

Language Development and Education

Children with Varying Language
Experiences

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Language Development in Infancy: Ages 0–3

1.1 Introduction

Language development during these very early years of life, from birth to about 2½ to 3 years, is very dramatic and rapid. From birth to 2½ years is the period usually labeled as infancy, in keeping with Piaget's description of these years (Piaget, 1926). The period starts with the baby, who spends much of the time sleeping, crying and cooing, and ends with the almost-3-year-old child who can engage in conversation with family members, peers and teachers in one or more languages. The home environment is of principal importance during these years since much of the infant's time is spent in that situation. However, over the past few decades care-giving and educational programs for infants have been developing in the U.S., as well as being available in some other countries for some time. Even though some aspects of language development are still very much the product of the familial situation in which a child is born, these programs can impact development as well, and can do so in a positive manner.

The social and economic situation of the family, and the culture and particular language(s) or dialect(s) in the environment seems to affect most markedly two aspects of language development for both monolingual and bilingual learners. These are vocabulary, or what has been termed *lexical development*, and also the use of language or what has been termed *the pragmatics of the language*. For bilingual children pragmatic knowledge includes choice of the appropriate language in the appropriate situations. There are also universal aspects of development regardless of environment. These universals of development also take place in two aspects of development. The first is in the acquisition of structural knowledge (how to combine words in utterances) or what we

and others have termed *semantax*. The term *semantax* is used because knowledge of syntactic structures and semantic relations are both required in comprehending word combinations. The second is in speech perception and production or what has been termed *phonological acquisition*.

We have used both the informal and formal words to identify the aspects of language we will be discussing because both types of words are used in the literature. Again, informal terms are *vocabulary*, *uses of language*, *combinations of words* and *speech perception and production*. The more formal terms are *lexicon*, *pragmatics*, *semantax* and *phonology*. In this chapter variation in development due to variations in the socio-linguistic context in which the child is born as well as universals in development will be discussed with respect to both children raised in English and those raised in two languages simultaneously.

There are developmental anomalies that can be identified early in life. These are sensorial problems such as deafness and blindness. Blindness is evident very early in life. Deafness is usually diagnosed in the United States, Canada, and Western European countries during the first year, although there are still deaf children who are not identified so quickly in some of these countries. Universal screening measures in hospital nurseries have played an important role in this early identification. Hearing loss and visual impairment, however, are usually not identified until later in life.

Some conditions of being developmentally delayed or challenged (earlier termed mental retardation) or cerebral palsied are also identified early. Other developmental anomalies which can affect language development such as learning disabilities and specific language impairment are usually not identified until the next period of development to be discussed, or even later. Because of the early diagnosis of some of these children their language development will be briefly discussed in this chapter.

1.2 Variations in language development: lexicon and pragmatics

There are two factors that are outstanding in causing variations in lexical development and pragmatics with normally developing children. These are socio-economic status, and cultural-linguistic factors. However, some of the milestones in development in these two areas are also universal. There is a very rapid rate of development in vocabulary

over this period, and children quickly learn to use language in ways that conform to the requirements of their society. Children in all environments begin to recognize words at about 10 months of age. This is true of infants in both monolingual and bilingual environments. However, bilingual children evidence crosslinguistic behavior in vocabulary acquisition. Hildegard used the German word *auto* (car) when she spoke both German and English, although she understood both *car* and *auto*. She also invented the word *auto peep-peep* for *airplane*. It was derived from the German word *auto* and the English word *peep-peep* meaning *bird* (Leopold, 1949). One child, when she realized she was using similar meaning words in her two languages, started using doublets, (*bed-lit* Flemish and French) for certain vocabulary items to make sure she would be understood. Eve for a long time would not use the verb *tomber* (fall) in French when speaking French because she had had a bad accident in a French-speaking context. Ronjat's (1913) child, as soon as she heard a word in one language, would request the equivalent in the other. A Spanish-English toddler who, when asked to name a list of pictures in one language, and on another day in the other, did it accurately for all words except when he saw a picture of a frog. During the English test he said *froggie* and during the Spanish test he also said *froggie* but this time used Spanish pronunciation.

There is great variability in bilingual children's vocabulary development. Some studies report that development in the stronger language is comparable to monolinguals that speak that language. Others claim that vocabulary develops more slowly in bilinguals when studied separately for each language and compared to monolinguals. One of the reasons is that bilinguals usually learn vocabulary for each language from different sources (one from mama and one from papa or one from the family and one from caregivers). The contexts provide development of different vocabulary at different rates. However, when adding together the concepts that bilinguals have acquired, as represented by the words they know, their number often exceeds those expressed in the vocabulary of monolinguals. Bilinguals' vocabulary may be "less masterful than a monolingual's in either of their languages, but is surely more extensive in terms of their communicative possibilities than any monolingual" (Bialystok, 2001, p. 62).

Despite variation most children's vocabulary grows rapidly in the first 18 months of life, and even more rapidly after that. There have been studies that have found a vocabulary spurt at about 18 months in many, but not all children. A multitude of factors play a role in this spurt. This multitude includes cognitive factors, phonological abilities,

and variation in personality. These differences among infants can lead to some children experiencing a vocabulary spurt and others acquiring new words more gradually. Any delay among bilinguals in the development of vocabulary in their two languages usually evens out by grade 5. In the case of the heritage language, progress depends on its use in the school and larger society.

Studies of infants learning one language have found that typically at 10 months the average number of words recognized is about 10 words, and at 13 to 14 months is about 50 words. Infants usually produce about 10 words at 14 months and 50 words at 18 months (Menyuk, Liebergott & Schultz, 1995). These are the numbers that can typically be found in many studies of infants learning one language. There are several things that should be observed about these numbers. The first is the rapid rate of development. The second is the fact that words are usually understood before they are produced, although there are some exceptions. The third is that these are average numbers and that there is some degree of variation to be expected. However, having no spoken words at 18 months may be a sign of hearing loss or developmental problems. These conditions are very evident early on and can be easily measured at a very early time in the infant's life.

The second aspect of lexical or vocabulary development that has been studied is the nature of the words that are produced early. In the study cited above (Menyuk et. al., 1995), the children's first words were labels for objects, persons and animals (real or toy). These were the most frequent early words. They also produced words for actions (*kiss, push*), games (*patty-cake* and *peek-a-boo*), some adjectives (*dirty, my*), adverbs (*here, up*), and formulaic expressions (*hi* and *bye*). The frequency with which each category of word is used is a function of two factors: the language being acquired (some languages place greater emphasis on actions than on labels for things) and the cultural importance assigned to each category. An example of the first is that children acquiring Korean will have a higher proportion of verbs than nouns in their early vocabulary. An example of the second is that the use of formulaic expressions may be a function of the social importance given some words such as *please* and *thank you* by the child's culture.

Lexical acquisition is a process of segmenting from a stream of speech a phonological sequence and relating that sequence to an object or event or quality of an object or event. Universal abilities in lexical development are the ability to learn these relations and the ability to store them in memory. The frequency with which a word is used makes it easier for it to be stored in memory and retrieved. Despite the

universals observed in lexical development, the socio-linguistic effects of the input from the environment can be observed early. There is a very direct effect of parental input on the rate of acquisition of words. This is one area of language development that is very dependent on the nature of the interaction between the caregiver and the child.

There are several things that caregivers do that seem to increase the rate at which new words are acquired both early and later in infancy, and these will be discussed in detail in the next chapter. Socio-economic status and culture affect the number of children a family will have. The mother of four children may have less time to engage in these interactions, which seem to speed up the rate of acquisition of words, than the mother of one. These factors may have an effect on rate of acquisition of vocabulary. Birth order affects bilingual learners. Older children do better at developing the family heritage language because they have more direct interaction with parents than younger ones.

Characteristics of mother-child interactions are not solely a function of socio-economic status and culture but also of the individual styles of mothers. This difference in style may be a function of the personality of the mother. Some mothers talk a great deal to their children while others do not. Socio-economic status may also affect the frequency with which mothers verbally interact with their children. Middle-class mothers may engage in teaching interactions more frequently than lower-income mothers. This style may be dictated to some extent by the cultural differences among mothers. In some cultures talking to babies is considered a waste of time; the notion might be that "since babies do not understand what is said to them" it's a waste of time to talk to them. However, babies do learn by observation as well as by direct interaction.

Two other areas of language development are affected by socio-economic status and culture. One is pragmatic development and the other is literacy. We shall discuss pragmatic development in this chapter and emergent literacy will be addressed in the next chapter. Schieffelin and Ochs (1986) discuss, in a book dedicated to studies concerned with pragmatic development, how children learn about their culture through engagement in different interactional routines. A very important aspect of this learning is what an infant finds out about the uses of language in their community. Are they to be quiet and listen in certain situations or to assert themselves by speaking up? Are they very important members of the community, or are they "lowly" members? How will they be allowed to express needs and feelings? In middle-class child-centered communities, there is a great deal of attention paid to

the infant's behavior, and, usually, there is a prompt response to that behavior. This is less the case in some families where there is less attention paid to babies (or at least their language), and responses to their behaviors are not so prompt. Developmental psychologists found, in an early study, that prompt response to crying during the early months of life has an effect on how early crying shifts to other vocalization behaviors (babbling) in the first year of life (Bell and Ainsworth, 1972). Responding promptly to crying does not reinforce crying itself but, rather, vocalization behavior that may precede the all-out screaming that can occur if the infant is not attended to.

The sequence of development of actual forms used to communicate intent are affected by the frequency with which various types of interaction routines are engaged in, and in what language or dialect, by members of the infant's community. Pragmatic knowledge, or how to speak to whom, under which circumstances, develops through communication interaction between the child, caregivers, and others.

Pragmatic development of bilingual learners includes being aware that there are two languages. Fantini (1985) reports that his child could distinguish Spanish and English as two languages (1; 10). He would respond to people speaking Spanish and be indifferent to those speaking English – a language he seldom heard. Infants also learn which language to use with whom and where. They have an unconscious awareness of language differences. Even toddlers learn in what place or context it is allowable to alternate their languages (this is known as code-switching). For example, Fantini's child would frequently code-switch at home but never in pre-school (Fantini, 1978). Often bilingual infants are inflexible about the rules of language choice that they develop based on their experience. A toddler became upset at her uncle, who usually spoke English, because he inserted a short phrase in Spanish (Bergman, 1976). Changes in these rules can leave an infant speechless. For example, a hearing child of deaf parents would not talk to the teacher on the first day of pre-school because he was used to having adults sign when communicating with him.

The various intentions of communication have been described as a variety of speech acts (Grice, 1975). The form of what we say conveys more than just the meaning of the words and the structures in which they are put. For example, a request such as "Can you pass the salt?" is in the form of a question, but really asks for someone to pass the salt rather than simply give an answer. The expectation is that someone *will* pass the salt. Statements such as "That's my book" may be a form of telling or of indicating that the book is mine so don't touch it. Demands

such as "Give me my book!" may be a form asking for action or may imply that someone is doing something they shouldn't do with the book. Questions such as "Is that my book?" may be a way of asking for information or may indicate that the book doesn't belong to anyone else. Speech acts by their form, the context in which they are produced, and the paralinguistic cues (intonation, stress, facial expression, and gesture) attached to the utterance, are the acts that we carry out when speaking.

During infancy some of the basic speech acts of indicating, requesting, questioning and commanding are used. Initially, they are conveyed by use of babble and different patterns of intonation, stress, facial expression, and gesture (the paralinguistic cues listed above). In American English rising intonation on the end of a sentence can convey a question or request. Sharply rising then falling intonation can convey a demand. There are differences among languages in the use of these cues. These intonation contours are used on babble, then words, and then on two-word utterances. The child then learns the particular structures used in the language to convey intent: that is, how to question, command, and state using the appropriate word combinations, as well as appropriate intonation contours.

Particular patterns of paralinguistic cues that are used in a child's culture are carried over to multi-word utterances, and continue even as those utterances become more complex. This is done so that important differences among meanings can be conveyed. Different gestures may be used while indicating the same intent when speaking one language or another. An anecdote in the literature indicates that the gesture used with "bye" was different from the gesture used with "adios" by an English-Spanish speaking child.

It has been noted in a number of studies of child-centered societies that turn-taking behavior between infant and caregiver begins very early (as early as 3 months). The caregiver speaks to the infant and waits for a response. The infant looks at the caregiver and vocalizes, and then the "conversation" continues in this manner. The caregiver cues the behavior by looking directly at the infant and producing words at a frequency that is higher than that used when addressing other adults, and also by stressing words. This seems to be a universal behavior in our and other societies when talking to infants. A typical utterance might be "Hi *baby*" (or baby's name) produced with stress on the word *baby* or the baby's name, and ending with a sharp change in intonation, either rising or falling. Although these types of interactions take place in all societies there may be differences in the timing of responses between infants and adults in one society compared to another.

Turn-taking behavior over the first year of life is composed of these kinds of interactions as well as play interactions such as "patty cake" and "peek-a-boo." In different cultures, other than that of middle-class United States families, somewhat different forms of interaction take place, but in all cultures a special form of interaction is usual between infants and caregivers (Snow and Ferguson, 1977). Communication routines of various sorts are a part of the communication interaction in all cultures. There are several important lessons about communication that appear to be taught and learned in these interactions. One is the role that the addressee (the baby) should play in communication; that is, to take a turn or not, to take it immediately or with some delay. The other is the way in which a particular society expects these interactions to take place in terms of the forms used. As the child's language matures these roles are made clearer by the caregiver. In the beginning the caregiver takes primary responsibility for presenting and guiding communication interactions, but as the child's language matures there are increasing expectations about the amount and nature of participation on the part of the child.

In the discussion of early lexical and pragmatic development we have talked about the effect of the environment on this learning and set aside the kinds of abilities that are required to learn these two systems of language. However, there are particular sensory and cognitive abilities that are needed to acquire these aspects of language. The infant must have the ability to learn the ways in which particular sensory experiences are related to the language used in his or her environment; that is, to relate words and utterances to objects and events in the environment. These are universal, a product of a human's ability to acquire this kind of knowledge. The two aspects of language development that we have labeled universal are phonology and semantax. The development of these two systems are said to be primarily based on the unique perceptual and cognitive abilities of the child learning a language.

1.3 Universals in language development: phonology

The pattern of development of two aspects of language development that do not seem to be remarkably modified by the specific context into which a child is born is the pattern of syntactic and phonological development. Clearly each language or dialect that a child acquires has a specific grammar or set of rules for word combinations, and a specific set of sounds and rules for the combination of these sounds. However, there are universal limitations on the set of rules that any language can

have for both syntax and phonology. In phonology the sounds of a language are only those that humans can hear or see (as in the case of sign language). The sets of rules for the sound combinations that make up words seem to be based more on the biological and cognitive constraints of being human than on the particular society into which an infant is born.

We shall start with phonology because this is what has been termed the surface structure of the language presented to the baby. Therefore, the information in the stream of speech (or stream of gestures) is what reaches the infant first. Although there is overlapping among languages, different languages have somewhat different boundaries between speech sound segments that are distinctive. Therefore, the bilingual child has the task of making distinctions between speech segments in two languages.

The process of phonological acquisition is an orderly process consisting of acquiring a set of speech sound distinctions. This process occurs in a certain order. Infants also acquire a set of speech sound production distinctions, and these are also mastered in a certain order. For example, distinctions are made between plus-voice labial and nasal sounds such as between /b/ and /m/, before distinctions between minus-voice labial and alveolar sounds such as /p/ and /t/ are acquired. Labial sounds such /m/, /b/ and /p/ are articulated clearly before the alveolar sounds /t/ and /d/ are clearly produced. Plus-voice sounds such as /d/ and /g/ are acquired before their minus-voice cognates /t/ and /k/.

Research in this area has shown that early on there are segments of the speech signal that are differentiated based on their supra-segmental differences; that is those differences that occur between different intonation patterns. As described above, an early method of communicating intent is the use of different intonation contours on babbled utterances, then words and then multi-word utterances. Simultaneously, research has shown that infants can distinguish both the supra-segmental information in utterances with different intonation patterns, and between segments or speech sounds in the system. For example, infants can distinguish between the syllable /pa/ and the syllable /ba/ based on their initial segments. Early in infancy infants can make some distinctions among speech sound segments from any language. This makes them ready to acquire the sound system of any language or languages.

By using a modern technique for measuring speech sound discrimination in infants, it has been found that infants use certain acoustic differences in the signal to discriminate between two sounds. Adults also

use these same differences to discriminate between sounds. Another important finding from this research is that regardless of differences in the languages in the environment, infants perceive many speech differences that exist in any language when they are less than 6 months old. This, apparently, is a universal ability. Between the age of 6 and 10 months, they begin to discriminate speech sound differences that exist in their own language or languages much more easily than those that exist in other languages. Bilingual infants respond to the sounds of each language differently, indicating that they perceive the differences. For example, infants can distinguish the slight sound differences between the English and Spanish pronunciation of /pa/ and /ba/ (Bialystok & Hakuta, 1994).

Although speech sound discriminations shift to a set that fits a particular language or languages, in the case of bilinguals the order in which discriminations occur is dictated by the acoustic parameters that are used universally by infants to discriminate. Thus, for both monolingual and bilingual infants voicing distinctions are easier to make in stop sounds (/ba/ versus /pa/) than in continuants (/su/ versus /zu/). This result indicates that there is universal ability to discriminate more accurately among a particular set of speech sounds than among others. As stated, speech discrimination develops from a universal ability to discriminate between a number of speech sound contrasts to a particular set of discriminations. In learning more than one language, the child or adult must be able to discriminate between speech sound segments in both languages. The initial ability to discriminate among many possible speech sounds is part of the infant's competence.

Like speech perception, speech production is composed of a sequence in which speech sound distinctions are realized in a certain order. To begin with the infant produces various kinds of vocalizations (crying, cooing, raspberries, etc.) and then begins to babble. The composition of this babbling appears to be universal until the age of around 12 months when there is some indication of understanding the meaning of some words. Babbling then becomes more representative of the speech sounds of an infant's own language or languages. The repetitive babbling the baby produces requires the ability to move the articulators in a more complex manner than do vocalizations like cooing and raspberries. Babbling occurs when the baby has greater control of the articulators. Bilingual infants babble with sounds in their two languages.

The order in mastery of production of speech sounds seems to continue to be dictated by ease of articulation as well as perceptual

distinctions between sounds. It is easier to say *mama* and *baby* (consonant vowel syllable) than *put* (consonant, vowel, consonant syllable). It is easier to say *batu* than *bottle*, to say *fis* than *fish*, and so on. Speech production begins as a universal process and then sharpens to a particular set of speech sound productions and combinations. However, in this developmental shift, ease of articulation continues to play a role.

Bilinguals develop two sound systems without confusing them. However, when a sound is easier in one language than the other, it is produced first and then used in both languages. For example, Latvian uses apical /r/, while in southern Swedish it is a uvular /r/. This latter sound is more difficult to produce. When a child is learning both languages the apical /r/ is used in all contexts that require an /r/. A further example is from Burling (1959). He reports that his son had differentiated vowels for English and Garo, but used Garo consonants until he was 3-4 years when the family moved to the U.S. For example, the single Garo strident sound /s/ was used in place of the three English phonemes /zh/, /sh/, and /s/. Phonological development influences word production. Lexical items are acquired earlier in one language as compared to the other when they include sounds that are produced earlier. For example, the word *ten* is acquired earlier than the word *diez* because *ten* includes consonants acquired earlier.

As in speech sound perception, somewhat different speech-production abilities must be used when becoming bilingual. Overall speech production seems to be a more difficult task than speech discrimination. The fine movements required of the articulators in speech production are a product of the development of the motor system over time, and of practice. Therefore, the motor requirements of sound making in each of the languages being acquired by the infant make articulating the speech differences between languages a more difficult task than discriminating between the speech sounds of the two languages.

The process of phonological development is both universal and particular. Monolingual infants learn to recognize words produced by their mothers and female speakers earlier than words produced by male speakers. Familiarity of the speech signal is the factor that plays an important role in recognition. Thus, bilingual infants may learn to recognize particular words in one language but not in their other language when these words are spoken frequently by either mother or father. As stated earlier, the more frequently a word is heard the easier it is to store and retrieve it.

1.4 Universals in development: semantax

Semantax development has been described as the acquisition of rules for combining words in utterances to convey different intents. Over the past few decades various researchers have applied different linguistic descriptions to this development. This is because linguists and psycholinguists have developed different syntactic descriptions. We will try in our discussions of semantax acquisition during the various periods of development to make some generalizations about the findings of the developmental period regardless of the variations in description. There are generalizations that can be made regardless of this variation.

The infant's primary task in the acquisition of the semantax of the language of the environment is to learn how that language conveys various intentions. In examining the various intentions that children have early on there appears to be a universal list. This list includes questions, requests, commands, assertions and negation. Some examples of early utterances in English that carry out these intentions can be found in Table 1.1.

Several things can be noted about these early utterances. First, they are primarily two words in length. Second they do convey intentions very adequately, especially when produced with appropriate intonation and stress. Third, they are incomplete. An outstanding finding about semantax development is that utterances increase in length over time. This has been found in many, many studies of this development. In the study referred to earlier (Menyuk et al. 1995) it was found that among the 58 children studied the average sentence length from 22 months to 36 months (approximately 2 to 3 years) increased from 1 to 4 words. The incompleteness of the utterances is due to the omission of what

Table 1.1 Early and later utterances produced by infants

<i>Intentions</i>	<i>Early child language</i>	<i>Later child language</i>
question	What that?	What is that?
request	Wanna ball	I want the ball
command	Gimme doll	Give me the doll!
assertion	That fish	That's a fish
negation	No fish	That's no fish
partial imitation	Idonowatis shoe	I don't know what it is – a shoe
repetition	That uh fish	That's a fish

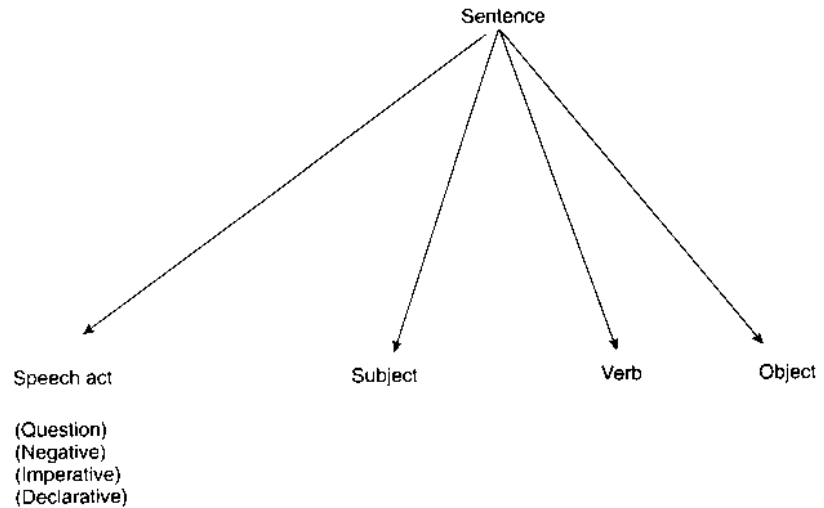


Figure 1.1 Early sentence structure

have been called morpho-syntactic markers. More familiarly, these are articles, tense and number markers, adjectives, copulas, etc. If we expand each of these utterances in accordance with the rules of English the nature of the omissions become clearer. The later examples that contain expansions can also be seen in Table 1.1.

In terms of linguistic descriptions infants acquire knowledge of the basic structure of an utterance as indicated in Figure 1.1. When they are in the one-word transitional stage they may express one structure in the utterance at a time. During the two-word stage they express two of the structures shown, and when in the three-word stage all parts of the utterance.

Bilingual children go through the same stages of semantax development as monolinguals, on the whole, but there is conflicting evidence as to whether bilingual children start with one or two syntactic systems. It is often difficult to determine what system is being acquired because of the limited amount of language that is used early on, and the fact that babies use words in both languages. Most researchers presently believe that infant bilinguals develop two syntactic and morphological systems from the start. The systems develop independently following the order and constraints typical of each language but influenced by the fact that the child is developing two languages (Bialystok, 2001; DeHouwer, 1995).

Structures with the same function may be acquired at different times in each language depending on the level of difficulty of that structure in the language. Sometimes bilingual children will use the easier structure in both languages, as an interim strategy, until they learn the more difficult structure. In other cases acquisition in one language facilitates acquisition in the other. For example, Burling's (1959) child acquired the conditional structure in Garo quite early because it is an easier structure in that language than in English. When the family moved back to the U.S., the child started using the conditional in English before his monolingual English-speaking peers did so.

Once bilingual children have two-or three-word sentences they use the proper word order for each of their languages. If one language is dominant the syntax of that language is also initially dominant. As said, the complexity of the structural features of each language also influences the rate of development of structures within each language. In addition, the functional load (the amount of information conveyed) plays a role. For example, the verb system in Spanish, which has a richer morphological system, and therefore carries a greater functional load than the English system, was acquired more rapidly and used more consistently by a bilingual Spanish-English speaking child (Saunders et al, 1974, p. 58).

1.5 Aspects of infant development specific to bilingualism

"Bilingualism is not a phenomenon of language; it is a characteristic of its use" (Mackey, 1968, p. 554). Use influences relative development of the two languages, the alternation of languages or code-switching, and avoidance or rejection of languages. The rate of language development of bilingual children differs with respect to children and languages. Some children develop at expected rates while others show critical initial delay in general or in particular aspects of language. These latter children usually catch up in both languages in a matter of months provided they receive input in both languages and have no developmental disabilities (Ronjat, 1913; Swain and Wesche, 1975).

Bilinguals develop each language at different rates relative to the amount of use of each of the languages in their environment, and particular characteristics of the languages. Usually, the language of the country in which they are living develops faster, particularly once babies begin to be exposed to language outside the home. The children of three Spanish-English bilingual families raised in California were developing their two languages at comparable rates. One of the

children moved to Mexico for three weeks. Although the family continued using both languages the child became predominantly Spanish-speaking (Padilla & Liebman, 1975). Caldas and Caron-Caldas (2000) report similar switches in proficiency between English and French by their children. The family lived in the United States and spent summers in Canada in a predominantly French-speaking environment.

The pace of language development is affected when children are moved from an environment where one language predominates to another environment in which the predominant language is different (Genesee, Nicolaidis & Paradis, 1995; Leopold, 1949). At age 1;6 (1 year, 6 months) Angelica appeared language-delayed to her relatives. She was used to living in an English-speaking environment in the United States with her father using English and her mother Spanish. For the first two weeks of her first experience in Latin America she refused to speak to anyone except her mother and in private. Once she adjusted to the fact that everybody spoke Spanish, and not only her mother, her public speaking returned.

Language alternation or code-switching is a phenomenon of bilingualism. Switching from one language to the other can take place within a sentence or between sentences. It occurs throughout the life of the bilingual for a variety of reasons. Mixing content words is typical of early bilingual language development because some words are unknown in both their languages. Cognates, or words similar in both languages, may cause hesitation and lead the child to use both words. Caroline, a French-English speaker, used terms from both languages because she was not sure which one she should use. For example she said both /kol/ for *ecole* and /kul/ for *school* (Celce-Murcia, 1978). Level of difficulty of pronunciation sometimes leads to avoidance and code-mixing. For example, Mikihide would code-switch to Japanese for such words as *clown*, *drum*, and *blocks* because of the difficulty Japanese speakers have in pronouncing the initial consonant clusters in these words (Yoshida, 1978).

As bilinguals mature they improve their ability to code-switch, and the functions of code-switching become more sophisticated. Swain & Wesche (1975) report on a child who paraphrased in the other language to make sure that the interlocutor would understand. She said "Un autre, Johnnie. Another one" (p. 18).

Children may not develop, and also reject, one of the languages at any age because they associate it with something unpleasant. A toddler did not like the nursery school she was in, and as a consequence rejected English because she associated it with the school. Children

raised in one-parent, one-language homes may reject the language of the parent who leaves when the parents divorce (Mackey, 1972).

1.6 Deaf children: a special bilingual case

Included among children we are describing as bilingual are deaf children. Deaf children, who are developing normally outside of their deafness, seem to take two paths to language development. Deaf children of deaf parents who use sign in their communication with their children acquire sign language in much the same way as hearing children acquire vocal language. Hearing parents who interact with their children using sign language also have children who follow a similar pattern of sign language development as children of deaf parents. However, hearing parents of deaf children have to learn sign, and may initially be less competent in the use of sign than deaf parents. In that case, the developmental course of sign language acquisition may be somewhat slower. It is important to note that some deaf children of hearing parents who don't use sign language have been found to develop a system of home-grown sign that captures the symbolization of objects and events by gesture. They then go on to express relations among these objects and events using these gestures in a manner that is very similar to the early word combinations of hearing children (Goldin-Meadow, 1982).

We have placed deaf children among bilingual children because these children function in two languages: sign language for face-to-face communication and English for written communication. Some deaf children may develop knowledge of the spoken language of the environment by exposure to total communication (spoken and signed language presented simultaneously) and by learning about written language. In addition, some of these children can also communicate using speech, depending on their degree of hearing loss. They do so, even at an early age, by hearing through amplification and learning how to articulate speech. Some of these children become multilingual by learning not only American Sign Language (ASL) but also English and a heritage language used at home (Gerner de Garcia, 1993).

1.7 Language development of some children with developmental problems

The problems that will be addressed in this part of the chapter are those of developmental delay, blindness, cerebral palsy, and autism. There are

a number of reasons why the discussion of language development during infancy is limited to these populations. One is that these children are usually identified in infancy whereas other types of problems are usually not identified until later in development. With children who are developmentally challenged or delayed, blind, and cerebral palsied, data have been collected about their language development from birth on. Another is that during infancy they may be placed in a group of normally developing children for their education. Finally, there are educational interventions that have been suggested for them with which teachers should be familiar. We begin by talking about the nature of the language problems that these children might have.

The problems of developmentally delayed or challenged children can be twofold. They might not have the cognitive abilities to relate swiftly changing phonetic sequences (words) produced by caregivers to objects and events in the environment. They may then have great difficulty in recoding what they hear into swift articulation sequences. These are abilities that are displayed by children without these developmental problems during the first year of life. Because the impaired children have these difficulties, there can be varying degrees of delay in their lexical development. The degree depends on how delayed they are in both cognitive and physical development.

Subsequently, they are also delayed in semantax development because of the dependence of this development on lexical knowledge, and also the additional memorial requirement and production requirements needed to acquire this knowledge. Where they show little deficit is in trying to take a turn, and in the expression of needs and feelings through paralinguistic means. This is especially the case with Down syndrome children. Autistic children, who may also suffer varying degrees of cognitive development delay, show all the problems in language development that can be observed in developmentally delayed children. In addition, they have great difficulty in relating to others in their environment. Early on, they do not attempt to take a turn in communication. They do not focus on the face of their addressee, and they have little facility in the use of paralinguistic cues to convey needs and feelings.

Cerebral palsied children who are cognitively normal show a picture that is opposite to that of deaf children. They appear to understand what is said to them. They comprehend vocal language, but have enormous difficulty in articulating language. They therefore do not take a turn early on nor can they express needs and feelings using babbling with different intonation contours. Because of their particular

physiological difficulties, they may even be limited in how they can alter facial expression and gesture to communicate intent.

A classic study of the language development of blind children without other developmental anomalies indicates that they develop language slowly but normally (Fraiberg & Adelson, 1973). Initially they are delayed in lexical development because of diminished experience with objects and events but appear to catch up at a later age. They use auditory, spatial, and tactile information to denote objects and events. They have even been found to be very adept at using cross-modal information to acquire vocabulary meanings, although their meanings for words may vary somewhat from sighted children. They can do this because there is information about word meanings that can be derived from the sentence context in which particular words are used. These sentences can partially define the words that are used in them.

Each of the above groups of children exhibits particular difficulties in acquisition of particular aspects of language. Developmentally challenged children have some difficulty in lexical and semantactic development, and, sometimes, phonological problems. Autistic children may have all or only some of these problems, depending on how developmentally delayed they are, and, also, difficulties in pragmatics. Cerebral palsied children have difficulty producing any aspect of language but little difficulty in comprehension unless they are also developmentally delayed. Deaf and blind children develop language "normally". Deaf children acquire sign language if exposed to it. Blind children show an initial delay but appear to catch up. Each of the other groups of children we have discussed has particular difficulties with language because of the nature of their nervous system and cognitive problems.

1.8 A brief summary

The important aspects of development of language during infancy are the following:

1. First, learning to take a turn
2. Then, learning how to take a turn to express intent
3. First, learning phonologically what a word is
4. Then, learning distinctions between words based on meaning, phonology, and basic syntactic role (actor or action).
5. First, learning how to express actor-action relations in the native language

6. Then learning how to express three-part relations (subject + predicate)
7. And then learning how to coordinate and combine subject + predicates

All children who are developing normally acquire these various aspects of language during infancy. Children with developmental problems develop some aspects of the system during infancy but not others. Which aspects they acquire and which they do not depend on the nature of the difficulties they have in processing and recalling linguistic information.

Along with language development there are other aspects of development that also occur. Among the most important of these developmental aspects is cognitive development. This development plays a very important role in language development. These two aspects of development, language and cognition play a very important role in social development. In Table 1.2 below a summary of the two strands

Table 1.2 Cognitive and linguistic developments over the first two years

<i>Approximate age</i>	<i>Cognitive development</i>	<i>Linguistic development</i>
1-4 months	Surprise at object disappearance Object tracking	Speech-non-speech vocalizing Perceptual differentiation of segments & intonation Vocalization interchange
4-8 months	Properties of objects recognized Consolidation and repetition of motor habits Procedures for making interesting things last	Babbling Intonation differences on babbling
8-12 months	Use of signs and symbols to anticipate Observation of causality	Attention to stressed words Response to some words Reduction of babbling to words
12-18 months	Object permanence	Comprehension of two term relations Holophrastic utterances
18-24 months	Spatial & functional arrangements Logical classification	Comprehension of three term relations Two word utterances

of development, cognitive and linguistic, is presented. The cognitive development summarized is based on Piaget's (1970) descriptions.

As can be seen by an examination of Table 1.2, there appear to be many similarities between the two strands of development. For example, consolidation and repetition of motor habits occurs during the same time period that true babbling occurs. Use of signs and symbols to anticipate and attention to stressed words also occur during the same time period. There is no claim being made that one development causes the other to occur, simply that there are similarities in development.

2

Infant Language Education

2.1 The effect of input on language development in infancy

There is a controversy among child language researchers about the effect of input on child language acquisition throughout the years of development. This controversy was the result of arguments about whether language development is the result of the environment shaping behavior, or the result of a child's unique abilities to process language information. This is what has been labeled the "nature-nurture" argument. There has now been a great deal of data collected about the infancy years, and the influences that appear to affect language development during this period. Some of these influences are from the environment. Others are due to the innate abilities of the infant to process various kinds of sensory information. The answer to the nature-nurture argument is that both are involved. The question for educators of infants is what in the input of the environment assists in the development of language in this period.

We will start by discussing what has been found about caregivers' interaction behaviors with infants. Although much of the data collected on this topic was initially in primarily middle-class families in the United States, such behaviors have also been found in other groups. Examples of this are middle-class (SES) families in other countries, and some lower socio-economic-status (SES) families that have a similar orientation toward infants, so-called child-centered families. This probably includes many families that are not living in poverty, and have access to family and other sources of input. In these environments there are several behaviors of caregivers that appear to be special and potentially of importance in helping the infant to learn about language. The following is a list of these behaviors.