4

Language Development

Melissa Bowerman

Contents

Abstract

"How does a child learn to talk?" Cross-cultural research that examines this problem is reviewed in this chapter.[1] The focus is on three major content areas: the acquisition of the linguistic code (including syntactic, morphological, and semantic structure), the development of rules for socially appropriate language use (the emergence of different speech acts, speech variants, and discourse conventions), and the role of the environment (speech to children, other social factors). Methodological problems in studying child language cross-culturally are also discussed. The chapter emphasizes how cross-cultural research contributes towards understanding the process of language development by disentangling possible explanatory variables that are confounded in any one linguistic community, thereby showing how the child's characteristic ways of approaching the

language-learning task interact with the properties of the language to be acquired and with the child's social environment.

Introduction

The mastery of a first language is one of the most striking achievements of early childhood. Although scholars have pondered how language is acquired for centuries, the intensity with which it has been scrutinized over the last two decades is unprecedented. As Brown (1974) puts it, "all over the world the first sentences of small children are being painstakingly taped, transcribed, and analyzed as if they were the last sayings of great sages" (p. 123). This surge of interest stems in part from an increasing appreciation among social scientists for the complexity of the child's task and for the challenge it poses to current conceptions of learning. It also reflects a growing awareness that language acquisition is linked in intricate and as yet little-understood ways with human perceptual and cognitive abilities and with the structure of natural languages.

The inspiration for the "modern" study of child language can be traced rather directly to the work of the linguist Chomsky (1957, 1959, 1965), who argued cogently that existing theories of both language structure and language acquisition were grossly inadequate. Two of his claims particularly influenced subsequent research. First was his argument that knowing a language does not mean simply knowing a repertoire of sentences. Rather, being a fluent speaker of a language entails having internalized a set of rules that underlies sentence construction. According to this view, the task of the language-learning child can be seen as a problem in rule formulation: from the limited sample of speech to which he is exposed the child must somehow arrive at a set of rules that will enable him to produce and comprehend an infinite number of possible sentences.

Chomsky's second influential claim was that the structure of language is intimately related to the child's capacity to acquire it. He argued that the rules governing sentence construction are so abstract and complex that the child could not "discover" them from the superficial characteristics of the speech he hears unless he were guided by some inborn knowledge of what to look for. What Chomsky attributed to the child was an innate knowledge of linguistic universals, that is, of whatever structural principles are common to all languages. Indeed, the very existence of linguistic universals, according to Chomsky and his followers, is a direct consequence of the child's capacity for language: whatever characterizes this capacity has left its mark on the structure of all natural languages by restricting the form of language to that which is learnable by humans (McNeill, 1966b, p. 50).

Much of the early "post-Chomskian" research was specifically aimed at the question of whether children's early linguistic progress could indeed be characterized accurately in terms of rule formulation (e.g., Berko, 1958; Brown & Berko, 1960; Brown & Fraser, 1963; Braine, 1963; Miller & Ervin, 1964). This research quickly resulted in a number of empirically based generalizations about the early syntactic systems of children learning English, and a limited amount of evidence from children learning other languages suggested tantalizingly that the observed phenomena might be universal (Slobin, 1966a, 1968, 1969, 1970). Questions began to proliferate. Would putative universals of language development hold up against further cross-cultural scrutiny? What other as yet unsuspected similarities might there be among children learning different languages? For example, do all children pass through a similar sequence of "stages" on their way to adult mastery of the language? How does the structure of the language being acquired affect the learning process? What could account for any observed universals of language acquisition? In particular, could an innate knowledge of universals of language be effectively invoked as an explanation for commonalities among children learning different languages? The era of cross-cultural research on child language development had begun.

Comparative work with existing material proved difficult, however. Although child language had been studied by researchers in a number of European countries and in the Soviet Union, much of the material was inaccessible to English-speaking investigators. In addition, adequate comparison was thwarted by differences both in data collection techniques and in the particular problems that had been investigated. Finally, most of the non-English studies dealt with the acquisition of languages that share an Indo-European ancestry with English. How language acquisition proceeds in languages with totally different structural properties was little understood. New data that could provide a firmer basis for comparative analysis were clearly called for.

An important reflection of this need was the 1967 publication of *A Field Manual for Cross-Cultural Study of the Acquisition of Communicative Competence.* This volume, edited by Slobin and collaborated on by several psychologists and anthropologists at the University of California at Berkeley, presented an admirably eclectic view of the range of phenomena that should be studied, a summary of existing research techniques, and specific suggestions for the conduct of cross-cultural research on language development.

In the years since the *Field Manual* came out, the cross-cultural study of child language has mushroomed. The vigor of the approach is attested to by the appearance of many detailed reports on language acquisition by children learning languages other than English,[2] the instigation of child language projects at universities and research centers in a number of

countries by investigators interested in the work going on elsewhere, the convocation of several international conferences on child language, and the founding of the *Journal of Child Language*, a publication with an international advisory board that explicitly encourages the submission of articles on languages other than English. During this period, considerable progress has been made in our understanding of how language acquisition takes place. Much of this progress would not have been possible without the input provided by studies of children in non-English-speaking communities.

The discussion in this chapter of the role of cross-cultural research in the study of language development is organized in the following way. The first major section provides an overview of what is studied in research on language development and outlines the major goals of cross-cultural investigation in this field. Following this is a section on methodological problems in studying child language cross-culturally. Then come two major sections that discuss cross-cultural perspectives on selected aspects of the acquisition of the *linguistic code* and of competence in *language use*, respectively. "Selected" must be stressed because in a chapter-length review the coverage is necessarily limited. The most notable omissions are cross-cultural perspectives on babbling and speech perception during the first year of life and on phonological development.[3] These have been neglected in the interests of providing a more thorough review of the development of *form-meaning* relationships, or how children acquire an understanding of the referential and social meanings that underlie language and how they master the linguistic devices their language employs to express these meanings.

Following the sections on the linguistic code and on language use is a discussion of the role of the child's social milieu in the acquisition of language. The chapter concludes with a brief consideration of directions for future research and some comments about the value of research on language development for investigators in other fields.

Cross-Cultural Research on Language Development: An Overview of Content and Goals

The ultimate motivation for doing cross-cultural research on language development, as in any content area, is to determine what is universal and what is specific to particular groups and to formulate, on the basis of this information, both very general principles that apply to individuals in all cultures and detailed accounts of how these principles are realized under different kinds of conditions. Of course, the goals of any particular cross-

cultural study are much more specific. Before we consider what some of these goals are in the case of child language research, a general review of the subject matter of the study of language development is in order.

Acquiring Communicative Competence

A general theory of language development must be able to account for both what the child acquires—the nature of the information the child must have to qualify as a fluent speaker—and how he acquires it. One important function of Slobin's (1967) *Field Manual* was to heighten awareness among students of child language of the different types of information a speaker must master.

The linguistic code. During most of the 1960s, investigators focused heavily on one particular kind of linguistically relevant knowledge—knowledge of the *linguistic code,* or the structure of language itself insofar as it is an instrument for expressing referential or ideational content (propositions about events, objects, actions, spatial relationships, feelings, and so on). Even within this general category, research efforts were mainly limited to the exploration of how children learn morphological and syntactic rules, that is, rules governing the way in which morphemes combine to form words and sentences. The investigation of the acquisition of other aspects of language structure, including semantics and phonology, has begun to flourish only more recently.

The initial restriction of research to the child's learning of the structural characteristics of his language was primarily due to the influence of the distinction Chomsky drew between *competence,* or "the speaker-hearer's knowledge of his language," and *performance,* or "the actual use of language in concrete situations" (1965, p. 4). According to Chomsky, performance is affected by "such grammatically irrelevant conditions as memory limitations, distractions, shifts of attention and interest, and errors (random or characteristic)" (1965, p. 3); competence, in contrast, is the "mental reality underlying actual behavior" (1965, p. 4). Chomsky argued that performance is irrelevant for linguistic theory; linguists should be concerned with characterizing competence.

Rules for language use. By the late 1960s, a small but growing number of investigators had voiced objections to Chomsky's notion of competence (e.g., Hymes, 1964; 1971a; Slobin, 1967; Campbell & Wales, 1970). They pointed out that the domain of linguistic knowledge with which Chomsky was concerned constitutes only *one* component, albeit critical, of what the speaker must know in order to be fluent in his language. In particular, they argued that in ignoring "the actual use of language in concrete situa-

tions" Chomsky was overlooking all the knowledge that speakers must draw on in order to produce utterances that are not only grammatically well formed but also *appropriate* to the particular social contexts in which they occur. As Hymes put it, "it is not enough for the child to be able to produce any grammatical utterance. It would have to remain speechless if it could not decide which grammatical utterance here and now, if it could not connect utterances with situations" (1964, p. 110).

Norms governing the contextually appropriate use of language are no less binding than rules governing syntactic or phonological well-formedness. For example, departures from "grammaticality" can readily be detected in both cases. For this reason, such norms can be formalized as *rules for language use*. These rules, which have been termed "sociolinguistic" or "pragmatic," depending on the investigator's orientation and emphasis, specify how language is used in particular social settings to accomplish specific goals such as eliciting or imparting information, making requests, telling stories or jokes, negotiating a conversation, emphasizing or highlighting some parts of a message and backgrounding others, and so on. How speakers cast their sentences and how listeners interpret them is systematically related to a host of social and contextual factors such as the attributes and interpersonal history of the participants in the speech event, the setting, the topic of conversation, and the details of the preceding discourse, (Hymes, 1972).

The totality of knowledge that enables a speaker to produce utterances that are structurally well formed, referentially accurate, and contextually appropriate, and to understand the speech of others as a joint function of its structural characteristics and social context, has become known as *communicative competence* (Gumperz & Hymes, 1964; Slobin, 1967). To provide a comprehensive account of the acquisition of communicative competence under a full range of social and linguistic conditions must be the ultimate goal of any theory of language development.

Learning the Mapping Between Form and Meaning

Consider from the child's perspective what is involved in acquiring communicative competence. From those around her, she hears sequences of sounds varying simultaneously along a number of dimensions. At the same time, she is experiencing continual changes in her external environment, both physical and social, and shifts in her internal or subjective reactions. Her problem, to a borrow a construct from Bruner, Wallach, and Galanter (1959), is to identify *recurrent regularities* and to build a model isomorphic with the redundancy of the environment.

What are the "regularities" in question? First are regularities or patterns in the linguistic signal itself. For example, recurrent sounds, words, intonational patterns, and so forth, must begin to be recognized as "the same" despite superficial variation. Restrictions on how linguistic forms are patterned must be discovered (e.g., *put the hat on, put on the hat, put it on,* but not *put on it*). Second are regularities in the child's social and physical environment and in her internal experiences or reactions. Identifying regularities of this second type entails nothing less than building up a complex system of *meanings*—ways of categorizing and interpreting the significance of events in the world. Third and most critical, the child must discover the *contingencies* between linguistic forms and physical and social meanings, that is, how the two sets of variables covary. For example, she must determine which linguistic variations are insignificant and which are linked in a regular way to variation in meaning. Conversely, she must learn which discriminable differences in meanings are matched by differences in language forms and which are not. And, most centrally, she must work out precisely what the connections are, that is, which meanings are associated with which linguistic forms. The child's task of discovering how language forms and meanings covary is often called the *mapping* problem (e.g., Clark, 1975).

Determining how children accomplish the mapping between form and meaning requires the joint exploration of a number of problems. For example: 1) How does the child approach the analysis of the linguistic signal itself? Does she come equipped with strategies specific to language, for example, knowledge of some of the structural properties of language? Or does her analysis depend only on more general information-processing abilities? How does she determine what behaviors on the part of others are relevant to language (coughs? clicks? gestures?) and which are not? 2) How does the child categorize and interpret the nonlinguistic events of her environment, that is, build up a repertoire of meanings? Does she start out as a *tabula rasa* or does she have inherent predispositions to categorize in certain ways, for example, to attend to certain stimuli and not others as a basis for classification? Does language influence her way of conceptualizing her physical and social surroundings or does she organize and interpret the environment relatively independently of language? 3) How does the child tackle the mapping problem itself? Are there priorities in the hypotheses she entertains about what meaning might be associated with language form X, or, conversely, what language form might be used to express meaning Y? What factors make the mapping problem difficult and what factors facilitate it? For example, what is the effect of inconsistency or irregularity (noise) in the system of mapping itself? Does speech to children have special tutorial properties that help them discover connections between forms and meanings? How does the

frequency with which the child is exposed to various forms affect the rate and order of acquisition? Questions like these cannot be answered without input from cross-cultural research, for reasons that are outlined below.

Goals of Cross-Cultural Research on Language Acquisition

For heuristic purposes, three broad, interrelated goals of cross-cultural research relevant to language acquisition may be distinguished. First is the goal of obtaining a deeper understanding of what children must learn in order to be fluent in their native language, and of the social contexts in which they may be called on to learn it. What in fact is the range of variability in the structure and use of language? How much cross-cultural variation is there in the socialization practices that are relevant to language acquisition?

Information about whether there are constraints on the form that language structures and rules for language use can take is of particular importance for the study of language development because of the possibility that universals of language may be linked to the inherent knowledge, strategies, or expectations of the language-learning child, as Chomsky (1965) suggested and as will be discussed later. Information about variability in the social contexts of language acquisition is also essential for exploring questions of innateness, for two reasons. First, as Campbell and Wales (1970) point out, universals of language might stem at least in part from universal experiences of early childhood rather than from innate predispositions. Second, biologically given predispositions should show up as similarities among language-learning children even if there are gross differences in their environments and in the language socialization practices to which they are exposed. Conversely, to the extent that language development is dependent on environmental rather than biological factors, cross-cultural variability in language socialization should result in different patterns of acquisition.

The second goal of cross-cultural research is to determine what is universal and what is variable in the course of language development itself. Do generalizations based on children learning one particular language apply to children everywhere? Or do differences of language structure and environment exert such strong effects that few commonalities can be found?

The first and second goals of cross-cultural research on language acquisition feed directly into the third goal: to arrive at a theory of *how* children acquire language that not only accounts for any observed universals of development but that also is sufficiently flexible and abstract to explain variability by reference to the way the knowledge, learning principles, or

strategies that the child brings to the task *interact* with the particular language rules that must be acquired and with the characteristics of the social milieu.

Aspects of these three broad goals of cross-cultural research on language development are overviewed below; themes raised here are pursued in more detail in subsequent sections.

Cross-cultural perspectives on acquiring the linguistic code. Differences among languages are found at every level of structure: phonological, morphological, syntactic, and semantic. For example, English relies heavily on word order to distinguish between nouns with different syntactic functions such as subject, direct object, and indirect object (cf. *John hit Jim* versus *Jim hit John; give the dolly a baby* versus *give the baby a dolly*). In contrast, Hungarian and Russian mark these relations by case endings on the nouns, leaving word order free to vary in the service of other goals, such as emphasizing new information and backgrounding old information. To take a second example, Spanish uses intonation (rising versus falling) to distinguish between yes/no questions and declaratives, whereas Finnish signals this distinction with word order rearrangements and the addition of a question particle without accompanying intonational changes. English uses both changes in intonation *and* in word order; Tarascan (an Indian language spoken in Mexico) uses neither, but instead distinguishes questions from declaratives by voicing the normally whispered sentence-final vowel. Languages also differ in the way they categorize or divide up the world of experience through their lexicon and syntactic structure. Some semantic categories found in one language may have no counterpart in another, or the categories of the two languages may overlap in complex ways.

As these examples indicate, individual languages represent particular "solutions" from among a range of possible solutions to the problem of how meanings and formal devices for expressing meanings are to be related to each other (see Bates, 1976a, p. 161 ff. for relevant discussion). Similarly, the various structural characteristics (e.g., syntactic, semantic) of a language are themselves interrelated in specific ways. The problem that this language-specific "packaging" of characteristics poses for the student of child language is that it creates a confounding of the factors that might be invoked to explain why children learning a certain language proceed as they do. For example, if children learning English tend to observe word-order constraints in their earliest sentences, is this because of a built-in tendency of all language-learning children to prefer rigid word order? Or might it instead simply reflect exposure to a language in which word order plays a critical role in expressing basic semantic/syntactic relations? Similarly, if children learning a particular language acquire a given set of language forms in a certain order, does the explanation lie in

the relative difficulty of the *meanings* these forms express? Or is it perhaps due instead to the relative difficulty of the formal devices that are used to encode these meanings?

Disentangling confounding factors so that questions like these can be answered requires comparing the progress of children learning languages that differ structurally in key respects. Only when we know that children behave similarly with regard to a particular aspect of acquisition even though there may be critical differences in the structures being acquired can we speculate sensibly about universality. On the other hand, when we find that children learning different languages proceed differently, a careful analysis of their behaviors against the structural features of their languages often allows us to infer determining factors. In short, information on the learning of a wide variety of languages must be compared and integrated in efforts to move beyond the simple description of how acquisition takes place in particular linguistic communities to a universally applicable account of how children approach the structure of language.

Cross-cultural perspectives on rules for language use. Nowhere is cross-cultural research more essential than in helping investigators identify and characterize what the child must learn in order to use his knowledge of the structural aspects of language in contextually appropriate ways. Fourteen years ago, Ervin-Tripp (in Slobin, 1967) noted that the study of rules for language use, or "the ethnography of speaking," was "in its infancy," and observed that an important first step must be "to obtain sufficient ethnographic data to provide a basis for comparative discussion among . . . field workers" (p. xi).

Much of the literature that has been published to date on the ethnography of speaking, by sociolinguists, anthropologists, and child language specialists alike, has been aimed not only at presenting specific research findings but also, perhaps even more importantly, at "consciousness raising"—increasing our level of awareness that, just as there are important structural differences from one language to another, so also is there significant cross-cultural variation in patterns of language use.

A central fact that must be dealt with in studying situationally appropriate speech is that language, even within a relatively homogeneous linguistic community, is not a single monolithic entity. Rather, it comprises a set of linguistic variants—alternative ways to express approximately the same ideational content or to accomplish a given aim, such as requesting a service. Variation takes place at every level of language structure, including pronunciation (e.g., *eating* versus *eatin'*, *What are you doing?* versus *Whatcha doin'?*), lexicon (e.g., *woman* versus *lady*, *Mr. Smith* versus *Bob*, *Mary loves John* versus *she loves him*), prosody, (e.g., *Hárry killed Jim* versus *Harry killed Jím*), and syntax (e.g., *open the window* versus *I wonder if there's some way to cool off this room?*).

The choices speakers make between competing variants are systematically linked to a variety of factors. One important goal of ethnographic research on rules for language use has been to formulate a universally applicable vocabulary for identifying, describing, and interrelating these factors. Hymes suggests that at least sixteen or seventeen components of speaking situations must be distinguished in order to account for the way people talk and interpret the talk of others, for example, for the choices they make between alternate ways to express more-or-less the same message. He notes that these components combine in different ways in different cultures; thus, "these features and dimensions, more than particular constellations of them, will be found to be universal, and hence elementary to descriptive and comparative frames of reference" (1972, p. 49). Among the components that Hymes and other have emphasized are the attributes of the *participants* in the speech event (e.g., their sex, relative and absolute age, social status, role relative to one another in the context of speech [e.g., waiter-diner, doctor-patients], their assumptions about each other's prior state of knowledge, their past interpersonal history [e.g., friendly or quarrelsome], the *topic* of the message, and the *setting* (including the time, place, and "situation," e.g., a dinner party or a date) (see Hymes, 1972; Ervin 1964a; Rubin, 1974).

Cultural specificity is found not only in the way in which such factors cluster (are "emicized") to constrain the production and interpretation of speech but also in the way each factor is defined within the culture. For example, the relative ages of the speaker and listener may be important in most or all cultures, but the degree of discrepancy in age that is required to make a difference linguistically varies considerably (Ervin-Tripp, 1971). Similarly, how relative social status is defined and what contrasts between settings are linguistically important are subject to wide cultural variation (Rubin, 1974).

Cross-cultural variation is also found in the specific ways that speech is affected by factors such as social status and setting. For example, probably all languages have less versus more "formal" ways of talking (with "formality" being culturally defined but usually including some reference to variables like absolute and relative social status, degree of social distance, and setting). But the way in which degrees of formality are marked linguistically varies greatly from one social group to another. Sometimes the variants are options within the same language or dialect (e.g., *eatin'* versus *eating; buck* versus *dollar; tu* versus *vous; gimme your coat* versus *it's cold out tonight* as alternate ways to obtain a coat). In other communities, contrasts in formality may be marked by a shift between a local dialect and a standard language. In still others, the same effect may be obtained by shifting between distinct languages (Rubin, 1962). Because the communicative ends that are served by shifting between alternate linguistic forms may be similar despite differences in the "level" at which the shifting

takes place, several sociolinguists have suggested that the tradition of thought that equates one language, one culture sets up artificial boundaries and should be abandoned in favor of a theory that treats monolingualism, bidialectalism, and bilingualism within a common sociolinguistic framework (Gumperz & Hymes, 1964; Hymes, 1971b; Rubin, 1974).

Acquiring language entails not only learning how to form sentences that are grammatical and contextually appropriate one at a time, and to interpret such sentences by others, but also learning *discourse* conventions, or how successive sentences are integrated into coherent longer sequences. Discourse conventions, like rules governing the alternation between linguistic variants, are culturally variable. For example, social groups differ with regard to the types of discourse they stress and the elaboration or systematization of the knowledge required to successfully participate in them. Examples of genres that vary in their social significance and degree of elaboration from culture to culture and even among subgroups within a culture include story-telling, joking, insult-exchange or verbal dueling, indirect speaking or innuendo, and political or rhetorical speaking.

Even when genres of discourse are widespread or universal, there may be significant variability in their specific content and/or in the sequencing of material. For example, Mitchell-Kernan and Kernan (1975) and Dundes, Leach, and Özkök (1972) note that there are cross-cultural differences in the content of insults. Godard (1977) has analysed differences in the content and sequencing of telephone conversations in France and the United States. And Philips (1976), who compared the regulation of conversation among Indian speakers on an Oregon reservation and among "Anglos," found differences in the use of devices for regulating conversational turn-taking such as gaze direction and body alignment and in the speakers' degree of control over their own turns and those of their addressees.

Discourse conventions may vary across cultures in even more subtle ways. For example, Keenan (1976) has recently presented a thought-provoking analysis of possible cross-cultural differences in the underlying assumptions that speakers and listeners bring to linguistic interactions. Her analysis uses the influential work of Grice (1975) as a jumping-off point. According to Grice, participants in conversation expect each other to conform to a certain implicit code of behavior; this code can be formalized in terms of *conversational maxims,* such as "be informative" (meet the informational needs of your listener) and "be relevant" (keep your utterances relevant to the topic at hand). These maxims guide both the speaker's behavior and the listener's interpretation of what the speaker says. Of course, the maxims are in fact often violated, but the context will usually hold some clue to the possibility of violation; in the absence of counterindications, interlocutors will ordinarily assume that the maxims are being followed.

Are Gricean conversational maxims universal? Grice did not discuss this, but the assumption that they are is implicit in his work. Keenan, however, presents counterevidence based on her analysis of expectations and practices regarding "informativeness" among Malagasy villagers (Madagascar), and observes that "In some societies, meeting the informational needs of a conversational partner may be relatively unmarked or routine behavior. In other societies, meeting another's informational needs may be relatively unexpected or marked behavior" (1976, p. 69). Despite Grice's inattention to the possibility of cultural differences in underlying assumptions about conversation, an important value of his work, as Keenan stresses, is that it "orients us to pursue the . . . goal of assessing universal conversational principles," and "offer[s] a framework in which the conversational principles of different speech communities can be compared" (p. 79).

Most studies to date on the acquisition of rules for language use have been conducted in single cultures and have concentrated primarily on describing what the child learns and when he learns it. Explicitly comparative studies are only recently beginning to appear (e.g., Ervin-Tripp, 1977; Hollos & Beeman, 1978; Mitchell-Kernan & Kernan, 1975). As these studies multiply, researchers will gradually become better equipped to tackle the difficult question of *how* children learn the socially appropriate use of language.

Cross-cultural perspectives on the role of the social milieu. What role does the child's environment play in language development? In traditional behaviorist psychology, the environment has been considered paramount, with the child's caretakers supplying models of correct speech patterns, encouraging imitation, and shaping the child's speech efforts by differential reinforcement to more closely approximate the norms of the community.

If we look beyond middle-class Western societies, however, it becomes clear that this view is parochial in its assumptions about the social context in which language learning takes place. For example, in many cultures, toddlers are cared for primarily by slightly older children rather than by attentive parents (Slobin, 1975a). In some social groups, children's verbal efforts are met with relative indifference rather than encouragement (e.g., Hymes, 1972; Ward, 1971). And high tolerance for error, that is, failure to provide corrective feedback, appears to be the rule not only in other cultures but even in our own (see Brown & Hanlon, 1970; Radulovic, 1975; Blount, 1972a; and Kernan, 1969, for evidence on this matter with regard to American, Yugoslavian, Luo, and Samoan parents, respectively).

Despite great cultural variation in general child-raising practices and in the specific treatment of language development, the overall course of language acquisition is very similar from one social group to another. For example, Lenneberg (1966) noted the striking absence of reports by an-

thropologists about "discrepancies between the vocalizations or communicative behavior among the children of 'primitive' and 'western' man" (p. 230). He reported additionally that recent field work in several cultures confirmed the concordances between speech and motor behavior that had previously been observed in western cultures, for example, first words at about the time of walking, fluency (despite minor inaccuracies) by the time the child can tiptoe or walk backwards three yards. Lenneberg and others have used these findings to support the view that language development is to a large extent maturationally controlled and therefore robust against a wide variety of environmental conditions, some of which would necessarily be seen as highly adverse from a behaviorist's standpoint.[4]

Additional arguments for the importance of biological factors in language development are provided by Slobin (1970). Observing that children everywhere seem to pass through a "two word stage" of development, he notes that "There is no a priori reason why child speech, at a certain stage, should be limited to utterances of two words in length, for children can babble much longer strings of sound. The universality of this phase suggests the maturation of a 'language acquisition device' with a fairly fixed programming span for utterances at the start" (p. 176).

Despite these indications that language acquisition has a significant biological component, there is increasing evidence that children's inherent capacity interacts in complex ways with environmental factors. The prime support for this view comes from recent studies of the nature of talk to children. According to the nativist view of the mid-1960s, speech to children cannot serve as a sufficient basis for extracting rules of grammar because it is random, haphazard, and full of disfluencies and ungrammatical sentences. But careful scrutiny has demonstrated that this assumption is invalid. Speech to children is not only admirably fluent and free of errors, but also different in a number of potentially important ways from the speech that adults address to each other. For example, it is characterized by shorter, slower, and syntactically simpler sentences, modifications of word choice and phonological structure, and special interaction patterns. Most detailed studies of caretaker speech have been carried out in English-speaking communities (see Snow, 1977, and de Villiers & de Villiers, 1978, for reviews), but the phenomenon of special, simplified speech to language learners appears to be universal (Ferguson, 1977).

The generality of special speech to infants, coupled with its simplicity, clarity, and redundancy relative to speech among adults, has led many researchers to suggest that it plays an important tutorial role in language acquisition (e.g., Snow, 1972; Garnica, 1977). To the extent that this proposal is substantiated, arguments for a strong innate component to the language acquisition capacity that are based on the supposed degeneracy of the child's language input are correspondingly weakened (Brown, 1977; Newport, Gleitman, & Gleitman, 1977).

Interest in the role of the social milieu in language acquisition has not been limited to caretaker speech patterns, although this topic has received the most intense examination in recent years. Investigators have also pointed to the existence of cultural differences in general *style* of child socialization, particularly socialization with respect to language. Style is in part a function of beliefs about how babies should be treated and what should be expected of them. There is significant cultural and subcultural variation in these beliefs (see Tulkin & Kagan, 1972; Blount, 1972a; Hymes, 1971b). For example, in some cultures it is assumed that infants can understand speech from birth or even before (Blount, 1972a), whereas in others the child is credited with comprehension only much later. How might this differentially affect the kind of speech infants are exposed to? A study by Bingham (1971) suggests an answer: she found that adults who believe that babies can understand a great deal simplify their speech to prelinguistic children more than those who believe that comprehension begins later. It is not yet known whether exposure to simplified speech during the first year of life affects subsequent language acquisition, but, if so, this could result in systematic differences among social groups in qualitative or quantitive aspects of language development. Other cultural factors that affect the speech the young child hears include attitudes about the *social role* of the child within the family or the society (Blount, 1972b; Bernstein, 1972; Fischer, 1970).

The nature of communication between child and caretaker will be examined more fully in cross-cultural perspective in a subsequent section, along with discussions of the effects of environmental variation on the course of language development. Most studies of the latter topic have been carried out only within homogeneous social groups or at best across social classes; there are still few explicitly cross-cultural studies. However, whether carried out across individuals within social classes, across social classes within a culture, or across cultures, the advantage of the comparative approach is that it allows the role of environmental factors to be assessed in the context of "natural experiments" that would be unethical if set up deliberately (Ervin-Tripp, in Slobin, 1967, p. 138).

Methodological Problems in Studying Child Language Cross-Culturally

Methodological Bias

Comparing the language acquisition of children in different linguistic communities raises certain methodological problems that do not affect the comparative study of children within relatively homogeneous groups. A

warning that has by now been raised in connection with so many areas of psychological investigation that it requires little elaboration here is that what one finds when looking for particular kinds of knowledge or ability is greatly affected by how one looks for it. Methods of data collection that work well enough in one cultural setting are often inadequate in another because they fail to engage the relevant knowledge or skill. Thus, what may at first appear to be a deficiency on the part of members of one culture relative to members of another culture may actually stem from factors irrelevant to the ability under investigation. A simple shift in the task or in the content area to which the task is applied will sometimes produce surprisingly different results (see Cole, Gay, Glick, & Sharp, 1971, for a careful exploration of this general theme as it affect the cross-cultural conduct of cognitive psychology).

The possibility of cultural bias in the application of methods for studying language development are obviously of both theoretical and practical concern. The theoretical problem is that methodological factors may lead one to identify differences in the language development of children in different social groups where differences do not exist. The most important practical problems raised by questions of methodological adequacy concern educational practices in countries whose children are linguistically and/or culturally heterogeneous.

Two types of methodological bias that can threaten the validity of comparative studies of language development have been discussed by Ervin-Tripp (1972). She termed these *linguistic bias* and *sociolinguistic bias.*

Linguistic bias. Linguistic bias arises when the linguistic materials that are selected for testing or as targets for observation are not potentially equally accessible or familiar to the children being compared. This problem is particularly serious when the children involved are ostensibly speakers of the "same" language but are acquiring dialects that treat the linguistic forms under study differently. In this case, the blanket use of the same forms (usually taken from the "standard" dialect) for all subjects virtually guarantees a poorer performance by the children for whom the forms are less familiar (see Ervin-Tripp, 1972, and Dale, 1976, p. 305, for some examples from the literature).

Sociolinguistic bias. "Each community, even subgroups within communities like teenage gangs, may develop its own patterns of language use, its own set of speech events, its own valuing of skill" (Ervin-Tripp, 1972, p. 265 in Ervin-Tripp, 1973). This means that the social situations in which the investigator collects data and the particular techniques he uses may have very different kinds of significance for members of different groups. The term *sociolinguistic bias* refers to bias that arises when an investigator's methods of data collection do not tap the intended linguistic ability

equally in members of different social groups because of differences in rules for language use or in reactions to the investigator's tasks.

Consider the cultural factors that may affect attempts to collect representative samples of children's spontaneous speech. Most of the English-speaking children whose speech has served as a basis for cross-cultural comparison have come from middle-class families where the display of verbal skill to friends and strangers alike is encouraged and where interactions with strangers may be commonplace. Such children tend to be relaxed and talkative in a wide range of settings, even when confronted with demands for unfamiliar types of performance (e.g., psycholinguistic tests). Compare this happy situation with the one that met Blount (1969), who studied language development among the Luo of east Africa. There, despite visiting extensively in the children's homes, varying the time of day at which the visits took place, and providing props for stimulating speech, Blount was able to collect less than 200 spontaneous utterances from a total of six children—barely enough to even suggest the nature of the children's verbal abilities. Blount attributed the children's silence to a number of cultural factors, including the promotion and encouragement of children's fear of strangers by both ecological conditions and social practices, the fact that children are taught to be silent in the presence even of welcomed visitors so that adults can talk, and the fact that children are taught to speak to adults in certain respectful ways. Even when the children were encouraged to talk by their parents they found it difficult to overcome these culturally induced strictures. Blount's perceptive analysis nicely illustrates Hymes's (1971b) observation that the difficulties anthropologists experience in gathering ethnographic data can provide valuable cues to the local rules of language use.

Even when children are not severely reluctant to talk, cultural differences in adult-child interaction patterns can affect data collection. For example, parents in some social groups are accustomed to conversing with their children and have well-developed techniques for eliciting speech on a variety of topics. In other groups, adults may typically speak with children primarily to direct and control their behavior, or may interact with them relatively little because caretaking responsibilities are typically assigned to other, slightly older children. The latter situation confronted Kernan (1969) in his study of language acquisition by Samoan children. The spontaneous speech samples collected from one of his two subjects consisted primarily of short labeling responses to "what's that?" questions from the child's mother and aunt, who were hard-pressed to think of ways to engage the child in conversation.

The traditional western technique of taping mother-child interactions in the home seems quite unsuited to such cultures. Obtaining maximally informative speech samples requires following children to the settings in which their most representative and varied speech takes place. Schieffelin

(1980) has recently provided an interesting account of the ethnographic work that went into her identification of such settings for the Kaluli children she studied in New Guinea, along with thoughtful analyses of how unexamined assumptions in the Western approach to scientific study have hampered attempts to collect useful language data from non-Western children.

Transplanting experimental techniques for probing children's linguistic knowledge to social groups other than those in which they were developed is an even greater challenge than trying to collect representative speech samples. A first problem, of course, is that how children perform on such tasks is influenced by how they perceive them and what they think is expected of them; cross-cultural differences in these factors is inevitable. But beyond this, the use of certain techniques may present specific problems in some cultures but not in others. For example, many studies of how English-speaking children comprehend various words and sentence structures have required that the subjects distinguish between two or more pictured stimuli and pick out the one referred to or described by an utterance produced by the experimenter (e.g., Fraser, Bellugi, & Brown, 1963). But interpreting the meaning of two-dimensional representations is governed to a large extent by learned and culturally variable conventions (Davidoff, 1975, p. 90). Moreover, children's access to such representations and their opportunity to learn interpretive conventions vary considerably across cultures. Thus, experimental techniques involving pictures may be impossible to employ in some cultures.

A second example of a technique that may be relatively unsuited to some cultures is elicited imitation. This method can often provide information about the nature of children's grammatical rule systems (e.g., Slobin & Welsh, 1973; Kuczaj & Maratsos, 1975; and Menyuk, 1963), and it has been successfully used with Mayan children (Stross, 1969). However, Ervin-Tripp and Mitchell-Kernan (1977, p. 19) report that researchers have had trouble using it in Italy, apparently because children's imitation of the speech of others is censured.

Sometimes cultural differences in the way children "take to" a technique can be overcome by special adaptations. Kernan and Blount's (1966) attempt to test Mexican children with Berko's (1958) technique for studying children's knowledge of morphological rules provides a good example. This method entails showing the child cartoon-like pictures and asking her to complete utterances about the pictures. Thus, the child might first be presented with a picture of a "wug," then a picture of two of them along with the sentence "Now there are two————." Nonsense words are used to insure that correct performance ("wugs" in this case) can be attributed to true knowledge of morphological rules rather than to memorization of the inflected forms of familiar words. Berko's middle-class American subjects were not bothered by the nonsense words and readily

inflected them, but Kernan and Blount found their lower-class Mexican subjects reluctant to use them. They interpreted this as a difference in the degree to which the children had been exposed to formal testing situations. Eventually Kernan and Blount were able to induce the children to respond to nonsense items by presenting them with warm-up examples using real words, a preliminary not found necessary by Berko.

Reappraising Existing Generalizations in Light of
Cross-Cultural Evidence

Suppose that cross-cultural work has revealed some differences between children in another culture and those "at home," and that special care has been taken to ensure that the new data are not biased and misleading for reasons of the sort just discussed. Can we now conclude with confidence that true cross-cultural differences exist? Clearly not. Another possibility must first be considered: that our assumptions about children in the familiar culture are in error.

One important contribution that cross-cultural research can make to the study of language development, as to any discipline, is to force investigators to question the accuracy of existing generalizations. Reappraisal on the basis of cross-cultural information can lead to the identification and elimination of erroneous or unwarranted assumptions. When this is done, apparent cross-cultural differences may disappear. Notice that the outcome in this case is the opposite of the outcome of removing cultural bias: eliminating bias makes members of the "other" culture seem more similar to members of the known culture, whereas revising assumptions about the known culture in light of new cross-cultural information makes members of the known culture appear more similar to members of the "other" culture.

The power of cross-cultural research to force reevaluations of existing assumptions has been realized in connection with at least two English-based generalizations about children's early language, the "pivot grammar" and "telegraphic speech." These will be considered in a later section.

Problems in Identifying Causes of Variability Among
Children

Cross-cultural research has great potential for separating confounded factors and allowing researchers to determine how variation in patterns of language acquisition is linked to variation in social milieu and in rules governing language structure and use. However, realizing this potential has been more difficult than investigators at first envisioned. In particular,

efforts to link differences in acquisition to differences in the language being learned or to variability in social practices have often failed because the variation among children *within* linguistic and cultural boundaries has often turned out to be just as great as the variation across them.

One illustration will suffice. Children differ with respect to how rigidly they order words in their sentences. Some used fixed order for words performing such basic syntactic functions as subject, verb, and direct object, whereas others use flexible order. A reasonable hypothesis would be that such variation is determined by the way in which word order is treated in the language being learned. Children learning languages that have fairly fixed word orders, such as English, would be expected to observe word order constraints consistently in their own speech, whereas children learning languages with relatively flexible word orders, such as Turkish, would be expected to adhere to word order constraints less rigorously or not at all.

As it turns out, this hypothesis is accurate only in a rough, probabilistic sort of way: most children learning fixed-order languages do observe word order constraints from early on, but some do not. Similarly, many children learning flexible-order languages use relatively flexible order, but some use very rigid order (see Brown, 1973, for a review of relevant data). Some of this variability can be accounted for by a more detailed characterization of the exact properties of the language being learned (e.g., Slobin, 1976; see discussion later in this chapter, p. 130). However, even children learning the *same* language may differ considerably in their treatment of word order (e.g., see Braine, 1971, and Ramer, 1976, for data on English-speaking children). Obviously, then, factors in addition to the particular language being learned must influence children's handling of word order. These factors must be sought at a level beneath the relatively coarse variable of "language." For example, subtle differences in the way children's caretakers *use* the resources of a given language may account for at least some of the differences among children learning that language. This possibility was suggested by Bowerman's (1973a) analysis of word order in two Finnish children of middle-class, academically oriented homes: one child's mother used very flexible word order in speaking to her child, and the child's treatment of word order was correspondingly flexible, whereas the word order patterns of both the other mother and her child were considerably more constrained.

In summary, determinants of variability in the course of language acquisition may often be relatively subtle and will not be revealed unless investigators go beyond the gross linguistic and social differences that characterize cultures as a whole in order to explore the way in which details of language use and socialization practices are distributed within the society (see Hymes, 1964). Efforts to do this at the level of social class have met with some success (e.g., Bernstein, 1971; Hess & Shipman, 1965).

However, even at the subcultural level of social class, group members are heterogeneous with respect to certain variables that affect the pattern of language acquisition. Thus, given types of variation are found among children *within* the same subgroup as well as across groups and across cultures. However, the proportions of children doing one thing as opposed to another may vary across class and cultural lines in accordance with the degree to which the causal factors are concentrated in and typical of the different groups.

Equating Children: A Prelude to Comparison

When researchers want to make detailed comparisons of the language development of different children, they must have some way to equate the children for level of development so that they can distinguish "real" differences from differences in degree of linguistic maturity. What can be used as a developmental yardstick? Chronological age is far too rough a guide; even children learning the same language often differ radically in ability at a given age (Brown & Fraser, 1963). A more useful index for equating English-speaking children has proved to be "mean length of utterance" or MLU, which is usually calculated in morphemes (rather than words) on the basis of a sample of a hundred or more consecutive utterances. MLU is a particularly valuable developmental index early in language development; it becomes more variable and therefore less useful as it increases (Brown, 1970).

Could MLU also be used as a metric to equate speech samples from children learning different languages? At first this was unknown. Even if it were established that MLU provides a universally reliable index to development among children learning the same language, this would not resolve the question of whether similar MLUs signal similar developmental levels across languages. In addition to this theoretical uncertainty there was a practical one. Calculating MLUs for children's speech samples requires a number of relatively arbitrary decisions. Certain conventions or rules of thumb have been worked out to guide those who are working with English speech samples (see Slobin, 1967; Brown, 1973), but these are often inadequate for researchers dealing with other languages, particularly more highly inflected ones like German (see Park, 1970), Dutch (Arlman-Rupp, van Niekerk de Haan, & van de Sandt-Koenderman, 1976), and Finnish (Bowerman, 1973a) (see Brown, 1973, for discussion). How such researchers resolve particular dilemmas can considerably influence the MLU values they assign to given speech samples.

Despite these uncertainties about the cross-linguistic application of MLU, the metric has, on the whole, proved to do a remarkably good job of equating children learning different languages at least in the early stages

of development. However, Brown (1973) warns that MLU and other possible quantitative guides to level of development "are only intended as interim external indices, known to be better than chronological age. . . . When we have found evidence of reliable internal semantic and grammatical change . . . we can identify a child's construction level in these terms and ignore the various external indices" (p. 72).

Acquiring the Linguistic Code: Syntactic and Semantic Development

What Could Be Innate?

Chomsky's (1965) hypothesis that there is an explicit connection between universals of language structure and children's capacity for language acquisition (see p. 94, Introduction to this chapter) generated enormous interest and controversy; debate on LAD, the postulated inborn "language acquisition device," was the dominant theoretical issue of the 1960s. Discussion centered on three questions. First, what could such a device be like, that is, how would it operate? Second, what kind of evidence is there for a genetic preprogramming of language ability? And third, what is the nature of "linguistic universals"—are they such that they cannot be explained except by invoking an innate language faculty?

Early debate on the first question—how might LAD operate—focused on whether the device was best conceived in "content" or "process" terms. According to the content approach, LAD could be characterized as a storehouse for information about language universals (e.g., that words fall into certain syntactic classes, that sentences are composed of a subject and a predicate, that language is characterized by certain kinds of formal properties and operations; Chomsky, 1965, pp. 28–30). The content approach to LAD was pursued most vigorously by McNeill (1966a, b, 1970, 1971), who proposed, for example, that children's earliest attempts at sentence construction are guided by an innate grasp of the "basic grammatical relations" (subject, predicate, main verb, direct object, modifier).

Proponents of the process approach (Slobin, 1966b; Fodor, 1966), in contrast, suggested that what is innate is not a set of categories, structural relationships, or rules, but rather a set of *procedures* for analyzing linguistic input (Fodor cautioned, however, that such procedures might be learned rather than innate). Universals of language structure would result from the interaction of linguistic input with these analytic procedures, but would not in themselves be part of the child's biological endowment.

The second question—whether there is evidence for a genetic prepro-

gramming of language—was addressed most compellingly by Lenneberg (1966, 1967). As noted earlier, Lenneberg argued that language has deep biological roots and that language acquisition is, in contrast to other more clearly "learned" behaviors, largely controlled by maturational factors. In support of these claims, Lenneberg presented evidence that there is a "critical period" for language acquisition from birth to puberty and that the ages at which children reach certain basic "milestones" of language development are consistent from one culture to the next despite great differences in environmental conditions (see the discussion of social milieu presented earlier in this chapter, pp. 105–106).

Although Lenneberg's work obviously suggests that there is a significant biological substratum to the capacity for language acquisition, it does not actually support the strong claim to which it has often been applied, that this substratum is specific to *language*. Lenneberg himself became increasingly explicit in his view that the biological foundation for language is not limited to language alone; rather, it inheres in the general cognitive organization and dispositions of mankind and manifests itself in other capacities, such as mathematical ability (Lenneberg, 1971).

Lenneberg's position on this takes us directly to the third question, whether explaining linguistic universals requires appeal to an innate language-specific faculty. This question involves perhaps the most complex issues and has aroused the most heated controversy. Lyons (1966) pointed out early in the debate that existing views on what aspects of language structure are universal were based on little cross-linguistic evidence and would no doubt undergo radical change. He proposed further that those features of language standing a fair chance of being universal could probably be learned by the child on the basis of his general cognitive knowledge. Both of these remarks presaged future lines of research and hypothesizing.

Within the field of linguistics itself, there was growing discontent with Chomsky's separation of syntax and semantics and his claim that the former is more basic to sentence structure than the latter. By the early 1970s several investigators had proposed that syntactic and semantic structure are intricately intertwined, with semantic elements actually being the more fundamental (e.g., Fillmore, 1968; G. Lakoff, 1971; McCawley, 1971; Postal, 1971). Some linguists suggested that certain aspects of sentence structure held by Chomsky and others to be universal, such as the subject-predicate relationship, are in fact not universal at all but instead are best seen as resulting from language-specific transformational operations on underlying semantic materials (Fillmore, 1968). These new conceptions of language structure cast doubt on the need to credit children with innate knowledge of at least some of the formal syntactic structures that had been nominated as candidate components of LAD (Bowerman, 1973b).

Even as questions were being raised in the field of linguistics about

what aspects of language structure are in fact universal, investigators in other fields were suggesting that many purported linguistic universals are not *sui generis* but rather have striking correlates in the universal *nonlinguistic* modes of organizing and conceptualizing experience that the child builds up during the early months of life (Sinclair-de Zwart, 1969, 1971, 1973; Greenfield, Nelson, & Saltzman, 1972; Goodson & Greenfield, 1975; see Bowerman, 1974, for discussion).

Both the introduction of grammatical frameworks that treat semantic structure as primary and the proposal that many syntactic structures have nonlinguistic counterparts lent strength to the growing feeling that much or all of language acquisition can be accounted for by reference to children's general cognitive abilities without invoking a language-specific capacity. By the late 1960s and early 1970s, many researchers had adopted a cognitive-perceptual orientation towards what is biologically "given" to the child, and towards accounting for linguistic universals. Supporting materials have proliferated. For example, there is evidence from studies of both children and adults, some of it cross-cultural, that human beings are predisposed towards categorizing some domains of experience in certain ways and that these predispositions are reflected in universals of semantic structure (e.g., Berlin & Kay, 1969; Rosch, 1973, 1974, 1975; E. Clark, 1977; H. Clark, 1973). Similarly, it has been argued that certain concepts are inherently less "complex," that is, more salient or basic—than others to adults and children alike, and that differences in complexity show up both in language structure and in the relative ease with which children acquire various linguistic forms (E. Clark, 1973b; H. Clark, 1973). Still other universals of language structure have been explained in terms of constraints on the human capacity to process information received in a temporally ordered, rapidly fading medium (Vennemann, 1975; Bever & Langendoen, 1971; Lehmann, 1973; Kuno, 1974; see Slobin, 1975a, for an overview).

Despite the current widespread emphasis on the important role played by cognitive-perceptual factors in the acquisition of language, the question of whether there might nevertheless be some preprogramming for language that is purely *linguistic* and cannot be related to a more general cognitive capacity is far from settled (see Cromer, 1974, 1976, for discussion). Recent evidence in support of this possibility has been presented by Leonard, 1975; Roeper, 1976; and Lust, 1977; among others. However, explicit attempts to link children's linguistic predispositions to universals of language structure have been very few, and for the most part either highly speculative (e.g., Dowty, 1976, on causative verb constructions), open to alternative interpretations (see, for example, Brown, 1973, and Bowerman, 1973a and b, on McNeill's hypothesis that children come equipped with knowledge of the basic grammatical relations), or not borne out by further study.[5] In summary, then, clear-cut support is still lacking for the hypothesized relationship between children's capacity for

language acquisition and any universals of language structure that cannot be viewed as manifestations of more general cognitive universals.

Early Studies of Language Acquisition: From Form to Meaning

Most empirical studies of language acquisition have been conducted not in hopes of relating language acquisitional processes to linguistic universals but rather in order to discover, quite concretely, what children know about various aspects of language structure at different stages of development. What are their early utterances like? What is the best way to characterize the knowledge that underlies these utterances? Is there a consistent order in which various forms emerge?

The first child language studies of the post-Chomskian era were attempts to describe English-speaking children's first sentences and to characterize the rules for word combination that might underlie them. Existing cross-linguistic material was quickly brought in for comparison, with the result that several hypothesized "universals of language acquisition" were soon ripe for the testing. New cross-linguistic material introduced in the late 1960s supported some of the more general of these proposals, for example, that early child language everywhere is patterned and productive. That is, children are clearly not just memorizing sentences or sentence fragments, but rather are learning something that allows them to go beyond what they have heard to create and comprehend novel utterances. However, certain more specific hypotheses about universal characteristics of early child language were found untenable. These hypotheses and the analyses that led to their rejection are considered below, in connection with more recent studies that bear on the same and related problems.

The pivot grammar. Following Chomsky's (1959) compelling arguments that knowing a language involves having internalized a set of rules governing sentence construction, researchers began to investigate whether in fact children's earliest sentences could be characterized as rule-governed, and, if so, what the rules were like. Studying these questions required dropping preconceptions based on knowledge of the categories and relationships of *adult* grammar (e.g., noun, verb, subject, predicate) to approach child language like a linguist studying the structure of an unknown language.

Three independent studies soon suggested that early sentences are indeed patterned and systematic, and, moreover, that they could be described in terms of simple rules specifying the temporal sequencing of words in different syntactic classes (Braine, 1963; Brown & Fraser, 1963; Miller & Ervin, 1964). The findings of the three studies were remarkably

similar and soon formed the basis for an influential model of children's earliest syntactic knowledge known as the "pivot grammar" (McNeill, 1966b, 1970; Slobin, 1968).

According to the rules of the pivot grammar, children's early words can be divided into two syntactic classes on the basis of differences in the way they behave in sentences. A relatively small number of words, known as "pivots," occur with high frequency relative to other words, have fixed position (first or last in two-word utterances), can combine freely with all nonpivot words but not with other pivots, and do not occur as single-word utterances. The residual (nonpivot) words in the child's vocabulary, known as "open class" words, occur with lesser frequency, do not have fixed position, combine either with pivots or with each other, and also occur as one-word utterances. Children appeared to differ with respect to which of their words were "pivots" and which were "open" (e.g., *want* or *more* might be pivots for one child, open for another), but at a more abstract level their grammars were said to be identical.

Slobin (1966a, 1968), who was interested in the generality of the pivot grammar, examined several studies of children learning languages other than English. After finding that all the children had used certain words with relatively high frequency and fixed position, he concluded that the pivot grammar might characterize the first stage of syntactic development everywhere (Slobin, 1968, 1969). McNeill (1966a and b, 1970) proposed that the pivot grammar might be the outcome of children's innate knowledge of certain putative linguistic universals.

The universality of the pivot grammar was still uncertain, however, so investigators launching new cross-linguistic studies of language acquisition in the late 1960s looked at their data with interest to see whether the model would be supported. To summarize a long story, the new data provided clear counterevidence (e.g., Bowerman, 1973a, on Finnish; Kernan, 1969, on Samoan (see analysis in Bowerman, 1973a); Rydin, 1971, on Swedish). The various criteria used in differentiating word classes in a pivot grammar analysis (differences in relative frequency, fixed versus flexible position, occurring versus not occurring as single-word utterances, and so on) simply did not converge on two distinct word classes (see Bowerman, 1973a, and Brown, 1973, for discussion). When taken beyond English, then, the pivot model proved descriptively inadequate.

But what about its adequacy for English-speaking children? Bowerman (1973a) was struck by the fact that despite the failure of her two young Finnish subjects to adhere to the rules of the pivot grammar, their utterances were remarkably similar to those that had been reported for English-speaking children. After reanalyzing the data from the American children on whose speech the pivot model had been based, she found that not a single child's speech conformed fully to the rules of the pivot grammar. Deviations from the model were no greater for the Finnish children

than for the American children. Bowerman concluded that the pivot grammar model, which was an abstraction from the findings of three different studies, distorted the original data and neglected important individual differences among the children who had been studied. Results from analyses of other American children (Bloom, 1970; Bowerman, 1973a) have confirmed that the pivot grammar provides an inaccurate account of the early syntax of children learning English. Little wonder that the pivot grammar failed its test of universality! This example illustrates how an important benefit of the cross-cultural approach can be to force a reappraisal of our conceptions of what takes place in our own culture.

Beyond the pivot grammar. The pivot grammar model suffered from a deeper flaw than descriptive inaccuracy, however. In an influential study of three American children, Bloom (1970) argued compellingly that the pivot grammar is in principle incapable of representing what children know about language because it does not take *meaning* into account, but only the superficial form and arrangement of words in sentences. Bloom illustrated the point with her now-famous *Mommy sock* example. This utterance was produced by her subject Kathryn on two different occasions: once as Mommy put Kathryn's sock on Kathryn and once as Kathryn picked up Mommy's sock. A pivot grammar for Kathryn would have assigned both utterances identical structural representations: open class word + open class word. But, argued Bloom, surely the two utterances *meant* very different things to Kathryn, so the structural relationships between *Mommy* and *sock* were not in fact identical. In one, the word *sock* represented an object acted on by an agent represented by the word *Mommy*, and in the other it represented an object owned by Mommy.

Bloom presented various kinds of evidence for her argument that differentiated meanings underlay her subjects' superficially similar utterances. The most important of these was that the children used *word order* patterns that were consistent with the meanings one would attribute to their utterances, given knowledge of the nonlinguistic contexts in which they were spoken. Thus, for example, agents and possessors were consistently placed first in two-word utterances, while objects acted on or possessed were placed second. Working independently of Bloom, Schlesinger (1971) also concluded that word order consistencies in children's first two-word sentences are a function of underlying meaning.

Brown (1973) has termed the method of Bloom and Schlesinger (and many others since then) the "method of rich interpretation," since it requires using clues from behavior and nonlinguistic context to make judgments about children's probable semantic intentions. Despite the inherent risks and uncertainties of the method (one can never be certain that the intentions underlying given utterances have been judged correctly; see Brown, 1973, for discussion), the method of "rich interpre-

tation" has opened up a new and remarkably productive phase of research on child language. Use of the method has, among other things, resulted in the discovery of previously unrecognized similarities in the speech of children learning different languages. These are discussed in the following section.

Stage I: First Word Combinations

Characterizing the early sentences. Cross-linguistic perspectives on the structure of children's first sentences are provided by Brown (1973) and Bowerman (1973a, 1975), who compared the speech of children in a variety of linguistic communities. Both studies looked at children in the early period of word combining, which has become widely known as "Stage I," following Brown's (1973) terminology. Stage I is defined as the period beginning when MLU first rises above 1 (that is, when the child first starts to combine morphemes) and ending when MLU reaches 2 (an arbitrary cutoff point), at which time utterances of three and four morphemes are common and sentences as long as seven morphemes sometimes occur. Brown's study is based on nineteen Stage I spontaneous speech samples collected by himself and others from thirteen children learning one of five languages: English, Finnish, Samoan, Spanish, and Swedish. In Bowerman's investigation, Stage I was broken down into "early" and "late" substages and the speech of Finnish, Samoan, English, and Luo speaking children was compared at each of these.

What is Stage I speech like? Its most striking aspect is that it is limited, or almost limited, to the expression of a small set of meanings that is the same from one language to the next. As Slobin (1970) notes, "if you ignore word order, and read through transcriptions of two-word utterances in the various languages we have studied, the utterances read like direct translations of one another" (p. 177). Brown (1973) calculated that a list of eight "prevalent semantic relations" would account for about 70 percent of the multiword utterances in the samples of the children he studied. These include Agent and Action (e.g., *Adam hit, man dance,* and translation equivalents), Action and Object, (*hit ball, bite finger*), Agent and Object (with an implied action linking them, e.g., *Adam ball,* and see Bloom's *Mommy sock* example, p. 119 above), Action and Location (e.g., *go store, sit bed*), Entity and Location (*ball table, car garage*), Possessor and Possessed (*Mommy hat, candy mine*), Entity and Attribute (*big bed, more juice, other cookie, hair wet*), and Demonstrative and Entity (*this/that doggie, here/there cookie, it clock*). Also common are utterances referring to or requesting the disappearance or nonexistence of an object or event (e.g., *juice all gone, no more walk, no pocket, ant away*) and rudimentary questions about location (e.g., *where X* [*go*]?) and identity (e.g., *what dat?*). Somewhat less common are utterances

referring to instruments (*sweep broom, cut knife*), indirect objects (*give Mommy, show me*), experiencers and states (*Adam see*), and a few others.

Brown noted that these few meanings by no means exhaust the range of possible meanings that languages can express. He hypothesized that the reason for their frequency and apparent universality early in development is that they constitute the linguistic expression of *sensorimotor intelligence*, or the kind of basic understanding of the world that children everywhere construct during the first two years of life, according to Piagetian theory (see also D. Edwards, 1974).

It is instructive to notice what is missing from the early sentences as well as what is present: prepositions, definite and indefinite articles, copulas (forms of *be*), noun and verb inflections, conjunctions, and verbal auxiliaries. The absence of these forms from the early speech of English-speaking children led Brown and Fraser (1963) and Brown and Bellugi (1964) to characterize this speech as "telegraphic." Telegraphic speech was described in terms of a distinction between "content" words and "functors." Content words are primarily nouns, verbs and adjectives. These reference-making words belong to large syntactic classes that readily admit new members. Functors, in contrast, primarily serve grammatical rather than referential functions and belong to small, closed syntactic classes. In a comparison of cross-linguistic data Slobin (1970) reported that "telegraphic speech" seemed to be a universal of early language development. We will return to the aptness of this description shortly.

The first major complications that lengthen children's utterances from two to three morphemes appear to take place in a similar way across a variety of languages (Brown, 1973; Bowerman, 1973a, 1975). Rather than adding in the various functors that would be required by the adult language (e.g., *ball table* expanding to *ball on table*, *that ball* to *that's the ball*), children begin to *combine* the meanings expressed earlier in two-word utterances. In one type of elaboration, major constituents (Agent, Action, Location, etc.) that occurred two-at-a-time earlier begin to combine to form three-constituent strings like Agent-Action-Object (e.g., *Adam hit ball* [English]; *Rina eats cake, piggy drives bicycle* [both Finnish]); and Agent-Action-Location (e.g., *bunny walks sand* [Finnish]; *goes Usa there* [Samoan]). In a second type of elaboration, a major constituent, such as Agent, Object, Location, or "Demonstrated Entity," undergoes expansion as an attributive or possessive construction. For example, *monkey come* might now be realized as *big monkey come, lift stone* as *lift big stone, sit chair* as *sit Daddy chair* (= in Daddy's chair), *that soup* as *that Mommy soup*, and *there cookie* as *there more cookie*. The approximately simultaneous emergence of three-morpheme strings of both kinds (three major constituents versus two major constituents, one of which is a modified noun) led Brown (1973) and Bowerman (1973a) to conclude that the two types of syntactic elaboration are equivalent in cognitive complexity.

Readjusting our model of Stage I speech. New data and reanalyses of earlier data require that our notions of the characteristics of Stage I speech be continually modified. However, evidence that at first appears to challenge the cross-linguistic validity of the description often ends up exposing oversimplifications in the original conclusions, just as in the case of the pivot grammar (see discussion earlier, pp. 118–119). That is, when researchers suggest ways in which their subjects, learning language D, depart from the "universal" characterization of child speech that was developed on the basis of children learning languages A, B, and C, closer analysis often reveals that at least some children learning A, B, and C also depart from the model in similar ways.

Brown (1973), for example, used an apparent departure from the "telegraphic speech" characterization of early sentences as a starting point for a reevaluation of the general adequacy of this description. In analyzing speech corpora from young German children, Park (1970) had found that a number of functors were used frequently and appropriately. He concluded that "apparently functors do not operate in the same manner in American and German children" (p. 6). Brown (1973) makes the following observation:

> At first sight Park's paper suggests the breakdown, just in the case of German, of a description of Stage I speech, otherwise universally apt. In fact, however, his data are not so very different from data reported by other investigators. After all, no one found functors invariably absent from Stage I, only usually so. What is different about the German study is the stance Park takes up. Most of us, especially students of English, have taken the position that Stage I speech is, in the main, telegraphic and have tried to explain away the exceptions in one way or another. Park, in not committing himself to the maintenance of the generalization, turns us back to the data of the other studies to see what the *exceptions* to the rule have been like. (p. 80)

Brown then reminds us that many of the functors found in Park's German data are also present in early child English and other languages. For example, personal and demonstrative pronouns, prolocatives like *here* and *there*, and words like *on* and *off* (used as verbal particles equivalent to "take off" and "put on" rather than as prepositions) are common; these are technically functors because, like *a*, *the*, and present progressive *-ing* (for example), they belong to small, closed syntactic classes.

Why are functors like these present in early sentences whereas others are not? Brown argues that the gross dichotomy between "functors" and "content words" has obscured important differences among words. He observes that the category "functor" in American English is defined "by the partial convergence of a large number of characteristics or variables. Some, at least, of these variables affect the probability that a given form will occur in Stage I speech" (p. 82). According to Brown, "what the study

of languages other than English does . . . is to change the correlations among variables and so help to force us to think not in terms of a class but of variables" (p. 82).

After a review of available evidence on the presence or absence of functors in the early speech of children in a variety of linguistic communities, Brown proposed that the likelihood that a particular functor will be present in early speech is a combined function of four determinants: relative perceptual salience, relative frequency in adult input, whether the form taken by the functor is constant or is conditioned by verbal context, and whether the functor expresses a basic semantic role (e.g., agent, object, possessor, location) or instead marks a "modulation" of meaning such as plurality or past time. More specifically, Brown hypothesized that functors that have high perceptual salience, high frequency in adult speech, are unconditioned by context, and express basic roles will be "fully controlled" in early speech. Functors that have high salience and frequency but that are conditioned by context and/or express modulations of meaning will occur, but only in "prefabricated routines" rather than under full control. And functors that have low salience and frequency, are conditioned, and express modulations will be absent (Brown, 1973, p. 88).

Brown's revised analysis of telegraphic speech comes much closer to accounting for all the data than did the earlier version, but further modifications will still be needed. For example, Lindhagen (1976) has challenged the hypothesis that only functors expressing "basic semantic roles" will be used "freely and correctly" in Stage I. Her two Swedish subjects, who clearly qualified as Stage I speakers on many other grounds, showed good control of certain functors expressing "modulations" of meaning, including markers for the definite form of nouns and for the present and future tense of verbs. Similarly difficult to square with Brown's formulations are Burling's (1959) report on his 2-year-old son's learning of Garo, a Tibeto-Burman language, and Varma's (1979) observations on a Stage I Hindi-speaking child. From the very beginning of word combination, both children used, productively and appropriately, a variety of verb suffixes marking modulations such as "imperative," "past," "present progressive" (Hindi) or "present/habitual" (Garo); other functors such as possessive suffixes and the copula (Hindi) soon followed.

Arlman-Rupp et al. (1976) advance still further challenges to the universal aptness of Brown's characterization of "telegraphic speech" during Stage I. They found that the Stage I Dutch children they studied used a large number of "modal elements" expressing modulations of meaning involving certainty, probability, possibility, and so on (e.g., in translation *now, now again, just, then, really, indeed, must,* and *may*). They disagree with Brown's (1973) conclusion that when such forms occur in Stage I they are used idiosyncratically, inflexibly, and uncomprehendingly: their subjects

appeared to use them appropriately and with understanding. Arlman-Rupp et al. also found that only about 50 percent of their subjects' multiword utterances could be described in terms of Brown's "prevalent semantic relations," as opposed to the average of 70 percent reported by Brown for children learning other languages. Even those utterances that could be classified in terms of one or another of the prevalent relations contained a great deal of "surplus material," such as copulas, articles, and prepositions. They conclude that "the concept of prevalent semantic relations would seem to be a much less powerful way of describing the early stage of language acquisition in Dutch than in English or in the other languages Brown studied" (p. 272).

Arlman-Rupp et al.'s study certainly underlines some weaknesses of the existing characterization of Stage I speech, but the conclusion that there is some *systematic* difference between Dutch children and the speakers of English, Finnish, Samoan, Swedish, and Spanish on whose data Brown drew is probably unwarranted. In the twelve samples Brown analyzed, the percentage of utterances acounted for by the prevalent semantic relations ranged from 30 to 81; the percentage was 58 or under for four samples. Obviously Brown's description of Stage I speech fits some children better than others, but it is not at all clear that its adequacy can be predicted on the basis of the language being learned. At the least, however, it appears that Stage I children *are* capable of conceptualizing and verbally expressing certain "modulations of meaning." The exact conditions under which they do this have yet to be worked out, however.

Operating Principles for Language Acquisition

Simply describing what children do linguistically is a necessary first step in accounting for language acquisition. But beyond this it is essential to ask why they do it in this way and not in some other. Identifying consistencies in the way children approach linguistic material is often difficult beyond Stage I because any such consistencies interact in complicated ways with other factors such as the particular structures that must be learned. The end result is that underlying regularities are obscured by the surface appearance of wide variability in patterns of acquisition from one language to the next or even among children learning the same language.

Slobin's 1973 "Cognitive Prerequisites" paper. In a 1973 paper entitled "Cognitive prerequisites for the acquisition of language," Slobin made a seminal contribution to the study of language development by pulling order out of masses of cross-linguistic data. Taking into account reports on the acquisition of about forty different languages, Slobin inductively formulated seven very general "operating principles" that "guide the child in

developing strategies for the production and interpretation of speech and for the construction of linguistic rule systems" (p. 194). Each operating principle, which is phrased as a self-instruction to the child, accounts for a number of observed "universals" of grammatical development. Each universal, in turn, is a summary statement based on information about the acquisition of various kinds of structures in a number of different languages.

Slobin's analysis of children's operating principles is founded in part on a working hypothesis about semantic acquisition: 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" (p. 187). If this "very strong developmental psycholinguistic universal" is true, argues Slobin, "and if communicative intentions can be reliably assessed from a combination of contextual and partial linguistic cues [i.e., by the method of "rich interpretation" described earlier, see p. 119], then we have a powerful research tool for probing the information processing devices used and developed by children to understand speech and to construct grammars" (p. 187). In essence, the method Slobin proposes is to measure the lag between a child's first (linguistic) attempts to express a given meaning and his later mastery of the conventional linguistic device(s) for encoding that meaning. Systematic variation in length of time to mastery as a function of the type of device involved (e.g., inflections versus word order versus intonation) would reflect the relative difficulty of the devices for the child and so provide clues to the child's strategies for linguistic data-processing.

Slobin illustrates this method with a test case involving two children who were bilingual in Hungarian and Serbo-Croatian. Before the age of two, these children were appropriately using a variety of Hungarian case endings to express such locative notions as "into," "out of," and "onto." Yet at the same time they were barely beginning to develop equivalent locative forms in Serbo-Croatian, which are prepositions governing various (nonlocative) case endings on the following nouns. Slobin notes that the lag in development in Serbo-Croatian cannot be attributed to immaturity of semantic intentions, since if a child can express such notions as "into" in one language (e.g., by saying *doll drawer-into* as she puts a doll into a drawer), we can infer that she is capable of the same semantic intentions when speaking the other language even though she may say only *doll drawer*. The difficulty presented by Serbo-Croatian is thus not a semantic one; rather, it has to do with the nature of the linguistic devices the language uses to *express* locative meanings. Slobin's point does not depend on the child's bilingualism. He uses this example merely to demonstrate the claim, supported by other data as well, that semantic intentions can develop in advance of knowledge of the necessary linguistic devices to encode these intentions.

After consideration of this and other material, Slobin concludes that (all else being equal) children find suffixes, postverbal particles, and post-positions *easier to learn than prepositions for expressing locative relation-*ships. Moreover, this tendency is "not limited to the expression of loca-tives. In fact, it seems to reflect a generally early tendency on the part of the child to attend to the ends of words when scanning linguistic input in a search for cues to meaning" (p. 191). The operating principle that Slobin proposes to account for this is *Pay attention to the ends of words.* A language developmental universal that flows from this is: "For any given semantic notion, grammatical realizations in the form of suffixes or post-positions will be acquired earlier than realizations in the form of prefixes or prepo-sitions" (p. 192).

Slobin's six other proposed operating principles, arrived at in the same way from examination of language-specific data, are as follows (each principle is illustrated by one or two of the developmental universals that the principle is designed to account for). (1) *Pay attention to the order of words and morphemes* (e.g., "The standard order of functor morphemes [inflec-tions, prepositions, etc.] in the input language is preserved in child speech"). (2) *Avoid interruption or rearrangement of linguistic units* (e.g., "Structures requiring permutation of elements will first appear in non-permuted form," as in "Where *I can* go?"). (3) *Underlying semantic relations should be marked overtly and clearly* (e.g., "A child will begin to mark a se-mantic notion earlier if its morphological realization is more salient per-ceptually (ceteris paribus)"; "When a child first controls a full form of a linguistic entity which can undergo contraction or deletion, contractions or deletions of such entities tend to be absent"). (4) *Avoid exceptions* (This is illustrated in the discussion of the acquisition of morphological rules). (5) *The use of grammatical markers should make semantic sense* (e.g., "Semantically consistent grammatical rules are acquired early and without significant error"). (6) *The phonological forms of words can be systematically modified.*

Inevitably, these operating principles require continuing revision, tightening, and supplementing as ongoing work reveals counterexamples and unexplained phenomena. Maratsos (1979), for example, notes that the principle that *Underlying semantic relations should be marked overtly and clearly* seems particularly weak: young children often do not make semantic re-lations explicit even when they have the capacity to do so. Acknowledging this, Slobin (in press) suggests that this operating principle may function to guide *discovery* rather than, as the original formulation indicates, pro-duction. That is, "surface marking that is 'overt' and 'clear' is more easily discovered and acquired by the child."

Slobin (in press) goes on to elaborate on the notion of what constitutes "overt and clear grammatical marking," drawing on recent findings from cross-linguistic studies in which children learning English, Italian, Serbo-Croatian, and Turkish served as participants in a battery of experiments

testing their grasp of a variety of sentence patterns and words (see Slobin, in press, for an overview and Slobin, 1976; Ammon & Slobin, 1978; Johnston & Slobin, 1979; and Slobin & Bever, to appear, for details on the studies). In particular, Slobin now stresses the importance of *local cues*, or "signals to underlying meaning which occur at localized points in the sentence," such as grammatical particles indicating notions like causation and aspect (Slobin, in press).

As the previous paragraph suggests, the commonalities in the course of language development that Slobin's operating principles are designed to capture are not for the most part common patterns of acquisition at the level of form and content, but rather factors that influence ease of acquisition (Slobin, in press). Taken together, they provide a partial explication of what constitutes formal complexity for the child. Thus, a child will acquire given syntactic devices more or less readily according to whether they involve preword or postword marking, whether the devices are regular or subject to many exceptions, whether they are semantically arbitrary or mark underlying meaning distinctions, whether they do or do not require the interruption of linguistic material, and so on.

Formal complexity, defined in this way, interacts with the complexity of underlying meanings to determine the order in which children will begin to produce and understand linguistic forms. The relative difficulty of meaning is the ultimate constraint, since regardless of how simple a syntactic device is it will not be acquired unless the meaning it encodes is within the child's grasp. However, a given meaning may be relatively easy, but if a particular language encodes this meaning in a way that is formally difficult for children, children learning that language will not acquire the conventional means for expressing the idea until relatively late.

Children's acquisition of devices for marking yes-no questions provides a good example of this phenomenon. As noted earlier, many languages offer a distinctive intonation pattern that distinguishes questions from declarative sentences. Children learning such languages typically begin to use intonation to mark questions by the two-word stage or even earlier. But asking a question in Finnish cannot be accomplished by manipulation of intonation; rearrangements of word order and the addition of a question-particle are required instead. Correspondingly, children learning Finnish do not begin to ask formally marked yes-no questions until long past the two-word stage, even though we can assume that entertaining an interrogative intent is within their cognitive capacity earlier (Bowerman, 1973a; see Slobin, 1970, 1973, for discussion).

The operating principles that determine what aspects of language are difficult or easy for a child to acquire may reflect constraints on human information processing and rule formation and storage that are not limited to children. Slobin (1975b) has recently proposed that children's operating principles reflect very general psychological laws that constrain the form

natural languages can take, guide the way in which languages change over time, and determine the way in which languages affect each other when they are in bilingual contact. Thus, for example, those aspects of the structure of a particular language that are easy for children to learn tend to persist over time in the historical evolution of the language and are resistant to erosion by bilingual contact; conversely, those aspects that are hard for children to acquire are less stable over time and are susceptible to rapid modification in the event of continued bilingual contact.

Word order. The workings of several of Slobin's operating principles, including the way in which they interact with each other and with the structure of the language being learned, can be seen with particular clarity in the processes by which children learn word order patterns and inflectional morphology. These two syntactic devices have long interested students of language acquisition, and have been the subject of considerable cross-linguistic attention, because they constitute two major mechanisms that languages can call on, either singly or in combination, to distinguish between nouns in different syntactic roles such as subject and direct object.

First hypotheses about children's approach to word order were based on studies of children learning English. These children, it was noted, tend to observe adult-like word order constraints both in imitations of adult utterances and in spontaneous speech. Observing that English relies heavily on word order to convey basic syntactic information, Brown and Bellugi (1964) speculated that the child learning English preserves word order because he intends the meanings conveyed by these orders. But, they cautioned, "it is also possible that he preserves word order just because his brain works that way and that he has no comprehension of the semantic contrasts involved" (p. 137). They called for data from children learning languages that do not use word order as a major syntactic device to help evaluate these alternatives.

When Slobin (1966a) reported that a child learning Russian, a language with relatively free word order, also used a fixed order for subject-verb-object sentences, it seemed as though rigid word order might indeed be characteristic of all early child speech. Slobin proposed that "there must be something in LAD, the built-in 'language acquisition device' . . . that favors beginning language with ordered sequences of unmarked classes, regardless of the degree of correspondence of such a system with the input language" (1966a, pp. 134–35). McNeill (1966a) hypothesized that children's rigid word order reflects their innate knowledge of the "basic grammatical relations" (subject, predicate, verb, direct object, modifier) and their search to express these in their speech. Both Slobin and McNeill suggested that children learning highly inflected languages with relatively flexible word orders might use rigid word order in their own

speech up until the time they acquire inflections; then they would learn rules for reordering sentence elements.

Further cross-linguistic data soon proved these hypotheses wrong. Children learning highly inflected, flexible languages do not necessarily preserve word order either in imitating the utterances of others or in their own spontaneous sentences in the period before they acquire inflections to mark subject, object, and so on (see, for example, Bowerman, 1973a, on Finnish; Slobin, 1973, on Polish and Russian; Slobin, 1976, in press, on Turkish).

Even though children do not universally rely on fixed word order in the initial stages of word combination, they clearly come equipped to consider the possibility that word order may be important (hence Slobin's operating principle, *Pay attention to the order of words and morphemes.*) Children learning relatively inflexible languages like English and Samoan tend to acquire appropriate ordering rules very early, although there are some exceptions (e.g., Burling, 1959; Braine, 1971). And even those learning more flexible languages seem to rely on word order to an extent. For example, Braine (1976), who compared speech corpora from children learning English, Finnish, Samoan, Hebrew, and Swedish for clues to children's early rules for sentence construction, concluded that for all children "the first productive structures are formulae of limited scope for realizing specific kinds of meanings. They define how a meaning is to be expressed by specifying where in the utterance the words expressing the components of meaning should be placed" (p. 4). Some of these "positional patterns" are word-based (e.g., *there* + X, *want* + X, *have* + X, *big* + X), while others involve the placement of words representing more abstract categories of meaning such as actor or possessor.

Bates (1976a) and MacWhinney (1975), who studied Italian and Hungarian children respectively, found that many or most of their subjects' first word combinations could be accounted for by word-based positional patterns of the type described by Braine (1976). But word-order regularities in the rest of their sentences reflected not underlying semantic distinctions (e.g., actor first, action second), but rather *focusing* principles such as "new information first, old (or given) information second" (Bates, 1976a) or "more important information (whether new or old) first, less important information second" (MacWhinney, 1975). Adult speakers of Italian and Hungarian also do not rely heavily on order to convey basic semantic information, but use word-order contrasts for the pragmatic purpose of foregrounding and backgrounding sentence constituents instead. Bates (1976a) proposes that children adopt semantic ordering principles when there are clear-cut models for this in the adult input, but use pragmatic ordering principles when there are not (although their first pragmatic ordering principles may not correspond with those of adults).

Besides focusing, a second factor that influences how word order is handled by children learning "flexible order" languages is the relative difficulty of the language's inflectional system. Turkish has a system of agglutinative inflectional morphology that is so clear and regular that it is "a joy to descriptive linguists . . . and to the Turkish child as well," who masters the entire system before the age of two (Slobin, 1975b, p. 7). In contrast, the inflectional system of Serbo-Croatian is exceedingly complex, with many irregularities and with case endings varying on the basis of gender, animacy, number, and phonological shape of the stem. Mastering this system is a drawn-out process that continues at least until the age of five (Slobin, 1975b; Radulovic, 1975). Slobin (1976, in press) reports that young Turkish and Yugoslavian children performed very differently on a comprehension task that required them to manipulate toys to act out sentences composed of two nouns and a verb in various order permutations and with inflections variously present or absent (e.g., "calf touches bird"). The Turkish children relied on case endings from a very young age and never developed word-order strategies to guide their assignment of subject and object roles to the nouns (the use of word order strategies for interpreting sentences is typical of both young American children, cf. Bever, 1970; Fraser, Bellugi & Brown, 1963; and French children, cf. Sinclair & Bronckhart, 1972; it has also been documented in older Tamil-speaking children, Garman, 1974). The Yugoslavian children, in sharp contrast to the Turkish youngsters, seemed at first to require redundant cues from both inflections *and* word order, and went on depending heavily on word order for some time.

The spontaneous speech of Turkish and Yugoslavian children parallels their comprehension strategies. The former vary order freely virtually from the beginning of word combination, whereas the latter adhere to a far more rigid word order than do their parents, even long after they have acquired inflections (Slobin, 1976; Radulovic, 1975). Children learning other Slavic languages, which have inflectional systems similar to that of Serbo-Croatian, also show a heavy reliance on word order (Slobin, 1976).

Slobin (1976) concludes that "given a reliable case inflection system [i.e., like that of Turkish], children are not constrained to orient to word order as a guide to underlying semantic relations." (He leaves open the question of whether they may instead formulate pragmatic word order rules of the type discussed by Bates and MacWhinney). In contrast, children whose language provides a complex, irregular, and unreliable case system may "find it hard to believe that what they are exposed to is a case system . . . they suspect that the real marker to underlying relations in their language is word order." Slobin (1975b, 1976) relates the difference in the ease with which children learn the inflectional systems of Turkish versus Slavic (and, more generally, Indo-European) languages to differences in the persistence of these systems over time: the former have en-

dured with little change for centuries whereas the latter have progressively decayed and been partially replaced by analytic devices that are apparently easier than the original system (although still harder than the Turkish system) not only for children to master but also for adults to process in speaking and comprehending.

Morphology. Despite the existence of gross disparities in the elaboration and complexity of the inflectional systems of different languages, the pattern of acquiring inflectional morphology is remarkably similar everywhere. Slobin (1973, p. 205) sketches the following stages of inflectional marking of a semantic notion: (1) no marking, (2) appropriate marking in limited cases, (3) overgeneralization of marking (often accompanied by redundant marking), and (4) full adult system. Stage 3, which is fairly straightforward in English (e.g., characterized by the production of overgeneralizations like *comed, breaked, foots*, and redundant forms like *wented, toastses* and *feetses*) is often marked in languages with more complex inflectional systems by "substages of successive overgeneralizations, in which one form drives out another. . . . For example, Russian children first use the masculine and neuter *-om* inflection for all singular noun instrumentals; then replace this with the feminine *-oy*; and only later sort out the two inflections" (Slobin, 1973, p. 205). Slobin (1968) has termed this phenomenon "inflectional imperialism." Nowhere is it clearer than in the acquisition of inflections that children are seekers of *broad patterns.* No matter how well practiced a language form may be, if it is irregular with respect to a particular rule it will be eclipsed for a time by a regularized form once the child discovers the rule. This is the essence of Slobin's (1973) operating principle *Avoid exceptions.*

Another of Slobin's operating principles, *The use of grammatical markers should make semantic sense* (1973, p. 206), is reflected in various other aspects of the acquisition of morphology. Children attempt to link markers to meaning distinctions as directly as possible. This means that they have relatively little difficulty with semantically consistent inflections. For example, English speakers very early appear to grasp the meaning distinction that determines whether a verb can take present progressive *-ing* or not ("process" verbs can, "state" verbs cannot), and rarely or never make overgeneralizations such as *liking, wanting,* and *needing* (Brown, 1973). However, when semantically arbitrary factors, such as the phonological shape of the stem to which an inflection is attached, determine what inflection should be used to perform a given semantic function, children initially ignore such factors and apply a single inflectional form in all formal contexts in which the function must be marked.

The operating principle *Underlying semantic relations should be marked overtly and clearly* is illustrated by other aspects of morphological development. For example, children initially avoid inflections that are homony-

mous, that is, that express more than one meaning, preferring to express a given meaning with a phonologically unique form wherever possible. Thus, Russian children first bypass the Russian inflection *-oy* in favor of *-om* as a marker for instrumental nouns; the former is more frequent in adult speech, but it expresses four meanings in addition to instrumentality, whereas the latter has only one homonym.[6]

Unconfounding Within-Language Variables to Determine Sources of Complexity

Implicit in much of the foregoing discussion is that cross-linguistic research can serve to clarify sources of relative difficulty or complexity *within* a single language as well as across languages. It does this by allowing possible explanatory variables that are confounded within the language to be separated so their independent effects can be assessed. For example, cross-cultural research has allowed researchers to conclude that English-speaking children's early observation of word-order constraints is related primarily to the structure of the language they are learning rather than to a very general strategy of the language-learning child, since children learning at least certain flexible-order languages show no tendency towards rigid word order.

The point that cross-cultural research can profitably be applied to the solution of within-language problems is important enough to merit further illustration. An excellent example of research of this nature is provided by Hakuta's (1976) study of how Japanese children interpret sentences containing relative clauses.

English-speaking children's comprehension and production of sentences with relative clauses has been extensively studied (see de Villiers, Tager Flusberg, Hakuta, & Cohen, 1979, for review). Although findings are somewhat mixed, a common observation is that sentences such as "the horse that bit the cow ran away" are both harder to comprehend and later to be produced than those like "the horse bit the cow that ran away." What does this difficulty stem from? One possible line of explanation would focus on the *syntactic roles* of the nouns involved: the former sentences involve an operation on the *subject* noun while the latter involve one on the *object* noun. Perhaps for some reason operations on subjects are harder than operations on objects. A second quite different type of explanation makes reference to the *positioning* of the relative clause within the sentence. In the former, more difficult type of sentence, the relative clause is *center-embedded* and interrupts the main clause, while in the latter, easier type of sentence it is *right-branching* and leaves the main clause undisturbed.

If we stick solely to English, it is difficult to determine whether syntac-

tic role or positioning is the more important source of difficulty, since in simple sentences right-branching relative clauses always operate on object nouns and center-embedded relative clauses always operate on subject nouns. But in Japanese this confounding of factors is absent. Sentences can easily be constructed in which syntactic role and positioning (center-embedded versus left-branching, in this case) vary independently. And Hakuta's (1976) to-the-point study of Japanese children's comprehension of relative clause-containing sentences indicates that the more important factor is *positioning*: center-embedded sentences were more difficult than left-branching sentences *regardless* of whether the relative clause was attached to the subject noun or the object noun.[7] Notice that this finding accords with Slobin's (1973) operating principle *Avoid interruption or rearrangement of linguistic units*, and particularly with one of its associated developmental universals: "There is a tendency to preserve the structure of the sentence as a closed entity, reflected in a development from sentence-external placement of various linguistic forms to their movement within the sentence" (p. 200).

Studies like Hakuta's, in which a within-language problem is explored with the help of information on the acquisition of a language that is structurally dissimilar in key ways, should become increasingly common as investigators formulate more precise hypotheses about possible sources of complexity or difficulty. Further existing research along these lines includes Lust and Wakayama's (1979) comparison of the acquisition of conjoining operations (with "and") in Japanese and English and MacWhinney's (1976) and Radulovic's (1975) data on the order in which various "grammatical morphemes" (that is, functors such as case endings, other inflections, and prepositions) emerge in Hungarian and Serbo-Croatian, respectively (cf. Brown, 1973, for discussion of the order of emergence in English and the confounding of semantic and syntactic complexity as possible explanations).

A Closer Look at Semantics

As the discussions of the semantics of children's early sentences and of operating principles for language acquisition indicate, there is presently considerable interest in the role played by cognitive growth in the acquisition of language. Earlier in this century it was common to view cognitive development as heavily dependent on language learning (see Cromer, 1974, for discussion). For example, Sapir, Whorf, and their followers argued that language is the medium through which children learn to categorize and organize their experience of the world. This stance has been strikingly reversed in a currently popular position on the relationship between cognitive and linguistic growth. This view holds that cognitive

growth is prior to and relatively independent of language acquisition; moreover, the acquisition of language itself depends heavily on previous conceptual development. Thus, children are seen as expressing verbally only those meanings that they have already worked out on a nonlinguistic basis. Their task is regarded as one of learning conventions for mapping or translating from one representational system (i.e., nonlinguistic conceptual organization) to another (i.e., language) (see Schlesinger, 1971; Slobin, 1973; Bloom, 1973; Nelson, 1974; Wells, 1974, for various versions of this hypothesis). Recall in this connection the working assumption that guided Slobin in making sense of a patchwork quilt of language acquisition data from many cultures: that semantic intentions develop in advance of knowledge of the formal linguistic means to express them, and that the rate and order in which they develop is fairly constant (as discussed earlier, p. 125).

Even though there can be no question that the recent emphasis on cognitive development has led to important insights into language acquisition, the hypothesis that language is initially learned only to encode previously formulated meanings may be a considerable oversimplification. At the least, it has certainly tended to discourage interest in a problem about which little is yet known—how children work out the fine details of the semantic systems of their own language, insofar as these details differ from one language to another. This problem will be considered shortly, after a look at the nature of the evidence that cognitive growth precedes language.

Evidence for the primacy of cognitive development. One important source of support for the "cognition-first" hypothesis has already been mentioned (p. 125)—that children often show signs from both behavior and immature linguistic constructions (as analyzed through the method of "rich interpretation") of wanting to communicate certain meanings before they have acquired the conventional linguistic devices for doing so. After presenting evidence for this phenomenon, Slobin (1973) concluded that "new [linguistic] forms first express old functions [meanings]" (p. 184). Conversely, when new *meanings* enter, the child expresses them with whatever "old forms" he has available, since he still lacks the conventional devices for encoding them. Cromer (1968, 1974) hypothesized that the development of new meanings or semantic intentions may in fact precipitate an active search for the relevant linguistic forms.

A second line of evidence for the primacy of cognitive development over linguistic development comes from numerous studies indicating that in the absence of full knowledge of the meanings of words or of syntactic patterns children rely on nonlinguistic strategies to direct their *interpretations* of these forms in the speech of others. For example, when 2-year-olds are told to "put X in/on/under Y," they behave according to expectations

about how things should be spatially related (E. Clark, 1973a; Wilcox & Palermo, 1974; see also E. Clark, 1975; Chapman & Miller, 1975; R. Clark et al., 1974, for other examples of strategies based on nonlinguistic expectations).

Still further support for the "cognition-first" hypothesis comes from evidence that once a child has acquired a given language form, she may use it to express a range of meanings that differs systematically in some way from the range of meanings in connection with which she has heard it modeled. A plausible explanation for this phenomenon is that the child has identified the form with a concept of her own devising and uses this concept as her hypothesis about the meaning encoded by that form. Sometimes the concept is *overextended* relative to the adult concept tagged by that word; that is, it encompasses the adult meaning and more besides. For example, a child may use *doggie* to refer to all four-legged animals or *ball* to refer to all small round objects (E. Clark, 1973b). Alternatively, sometimes the range is *underextended*. For example, Antinucci and Miller (1976) found that both American and Italian children initially use past-tense markers not to refer indiscriminately to any event in the past, as in adult speech, but only for that subset of past events that result in a *change of state* that persists up to the time of speech.

What about Slobin's hypothesis that the rate at which and order in which semantic intentions develop in children learning different languages is fairly constant? This has been relatively little studied as yet. What little evidence is available is somewhat mixed. For example, on the positive side, Clancy, Jacobsen, and Silva (1976) found that children's intentions to link propositions together in various ways develop in the same order regardless of language (e.g., simple conjoining first, causal linkages later, temporal sequencing with *before* and *after* still later; American, Turkish, German, and Italian children were studied). Similarly, Johnston and Slobin (1979) found that the order in which children learning English, Italian, Turkish, and Serbo-Croatian acquired locative markers (*in, on, between,* etc., and their translation equivalents) could be predicted to a large extent on grounds of conceptual difficulty (where *conceptual* was defined in terms both of cognitive difficulty of the spatial notions involved and relative salience in communicative settings). Discrepancies among orders of acquisition, where they existed, could be explained in terms of special facilitating or retarding effects of the linguistic devices used by the different languages to encode the locative notions.

On the negative or at least "not yet explained" side, however, is the fact that the order of emergence of two-word utterances expressing various semantic relationships (e.g., possession, agent-action) is somewhat variable across children learning both the same and different languages Bowerman, 1975; Braine, 1976). Reasons for this variability are not yet clear, but it cannot easily be accounted for by reference to the complexity

of the formal encoding devices offered by the language (see Bowerman, 1975). Thus, it is possible that it reflects a *variable order of emergence* of the relevant semantic notions.

Origins of prelinguistic concepts. If children's acquisition and use of language forms depend heavily on concepts formulated prior to language, where do these concepts originate? Some are undoubtedly idiosyncratic (e.g., see Nelson, 1974; Bowerman, 1980), but others appear to be very general and may well reflect universal cognitive processes. Such processes could be expected to manifest themselves not only in the course of language development but also in the structure of language itself. A number of observations and hypotheses about this possibility have been made. For example, several investigators have remarked on the striking correspondence between the relational meanings of children's Stage I sentences and the set of "cases" or basic meanings that Fillmore (1968) proposed as universal primitives of underlying sentence structure (e.g., Brown, 1973; Bowerman, 1973a). As Brown (1974) notes, "This is surprising since Fillmore did not set out to say anything at all about child speech but simply to provide a universal framework for adult grammar" (p. 130). The "fit" between child speech and Fillmore's case grammar is not perfect (see Bowerman, 1973a; Brown, 1973; Braine, 1976; and Lindhagen, 1976, for discussion), but it is close enough to suggest that the types of meanings that are universally basic to language structure are also universally among the earliest meanings to emerge in child speech.

Evidence linking the acquisition of *word meaning* to the semantic structure of languages, and ultimately tying both to underlying cognitive processes, has been advanced by E. Clark and Rosch. Clark first tried to identify the types of semantic distinctions that children's early words encode, and then to determine the ontogenetic origin of these distinctions. In the first phase of research, Clark (1973b) examined diary study reports on the way children in many different language communities extended words to novel objects. In a later study (Clark, 1977), she compared children's bases for word extension with the semantic distinctions encoded by the obligatory classifier systems found in many natural languages.[8] She found that:

> Visual perception plays an important role [in] both. . . . In both cases, objects are categorized primarily on the basis of shape, and the same properties of shape appear to be relevant in acquisition and in classifier systems. Roundness and length . . . appear to be very salient. (p. 460)

Clark concluded that word acquisition and the classifier systems of natural languages are similar because both depend on a universal, "a priori, nonlinguistic categorization process." Her conclusion is strengthened by Allan's (1977) independent claim, based on study of the semantics of clas-

sifier systems in more than 50 languages, that, counter to strong Whorfian claims, "diverse language communities categorize perceived phenomena in similar ways" (Allan, 1977, p. 285).

Rosch, who has explored category structure cross-linguistically and ontogenetically, reports various additional kinds of evidence for the hypothesis that human beings are predisposed to categorize in certain ways and that these predispositions influence both language structure and language development. One cogent line of work has involved color categorization. Anthropologists had long supposed that the way in which different cultures cut up and label the color spectrum is highly arbitrary. But recent research has shown this to be untrue: even though the boundaries of color categories do vary considerably from language to language, speakers of different languages tend to agree in the color instances they select as being *best exemplars* for given categories (Berlin & Kay, 1969). In other words, best exemplars ("focal colors") for color categories of different languages cluster in certain areas of color space rather than being randomly distributed across it.

Rosch found that focal colors are more easily remembered than nonfocal colors both by Americans, whose language has a highly differentiated color vocabulary, and by the Dani, a stone-age people of New Guinea whose language encodes only a simple distinction between light and dark (Heider [Rosch's former name], 1972). Moreover, names could more easily be taught to the Dani for focal than for nonfocal colors (Rosch, 1973), focal colors attract the attention of young children more readily than nonfocal colors (Heider, 1971), and focal colors are recognized by children as instances of their color category earlier than nonfocal colors (Mervis, Catlin, & Rosch, 1975). Rosch (1974) has proposed that focal colors are perceptually more salient than nonfocal ones for certain physiological reasons and that they serve as "natural prototypes" around which the historical development and ontogenetic learning of color names revolve. Rosch (1974) also discusses evidence that there are similar perceptually salient natural prototypes in other category domains (shape, emotion) and suggests further that certain broad "psychological principles of categorization may apply to the formation of all categories, even in culturally relative domains" (p. 119).

Some cautions: interactions between language and cognition. To summarize the preceding discussion, there is now considerable evidence that, contrary to earlier views, cognitive development to a large extent paces the acquisition of language forms and constrains the way in which they are used. However, it is becoming increasingly clear that attempts to *explain* language development by reference to nonlinguistic conceptual development are doomed to failure. A first critical problem is that this approach overlooks essential differences between "knowing" something nonlinguistically, for

example, having a sensorimotor understanding of events in the world, and having the kinds of semantic categories needed for language (Bloom, 1973; Bowerman, 1976; Schlesinger, 1977; Slobin, 1979). The former cannot simply be mapped directly into the latter; as Dore (1979) puts it, "Propositions are not merely tacked onto conceptual schemata, as some investigators would have it, they are themselves cognitive reorganizations of those schemata on the plane of linguistic expression" (p. 136).

The "cognition-first" hypothesis also suffers from an inability to account for cross-linguistic semantic variability. If language forms are mapped onto already formulated meanings, how are concepts that are needed for some languages but not for others constructed? It is clearly implausible that children formulate on a nonlinguistic basis all the concepts that are required by all the world's languages and then, depending on their local language, proceed to map some of these into language but not others. Much more likely is that experience with language must often instruct the child on the necessary concepts. But exactly how?

The "cognition-first" hypothesis also cannot account for the learning of semantic categories in the case of those categories whose "core meanings" may be universal but whose boundaries are variable. For example, even assuming that children generate the core meanings independently of language and then identify them with received language forms, how do they adjust the boundaries of these concepts to conform with the local adult norms?

It is tempting to relegate problems of learning language-specific categories and of adjusting category boundaries to a "later" stage of language acquisition, beyond the early period of word acquisition and sentence construction during which one can reasonably assume that autonomous cognitive development exerts its maximum influence. But this is unsatisfactory, not only because it provides no solution, of course, but also because there is growing reason to suspect that language plays a more important role even in early concept formation than the "cognition-first" hypothesis allows for. For example, Bowerman (1976, 1980) presents data suggesting that children at the one-word stage attend to language forms whose meanings they do not yet know and attempt to build meanings to match the usage they have observed. The meanings they construct, often erroneous by adult standards, reflect a complex interaction between the child's own predispositions to categorize in certain ways and the categorization schemes suggested by adult usage.

If children even at the one-word stage are influenced in their categorizations by the nature of the adult input, we might expect to see some systematic differences in the speech of young children learning different languages that have thus far been overlooked in the recent emphasis on very general cognitive precursors to language development and on "uni-

versal" aspects of the meanings of children's early utterances. An intriguing question in this connection is whether children's first (Stage I) sentences already exhibit language-specific properties that have gone unremarked because existing schemes for classifying them semantically are too coarse.

In studies of adult language, Talmy (1975, 1976) has shown that languages differ in the characteristic ways they bundle or "conflate" semantic material into words. For example, English routinely allows the semantic notions of *motion* and *manner* to conflate such that they are expressed by a single verb, as in sentences like *The bottle FLOATED into the cove* (= by floating move, or move in a floating manner). In contrast, Spanish does not routinely allow this conflation; instead, motion and path (direction) conflate while manner must be expressed separately: *The bottle ENTERED* (= *moved into*) *the cove floating.*

Do Stage I speakers of languages that typically conflate motion and manner produce sentences like *man run house* (= runs into the house), *birdie fly up*, etc., whereas those whose languages are not characterized by this pattern do not? This seems likely (see Farwell, 1976, 1977, and Johnston 1976, for relevant observations and Slobin, 1979, for related discussion). But the use of descriptive categories like "action" and "location" that do not discriminate between sentences like *man run house* on the one hand and *man go house* or *man enter house* on the other would obscure such differences. As this example illustrates, the exploration of interactions between linguistic and cognitive development will necessitate much finer-grained comparisons of children learning different languages than have thus far been performed.

The preceding pages have examined the child's acquisition of the semantic and syntactic structure of the language to which he is exposed. Cross-linguistic studies have helped illuminate both general strategies the child brings to the task of mastering the linguistic code and the differential effects of exposure to different kinds of structures. A linguistic code is not mastered in social isolation, however. As the child acquires knowledge of the formal aspects of language, he is also learning how to *use* language to accomplish various ends in specific contexts, and how to interpret the meanings of the utterances of others as a function of the circumstances in which they are produced. Cross-cultural perspectives on the development of skill at language use are explored below.

Acquiring Rules for Language Use

What problems confront the child in learning to use his language in contextually appropriate ways? The child's task is parallel in many respects to

the task reviewed in the last section, that of learning the mapping between language forms and referential or propositional meanings. However, in the present case the "meanings" that the child must learn to express are not concepts such as "possession," "location," or "agency," but rather social intentions such as the desire to direct the listener's behavior or to inform him of something, to insult him or show him deference, and so on.

In learning how to convey his social intentions effectively and appropriately, the child must acquire a repertoire of speech variants, or alternative ways to say more or less the same thing, and he must learn the social implications of these variants. He must learn the socially appropriate use of language not only in order to use language effectively himself—which includes knowing how to break the rules to achieve certain effects such as humor or insult—but also in order to interpret the utterances of others. For example, when his companion says *it's cold out tonight,* does she mean it as a statement of opinion or as a request for his coat? When he is asked *do you know any stories?* is a *yes* or *no* answer expected, or should he begin to tell one? When the speaker called him *Mr. Jones* instead of *Bob* was this a sign of respect or an attempt to increase the social distance between them? The correct interpretation of how others intend their utterances to be taken and of how they view the relationship between the speaker and listener depends on the ability to process utterances *in conjunction with the situations* in which they are uttered.

In addition to learning how to deal with the social implications of language one sentence at a time, both as a speaker and as a listener, the child must learn conventions governing longer stretches of language; for example, he must learn the rules regulating conversational turn-taking. He must learn how to anticipate his listener's needs by emphasizing new information and backgrounding old information that is already shared by virtue of the preceding discourse or other mutual knowledge. He must learn the "sequencing rules" (Ervin-Tripp, 1969) that govern how one greets, takes leave, changes the topic, responds to an insult, tells a joke or story, participates in courtroom procedures, conducts a telephone call, and so on. Knowledge of sequencing rules is just as essential for interpreting the meaning of other people's utterances as is knowledge of the social implications of speech variants. For example, *hello?* in the middle of a telephone conversation has quite a different meaning from *hello?* at the beginning of it.

How children go about acquiring the pragmatic/sociolinguistic skills they need in order to be fluent speakers of their native language is less well understood than how they acquire knowledge of the linguistic code. Studies of such topics have begun to appear only recently, and information about children's behavior in particular social settings is still too limited to allow more than preliminary guesses about what "universals" of

pragmatic/sociolinguistic development might be like, and about what kinds of factors may influence the rate, order, and qualitative nature of learning. The following subsections single out three topics for discussion in cross-linguistic perspective: the acquisition of speech acts, speech variants, and discourse skills. These are followed by a more general attempt to look at what factors may be operating to determine when and how children acquire particular pragmatic/sociolinguistic abilities.

The Development of Speech Acts

Functions of speech. The child's first step in learning how to use language appropriately is to acquire some reasons for using it at all. What does he wish to accomplish through words? Does he want to request help? Report an observation? Direct someone's attention?

A speaker's goal or communicative intent in using language is designated by the term "speech act," first introduced by Austin (1962) (the terms *performative* and *illocutionary force* are now often used roughly synonymously, see Bates, 1976b). Speakers' goals can be classified in different ways or at different levels of abstraction, according to the investigator's purposes (Mitchell-Kernan & Kernan, 1977). Informal listings at a fairly low level of abstraction include such intents as reporting, announcing, insulting, instructing, requesting, interpreting, commanding, praying, cursing, taunting, and inquiring (Hymes, 1971b). More abstractly, requesting, commanding, praying, and inquiring can all be construed as attempts to influence the behavior of another. Similarly, issuing a command may serve not only an immediate communicative purpose of influencing someone's behavior but also a more subtle one—which could also be served by other types of speech acts—of establishing or reestablishing social superiority (Mitchell-Kernan & Kernan, 1977).

Are speech acts universal? At a relatively specific level of categorization there is no doubt cross-cultural variability (Ervin-Tripp, 1973). However, Searle (1976) has recently proposed a tentatively universal listing of five major categories of speech acts (*illocutionary acts* in his terminology) that subsume more specific ones: *representatives* or assertives (telling people how things are); *directives* (trying to get people to do things); *commissives* (committing oneself to doing things, e.g., promising); *expressives* (expressing feelings and attitudes); and *declarations* (bringing about changes through speech, e.g., "you're fired," "I resign").

The concept of speech acts has played a central role in many analyses of rules for language use. This is because it provides a framework within which the contingent relationships between formal linguistic structures and social-contextual factors can be worked out. For example, one can

ascertain how the formal realization of a given speech act varies as a function of the relative social status of the speaker and listener, the presence or absence of shared background information, the topic, and so on.

Order of emergence of speech acts. What communicative functions are served by children's earliest utterances? Do different types of speech acts emerge in a consistent order across children and across languages? How are the early speech acts related to nonlinguistic communicative signals and to level of cognitive development? Questions like these have so far been explored extensively only with middle-class English- and Italian-speaking infants, so generalizations must be considered preliminary.

Several researchers have found that the period preceding the emergence of real words is characterized by the use of syllables that are idiosyncratic but phonetically relatively stable. These occur as an integral part of some action pattern, such as *mm* while reaching for something, *brrr* while pushing a toy vehicle, *bam* while knocking something over, *da* while pointing at something (Bates, Camaioni, & Volterra, 1975; Bates, Benigni, Bretherton, Camaioni, & Volterra, 1977, (Italian, American children); Dore, Franklin, Miller, & Ramer, 1976; Carter, 1975, 1978 (both American)). The first recognizable words are also tied to action, e.g., *bye bye* or *hi* accompanied by a wave; *da* ("give" in Italian) while handing over or receiving an object. These words have been called "pure performatives" (Greenfield & Smith, 1976) because they lack propositional content; that is, they do not appear to make reference.

Two kinds of early words and word-like sounds are particularly common and have been singled out for special analysis by several investigators because of their communicative importance: those used in eliciting an adult's help in obtaining an object and those used in pointing out an object or event for the adult's attention. These seem to be primitive versions of Searle's speech act categories of "directives" and "representatives," respectively (Clark & Clark, 1977). Bates and her colleagues (Bates et al., 1975, 1977), studying both Italian and American babies, tried to trace the precursors of these speech acts back into the prelinguistic period and to identify their cognitive prerequisites. They found that the intentions of indicating and requesting something were already being systematically expressed in the prelinguistic period (by about 10–12 months) by points or palm-up reaches coupled with eye contact.

Bates et al. (1975, 1977), curious to determine whether there might be specific cognitive prerequisites for the development of the prelinguistic "requesting" and "declaring" communicative routines, performed a number of formal and informal cognitive tests on their subjects. They found that the emergence of the routines (which they termed "proto speech acts") coincided with the attainment of Piaget's sensorimotor Stage 5,

which is characterized by the child's ability to use novel means, such as tools, in pursuit of familiar goals. Bates et al. conclude that communication through pointing or reaching coupled with eye contact can be considered a form of tool use just as is pulling on a cloth to obtain an object on the other side: the first is the use of an object as the means to obtain adult attention, the second is the use of an adult as the means to obtain a desired object, and the third is the use of an object to obtain another object.

As the child matures, he develops linguistic means to express his communicative intents. What he once expressed with gestures and eye contact alone, he later conveys with these gestures plus a vocalization such as *da* or *mm*. Still later he adds words such as *doggie* or *more*, perhaps with distinctive intonations for different speech acts (Dore, 1975),[9] and later yet he formulates word combinations such as *there doggie* and *more cookie* to express the same basic speech acts.

Notice that this account of the acquisition of speech acts or communicative intentions parallels Slobin's account of the acquisition of the "semantic intentions" underlying referential speech (as discussed earlier; see p. 125); in both cases, it is hypothesized that "intentions" (either semantic ones such as "possession" and "location" or communicative ones such as "directing" and "asserting") emerge prior to the acquisition of conventional devices for expressing them (Bates, 1976a, b). Development consists of both gradually replacing linguistically immature methods of expression with more mature, elaborated ones and of learning alternative ways of encoding acts along with the social bases for selecting between them.

With maturation also comes an expansion in the child's repertoire of speech acts. Whether speech acts of various kinds emerge in a consistent order across all children is not yet clear. After reviewing several recent studies on the development of speech acts and pointing out some conflicting claims, Nelson (1978) observes that there is no reason to expect a universal course of development because "the set of possible [speech acts] is open" and because many of the communicative goals that a speaker can achieve through language can also be achieved through nonlinguistic means such as pointing, reaching, and so on. However, certain general developmental trends may turn out to hold up if speech acts are categorized broadly enough. For example, after reviewing the admittedly limited cross-cultural evidence on the order of emergence of speech acts, Clark and Clark (1977) tentatively concluded that speech acts are acquired in the following order: directives and representatives (Searle's [1976] terminology; these correspond to the requesting and pointing out or remarking forms examined earlier); then commissives; then expressives (although a few types of expressives appear at an early age). Evidence on the relative difficulty of commissives (promising, committing oneself) relative to di-

recting others comes from both American children (C. Chomsky, 1969) and German children (Grimm, 1975; Grimm & Schöler, 1975); see Clark and Clark, 1977, for a brief review.

Acquiring Speech Variants

When do children begin to acquire more than one way to express the same speech act? Is alternation between speech variants random, or are children sensitive to the social correlates of alternative forms right from the beginning? What social features are they responsive to first? When do children begin to recognize the social import of stylistic variation in the speech of others, regardless of whether they themselves use the forms in question? When do they acquire a sense of norms for socially appropriate speech that is firm enough to allow them to detect violations? When do they begin to recognize cues to social background in the speech of others? When do they acquire evaluative attitudes towards stylistic variants? (See Ervin-Tripp, 1972, for a general discussion of these and related questions.)

When do speech variants emerge? Research relevant to some of these "when" questions has provided surprises. Until fairly recently it was widely assumed that in both speech and other behaviors preschool children are "egocentric," that is, insensitive to listener and contextual variations and unable to tailor their behavior to fit the occasion or the perspective of others (Piaget, 1926). However, recent studies show, counter to this view, that very young children are capable of attending to the characteristics and needs of their companions and of framing their speech accordingly. For example, in the United States (evidence is not yet available from elsewhere), children as young as two (Ervin-Tripp, 1977) and clearly by four (Shatz & Gelman, 1973; Sachs & Devin, 1976) speak differently to younger children than they do to peers and adults. The adjustments they make for infants (higher pitch, syntactic simplification, and so on) are similar to those made by adults in talking to babies. These speech modifications appear to reflect a real sense of conventions for talking to young children rather than merely the effects of listener feedback, because they occur even when the addressee is a doll whom the child has been instructed to treat like a baby (Sachs & Devin, 1976).

Studies of how young children interpret the sentences of others have also revealed a surprising sensitivity to the social correlates of speech variants. For example, Bates (1976a) found that Italian children as young as three were capable of judging the relative "niceness" or politeness of certain request forms, while Jacobs (cited in Ervin-Tripp, 1977) found that five-year-old English speakers were able to accurately identify potential speakers for a variety of directives.

Young children are not only able to distinguish among speech variants and identify them with certain social features, but they are also capable of developing *evaluative* attitudes towards these variants quite early. Cremona and Bates (1977) found that when lower-class rural Italian children were presented with pairs of sentences in dialect versus standard Italian and asked to choose which one was "better," by first grade they already selected the standard variant over 80 percent of the time. As Bates (1975) points out, this finding has interesting implications for the study of the development of self-esteem, since the sentences the children evaluated negatively were cast in a dialect they themselves spoke.

Social determinants of directives. A particularly fruitful method for getting at young children's sensitivity to features of the social context has been through the study of children's production and comprehension of *directives*. Directives are perhaps especially sensitive to social features because they make a demand on the listener for services; these services may or may not be rendered depending on how the directive is put (Ervin-Tripp, 1977). For adults, issues of cost to the addressee, normal or expected duties versus special favors, relative status and the like enter into computing how to issue a directive, with less direct forms typically being used with social superiors and to request tasks outside of normal duties (see Ervin-Tripp, 1976a, for discussion). Indirectness is regarded as more "polite" because it leaves options open for the addressee, who can fail to "hear" the utterance as a directive and so refuse compliance without a direct confrontation (R. Lakoff, 1973b).

How children acquire directive forms is one of very few questions in the pragmatic/sociolinguistic study of language development that has been explicitly investigated cross-culturally (Ervin-Tripp, 1977; Hollos & Beeman, 1978). Ervin-Tripp compared studies of the production, comprehension, and evaluation of various directive forms by children learning English, Turkish, Italian, and Hungarian and was able to identify a number of shared features of development. She reports that the earliest request forms are gestures, vocalizations, and names of desired objects, followed towards the end of the second year by word combinations with words like *want* and *more*. Between 2 and 3 years (and sometimes even earlier), children begin to develop more elaborate repertoires for making requests. Variants are not distributed randomly across contexts: even children as young as 2 frame their directives differently depending on factors such as the age and familiarity of the addressee and the content of the request. For example, direct commands (e.g., *Give me . . .*) are typically used with peers or younger children, whereas commands softened with *please* and less direct forms like *Can I have. . ?* , *Would you give me . . . ?* are addressed to older children and adults. Languages differ in the "softening" devices they provide (e.g., inflections, particles, syntactic additions and

rearrangements, special intonations), so the particular ones children learn and the time of their emergence is somewhat language-specific. Most indirect directives (i.e., those that do not explicitly command) at least include mention of the desired object or action, e.g., *We haven't had any candy in a long time; Mom, don't you have any pickles?* Directives that do not mention what is desired (e.g., *Do you have a broken arm?* as a request for help in carrying in groceries) emerged very late in all the children studied (Ervin-Tripp, 1977).

In comprehension, the sequence of emergence is similar—although in advance of production—with more direct forms being understood as directives before less direct forms and with oblique hints understood only very late. However, certain conventionalized indirect forms (e.g., *Would you shut the door?*) appear to be comprehended as directives just as early as direct command are (e.g., Bates, 1971; Shatz, 1974). Bates (1976a and b) suggests that these may be so routine that their meaning can be acquired before the child has worked out the elaborate interpretive strategies that the comprehension of indirect speech normally requires.

Although there are certain cross-cultural similarities in the acquisition of directives (e.g., the early sensitivity to social features of the addressee; the gradual elaboration of indirect, polite ways to request), there are also differences. Hollos and Beeman's (1978) comparative study of directives among rural Hungarian and Norwegian children indicates that there is variability in the way directives are handled in different cultures and that children begin to "take on" the style of their community by at least 4 or 5 (the youngest age group studied). Hollos and Beeman's Hungarian subjects were capable of requesting help, permission, and so on efficiently from family, playmates, and strangers alike, although they had different styles for dealing with intimates and nonintimates. The Norwegian children also distinguished intimates from nonintimates, but in a different way: by becoming more and more indirect as social distance increased. They preferred, in fact, not to issue directives to nonintimates at all, but rather to gain the help of an intermediary. Hollos and Beeman note that the direct versus indirect styles (and reliance on middlemen in the case of the latter) are typical of adults as well as children in the Hungarian versus Norwegian villages they studied. They conclude that:

> there is a 'cultural communicative style' which operates in the issuing of directives—a kind of qualitative contour for this particular set of related communicative acts which is distinct for different societies . . . children learn the contours of this communicative style before they acquire the complete lexical and behavioral repertoire which helps them to adapt specific communicative acts to criteria of effectiveness and appropriateness. (pp. 353–354)

Boggs (cited in Ervin-Tripp & Mitchell-Kernan, 1977, p. 21) has raised similar considerations about cultural differences in directives. He

notes that most of the cultures in which the acquisition of directives has been studied (specifically, American, Italian, Hungarian) "positively value the individual's manipulation of others, and appear to train children positively to engage in such strategies." But in other cultures (e.g., Hawaiian, Ojibwan) "manipulation among adults, as among children, is anathema." This results in different requesting styles. Boggs states that Hawaiian children "risk . . . a slap" if they repeat requests with increasing emphasis, so their repetitions involve "a withdrawal of urgency." Hollos and Beeman (1978), in contrast, found that their Hungarian subjects *intensified* requests when they had to repeat them.

Discourse

Cultures vary tremendously in the types of discourse they stress, the content of specific genres of discourse, and the sequencing of materials (see p. 104 above). Whether there are universals in the acquisition of discourse conventions, what form such universals might take, and how acquisition is affected by specific kinds of variability is still largely unknown. However, preliminary research on children from a variety of cultures has begun to suggest some patterns.

Conversation. The development of skill at conversation involves knowing how to take turns rather than talking simultaneously or interrupting, how to sustain dialogue by responding appropriately to the utterances of the conversational partner and then adding relevant new comments (Keenan, 1974), how to initiate and terminate interactions (see Schegloff, 1972, for analysis of "opening" sequences), and how to negotiate successful transactions (Cook-Gumperz, 1977). A major finding of recent work on child dialogue is that children begin to develop skill at conversation as early as the second year of life. Documentation of early conversational ability comes mostly from studies of American and English children (Greenfield & Smith, 1976; Keenan, 1974; Bloom, Rocissano, & Hood, 1976; Dore, 1977; Halliday, 1975; Garvey, 1975, Ervin-Tripp, 1978), but data from children learning other languages are corroborative (e.g., Shugar, 1978, on Polish; Slama-Cazacu, 1977, on Rumanian). Recent studies of interaction patterns and reciprocal vocalizations between caretakers and prelinguistic children (e.g., Stern, Jaffe, Beebe, & Bennett, 1975; Bruner, 1975; Freedle & Lewis, 1977) indicate that the roots of conversational skill, e.g., turn-taking and joint focus on a topic, may extend back even further, into the first year of life. Evidence for the early onset of conversational responsiveness, like that of the early development of socially conditioned speech variants (see p. 144 above), strongly challenges Piagetian assumptions about the egocentricity of young children (see Keenan, 1974; Keenan & Klein, 1975).

Little is yet known about how children adopt the conversational conventions of their social group. Most of the work that has been done on this topic concerns the acquisition of devices for highlighting new information and backgrounding shared or presupposed information in the dialogue between child and interlocuter. Studies of American children (Greenfield, 1978; Greenfield & Zukow, 1978) and Italian children (Bates, 1976a) at the one-word stage of development indicate that children first mark the distinction between given and new by their choice of which element of the nonlinguistic context to encode linguistically. They select elements that are new, or salient by virtue of undergoing change. This choice reflects the *child's* point of view, however, rather than an understanding of the addressee's perspective. The sequencing of given and new information can also be accomplished through dialogue at the one-word stage. For example, the adult introduces a topic and the child adds a one-word comment (Greenfield & Smith, 1976), or the child introduces something, waits and repeats it if necessary until the adult acknowledges it, and then adds a comment about it (Scollon, 1976).

By the two-word stage, at around the age of 2, cultural/linguistic differences in the handling of old versus new information begin to appear. Children learning languages with relatively flexible word order manipulate word order to distinguish beween words encoding new and old information (Bates, 1976a, Italian children; MacWhinney, 1975, Hungarian children), whereas children learning languages that rely on word order to convey basic semantic information may use *contrastive stress* to mark old versus new (Wieman, 1976; American children).

Although some cultural specificity in conversational skill emerges early, it is likely that complete socialization into the local conventions takes a long time. For example, Cook-Gumperz (1977) found that even though dyads of 10-year-old American children were skillful at negotiating verbal interactions of certain kinds, their exact methods differed from those typically used by American adults. For instance, they used intonation to express certain meanings that adults would tend to "lexicalize" (express with words). In a related example, Keenan (1974) reported that by at least the age of 2 years, 9 months, her English-speaking twin sons had learned that responses to a prior speaker's utterances should "be relevant" (see Grice, 1975, and the discussion in this chapter, pp. 104–105, on conversational maxims); however, they apparently interpreted "relevance" differently from adult speakers. For example, their responses were often tied to the phonological form of the previous speaker's utterance, rather than to its content as in adult speech. Keenan's notational system for representing the conversational interactions of young children should prove useful to researchers interested in detecting cross-cultural similarities and differences in the development of dialogue.

Disputing. A number of special genres of discourse have been singled out recently for close study by students of language development; these include verbal play (Kirshenblatt-Gimblett, 1976, cross-cultural; Garvey, 1977, American children) and narration and joke-telling (Watson-Gegeo & Boggs, 1977, Boggs & Watson-Gegeo, 1978, Hawaiian children). Some of the most intriguing cross-cultural comparisons to date have involved the acquisition of patterns for verbal disputing. Verbal disputing is a natural choice for cross-cultural study because it almost surely occurs in every culture, but its patterning and content appear to be rather culture-specific. In some cultures disputing procedures are exceedingly elaborate and ritualized (cf. Dundes et al.'s [1972] study of verbal dueling among young Turkish boys, participation in which requires both general cultural knowledge and skill at returning an insult with a rhyme, and Labov, Robins, & Lewis's [1968] analyses of dueling games such as "playing the dozens" among black American adolescents).

Children's disputing has been studied in several different cultures. Analyses indicate that even by the age of 4 to 6 children have mastered the general structure of dispute sequences and some culturally specific ways of realizing it. For example, Boggs (1978) found that among his part-Hawaiian subjects, routines for direct allegations and contradictions, escalating to insults, appeared by as early as four. He notes that these routines were similar to those found among Massachusetts youngsters by Lein and Brenneis (1978), although the latter children differed from the former in that their claims were often far-fetched and unsupportable.

Mitchell-Kernan and Kernan (1975) report interesting cross-cultural differences in the content of children's disputes. They found that young Samoan children's insults and retorts were typically based on allegations about parents or about deviance in personal attributes such as cleanliness and appearance. The ultimate insult, for which no effective retort was possible, was to accuse the other of stinginess. Young black American children from Oakland, in contrast, often accused each other of being babies but did not derogate each other's parents (until they were much older) or refer to stinginess. Mitchell-Kernan and Kernan conclude that the analysis of disputing can give important insights into the acquisition of cultural values that are rarely discussed directly.

Determinants of Pragmatic/Sociolinguistic Learning

In studying the development of pragmatic/sociolinguistic knowledge, as in studying the acquisition of grammatical rules, it is necessary to go beyond simply describing what children learn and when they learn it in order to determine why learning proceeds in certain ways and not in

others. For example, why are certain links between linguistic forms and social-contextual variables relatively easy to acquire and others harder?

The role of formal factors. Differences in time of acquisition are undoubtedly related in part to the nature of the formal linguistic devices through which social meanings are conveyed, just as the time at which children express given semantic intentions linguistically is partially a function of the relative difficulty of the structural devices used to encode those meanings. In fact, many of the variables that facilitate or hamper the child's acquisition of syntactic and morphological rules undoubtedly affect pragmatic/sociolinguistic learning in similar ways.

Consider, for example, the finding that children acquire very early the ability to produce and understand directives in which the desired action is explicitly mentioned, but that they are relatively old before they produce hints that omit mention of the action (e.g., *it's cold in here* as a request for someone to shut the door) or begin to "hear" the directive intent behind such utterances (Ervin-Tripp, 1977). This sequence of development accords fully with Slobin's (1973) operating principle. *Underlying semantic relations should be marked overtly and clearly* (see p. 126 above); although in this case the underlying meanings are *communicative intents* rather than semantic relations.

Other aspects of pragmatic/sociolinguistic learning also conform with Slobin's operating principles, indicating that these principles are at work beyond the semantic-grammatical domain to which Slobin's examples are restricted. For instance, in their analysis of American and Samoan children's disputes, Mitchell-Kernan and Kernan (1975) note that certain errors stem from children's applications of given types of insult too broadly, failing to take into account distinctions in context that determine whether the insult is really appropriate (e.g., "she got a baby," said censuringly of a married woman, and "your father sleeps with your mother"). Mitchell-Kernan and Kernan observe that these errors are overgeneralizations similar to those made in the acquisition of lexical items and grammatical structure. With development, children "will, presumably, progress towards a more complete knowledge of their culture by learning to make those finer distinctions and to differentiate cases according to culturally relevant contextual factors" (pp. 313–314). This statement is clearly a pragmatic counterpart to one of the universals of grammatical development that Slobin's *Avoid exceptions* principle was designed to account for: "Rules applicable to larger classes are developed before rules relating to their subdivisions, and general rules are learned before rules for special cases" (Slobin, 1973, p. 205).

Another of Slobin's operating principles is: *The use of grammatical markers should make semantic sense.* This principle was based on (among other things) the general finding that "semantically consistent grammatical rules

are acquired early and without significant error" (see p. 131 above for discussion). The principle that form-meaning pairings are easier to acquire if they are consistent rather than inconsistent can be invoked to account for certain findings reported by Edelsky (1977). Drawing on R. Lakoff's (1973a) analysis of the difference between men's and woman's speech in English, Edelsky studied the ability of American grade-schoolers to guess the probable sex of speakers of sentences containing various sex-linked items such as *adorable, oh dear, damn,* and *just* (as an intensifier). She found that the earliest words to be associated with speakers of a given sex were those that adult subjects had previously judged to be highly or "categorically" sex-linked, that is, almost exclusively used by either male or female speakers. Words that were "variably" sex-linked—that is, only probabilistically associated with males or females—did not take on sexual connotations for the children until later.

This example, which shows the effect of consistency on time of acquisition of forms *within* a language, has interesting cross-cultural implications. Probably every language has speech variants that are sensitive to the sex of participants in the speech event, but languages differ considerably with respect to where, how, and how consistently sexual distinctions are marked linguistically. The English system is not very elaborate. There are relatively few sex-linked forms, and most of these are only probabilistically associated with speakers or hearers of a given sex. In many languages, however, the sex of the speaker, hearer, or both is *obligatorily* marked in a number of places in the system, for example, by the choice of syntactic markers, lexical items, and/or pronunciation (see Haas, 1964, for a typology of languages and discussion). If degree of consistency is an influential determinant of time of acquisition, children learning such languages should acquire a sense of appropriate speech to and/or from male and female speakers much earlier than those whose languages, like English, mark sex less consistently.

Evidence on this is fragmentary, but it accords with the prediction. For example, the American children in Edelsky's study were relatively slow to recognize that some forms are associated with female rather than male speakers and *vice versa:* first graders had little success at the task. In contrast, Braine (1976, p. 42) and Bar-Adon (1971, pp. 438–439) report that children who were learning Hebrew, a language in which the sex of speaker or listener (or both) is obligatorily marked in certain sentence patterns, were capable of selecting the proper sex-linked imperative verb form at least for certain verbs in their very earliest word combinations (e.g., *tire* versus *tiri,* imperative "see" for male versus female addressees).

Even though these studies of English- and Hebrew-speaking children are not directly comparable for a variety of reasons, they nevertheless suggest that the process of acquiring linkages between language forms and contextually given social meanings—including but not limited to the sex

of the participants in a speech event—may be affected by formal factors such as degree of consistency. Of course, other factors are undoubtedly at work simultaneously, such as the relative difficulty of the denotational meanings of the particular linguistic forms that have socially conditioned variants. Future cross-cultural studies that explore how formal factors influence the acquisition of knowledge about socially appropriate language will have to control for such factors carefully.

The role of meaning. Another factor that must be taken into account in attempts to determine how children acquire conventions governing socially appropriate language is the nature of the *social meanings* to which alternation between linguistic variants is sensitive. Are some social meanings inherently easier than others to learn, regardless of how they are marked linguistically or what their cultural importance is? Or is the time at which children become aware of given social distinctions affected by language-structural and/or cultural practices?

Slobin (1973) has convincingly argued that the child's intention to communicate semantic concepts such as possession and location can precede the acquisition of the conventional linguistic devices for encoding these concepts. Presumably the same is also true for social meanings. That is, a child could be well aware for example of distinctions among settings and in the attributes of his interlocutors (sex, age, relative familiarity, and so on), and perhaps modify his speech in some way in response to these distinctions (e.g., silence with strangers versus volubility among intimates, Gleason, 1973) well before he learns the conventional linguistic devices for marking the distinctions. But is this always the case? Can we set up a working hypothesis for social distinctions that is parallel to Slobin's (1973) hypothesis 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" (p. 187, see p. 125 above)? Or might the learning of social distinctions instead be significantly influenced by social practices and by the characteristics of the language that the child is learning, such that time and order of acquisition are highly variable?

As noted previously, there is evidence that language may influence some aspects of the child's early formation of semantic concepts, despite claims to the contrary. The possibility that language plays an instrumental role in teaching children social concepts is even stronger. This is because many of the social concepts to which rules for language use are sensitive are not based directly on variables like sex and age that have observable nonlinguistic correlates—correlates that could presumably be noticed by the child independently of language. Rather, their existence is part and parcel of the communicative system. Gumperz (1972) states it this way:

Just as the meaning of words is always affected by context, social categories must be interpreted in terms of situational constraints.

Concepts such as status and role are thus not permanent qualities of speakers, instead they become abstract communicative symbols, somewhat like phonemes and morphemes. . . . The division between social and linguistic categories is thus obliterated. Communication is not governed by fixed social rules; it is a two-step process in which the speaker first takes in stimuli from the outside environment, evaluating and selecting from among them in the light of his own cultural background, personal history, and what he knows about his interlocutors. He then decides on the norms that apply to the situation at hand. These norms determine the speaker's selection from among the communicative options available for encoding his intent. (p. 15)

To the extent that socially important concepts can be inferred *only* through communicative interactions, and have no direct nonlinguistic correlates, their acquisition could not take place independently of language. In other words, only by observing how the selection of language forms varies as a function of complex interactions among factors such as sex, age, setting, topic, etc., could a child formulate the relevant concepts.

One way in which such social learning might take place is discussed by Ervin-Tripp (1976b).

Social alternations [between language forms] are rarely single sets for single social variables. [For example,] the forms which signal male-female contrasts in Japanese also signal higher-lower. Thus, whenever a woman speaks to a man she not only tells him he is male; she tells him he is of higher rank. . . . The social significance of equivalence structures is that some meanings from one set of contrasts carry over to the other as a kind of metaphor. (p.145)

Ervin-Tripp goes on to hypothesize that the *first* meanings that children ascribe to alternations may be social features they already recognize, such as age or sex contrasts.

In the more ambiguous cases, where similar contrasts are used, we can assume the child will search for the social features that account for a formal contrast he has already found to be significant. For instance, once the child discovers differences that correlate with age of addressee in many features of language, he will see these same features extended to rank contrasts when no age differences exist. He may never be explicitly told there is a rank difference, but the metaphor of power will instruct him that X is treated like an elderly adult and Y is treated like a child. (pp. 151–152)

On the basis of such considerations Ervin-Tripp (1976b) concludes that the system of alternations in realizing speech acts may provide "an instructional milieu for learners regarding the major social dimensions and categories of the groups they join." Ferguson (1977) makes a further

relevant observation here: he notes that the special features of the speech that caretakers address to children ("Baby Talk") in themselves "delineate . . . roles: typically caretakers use them to the child, not to one another; older children use them to younger children, not to still older children; female caretakers use them more often than male caretakers and so on. Age, sex and kin roles are thus signaled insistently by [Baby Talk]" (p. 234).

To summarize, there is good reason to believe that many of the social concepts that are expressed by alternation among linguistic variants are learned through language itself rather than independently of language. This means that the rate and order of acquiring these meanings will vary across cultures (no doubt within some as yet undetermined limits) as a function of differences in the way the categories manifest themselves linguistically. For example, all else being equal, we would expect meanings linked consistently with given forms to be learned earlier than those linked only probabilistically.

Tutoring and motivation. What might affect patterns of acquiring pragmatic/sociolinguistic rules, in addition to formal factors and the nature of the social meanings signaled by choices between variants? Two other factors that must also be considered include explicit adult *teaching* and the child's *motivation* to learn given forms.

Tutoring appears to be an insigificant factor in the child's learning of syntactic and morphological rules. As noted earlier (p. 105 above), adults around the world seldom correct children's grammatical errors or supply explicit instructions. However, the picture is different with respect to the socially appropriate use of language; here, instruction is evidently much more common. Gleason and Weintraub (1976), who studied the acquisition of politeness formulas in English (along with certain other routines), suggest that unlike most language structures these are learned through explicit teaching and prompting ("What do you say?" "Say please"). Societies differ in the emphasis they put on early socialization into politeness. Bates (1976a), for example, observes that Italian parents are relatively tolerant in this respect. Thus, degree of adult pressure may considerably influence the age at which children master politeness routines. Similar cross-cultural variability in tolerance may also affect the learning of other conventions for appropriate language use, such as the avoidance of taboo words or the restriction of discussions of certain topics to certain settings (e.g., "where do babies come from?" as a topic for the privacy of the home). Of course, many aspects of socially appropriate language use, like much of language structure, are below the adult's level of conscious awareness and so are not available for explicit teaching.

When a child is exposed to competing speech styles, e.g., dialects, which one does he "select" to learn? Factors such as frequency of exposure and adult instruction may be important, but equally or even more

important, as Hymes (1971b) emphasizes, are motivational factors. Motivation is not influenced only, or even necessarily, by evaluative attitudes, i.e., by which speech variant the child perceives to be socially "better." More important may be the child's attachment of emotional importance to one variant over another (which is related to the larger issue of the role of language in maintaining a sense of "solidarity" among speakers). Which speech variants a child adopts may also, by some unknown age, be influenced by his identification with a certain social role (e.g., masculine, tough) (Hymes, 1971b).

The preceding discussion has considered a number of variables that may influence the acquisition of rules for language use: formal factors such as the consistency with which social distinctions are marked, the nature of the social concepts themselves, the degree to which rules are inculcated through explicit teaching, and the child's motivation to acquire certain speech variants over others. Sorting out the relative contribution of these factors to the patterns by which children learn to use language in socially appropriate ways will be exceedingly difficult. Cross-cultural studies in which independent variables are carefully controlled will be essential to such efforts.

The Role of the Environment

How is a child's language development affected by the social milieu in which learning takes place, for example, by who takes care of her, how the caretaker speaks to her and interacts with her, how many people she encounters in the daily course of events, where she spends her time, who she needs to talk to and for what reasons, and so on? The discussion below takes up the three aspects of the role of the environment that have been most studied within a comparative (although not always cross-cultural) framework: a major independent variable, the nature of talk to children, and two important dependent variables, *rate* of development and the way the child *uses* what language she knows as a function of environmental influences.

Talking to Children Around the World

Ethnographic research in widely scattered societies has established that "in all speech communities there are probably special ways of talking to young children which differ more or less systematically from the more 'normal' form of the language used in ordinary conversation among adults" (Ferguson, 1977, p. 209).[10] This special style of language has been

termed "Baby Talk" by researchers with a cross-cultural orientation (Ferguson, 1977) and "motherese" by researchers focusing on English (Newport, 1976).

Most of the features that distinguish the Baby Talk register from "normal" adult-to-adult speech are not found in every community, but many are very widespread. Ferguson (1977) proposes that the various features reflect three different types of underlying processes, which he terms "simplifying," "clarifying," and "expressive." Common simplifying processes, for example, include the substitution of simpler sounds for more complex ones, the reduction of syllable structure to "simple canonical forms," the reduction of inflectional affixes, the avoidance of second person pronouns in favor of other address forms, and the use of special terms for kin, body parts and functions, animals, foods, evaluative attributes, and so on. Widespread clarifying processes include repetition, exaggeration of intonational contours, and slow speech. And expressive processes very often include diminutives or other hypocoristic affixes, the "softening" or palatalization of consonants, labialization of consonants and vowels, and—probably a universal feature—the use of raised pitch. Brown (1977) suggests that simplifying and clarifying processes probably both derive from a desire to communicate and be understood, whereas expressive processes have as their main motivation the expression of affection.

Despite gross similarities in Baby Talk from one social group to the next, there are important cross-cultural differences as well. Most obviously, features that are present in some societies may be entirely lacking in another. More subtle, however, is variation that involves not the categorical presence or absence of given features of Baby Talk but rather differences in the frequency with which these features occur. A study by Blount and Padgug (1977) illustrates this phenonomenon clearly, and provides an excellent jumping-off point for future fine-grained comparative work on the characteristics of Baby Talk. Blount and Padgug formulated a checklist of thirty-four paralinguistic, prosodic, and interactional features that are often found in Baby Talk and used this in rating samples of speech from five English-speaking and four Spanish-speaking sets of parents to their one-word-at-a-time stage children. (The Spanish speakers came from several countries.) The investigators found consistent profiles of feature usage within each language, and both similarities and differences across languages.

Among the ten most frequently used features in each language, six were shared: exaggerated intonation, repetition, high pitch, instructionals (e.g., "that's a ball" after a child's incorrect identification), lower volume, and lengthened vowels. However, the level of usage of some of these features differed. Most strikingly, English-speaking parents used high pitch more than Spanish-speaking parents did (it figured in consistently over 60 percent of their utterances, versus 42–60 percent), and they relied on it

more heavily in proportion to the total number of Baby Talk features (20–25 percent versus 10–14 percent). Features that ranked among the top ten for English but not Spanish included breathiness, creaky voice, tenseness, and falsetto, whereas those for Spanish but not English included attentionals (*hey!*, *look!*, child's name), fast tempo, raised volume, and personal pronoun substitution. Overall, the Spanish-speaking parents used a higher rate of Baby Talk features than the English-speaking parents.

What can account for such differences in speaking to young children? Blount and Padgug propose that they reflect cultural differences in style of interaction. Specifically, they suggest that the English style is more heavily affective, since there is a greater reliance on affectively marked features such as intonation. In contrast, Spanish is more directly interaction-oriented, relying on structural devices such as attention-getting devices, repetition, instruction, and special pronoun usage.

Elsewhere, Blount (1972a) has stressed the wide variety of cultural variables that go into making up a social group's style of "language socialization," by which is meant not only the nature of Baby Talk but also such factors as when Baby Talk is used (in what contexts and for what age of children), what kind of language is expected of the child at various stages of development, how the child's verbal efforts are received, and so on. After describing the social and physical environment of language-learning Luo children, Blount concluded that "three features—practicality, absence of direct negative sanctions, and emphasis on individual freedom—appear to be the defining characteristics of what might be labeled the *Luo Type* of linguistic socialization" (p. 247). He noted that other studies "may serve to define additional types and provide a basis on which the nature, range, and causes of differing types can be explained" (p. 248).

One cultural dimension that may have a particularly important effect on the way adults interact verbally with children is the prevailing attitude towards the role of children in society. This may influence not only the extent to which Baby Talk features are used but also such variables as how often children are spoken to and what kinds of verbal interactions they are engaged in. For example, according to Blount (1972b), children are regarded as socially subordinate to adults in Luo and Samoan culture. This attitude manifests itself in the language of the adult in a very high proportion of imperatives and interrogatives, which effectively forestall conversational equality. Analyses by Blount of samples of Black English parent-child interactions revealed a different pattern, whereby children were treated more as conversational partners and were asked many yes-no questions designed to tap their preferences. Questions of this type were rare in the Luo and Samoan samples.

Another study implicating the social status of children as an important factor in language socialization practices is Fischer's (1970) comparison of Japanese school children and their parents to their American counterparts.

Although both cultures can be considered "child centered," Fischer found that the Japanese parents put more stress on the child's position as a child and tended to indulge dependency more than American parents. Communicative correlates of these attitudes included less talking to children on the part of the Japanese parents, more use of nonverbal communication, longer use of Baby Talk and a more favorable attitude toward it, and greater willingness to interpret children's deviant utterances as meaningful.

The study of cross-cultural similarities and differences in the way members of a society communicate with children is an important ethnographic pursuit in its own right. But the ultimate question that begs for an answer is whether variation in communicative patterns leads to differences in the course of language development, and if so, how? For example, does the use of the Baby Talk register actually facilitate language development, such that children who are exposed to more of it (or more of certain features of it, or more of it at certain stages of development) acquire language more rapidly than those who do not? Are some aspects of language acquisition more influenced by the speech the child hears than others? Does variation in linguistic input that reflects different attitudes towards children's social role affect language development differentially? And so on. Questions like these have increasingly interested students of child development, but although a number of relationships between linguistic input and language acquisition have been proposed, most evidence must still be regarded as preliminary or suggestive rather than conclusive. Some possible relationships are examined.

Environmental Influences on Rate of Development

Language input and rate of development in socially homogeneous groups. The most detailed studies of rate of development as a function of exposure to different kinds of verbal input have been conducted with socially homogeneous groups of English-speaking children. Although initial investigations failed to reveal the predicted differences (e.g., Cazden, 1965; Feldman, 1971), more recent studies examining a wider range of input variables have begun to suggest that rate differences related to input do exist (e.g., Nelson, Carskaddon, & Bonvillian, 1973; Cross, 1975, 1978; Newport, 1976; Newport, Gleitman, & Gleitman, 1975, 1977).

Most reported relationships do not involve those features of input that typically distinguish speech to children from speech among adults (e.g., high pitch, exaggerated intonation contours), although these features have rarely been explicitly investigated. Rather, the putative relationships hold between rate of acquisition and the relative frequency with which caretakers use various kinds of structures and interaction patterns that occur in speech to both children and adults. For example, Cross (1978) reports

that "acceleration in linguistic acquisition is associated with an input that is substantially matched to the child's own communicative intentions" (p. 214). Newport et al. (1975) found evidence that "the frequencies of certain kinds of structures in maternal speech do predict learning of related structures by the child" (p. 112), although they caution that frequency often *interacts* with children's language processing strategies (Slobin, 1973) to produce patterns of outcome not predictable from *absolute* frequencies alone.

Most interestingly from a cross-cultural perspective, Newport et al. (1977) found that only certain aspects of language development are affected by frequency differences in the input, and that whether a given language structure is affected is related to how fundmental it is. Universals such as the expression of semantic relations among agents, actions, objects, locations, and so on are the least affected, whereas language-specific structures like the English auxiliary system are the most affected. This finding provides preliminary support for Cazden's (1971) hypothesis:

> Variation in a child's experience will affect acquisition along [a continuum from language-universal to language-specific] in different ways or to different degrees. The acquisition of components towards the ... more universal ... end 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 the more language-specific components of competence ... should require more exposure, show greater variability across children, and be reflected in a longer learning period and more fluctuations and errors by each child. (pp. 42–43)

Social variables and rate of acquisition. If rate of acquisition can be affected by differential patterns of caretaker speech even within socially relatively homogeneous groups, it is plausible to hypothesize that systematic rate differences may obtain across cultural boundaries as a function of systematic differences in how caretakers interact with children. Any cross-cultural differences that do exist in rate of development cannot be too great, since children everywhere seem to follow roughly the same developmental timetable (see p. 106 above). Nevertheless, relatively small systematic differences might well have escaped notice thus far because studies as fine-grained as those of Cross (1975, 1978) and Newport et al. (1975, 1977) have not yet been conducted cross-culturally.

One formidable obstacle to cross-cultural research on rate of development is the difficulty of finding satisfactory ways to compare and equate levels of development when different languages are involved. The mean length of children's utterances provides a rough overall guide to the earlier stages of development (see p. 113 ff. above), but it is insensitive to differences in ability that do not affect sentence length and it becomes an unreliable index to linguistic maturity at later stages of development. Despite

the absence of cross-cultural studies, certain within-culture studies (where the variable of language is held constant) have hinted at input-rate relationships that might be expected to differentiate children cross-culturally.

The social variable that has received the most attention over the years as a possible determinant of rate of language development is *social class membership.* Social class differences in mother-child interaction patterns have been documented in a number of studies (e.g., Hess & Shipman, 1965; Bee, Van Egeren, Streissguth, Nyman, & Leckie, 1969, in the United States; and Snow, Arlman-Rupp, Hassing, Jobse, Joosten, & Vorster, 1976, in the Netherlands),[11] and many investigators have reported differences in rate of language learning favoring the middle-class child. This has led to the concept of "verbal deprivation" and its associated effects on educational policy.

However, evidence for verbal deprivation is highly controversial. For example, many findings of differences can be explained away as artifacts resulting from linguistic bias in the testing materials and from sociolinguistic bias in the settings in which data were collected (see p. 107 ff, above; Cazden, 1970, 1971; Ervin-Tripp, 1971. Dale, 1976, p. 317 ff., provides a brief review of the evidence pro and con on social class differences in rate of development). On the basis of these and other considerations, a number of researchers have suggested that the effects of social class on language acquisition are to be found not in rate of development or size of the repertoire but rather in differences in the typical *uses* to which language is put (Cazden, 1970; Ervin-Tripp, 1971; Cole & Bruner, 1972). We will return to this topic shortly.

A second social variable with important implications for the cross-cultural study of differences in rate of development is the *source of linguistic input* to the language-learning child. As noted earlier, children in some cultures are cared for primarily by adults and in others by slightly older children. Is rate of development affected differentially by the age of the caretaker?

In a preliminary consideration of this question, Slobin (1975a) concluded that the answer is no, since researchers in Samoa, Kenya, and a black United States ghetto, all cultures in which toddlers spend most of their time with other children, found the course and rate of language development to be similar in overall outline to that described for middle-class western children who are tended primarily by their mothers. Absence of rate differences between children cared for by adults and those tended by other children has been attributed to the fact that children as well as adults speak a special, simplified language to language learners (Slobin, 1975a).

More recent studies have suggested that rate differences related to age of primary caretaker do exist, and that these may be traced to differences in the way children and adults interact verbally with toddlers. In a within-

culture study in a Kipsigis community in Kenya, Harkness (1977) compared the rate of language development of children who spent most of their time with adults versus with other children. She found that faster development (as judged by mean length of utterance) was associated with spending more time with adults. In an attempt to determine why, Harkness analyzed and compared the speech addressed to her subjects by mothers and by 4- to 8-year-old children. The groups did not differ in the use of repetitions of various kinds or in efforts to elicit speech, and both adjusted the length of their sentences to the mean length of utterance of their younger conversational partners, although the mothers used somewhat longer and syntactically more complex sentences than the 4- to 8-year-olds. However, mothers engaged language learners in longer dialogues on a given topic and asked more questions, whereas children more often simply made statements. Harkness concluded that the faster rate of learning associated with adult conversational partners is due to the higher rate of verbal interaction maintained by adults.

Bates (1975), drawing on studies of the effects of birth order, twinship, and institutionalization on rate of development, also suggests that children are less effective than adults as language socializers. Bates interprets this differently from Harkness, however. She attributes it not to differences in rate of interaction but rather to the relatively lesser ability of children to take the perspective of their interlocutor in both constructing their own utterances and in interpreting the other's utterances. Less ability to see things as your partner does, for example, to provide him with the background information that he must have if he is to interpret your speech, results in a higher proportion of failed communication attempts.

These findings and interpretations are suggestive, but they are not conclusive. Brown (1977) reminds us that measures of rate of development can be misleading. With reference to Harkness's (1977) study, he notes that the fact that children who associate primarily with adults produce longer sentences on the average than those who spend time mostly with children may not reflect a truly greater linguistic ability. It might stem instead from the success of adults at keeping children "responding at the upper end of their competence range." With peers, children may have "attempted less" (p. 23). Further investigation is clearly needed before questions about the effect of age of caretaker on language development can be satisfactorily answered.

Environmental Influences on the Child's Use of Language

Elaborated versus restricted codes. The most complex and comprehensive arguments about differences in language use as a function of social group membership have been presented by Bernstein (1966, 1971, 1972). Bern-

stein, whose work has been conducted in England, postulates that although members of the middle and working classes command more or less the same body of grammatical knowledge, there are systematic differences in the way they call on the resources of their language in everyday life.

Bernstein termed the language of the working class the *restricted code* and that of the middle class the *elaborated code*. The functional difference between them is that the restricted code depends heavily on immediate context and past shared experience and expectations to convey meaning whereas the elaborated code communicates meaning much more explicitly. In terms of specific behavioral differences, speakers of the restricted code allegedly use more pronouns and more deictic forms (words with shifting, context-based reference, for example, *here-there, this-that*), whereas speakers of the elaborated code use more nouns and noun modifiers. In addition, restricted code users employ more idioms and clichés and simpler syntactic structures and tend to qualify and elaborate meanings less than elaborated code users. Finally, restricted code users rely more heavily on paralinguistic communicative signals like intonation, facial expression, and gestures. In early versions of his theory, Bernstein argued that middle-class speakers can also use the more context-based restricted code where social conditions call for it, but he proposed that members of the working class are largely limited to the restricted code and do not have the option of becoming more verbally explicit.

What cultural factors underlie use of the two codes? Bernstein hypothesized that the restricted code will emerge "where the culture or subculture raises the 'we' above 'I'. . . . The use of a restricted code creates social solidarity at the cost of the verbal elaboration of individual experience" (1972, p. 476). The elaborated code, in contrast, "will arise wherever the culture or subculture emphasizes the 'I' over the 'we.' It will arise wherever the intent of the other person cannot be taken for granted . . . an elaborated code encourages the speaker to focus on the experience of others as different from his own" (1972, pp. 476–477).

Bernstein has developed these cultural concepts by reference to the *role relations* within societies and families. Restricted codes are considered characteristic of "closed role" or "position-oriented" systems, in which judgments and decisions are made on the basis of ascribed roles such as sex, age, and family role (father, daughter, and so on). Conversely, elaborated codes are found in "open role" or "person-oriented" systems that refer less to ascribed status and position than to individual characteristics.

The codes are transmitted largely through the modes of social control characteristic of the two systems, according to Bernstein. Closed role system parents typically either legislate action ("shut up," "stop that," and so on) or appeal to the child on the basis of age, sex, or role norms (e.g., "little boys don't cry," "Daddy doesn't expect to be spoken to like that")

(Bernstein, 1972, p. 486). In contrast, open role system parents more often appeal to personal characteristics and give explanations based on motivations, intentions, consequences, and the like.

Bernstein's theory has generated considerable interest and research since its initial formulation, but it has remained highly controversial. Controversy has centered on two basic issues. First, does the speech of members of the middle and working classes really differ in the way Bernstein hypothesized? Second, if there really are differences in speech, are there cognitive consequences associated with the use of one code or the other? This latter question arose because of the "neo-Whorfian" position espoused by Bernstein in his earlier writings, according to which the linguistic differences that develop between children of different classes differentially affect the course of intellectual growth in favor of the middle-class child. More recently Bernstein (1972) has disavowed the implication of cognitive deficiency on the part of the working-class child, adopting a "different but equal" view. He does continue to argue, however, that the restricted code "directs the child to orders of learning and relevance that are not in harmony with those required by the school . . . between the school and the community of the working-class child there may exist a cultural discontinuity based upon two radically different systems of communication" (1972, p. 473).

With regard to the first question, whether members of different classes really differ in their typical patterns of speech, findings are mixed. Some researchers have reported code-related differences in speech collected in various situations from both adults and school-age children (e.g., Brandis & Henderson, 1970; Rackstraw & Robinson, 1967; Hawkins, 1969; Cook-Gumperz, 1973 [all in England]; Williams & Naremore, 1969 [U.S.]. And a study of Italian children by Parisi and Gianelli (1974; reported in Bates, 1976b) disclosed differences linked to social class as early as 1½ to 2½ years of age, with the working-class children depending more heavily on pronouns coupled with context to carry meaning and the middle-class children using more nouns. On the other hand, other studies have failed to uncover significant class differences (e.g., A. D. Edwards, 1976, England).

Many researchers have argued that even when such differences are found, they are not compelling evidence for a difference in underlying *ability* to exploit the resources of language but stem instead from class differences in speakers' relative familiarity with given situations and in their notions of what kind of speech is appropriate or called for in different settings (e.g., Labov, 1970; van der Geest, Gerstel, Appel, & Tervoort, 1973). This interpretation finds support in studies indicating that social class differences in apparent ability diminish or disappear when the conditions of the task or the setting in which speech samples are collected are slightly altered (e.g., Heider, Cazden, & Brown, 1968; Williams & Naremore, 1969;

van den Broeck, 1977; see Ervin-Tripp, 1972, for discussion). The interpretation of social-class speech differences in terms of differing rules for language use rather than differences in underlying ability with elaborated speech has been adopted by Bernstein himself in his more recent work (see, for example, Bernstein, 1971, pp. 179–180).

Effects of schooling on linguistic and cognitive ability. Many investigators have explored the relationship between schooling and the child's ability to use language. Bernstein's approach, and that of many researchers in the United States who are concerned with educational policy, has been to examine how differences in language ability related to social class or ethnic background affect children's ability to behave effectively in school situations. Other investigators have come at it from the opposite direction, trying to determine how schooling influences children's language skills, and, through these, their more general cognitive abilities.

A cross-cultural approach to the effects of schooling on language and cognition was taken by Bruner, Olver, and Greenfield (1966), who reported on experiments carried out in a variety of settings. These investigators concluded that going to school, and particularly learning to read and write, increases children's ability to use language in ways that are relatively abstract and removed from immediate context. This greater linguistic ability, in turn, frees them from the need to attend to the concrete, perceptual attributes of objects. Thus, on tests of cognitive development such as picture sorting and conservation tasks they usually perform in a more abstract, less percept-bound way than children from the same culture who have not attended school. Goody and Watt (1962) present related arguments that the achievement of literacy provides people with intellectual tools.

A number of researchers in recent years have criticized proposals like these, arguing that many apparent differences in the cognitive functioning of schooled and nonschooled individuals are artifacts of the kind of testing done and the materials used. For example, Cole et al. (1971) concluded on the basis of their studies among the Kpelle of Liberia that "cultural differences in cognition reside more in the situations to which particular cognitive processes are applied than in the existence of a process in one cultural group and its absence in another" (p. 233). More specifically, with reference to educated and noneducated Kpelle children,

> We suggest that there is a different likelihood that a given situation will evoke a general, as opposed to a specific, mode of problem-solving. It is *not* the case that the noneducated African is incapable of concept-based thinking. . . . Instead, we have to conclude that the situations in which he applies general, concept-based modes of solution are different and perhaps more restricted than the situations in which his educated age mate will apply such solutions. (p. 225)

This argument is exactly parallel to the one presented immediately above to the effect that differences in language use among members of different social groups reflect differences not in underlying *ability* but rather in the social settings that evoke particular uses.

The existence of such diverse opinions on whether and how schooling influences linguistic and cognitive abilities indicates that the problem is exceedingly complex. As Ginsberg (1977) puts it in a brief overview of aspects of the problem,

> It is naïve and imprecise to think of the general "effects of schooling on cognition." Schooling takes many forms and involves many components, some facilitative of certain kinds of cognition and some not. Cognition and its transfer are similarly multifaceted. It is therefore imperative to examine the nature of both schooling and cognition in far more detail than has been done to date. (p. 10)

Other Environmental Variables

The preceding discussion of the influence of environmental factors on rate of language development and on patterns of language use has been selective, concentrating primarily on the impact of variation in linguistic input and caretaker-child interaction patterns rather than on ecological factors such as the types of activities the child typically engages in, the frequency with which she leaves the home, interacts with people outside the immediate family, witnesses novel events, etc. Such factors may well have systematic effects on language development[12] and are obviously dimensions along which cultures vary, but, with the exception of schooling, they have as yet been little investigated from a cross-cultural perspective.

Conclusions

"How does a child learn to talk?" This little question looks so deceptively simple that almost every parent has a ready answer for it. Yet it is still one of the most challenging problems confronting social scientists. Contemporary efforts to achieve a better understanding of the process of language acquisition have benefited immensely from the input from cross-cultural research, as the discussions in the preceding pages have emphasized. Many pieces are still missing from the puzzle, however.

The problems that have been most thoroughly explored cross-culturally are, in general, those that have interested researchers right from the start of the post-Chomskian era; for example, the structure of children's early sentences, morphological acquisition, the handling of word order.

Within the domain of semantics, cross-cultural work has concentrated primarily on the relational meanings of the first sentences (e.g., agent, action), on possible semantic universals, and on the earliest period of acquiring word meanings. Even though some aspects of later semantic development have been extensively studied among English-speaking children, little comparative material is yet available. How children approach those aspects of semantic structure that are language-specific rather than universal has been little studied either within or across cultures.

The most recent topics to receive intensive within-culture scrutiny are how children learn to use language in contextually appropriate ways and what role is played by the language the child hears. Cross-cultural research in these areas is still relatively sparse but rapidly gathering momentum, as demonstrated by three recent publications: Snow and Ferguson (1977) on talk to children and Ervin-Tripp and Mitchell-Kernan (1977) and an issue of *Language in Society* (1978, 7, 3) on child discourse.

Most problems in language acquisition that have attracted extensive within-culture interest have sooner or later been explored cross-culturally. However, there are exceptions: certain problems with long histories of research in English-speaking countries have received surprisingly little cross-cultural attention. Two such problems—the role of imitation and the relationship between comprehension and production—are mentioned here to illustrate some directions in which future cross-cultural research might go.

The role of imitation in language development has been debated by American psychologists for years. According to many behaviorist theorists, imitation is an essential component of the language acquisition process. Post-Chomskian psycholinguists of the 1960s, in contrast, presented evidence that imitation plays a negligible role (e.g., Ervin, 1964b; Lenneberg, 1966; McNeill, 1970). The most recent studies indicate that although language acquisition is not dependent on imitation (some children almost never imitate), imitation may for some children serve an important function in processing new linguistic materials (Bloom, Hood, & Lightbown, 1974) or in storing up speech fragments for later analysis (R. Clark, 1978).

If children vary in their tendency to use imitation as strategy for language acquisition, it is possible that there are systematic cross-cultural differences in reliance on this strategy. The data needed to examine this possibility are not yet available, but fragmentary evidence of cultural differences in the sanctioning of children's imitation is suggestive. Recall that, according to Ervin-Tripp and Mitchell-Kernan (1977), speech imitation by children is discouraged in Italy; in contrast, Schiefflin (1980) reports that the Kaluli in New Guinea continually elicit imitation from language-learning children and have a special linguistic routine for doing so.

A second factor that may influence whether children adopt an imitation strategy is the extent to which caretakers *model* imitation as a speech act. In a study of American mother–child dyads, Folger and Chapman (1978) found that "the relative frequency with which children imitated mothers reflected the relative frequency with which mothers imitated children" (p. 25). If cross-cultural differences exist in how often caretakers repeat children's utterances, as seems likely, there may be accompanying systematic cultural differences in children's reliance on an imitation strategy for language acquisition.

A second problem that has interested researchers for many years but that has not yet received systematic cross-cultural study is the developmental relationship between comprehension and production. At one time it was widely assumed, with some experimental support (Fraser, Bellugi, & Brown, 1963), that the ability to comprehend given linguistic forms always precedes the ability to produce them. However, more recent evidence indicates that the relationship between comprehension and production is far more complex than this. For example, although comprehension apparently precedes production among English-speaking children for some forms, the reverse is true for other forms (see Bloom, 1974, and Chapman, 1978, for review and discussion).

Determinants of the developmental relationship between comprehension and production (e.g., which one precedes for a given form, length of the lag) are not well understood yet. However, a recent study by Hollos (1977), which explores rural versus urban Hungarian children's ability with personal pronouns, suggests that environmental factors may at least in some cases play a significant role. Hollos found that both sets of children did better at comprehending the social implications of various pronouns than they did at producing the appropriate pronouns in role-playing situations, and that the urban children were more advanced than the rural children in both skills. Hollos attributes this latter finding to the urban children's greater opportunities for social-verbal interactions with a variety of other people. What is interesting for present purposes is that the difference between the two sets of children was considerably *greater* for production than for comprehension; in other words, the ability to comprehend was less affected by environmental factors than was the ability to produce. Even though Hollos's study of course is not cross-cultural, the rural–urban distinction has entered into many discussions of cross-cultural differences. The results of her study thus indicate the potential fruitfulness of cross-cultural explorations of the developmental relationship between comprehension and production.

Throughout this chapter the emphasis has been on how cross-cultural research can help us better understand the process of language development. In closing, let us look briefly at child language research from an-

other perspective: What can the study of language acquisition, enriched as it has been and will continue to be by cross-cultural comparisons, contribute to research in other fields?

In acquiring language, the child must draw on a variety of different kinds of knowledge and ability. And child language researchers, increasingly aware of this, have profited immensely in recent years from taking into account information on children's perceptual, cognitive, and social development. But information can flow both ways: studies of child language in turn provide excellent clues to these aspects of child development.

Information about children's cognitive and perceptual abilities is found in a number of different types of studies. For example, many investigations of children's comprehension of words and sentence structures have shown that when children lack a full understanding of the forms in question their interpretations are guided in systematic ways by cognitively based strategies of various sorts, including assumptions about "how things are" in the world (e.g., E. Clark, 1973a, 1975; Wilcox & Palermo, 1974; Chapman, 1978).

How children speak—particularly deviations from adult norms in their use of words, inflections, and sentence structures—provides further important evidence on matters of interest to developmental psychologists: what is cognitively or perceptually salient for children (e.g., Bloom, 1970, 1973; Brown, 1973; E. Clark, 1973b, 1977; Bowerman, 1973a, 1976, 1980), what conceptual distinctions children make (Antinucci & Miller, 1976), what categorizational principles are available to them in the second year of life (Bowerman, 1978, 1980), and how cognitive and linguistic development are related (Slobin, 1973; Cromer, 1974; Schlesinger, 1977; Bowerman, 1976, 1980).

Studies of language development offer a variety of clues to social development. For example, as Ervin-Tripp and Mitchell-Kernan observe, "there is no way to study the acquisition of norms for sociolinguistic rules without at the same time learning about the child's socialization into the role system" (1977, p. 11). These authors point out that in learning the proper use of address terms, pronouns, and directives, "children systematically must come to attend to the features of age and power and familiarity of addressees" (1977, p. 11). The order in which these features begin to influence children's selection of speech variants, along with errors children make on the path to adult competence, are excellent sources of information about the development of social concepts. Besides offering clues to children's knowledge of social roles, children's speech provides insight into their developing understanding of cultural values. This important point was emphasized by Mitchell-Kernan and Kernan (1975) in their pioneering investigation of cross-cultural similarities and differences in disputing (see p. 149 above).

The preceding paragraphs indicate ways in which child language research provides information on processes of cognitive, perceptual, and social development. But the study of language acquisition has broader implications. As Chomsky hypothesized and as recent research increasingly demonstrates, there are close connections between children's characteristic ways of approaching the task of language acquisition and the properties of the linguistic structures they must acquire. Thus, the relevance of the study of language acquisition extends to linguists and to all scholars who are interested in the nature of higher mental processes.

Notes

1. This research was supported in part by Grant HD00870 from the National Institute of Child Health and Human Development. Some of the writing was carried out during a year at the Netherlands Institute for Advanced Study in the Humanities and Social Sciences. The support of these institutes is gratefully acknowledged.

2. For example, Blount (1969, Luo); Kernan (1969, Samoan); Stross (1969, Tzeltal); Bowerman (1973a) and Argoff (1976) (Finnish); Omar (1973, Egyptian Arabic); Schaerlaekens (1973, Dutch); Lange and Larsson (1973) and Lindhagen (1976) (Swedish); MacWhinney (1974, 1976, Hungarian); Aksu (1978, Turkish); Miller (1979, German); see Slobin (1972) for a more complete listing broken down by language.

3. The interested reader is referred to Ingram (1974), Ferguson and Garnica (1975), and Ferguson (1976) for overviews of phonological development that take cross-linguistic data into account.

4. Kagan and Klein (1973) report on a culture in the Guatemala highlands in which both cognitive and language development are considerably slowed down by the practice of keeping infants inside dim huts, holding them constantly and not allowing them to crawl about, and rarely talking or interacting with them. First words for these children apparently emerge at about 2½ years of age, or 1½ years later than for children in most cultures. Nevertheless the subsequent course of language and cognitive development is apparently normal, which led the authors to revise their earlier opinion that the nature of the early environment is a critical factor in later development. Instead, they now suggest that cognitive (and presumably linguistic) development is maturationally controlled and resilient even in the face of extremely adverse environmental conditions.

5. Cf. Cromer's (1975) unsuccessful attempt to replicate, with English-speaking children, a study by McNeill, Yukawa, and McNeill (1971) on how Japanese children comprehend slightly deviant sentences with direct and indirect objects. McNeill et al. had interpreted their findings as indicating that the children expected a marked linguistic form to be the indirect object, in accordance with a putative linguistic universal favoring the explicit marking, e.g., by inflection, of indirect objects over direct objects.

6. Consult Maratsos (1979) for a consideration of ways in which certain aspects of morphological acquisition do not accord with Slobin's operating principles, and MacWhinney (1978) for a comprehensive model of the processes involved in the learning of morphophonology based on experimental and diary data on the acquisition of ten different languages.

7. Actually, things are somewhat more complex than this. Some investigators of English-speaking children have found that center-embedded relatives are easier to understand than right-branching relatives at certain ages (H. Brown, 1971; Lahey, 1974); Aller (1977), studying Arabic-speaking children, also found center-embedded relatives easier. Some of the discrepancies between different researchers' findings may be attributable to important differences in the construction of stimulus sentences, as de Villiers, Tager Flusberg, Hakuta, and Cohen (1979) discuss. Sorting out the relative contribution of various structural properties to the complexity of relative clause-containing sentences will undoubtedly require both careful control of all possible sources of processing difficulty in constructing stimuli sentences and further cross-linguistic work.

8. Classifiers are linguistic forms used in conjunction with the predication of something about objects, e.g. when they are counted ("nine round-things balls") or when they are acted on (e.g., "he caused round-solid-thing-to-move upwards stone"—he lifted the stone).

9. The role of intonation in the one-word period is highly controversial. See Dore (1975) for one viewpoint, discussion, and references to investigators with differing positions.

10. Some language that have been studied include English, Arabic, Comanche, Gilyak, Latvian, Spanish, Marathi, and Japanese. See Ferguson (1977) for a listing of major sources on these and other languages.

11. Interestingly, however, these differences apparently take place *beneath* the level of overall simplification of speech to children, which, to judge from Snow et al.'s data on Dutch mother-child dyads, is general across social class lines.

12. See, for example, Nelson (1973) on the effects of frequency of television watching, "outings," etc. on rate of language development among middle-class American children and Hollos (1977 and p. 167) on differences between rural and urban Hungarian children's ability with the complex system of personal pronouns in Hungarian.

References

AKSU, A. *Aspect and modality in the child's acquisition of the Turkish past tense.* Unpublished doctoral dissertation, University of California at Berkeley, 1978.

ALLAN, K. Classifiers. *Language,* 1977, *53,* 285–311.

ALLER, S. K. The acquisition of relative constructions in Arabic. Paper presented at the 6th Annual University of Wisconsin-Milwaukee Linguistics Symposium. Milwaukee, March 18–19, 1977.

AMMON, M. S., & SLOBIN, D. I. A cross-linguistic study of the processing of caus-

ative sentences. *Papers and Reports on Child Language Development* (Stanford University Department of Linguistics), 1978, *15*, 114–128.

ANTINUCCI, F., & MILLER, R. How children talk about what happened. *Journal of Child Language*, 1976, *3*, 167–189.

ARGOFF, H. D. *The acquisition of Finnish inflectional morphology.* Unpublished doctoral dissertation, University of California at Berkeley, 1976.

ARLMAN-RUPP, A. J. L., VAN NIEKERK DE HAAN, D., & VAN DE SANDT-KOENDERMAN, M. Brown's early stages: Some evidence from Dutch. *Journal of Child Language*, 1976, *3*, 267–274.

AUSTIN, J. L. *How to do things with words.* New York: Oxford University Press, 1962.

BAR-ADON, A. Primary syntactic structures in Hebrew child language. In A. Bar-Adon & W. F. Leopold (Eds.), *Child language: A book of readings.* Englewood Cliffs, N.J.: Prentice-Hall, 1971.

BATES, E. *The development of conversational skill in 2, 3, and 4 year olds.* Master's thesis, University of Chicago, 1971 (Reprinted in Pragmatics Microfiche, 1975, 1[2], Cambridge University.)

———. Peer relations and the acquisition of language. In M. Lewis & L. Rosenblum (Eds.), *The origins of behavior* (Vol. 4): *Friendship and peer relations.* New York: John Wiley & Sons, 1975.

———. *Language and context: The acquisition of pragmatics.* New York: Academic Press, 1976. (a)

———. Pragmatics and sociolinguistics in child language. In D. Morehead & A. Morehead (Eds.), *Directions in normal and deficient child language.* Baltimore: University Park Press, 1976. (b)

BATES, E., CAMAIONI, L., & VOLTERRA, V. The acquisition of performatives prior to speech. *Merrill-Palmer Quarterly*, 1975, *21*, 205–226.

BATES, E., BENIGNI, L., BRETHERTON, I., CAMAIONI, L., & VOLTERRA, V. From gesture to the first word: On cognitive and social prerequisites. In M. Lewis & L. Rosenblum (Eds.), *The origins of behavior* (Vol. 5): *Interaction, conversation, and the development of language.* New York: John Wiley & Sons, 1977.

BEE, H. L., VAN EGEREN, L. F., STREISSGUTH, A. P., NYMAN, B. A., & LECKIE, M. S. Social class differences in maternal teaching strategies and speech patterns. *Developmental Psychology*, 1969, *1*, 726–734.

BERKO, J. The child's learning of English morphology. *Word*, 1958, *14*, 150–177.

BERLIN, B., & KAY, P. *Basic color terms.* Berkeley: University of California Press, 1969.

BERNSTEIN, B. Elaborated and restricted codes: Their social origins and some consequences. In A. G. Smith (Ed.), *Communication and culture.* New York: Holt, Rinehart & Winston, 1966.

———. *Class, codes, and control* (Vol. 1): *Theoretical studies towards a sociology of language.* London: Routledge & Kegan Paul, 1971.

———. A sociolinguistic approach to socialization, with some reference to educability. In J. J. Gumperz & D. Hymes, *Directions in sociolinguistics.* New York: Holt, Rinehart & Winston, 1972.

BEVER, T. The cognitive basis for linguistic structures. In J. R. Hayes (Ed.), *Cognition and the development of language.* New York: John Wiley & Sons, 1970.

BEVER, T. G., & LANGENDOEN, D. T. A dynamic model of the evolution of language. *Linguistic Inquiry*, 1971, 2, 433–461.

BINGHAM, N. E. Maternal speech to pre-linguistic infants: Differences related to maternal judgments of infant language competence. Unpublished paper, Cornell University, 1971.

BLOOM, L. *Language development: Form and function in emerging grammars*. Cambridge, Mass.: MIT Press, 1970.

———. *One word at a time: The use of single-word utterances before syntax*. The Hague: Mouton, 1973.

———. Talking, understanding, and thinking. In R. L. Schiefelbusch & L. L. Lloyd (Eds.), *Language perspectives—Acquisition, retardation, and intervention*. Baltimore: University Park Press, 1974.

BLOOM, L., HOOD, L. & LIGHTBOWN, P. Imitation in language development. *Cognitive Psychology*, 1974, 6, 380–420.

BLOOM, L., ROCISSANO, L. & HOOD, L. Adult-child discourse: Developmental interaction between information processing and linguistic knowledge. *Cognitive Psychology*, 1976, 8, 521–552.

BLOUNT, B. G. *Acquisition of language by Luo children*. Unpublished doctoral dissertation, University of California at Berkeley, 1969.

———. Aspects of Luo socialization. *Language in Society*, 1972, 1, 235–248. (a)

———. Parental speech and language acquisition: Some Luo and Samoan examples. *Anthropological Linguistics*, 1972, 14, 119–130. (b)

BLOUNT, B. G., & PADGUG, E. J. Prosodic, paralinguistic, and interactional features in parent-child speech: English and Spanish. *Journal of Child Language*, 1977, 4, 67–86.

BOGGS, S. T. The development of verbal disputing in part-Hawaiian children. *Language in Society*, 1978, 7, 325–344.

BOGGS, S. T., & WATSON-GEGEO, K. A. Interweaving routines: Strategies for encompassing a social situation. *Language in Society*, 1978, 7, 375–392.

BOWERMAN, M. *Early syntactic development: A cross-linguistic study with special reference to Finnish*. Cambridge, England: Cambridge University Press, 1973. (a)

———. Structural relationships in children's utterances: Syntactic or semantic? In T. E. Moore (Ed.), *Cognitive development and the acquisition of language*. New York: Academic Press, 1973. (b)

BOWERMAN, M. Discussion summary: Development of concepts underlying language. In R. L. Schiefelbusch & L. L. Lloyd (Eds.), *Language perspectives—Acquisition, retardation, and intervention*. Baltimore: University Park Press, 1974.

———. Cross-linguistic similarities at two stages of syntactic development. In E. H. Lenneberg & E. E. Lenneberg (Eds.), *Foundations of language: A multidisciplinary approach*. New York: Academic Press, 1975.

———. Semantic factors in the acquisition of rules for word use and sentence construction. In D. Morehead & A. Morehead (Eds.), *Directions in normal and deficient child language*. Baltimore: University Park Press, 1976.

———. The acquisition of word meaning: An investigation into some current conflicts. In N. Waterson & C. Snow (Eds.), *The development of communication*. New York: John Wiley & Sons, 1978.

————. The structure and origin of semantic categories in the language learning child. In M. L. Foster & S. Brandes (Eds.), *Symbol as sense*. New York: Academic Press, 1980.

BRAINE, M. D. S. The ontogeny of English phrase structure: The first phase. *Language*, 1963, *39*, 1–14.

————. The acquisition of language in infant and child. In C. Reed (Ed.), *The learning of language*. New York: Scribners, 1971.

————. Children's first word combinations. *Monographs of the society for research in child development*, 1976, *41* (1, Serial No. 164).

BRANDIS, W., & HENDERSON, D. *Social class, language, and communication*. London: Routledge and Kegan Paul, 1970.

BROWN, H. D. Children's comprehension of relativized English sentences. *Child Development*, 1971, *42*, 1923–1936.

BROWN, R. The first sentences of child and chimpanzee. In *Selected papers by Roger Brown*. New York: Free Press, 1970.

————. *A first language: The early stages*. Cambridge, Mass.: Harvard University Press, 1973.

————. The development of the human child's native language. In A. Silverstein (Ed.), *Human communication: Theoretical explorations*. Hillsdale, N.J.: Lawrence Erlbaum, 1974.

————. Introduction. In C. E. Snow & C. A. Ferguson (Eds.), *Talking to children: Language input and acquisition*. Cambridge, England: Cambridge University Press, 1977.

BROWN, R., & BELLUGI, U. Three processes in the child's acquisition of syntax. In E. H. Lenneberg (Ed.), *New directions in the study of language*. Cambridge, Mass.: MIT Press, 1964.

BROWN, R., & BERKO, J. Word association and the acquisition of grammar. *Child Development*, 1960, *31*, 1–14.

BROWN, R., & FRASER, C. The acquisition of syntax. In C. H. Cofer, & B. S. Musgrave (Eds.), *Verbal behavior and learning*. New York: McGraw-Hill, 1963.

BROWN, R., & HANLON, C. Derivational complexity and order of acquisition in child speech. In J. R. Hayes (Ed.), *Cognition and the development of language*. New York: John Wiley & Sons, 1970.

BRUNER, J. S. The ontogenesis of speech acts. *Journal of Child Language*, 1975, *2*, 1–19.

BRUNER, J. S., WALLACH, M. A., & GALANTER, E. H. The identification of recurrent regularity. *American Journal of Psychology*, 1959, *72*, 200–209.

BRUNER, J. S., OLVER, R. R., & GREENFIELD, P. M. *Studies in cognitive growth*. New York: John Wiley & Sons, 1966.

BURLING, R. Language development of a Garo and English speaking child. *Word*, 1959, *15*, 45–68.

CAMPBELL, R., & WALES, R. The study of language acquisition. In J. Lyons (Ed.), *New horizons in linguistics*. Harmondsworth, England: Penguin Books, 1970.

CARTER, A. The transformation of sensorimotor morphemes into words: A case study of the development of 'more' and 'mine'. *Journal of Child Language*, 1975, *2*, 233–250.

————. The development of systematic vocalizations prior to words: A case

study. In N. Waterson & C. Snow (Eds.), *The development of communication.* New York: John Wiley & Sons, 1978.

CAZDEN, C. B. *Environmental assistance to the child's acquisition of grammar.* Unpublished doctoral dissertation, Harvard University, 1965.

————. The neglected situation in child language research and education. In F. Williams (Ed.), *Language and poverty: Perspectives on a theme.* Chicago: Markham Publishing Co., 1970.

————. The hunt for independent variables. In R. Huxley & E. Ingram (Eds.), *Language acquisitions: Models and methods.* London: Academic Press, 1971.

CHAPMAN, R. S. Comprehension strategies in children. In J. F. Kavanagh, & W. Strange (Eds.), *Implications of basic speech and language research for the school and clinic.* Cambridge, Mass.: MIT Press, 1978.

CHAPMAN R. S., & MILLER, J. F. Word order in early two and three word utterances: Does production precede comprehension? *Journal of Speech and Hearing Research,* 1975, *18,* 355–371.

CHOMSKY, C. S. *The acquisition of syntax in children from 5 to 10.* Cambridge, Mass.: MIT Press, 1969.

CHOMSKY, N. *Syntactic structures.* The Hague: Mouton, 1957.

————. Review of Skinner (1957). *Language,* 1959, *35,* 26–58.

————. *Aspects of the theory of syntax.* Cambridge, Mass.: MIT Press, 1965.

CLANCY, P., JACOBSEN, T., & SILVA, M. The acquisition of conjunction: A cross-linguistic study. *Papers and Reports in Child Language Development* (Stanford University Department of Linguistics), 1976, *12,* 71–80.

CLARK, E. V. Non-linguistic strategies and the acquisition of word meanings. *Cognition,* 1973, *2,* 161–182. (a)

————. What's in a word? On the child's acquisition of semantics in his first language. In T. E. Moore (Ed.), *Cognitive development and the acquisition of language.* New York: Academic Press, 1973. (b)

————. Knowledge, context, and strategy in the acquisition of meaning. In D. Dato (Ed.), *Georgetown University round table on languages and linguistics.* Washington, D.C.: Georgetown University Press, 1975.

————. Universal categories: On the semantics of classifiers and children's early word meanings. In A. Juilland (Ed.), *Linguistic studies offered to Joseph Greenberg: On the occasion of his sixtieth birthday.* Saratoga, Calif.: Anma Libri, 1977.

CLARK, H. H. Space, time, semantics, and the child. In T. E. Moore (Ed.), *Cognitive development and the acquisition of language.* New York: Academic Press, 1973.

CLARK, H. H., & CLARK, E. V. *Psychology and language.* New York: Harcourt, Brace & Jovanovich, 1977.

CLARK, R. Some even simpler ways to learn to talk. In N. Waterson & C. Snow (Eds.), *The development of communication.* New York: John Wiley & Sons, 1978.

CLARK, R., HUTCHESON, S., & VAN BUREN, P. Comprehension and production in language acquisition. *Journal of Linguistics,* 1974, *10,* 39–54.

COLE, M., & BRUNER, J. S. Some preliminaries to some theories of cultural difference. *Yearbook of the National Society of the Study of Education.* Chicago: University of Chicago Press, 1972.

COLE, M., GAY, J., GLICK, J., & SHARP, D. *The cultural context of learning and thinking.* New York: Basic Books, 1971.

COOK-GUMPERZ, J. *Social control and socialization: A study of class differences in the language of maternal control.* London: Routledge & Kegan Paul, 1973.

———. Situated instructions: Language socialization of school age children. In S. Ervin-Tripp & C. Mitchell-Kernan (Eds.), *Child discourse.* New York: Academic Press, 1977.

CREMONA, C., & BATES, E. The development of attitudes toward dialect in Italian children. *Journal of Psycholinguistic Research,* 1977, *6,* 223–232.

CROMER, R. F. *The development of temporal reference during the acquisition of language.* Unpublished doctoral dissertation, Harvard University, 1968.

———. The development of language and cognition: The cognition hypothesis. In B. Foss (Ed.), *New perspectives in child development.* Baltimore, Md.: Penguin, 1974.

———. An experimental investigation of a putative linguistic universal: Marking and the indirect object. *Journal of Experimental Child Psychology,* 1975, *20,* 73–80.

———. The cognitive hypothesis of language acquisition and its implications for child language deficiency. In D. Morehead & A. Morehead (Eds.), *Directions in normal and deficient child language.* Baltimore, Md.: University Park Press, 1976.

CROSS, T. Some relationships between motherese and linguistic level in accelerated children. *Papers and Reports on Child Language Development* (Stanford University Department of Linguistics), 1975, *10,* 117–135.

———. Mother's speech and its association with rate of linguistic development in young children. In N. Waterson & C. Snow (Eds.), *The development of communication.* New York: John Wiley & Sons, 1978.

DALE, P. *Language development: Structure and function* (2nd edition). New York: Holt, Rinehart & Winston, 1976.

DAVIDOFF, J. B. *Differences in visual perception: The individual eye.* New York: Academic Press, 1975.

DE VILLIERS, J. G., & DE VILLIERS, P. A. Semantics and syntax in the first two years: The output of form and function and the form and function of the input. In F. D. Minifie & L. L. Lloyd (Eds.), *Communicative and cognitive abilities—Early behavioral assessment.* Baltimore, Md.: University Park Press, 1978.

DE VILLIERS, J. G., TAGER FLUSBERG, H. B., HAKUTA, K., & COHEN, M. Children's comprehension of relative clauses. *Journal of Psycholinguistic Research,* 1979, *8,* 499–518.

DORE, J. Holophrases, speech acts, and language universals. *Journal of Child Language,* 1975, *2,* 21–40.

———. 'Oh them sheriff': A pragmatic analysis of children's responses to questions. In S. Ervin-Tripp & C. Mitchell-Kernan (Eds.), *Child discourse.* New York: Academic Press, 1977.

———. What's so conceptual about the acquisition of linguistic structures? *Journal of Child Language,* 1979, *6,* 129–137.

DORE, J., FRANKLIN, M., MILLER, R., & RAMER, A. Transitional phenomena in early language acquisition. *Journal of Child Language,* 1976, *3,* 13–28.

DOWTY, D. Montague grammar and the lexical decomposition of causative verbs. In B. H. Partee (Ed.), *Montague Grammar*. New York: Academic Press, 1976.

DUNDES A., LEACH, J. W., & ÖZKÖK, B. The strategies of Turkish boys' verbal dueling rhymes. In J. J. Gumperz & D. Hymes (Eds.), *Directions in sociolinguistics*. New York: Holt, Rinehart & Winston, 1972.

EDELSKY, C. Acquisition of an aspect of communicative competence: Learning what it means to talk like a lady. In S. Ervin-Tripp & C. Mitchell-Kernan (Eds.), *Child discourse*. New York: Academic Press, 1977.

EDWARDS, A. D. Speech codes and speech variants: Social class and task differences in children's speech. *Journal of Child Language*, 1976, *3*, 247–265.

EDWARDS, D. Sensory-motor intelligence and semantic relations in early child grammar. *Cognition*, 1974, *2*, 395–434.

ERVIN, S. An analysis of the interaction of language, topic, and listener. In J. J. Gumperz & D. Hymes (Eds.), The ethnography of communication. *American Anthropologist*, 1964, *66* (6, Pt. 2), 86–102. (a)

————. Imitation and structural change in children's language. In E. H. Lenneberg (Ed.), *New directions in the study of language*. Cambridge, Mass.: MIT Press, 1964. (b)

ERVIN-TRIPP, S. Sociolinguistics. In L. Berkowitz (Ed.), *Advances in experimental social psychology*. New York: Academic Press, 1969. (Reprinted in B. G. Blount [Ed.], *Language, culture, and society*. Cambridge, Mass.: Winthrop Publishers, 1974.)

————. Social background and verbal skills. In R. Huxley & E. Ingram (Eds.), *Language acquisition: Models and methods*. London: Academic Press, 1971.

————. Children's sociolinguistic competence and dialect diversity. In I. J. Gordon (Ed.), *Early childhood education: The seventy-first yearbook of the National Society for the Study of Education*. Chicago: University of Chicago Press, 1972.

————. The structure of communicative choice. In A. S. Dil (Comp.), *Language acquisition and communicative choice: Essays by Susan M. Ervin-Tripp*. Stanford, California: Stanford University Press, 1973.

————. Is Sybil there? The structure of American English directives. *Language in Society*, 1976, *5*, 25–66. (a)

————. *Speech acts and social learning*. In K. H. Basso & H. A. Selby (Eds.), *Meaning in anthropology*. Albuquerque: University of New Mexico Press, 1976. (b)

————. Wait for me, roller-skate! In S. Ervin-Tripp & C. Mitchell-Kernan (Eds.), *Child discourse*. New York: Academic Press, 1977.

————. Some features of early adult-child dialogues. *Language in Society*, 1978, *7*, 357–373.

ERVIN-TRIPP, S., & MITCHELL-KERNAN, C. (Eds.), *Child discourse*. New York: Academic Press, 1977.

FARWELL, C. B. The early expression of motion and location. Paper presented at the first annual Boston Conference on Language Development. Oct. 2, 1976.

————. The primacy of goal in the child's description of motion and location. *Papers and Reports on Child Language Development* (Stanford University Department of Linguistics), 1977, *13*, 126–133.

FELDMAN, C. The effects of various types of adult responses in the syntactic acquisition of two- to three-year-olds. Unpublished paper, Department of Psychology, University of Chicago, 1971.

FERGUSON, C. A. Learning to pronounce: The earliest stages of phonological development in the child. In *Papers and Reports on Child Language Development* (Stanford University Department of Linguistics), 1976, *11*, 1–27.

————. Baby talk as a simplified register. In C. E. Snow & C. A. Ferguson (Eds.), *Talking to children: Language input and acquisition.* Cambridge, England: Cambridge University Press, 1977.

FERGUSON, C. A., & GARNICA, O. K. Theories of phonological development. In E. H. Lenneberg & E. Lenneberg (Eds.), *Foundations of language development: A multidisciplinary approach.* New York: Academic Press, 1975.

FILLMORE, C. J. The case for case. In E. Bach & R. T. Harms (Eds.), *Universals of linguistic theory.* New York: Holt, Rinehart & Winston, 1968.

FISCHER, J. L. Linguistic socialization: Japan and the United States. In R. Hill & R. König (Eds.), *Families in east and west.* The Hague: Mouton, 1970.

FODOR, J. A. How to learn to talk: Some simple ways. In F. Smith & G. A. Miller (Eds.), *The genesis of language: A psycholinguistic approach.* Cambridge, Mass.: MIT Press, 1966.

FOLGER, J. P., & CHAPMAN, R. S. A pragmatic analysis of spontaneous imitations. *Journal of Child Language,* 1978, *5*, 25–38.

FRASER, C., BELLUGI, U., & BROWN, R. Control of grammar in imitation, comprehension, and production. *Journal of Verbal Learning and Verbal Behavior,* 1963, *2*, 121–135.

FREEDLE, R., & LEWIS, M. Prelinguistic conversations. In M. Lewis & L. Rosenblum (Eds.), *The origins of behavior* (Vol. 5): *Interaction, conversation, and the development of language.* New York: John Wiley & Sons, 1977.

GARMAN, M. On the acquisition of two complex syntactic structures in Tamil. *Journal of Child Language,* 1974, *1*, 65–76.

GARNICA, O. K. Some prosodic and paralinguistic features of speech to young children. In C. E. Snow & C. A. Ferguson (Eds.), *Talking to children: Language input and acquisition.* Cambridge, England: Cambridge University Press, 1977.

GARVEY, C. Requests and responses in children's speech. *Journal of Child Language,* 1975, *2*, 41–63.

————. Play with language and speech. In S. Ervin-Tripp, & C. Mitchell-Kernan (Eds.), *Child discourse.* New York: Academic Press, 1977.

GINSBERG, H. Some problems in the study of schooling and cognition. *The Quarterly Newsletter of the Institute for Comparative Human Development* (Rockefeller University), 1977, *1*, 7–10.

GLEASON, J. B. Code switching in children's language. In T. E. Moore (Ed.), *Cognitive development and the acquisition of language.* New York: Academic Press, 1973.

GLEASON, J. B., & WEINTRAUB, S. The acquisition of routines in child language. *Language in Society,* 1976, *5*, 129–136.

GODARD, D. Same setting, different norms: Phone call beginnings in France and the United States. *Language in Society,* 1977, *6*, 209–219.

GOODSON, B. D., & GREENFIELD, P. M. The search for structural principles in children's manipulative play: A parallel with linguistic development. *Child Development,* 1975, *46*, 734–746.

GOODY, J., & WATT, I. The consequences of literacy. *Comparative Studies in Sociology and History,* 1962, *5*, 304–345.

GREENFIELD, P. M. Informativeness, presupposition, and semantic choice in single-word utterances. In N. Waterson & C. Snow (Eds.), *The development of communication*. New York: John Wiley & Sons, 1978.

GREENFIELD, P. M., NELSON, K., & SALTZMAN, E. The development of rulebound strategies for manipulating seriated cups: A parallel between action and grammar. *Cognitive Psychology*, 1972, 3, 291–310.

GREENFIELD, P. M., & SMITH, J. H. *The structure of communication in early language development*. New York: Academic Press, 1976.

GREENFIELD, P. M., & ZUKOW, P. G. Why do children say what they say when they say it?: An experimental approach to the psychogenesis of presupposition. In K. Nelson (Ed.), *Children's language* (Vol. 1). New York: Gardner Press, 1978.

GRICE, P. Logic and conversation. In P. Cole & J. L. Morgan (Eds.), *Syntax and semantics* (Vol. 3): *Speech acts*. New York: Academic Press, 1975.

GRIMM, H. Analysis of short-term dialogues in 5–7 year olds: Encoding of intentions and modifications of speech acts as a function of negative feedback. Paper presented at the Third International Child Language Symposium, London, September, 1975.

GRIMM, H., & SCHÖLER, H. Erlauben—Befehlen—Lassen: Wie gut verstehen kleine Kinder kausativierende Beziehungen? In H. Grimm, H. Schöler, & M. Wintermantel (Eds.), *Zür Entwicklung sprachlicher Strukturformen bei Kindern*. Weinheim, W. Germany: Julius Beltz Verlag, 1975.

GUMPERZ, J. J. Introduction. In J. J. Gumperz and D. Hymes (Eds.), *Directions in sociolinguistics: The ethnography of communication*. New York: Holt, Rinehart & Winston, 1972.

GUMPERZ, J. J., & HYMES, D. Ethnography of communication. *American Anthropologist*, 1964, special issue no. 6.

HAAS, M. R. Men's and women's speech in Koasati. In D. Hymes (Ed.), *Language in culture and society*. New York: Harper & Row, 1964.

HAKUTA, K. The role of word order in children's acquisition of Japanese. Paper presented to the New England Child Language Association, Brown University, Dec. 4, 1976.

HALLIDAY, M. A. K. *Learning how to mean—Explorations in the development of language*. London: Edward Arnold, 1975.

HARKNESS, S. Aspects of social environment and first language acquisition in rural Africa. In C. E. Snow & C. A. Ferguson (Eds.), *Talking to children: Language input and acquisition*. Cambridge, England: Cambridge University Press, 1977.

HAWKINS, P. R. Social class, the nominal group, and reference. *Language and Speech*, 1969, 12, 125–135.

HEIDER, E. R. 'Focal' color areas and the development of color names. *Developmental Psychology*, 1971, 4, 447–455.

———. Universals in color naming and memory. *Journal of Experimental Psychology*, 1972, 93, 10–21.

HEIDER, E. R., CAZDEN, C. B., & BROWN, R. Social class differences in the effectiveness and style of children's coding ability. *Project Literacy Reports, No. 9*. Ithaca, N.Y.: Cornell University Press, 1968.

HESS, R. D., & SHIPMAN, V. C. Early experience and socialization of cognitive modes in children. *Child Development*, 1965, 36, 869–886.

HOLLOS, M. Comprehension and use of social rules in pronoun selection by Hungarian children. In S. Ervin-Tripp & C. Mitchell-Kernan (Eds.), *Child discourse.* New York: Academic Press, 1977.

HOLLOS, M., & BEEMAN, W. The development of directives among Norwegian and Hungarian children: An example of communicative style in culture. *Language in Society,* 1978, *7,* 345–355.

HYMES, D. Formal discussion. In U. Bellugi and R. Brown (Eds.), The acquisition of language. *Monographs of the Society for Research in Child Development.,* 1964, *29* (1, Serial No. 92).

———. Competence and performance in linguistic theory. In R. Huxley & E. Ingram (Eds.), *Language acquisition: Models and methods.* London: Academic Press, 1971. (a)

———. Sociolinguistics and the ethnography of speaking. In E. Ardener (Ed.), *Social anthropology and linguistics.* Association of Social Anthropologists, Monograph 10. London: Tavistock, 1971. (b) (Reprinted in B. G. Blount [Ed.], *Language, culture and society.* Cambridge, Mass.: Winthrop Publishers, 1974.)

———. Models of the interaction of language and social life. In J. J. Gumperz & D. Hymes (Eds.), *Directions in sociolinguistics.* New York: Holt, Rinehart & Winston, 1972.

INGRAM, D. Phonological rules in young children. *Journal of Child Language,* 1974, *1,* 49–64.

JOHNSTON, J. R. The growth of propositional complexity: New data and critique. Unpublished paper, University of California at Berkeley, 1976.

JOHNSTON, J. R., & SLOBIN, D. I. The development of locative expressions in English, Italian, Serbo-Croatian and Turkish. *Journal of Child Language,* 1979, *6,* 529–545.

KAGAN, J., & KLEIN, R. E. Cross-cultural perspectives on early development. *American Psychologist,* 1973, *28,* 947–961.

KEENAN E. O. Conversational competence in children. *Journal of Child Language,* 1974, *1,* 163–183.

———. On the universality of conversational postulates. *Language in Society,* 1976, *5,* 67–80.

KEENAN, E. O., & KLEIN, E. Coherency in children's discourse. *Journal of Psycholinguistic Research,* 1975, *4,* 365–380.

KERNAN, K. T. *The acquisition of language by Samoan children.* Unpublished doctoral dissertation, University of California at Berkeley, 1969.

KERNAN, K. T., & BLOUNT, B. G. The acquisition of Spanish grammar by Mexican children. *Anthropological Linguistics,* 1966, *8,* 1–14.

KIRSHENBLATT-GIMBLETT, B. (Ed.). *Speech play: Research and resources for studying linguistic creativity.* Philadelphia: University of Pennsylvania Press, 1976.

KUCZAJ, S., & MARATSOS, M. What a child *can* say before he *will. Merrill-Palmer Quarterly,* 1975, *21,* 89–111.

KUNO, S. The position of relative clauses and conjunctions. *Linguistic Inquiry,* 1974, *5,* 117–136.

LABOV, W. The logic of nonstandard English. In F. Williams (Ed.), *Language and poverty.* Chicago: Markham, 1970.

LABOV, W., ROBINS, C., & LEWIS, J. *A study of the non-standard English of Negro and*

Puerto Rican speakers in New York City. Final Report, OE–6–10–059. New York: Columbia University, 1968.

LAHEY, M. Use of prosody and syntactic markers in children's comprehension of spoken sentences. *Journal of Speech and Hearing Research*, 1974, *17*, 656–668.

LAKOFF, G. *Irregularity in syntax.* New York: Holt, Rinehart & Winston, 1971.

LAKOFF, R. Language and woman's place. *Language in Society*, 1973, *2*, 45–80. (a)

———. The logic of politeness: Or minding your P's and Q's. *Papers from the 9th Regional Meeting of the Chicago Linguistic Society*, 1973. (b)

LANGE, S., & LARSSON, K. Syntactical development of a Swedish Girl Embla, between 20 and 42 months of age. Part I: Age 20–25 months. Report No. 1 *Project Child Language Syntax, Institutionem för Nordiska Språk*, Stockholms Universitet, 1973.

LEHMANN, W. P. A structural principle of language and its implications. *Language*, 1973, *49*, 47–66.

LEIN, L., & BRENNEIS, D. Children's disputes in three speech communities. *Language in Society*, 1978, *7*, 299–309.

LENNEBERG, E. H. The natural history of language. In F. Smith & G. Miller (Eds.), *The genesis of language: A psycholinguistic approach.* Cambridge, Mass.: MIT Press, 1966.

———. *The biological foundations of language.* New York: John Wiley & Sons, 1967.

———. Of language, knowledge, apes, and brains. *Journal of Psycholinguistic Research*, 1971, *1*, 1–29.

LEONARD, L. B. On differentiating syntactic and semantic features in emerging grammars: Evidence from empty form use. *Journal of Psycholinguistic Research*, 1975, *4*, 357–364.

LINDHAGEN, K. *Semantic relations in Swedish children's early sentences.* Studia Psychologica Upsaliensis 3. Uppsala, Sweden: Acta Universitatis Upsaliensis, 1976.

LUST, B. Conjunction reduction in child language. *Journal of Child Language*, 1977, *4*, 257–287.

LUST, B., & WAKAYAMA, T. The structure of coordination in children's first language acquisition of Japanese. In F. Eckman & A. Hastings (Eds.), *Studies in first and second language acquisition.* Rowley, Mass.: Newbury House, 1979.

LYONS, J. In 'General Discussion' to McNeill's paper, The creation of language by children. In J. Lyons & R. J. Wales (Eds.), *Psycholinguistics papers.* Edinburgh: University of Edinburgh Press, 1966.

MACWHINNEY, B. *How Hungarian children learn to speak.* Unpublished doctoral dissertation, University of California at Berkeley, 1974.

———. Pragmatic patterns in child syntax. *Papers and Reports on Child Language Development* (Stanford University Department of Linguistics), 1975, *10*, 153–165.

———. Hungarian research on the acquisition of morphology and syntax. *Journal of Child Language*, 1976, *3*, 397–410.

———. The acquisition of morphophonology. *Monographs of the Society for Research in Child Development*, 1978, *43* (1–2, Serial No. 174).

MARATSOS, M. How to get from words to sentences. In D. Aaronson & R. Rieber

(Eds.), *Perspectives in psycholinguistics*. Hillsdale, N.J.: Lawrence Erlbaum, 1979.

McCAWLEY, J. D. Prelexical syntax. In R. J. O'Brien (Ed.), *Georgetown University round table on languages and linguistics*. Washington, D.C.: Georgetown University Press, 1971.

McNEILL, D. The creation of language by children. In J. Lyons & R. J. Wales (Eds.), *Psycholinguistics papers*. Edinburgh: Edinburgh University Press, 1966. (a)

————. Developmental psycholinguistics. In F. Smith & G. Miller (Eds.), *The genesis of language: A psycholinguistic approach*. Cambridge, Mass.: MIT Press, 1966. (b)

————. The development of language. In P. H. Mussen (Ed.), *Carmichael's manual of child psychology* (3rd. ed). New York: John Wiley & Sons, 1970.

————. The capacity for the ontogenesis of language. In D. I. Slobin (Ed.), *The ontogenesis of language*. New York: Academic Press, 1971.

McNEILL, D., YUKAWA, R., & McNEILL, N. B. The acquisition of direct and indirect objects in Japanese. *Child Development*, 1971, 42, 237–249.

MENYUK, P. A preliminary evaluation of grammatical capacity in children. *Journal of Verbal Learning and Verbal Behavior*, 1963, 2, 429–439.

MERVIS, C., CATLIN, J., & ROSCH, E. Development of the structure of color categories. *Developmental Psychology*, 1975, 11, 54–60.

MILLER, M. *The logic of language development in early childhood*. Berlin: Springer-Verlag, 1979.

MILLER, W., & ERVIN, S. The development of grammar in child language. In U. Bellugi & R. Brown (Eds.), The acquisition of language. *Monographs of the Society for Research in Child Development*, 1964, 29, (1, Serial No. 92).

MITCHELL-KERNAN, C., & KERNAN, K. T. Children's insults: America and Samoa. In M. Sanches & B. G. Blount (Eds.), *Sociocultural dimensions of language use*. New York: Academic Press, 1975.

————. Pragmatics of directive choice among children. In S. Ervin-Tripp & C. Mitchell-Kernan, *Child discourse*. New York: Academic Press, 1977.

NELSON, K. Structure and strategy in learning to talk. *Monographs of the Society for Research in Child Development*, 1973, 38 (1–2, Serial No. 149).

NELSON, K. Concept, word, and sentence: Interrelations in acquisition and development. *Psychological Review*, 1974, 81, 267–285.

————. Early speech in its communicative context. In F. D. Minifie & L. L. Lloyd (Eds.), *Communicative and cognitive abilities—Early behavioral assessment*. Baltimore: University Park Press, 1978.

NELSON, K. E., CARSKADDON, G., & BONVILLIAN, J. D. Syntax acquisition: Impact of experimental variation in adult verbal interaction with the child. *Child Development*, 1973, 44, 497–504.

NEWPORT, E. L. Motherese: The speech of mothers to young children. In N. J. Castellan, D. B. Pisoni, & G. R. Potts (Eds.), *Cognitive theory* (Vol. II). Hillsdale, N. J.: Lawrence Erlbaum, 1976.

NEWPORT, E. L., GLEITMAN, H., & GLEITMAN, L. R. Mother, I'd rather do it myself: Some effects and non-effects of maternal speech style. In C. A. Ferguson &

C. E. Snow (Eds.), *Talking to children: Language input and acquisition.* Cambridge, England: Cambridge University Press, 1977.

————. A study of mothers' speech and child language acquisition. *Papers and Reports on Child Language Development* (Stanford University Department of Linguistics), 1975, *10*, 111–115.

OMAR, M. E. *The acquisition of Egyptian Arabic as a native language.* The Hague: Mouton, 1973.

PARISI, D., & GIANELLI, W. Language and social environment at two years. Unpublished manuscript, Institute of Psychology, National Council of Research, Rome, Italy, 1974.

PARK, T. The acquisition of German syntax. Unpublished paper, University of Bern, Switzerland, Psychological Institute, 1970.

PHILIPS, S. U. Some sources of cultural variability in the regulation of talk. *Language in Society*, 1976, *5*, 81–95.

PIAGET, J. *The language and thought of the child.* London: Routledge & Kegan Paul, 1926.

POSTAL, P. On the surface verb 'remind.' In C. J. Fillmore & T. D. Langendoen (Eds.), *Studies in linguistic semantics.* New York: Holt, Rinehart & Winston, 1971.

RACKSTRAW, S. J., & ROBINSON, W. P. Social and psychological factors related to variability of answering behavior in five-year-old children. *Language and Speech*, 1967, *10*, 88–106.

RADULOVIC, L. *Acquisition of language: Studies of Dubrovnik children.* Unpublished doctoral dissertation, University of California at Berkeley, 1975.

RAMER, A. Syntactic styles in emerging language. *Journal of Child Language*, 1976, *3*, 49–62.

ROEPER, T. Children's syntax. Unpublished paper, University of Massachusetts, 1976.

ROSCH, E. On the internal structure of perceptual and semantic categories. In T. E. Moore (Ed.), *Cognitive development and the acquisition of language.* New York: Academic Press, 1973.

————. Linguistic relativity. In A. Silverstein (Ed.), *Human communication: Theoretical explorations.* Hillsdale, N. J.: Lawrence Erlbaum, 1974.

————. Universals and cultural specifics in human categorization. In R. Brislin, S. Bochner, & W. Lonner (Eds.), *Cross-cultural perspectives on learning.* New York: Halsted Press, 1975.

RUBIN, J. Bilingualism in Paraguay. *Anthropological Linguistics*, 1962, *4*, 52–58.

————. Sociolinguistics. In J. J. Honigmann (Ed.), *Handbook of social and cultural anthropology.* New York: Rand McNally College Publishing Company, 1974.

SACHS, J., & DEVIN, J. Young children's knowledge of age-appropriate speech styles in social interaction and role playing. *Journal of Child Language*, 1976, *3*, 81–98.

SCHAERLAEKENS, A. M. *The two-word sentence in child language development: A study based on evidence provided by Dutch-speaking triplets.* The Hague: Mouton, 1973.

SCHEGLOFF, E. A. Sequencing in conversational openings. In J. J. Gumperz & D. Hymes (Eds.), *Directions in sociolinguistics.* New York: Holt, Rinehart & Winston, 1972.

SCHIEFFELIN, B. B. Getting it together: An ethnographic approach to the study of the development of communicative competence. In E. Ochs & B. B. Schieffelin (Eds.), *Developmental pragmatics.* New York: Academic Press, 1980.

SCHLESINGER, I. M. The production of utterances and language acquisition. In D. I. Slobin (Ed.), *The ontogenesis of grammar.* New York: Academic Press, 1971.

————. The role of cognitive development and linguistic input in language development. *Journal of Child Language,* 1977, 4, 153-169.

SCOLLON, R. *Conversations with a one-year-old.* Honolulu: University of Hawaii Press, 1976.

SEARLE, J. The classification of illocutionary acts. *Language in Society,* 1976, 5, 1-23.

SHATZ, M. The comprehension of indirect directives: Can two-year-olds shut the door? Paper presented to the Linguistic Society of America, 1974.

SHATZ, M., & GELMAN, R. The development of communication skills: Modifications in the speech of young children as a function of listener. *Monographs of the Society for Research in Child Development,* 1973, 38 (5, Serial No. 152).

SHUGAR, G. W. Text analysis as an approach to the study of early linguistic operations. In N. Waterson & C. Snow (Eds.), *The development of communication.* New York: John Wiley & Sons, 1978.

SINCLAIR-DE ZWART, H. Developmental psycholinguistics. In D. Elkind & J. H. Flavell (Eds.), *Studies in cognitive development.* New York: Oxford University Press, 1969.

————. Sensorimotor action patterns as a condition for the acquisition of syntax. In R. Huxley & E. Ingram (Eds.), *Language acquisition: Models and methods.* New York: Academic Press, 1971.

————. Language acquisition and cognitive development. In T. E. Moore (Ed.), *Cognitive development and the acquisition of language.* New York: Academic Press, 1973.

SINCLAIR, H., & BRONCKHART, J. P. S.V.O. a linguistic universal? A study in developmental psycholinguistics. *Journal of Experimental Child Psychology,* 1972, 14, 329-348.

SLAMA-CAZACU, T. *Dialogue in children.* The Hague: Mouton, 1977. (Originally published in Rumanian in 1961.)

SLOBIN, D. I. The acquisition of Russian as a native language. In F. Smith & G. A. Miller (Eds.), *The genesis of language: A psycholinguistic approach.* Cambridge, Mass.: MIT Press, 1966. (a)

————. Comments on McNeill's 'Developmental psycholinguistics.' In F. Smith & G. A. Miller (Eds.), *The genesis of language: A psycholinguistic approach.* Cambridge, Mass.: MIT Press, 1966. (b)

————. (Ed.). *A field manual for cross-cultural study of the acquisition of communicative competence.* Berkeley: A.S.U.C. Bookstore, 1967.

————. Early grammatical development in several languages, with special attention to Soviet research. Working Paper No. 11, Language-Behavior Research Laboratory, Berkeley, 1968.

————. Questions of language development in cross-cultural perspective. In The structure of linguistic input to children. Working Paper No. 14, Language-Behavior Research Laboratory, Berkeley, 1969.

————. Universals of grammatical development in children. In W. Levelt &

G. B. Flores d'Arcais (Eds.), *Advances in psycholinguistic research*. Amsterdam: North Holland Publishing Co., 1970.

———. (Ed.). *Leopold's bibliography of child language*. Bloomington: Indiana University Press, 1972.

———. Cognitive prerequisites for the development of grammar. In C. A. Ferguson & D. I. Slobin (Eds.), *Studies of child language development*. New York: Holt, Rinehart & Winston, 1973.

———. On the nature of talk to children. In E. H. Lenneberg & E. Lenneberg (Eds.), *Foundations of language: A multidisciplinary approach*. New York: Academic Press, 1975. (a)

———. The more it changes. . . : On understanding language by watching it move through time. In *Papers and Reports on Child Language Development* (Stanford University Department of Linguistics), 1975, *10*, 1–30. (b) (Revised version appears as Language change in childhood and in history. In J. Macnamara [Ed.], *Language learning and thought*. New York: Academic Press, 1977.)

———. Evidence for syntactic change in child speech: Word order in Serbo-Croatian and Turkish. Unpublished manuscript, University of California at Berkeley, 1976.

———. The role of language in language acquisition. Unpublished paper, University of California at Berkeley, 1979.

———. Universal and particular in the acquisition of language. In L. Gleitman & E. Wanner (Eds.), *Language acquisition: State of the art*. New York: Academic Press, in press.

SLOBIN, D. I., & BEVER, T. G. Cross linguistic acquisition of canonical arrangements of word order and inflections (to appear).

SLOBIN, D. I., & WELSH, C. A. Elicited imitation as a research tool in developmental psycholinguistics. In C. A. Ferguson & D. I. Slobin (Eds.), *Studies of child language development*. New York: Holt, Rinehart & Winston, 1973.

SNOW, C. E. Mothers' speech to children learning language. *Child Development*, 1972, *43*, 549–565.

———. Mothers' speech research: From input to interaction. In C. E. Snow & C. A. Ferguson (Eds.), *Talking to children: Language input and acquisition*. Cambridge, England: Cambridge University Press, 1977.

SNOW, C. E., ARLMAN-RUPP, A., HASSING, Y., JOBSE, J., JOOSTEN, J., & VORSTER, J. Mother's speech in three social classes. *Journal of Psycholinguistic Research*, 1976, *5*, 1–20.

SNOW, C. E., & FERGUSON, C. A. (Eds.), *Talking to children: Language input and acquisition*. Cambridge, England: Cambridge University Press, 1977.

STERN, D., JAFFE, J., BEEBE, B.,& BENNETT, S. Vocalizing in unison and in alternation: Two modes of communication within the mother-infant dyad. In D. Aaronson and R. W. Rieber (Eds.), *Developmental psycholinguistics and communication disorders*. New York: New York Academy of Sciences, 1975.

STROSS, B. *Language acquisition by Tenejapa Tzeltal children*. Unpublished doctoral dissertation, University of California at Berkeley, 1969.

TALMY, L. Semantics and syntax of motion. In J. P. Kimball (Ed.), *Syntax and semantics* (Vol. 4). New York: Academic Press, 1975.

————. Semantic causative types. In M. Shibatani (Ed.), *Syntax and semantics* (Vol. 6): *The grammar of causative constructions.* New York: Academic Press, 1976.

TULKIN, S., & KAGAN, J. Mother-child interactions in the first year of life. *Child Development,* 1972, *43,* 31–42.

VAN DEN BROECK, J. Class differences in syntactic complexity in the Flemish town of Maaseik. *Language in Society,* 1977, *6,* 149–181.

VAN DER GEEST, T., GERSTEL, R., APPEL, R., & TERVOORT, B. *The child's communicative competence.* The Hague: Mouton, 1973.

VARMA, T. L. Stage I speech of a Hindi-speaking child. *Journal of Child Language,* 1979, *6,* 167–173.

VENNEMANN, T. An explanation of drift. In C. N. Li (Ed.), *Word order and word order change.* Austin: University of Texas Press, 1975.

WARD, M. C. *Them children: A study in language learning.* New York: Holt, Rinehart & Winston, 1971.

WATSON-GEGEO, K. A., & BOGGS, S. T. From verbal play to talk story: The role of routine in speech events among Hawaiian children. In S. Ervin-Tripp & C. Mitchell-Kernan (Eds.), *Child discourse.* New York: Academic Press, 1977.

WELLS, G. Learning to code experience through language. *Journal of Child Language,* 1974, *1,* 243–269.

WIEMAN, L. A. Stress patterns of early child language. *Journal of Child Language,* 1976, *3,* 283–286.

WILCOX, S., & PALERMO, D. S. "In," "on," and "under" revisited. *Cognition,* 1974, *5,* 245–254.

WILLIAMS, F., & NAREMORE, R. C. Social class differences in children's syntactic performance: A quantitative analysis of field study data. *Journal of Speech and Hearing Research,* 1969, *12,* 778–793.