The boy told the girl which toy to play with.
19. The boy asked the girl which pencil to sharpen.
20. John promised Bill to finish the work quickly.
21. The boy asked the girl to go away.
22. The boy told the girl which flowers to pick.
23. John promised Bill to pay his debts.
24. The boy told the girl which fruit to eat.
25. John requested Bill to stay.
26. The boy asked the girl which book to read.
27. John promised Bill to work harder.
28. The girl told the boy which juice to drink.
29. The boy asked the girl to walk across the street.
30. The girl asked the boy to write a letter.
APPENDIX C

Questionnaire Administered to Adult Subjects
for Background Information

Name: ________________________________________ Age ________________

  Last    First    Middle                      Years    Months

Address and Telephone No _______________________________________________________

How long did you study English in your home country? __________________

Years   Months

How many hours per week? Your native language ______

Is this your first visit to the United States? Yes/No/Other (explain)

Date of arrival in the United States:

Date of joining the English Orientation Program:

Supplementary Questionnaire

Please give approximate dates during which you studied English in your home country:

School: From ________ to ________ Hours per week ______

College/University:
  From ________ to ________ Hours per week ______

Private study at home
  From ________ to ________ Hours per week ______

Have you used English for any purpose after leaving school or college and before coming to the United States? If so, describe briefly for what purpose, and between what dates: 

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VITA

Born on 4th October 1929 at Ludhiana (Panjab), India, Bishan Das Syngle graduated from Sanatan Dharam Parcharak High School, Ludhiana, in May 1944, with his name inscribed in the School Roll of Honor. He received his Bachelor of Science degree from Panjab University in 1949, and Master of Arts (English) degree in 1951. From 1951 to 1953 he taught English in two colleges in Panjab before migrating to Delhi. Since 1953 he has been teaching English language and literature to graduate and undergraduate students in Delhi University (Nirmala College, which was renamed Kirori Mal College in 1954), Delhi, India. He studied Journalism from 1953 to 1954 and received his Diploma in Journalism from Panjab University in 1954. In 1960, he attended a Summer Institute in the Teaching of Pre-University English at the Central Institute of English, Hyderabad, India. From 1964 to 1972 he edited the "New Outlook", a multi-language (English, Hindi, Urdu and Sanskrit) College Magazine (published irregularly, at least once a year and sometimes twice a year) for Kirori Mal College, Delhi University. In 1965, 1966, and 1969 he also taught in the English Orientation Program (Summer) for foreign students.
(from South East Asia, Middle East etc.), entering Indian Universities. In 1963 and 1964 he prepared some teaching materials (English language) for the Directorate of Correspondence Courses, Delhi University. He studied Linguistics at Delhi University from 1966 to 1969, and received his post-graduate Diploma in Linguistics in 1967 and M. Litt., degree in 1970, topping the list of recipients in both. For two years (from October 1968 to July 1970) he was the Acting Chairman of the Department of English, Kirori Mal College. Since August 1972 he has been on Study Leave from his college, working for his Ph.D in Linguistics at Louisiana State University. From 1972 to 1973 he was a research assistant in the Program in Linguistics, and since August 1973 he has been a teaching assistant in the Department of English. He was awarded a summer school fellowship both in 1973 and 1974. At present he is a candidate for the degree of Ph.D in Linguistics.
EXAMINATION AND THESIS REPORT

Candidate: Bishan Das Syngle

Major Field: Linguistics

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Approved:

[Signatures of Major Professor and Chairman and Dean of the Graduate School]

EXAMINING COMMITTEE:

[Signatures of Committee Members]

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