Language Files

Materials for an Introduction to Language and Linguistics

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What Is Language Acquisition?

Many people believe that language is what sets humans apart from other animals. Languages are highly complex and sophisticated systems. So how do we humans manage to learn such complicated systems? This chapter addresses that question. The predominant theory assumes that part of our ability to acquire language is innate and that children learn language by "inventing" the rules specific to their language.

When acquiring one or more native language(s), all children go through the same stages of language development: they start by babbling, then learn their first words, go through a so-called one-word stage (during which they can utter only one word at a time), enter the two-word stage, and finally learn the more complex structures of their language(s). Language acquisition is not limited to children; many people learn a second language later in life. However, second-language acquisition can differ from first-language acquisition in many respects.

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8.1 Theories of Language Acquisition

8.1.1 About Language Acquisition

Humans are not born talking. Instead, we typically learn to understand language and to speak during the first few years of our lives, before we even enter kindergarten or grade school. Recall from File 1.2 that language is a communication system consisting of sounds, morphemes, words, and rules for combining all of these. The knowledge of these elements enables people to understand and produce sentences they may never have heard or uttered before. So how does a child acquire this knowledge? If knowing a language were simply a matter of knowing a lot of words, language acquisition would just be a process of figuring out what the words were and memorizing them. Instead, children must acquire a grammar with all its components and rules. How do children learn these rules? For instance, how do they learn that the morpheme *un-* (meaning 'not') attaches to adjectives to form other adjectives having the opposite meanings? How do they learn to compose a sentence from a noun phrase and a verb phrase? Rules, unlike words, are never explicitly stated, so the child cannot just memorize them: he must somehow figure the rules out on his own—a remarkable intellectual feat.

Various theories have arisen that attempt to account for how children acquire language. One theory that has found a lot of support throughout the years is that at least part of the human language ability is innate. In the sections that follow, we will first explore the innateness hypothesis and the evidence for it.

However, innateness alone does not answer all of the questions about how children acquire the specific language that is spoken around them. Again, there are a number of theories that have been proposed for how additional, more specific knowledge is acquired. We will briefly consider two early ones, Imitation Theory and Reinforcement Theory, which have been refuted but which remain part of popular belief. It is therefore important to point out why these theories are inadequate. We will then consider three more current theories of language acquisition: the most influential of them is the Active Construction of a Grammar Theory. This theory is the one that most linguists believe today. However, there are a number of influential competing theories. Of these, we will introduce Connectionist Theories and Social Interaction Theory.

8.1.2 The Innateness Hypothesis

The first theory of language acquisition that we will consider asserts that language ability is innate in humans. That is, humans are genetically predisposed to acquire and use language (though not any particular language, of course). This theory claims that babies are born with the knowledge that languages have patterns and with the ability to seek out and identify those patterns. Some theorists have even claimed that humans have innate knowledge of some core characteristics common to all languages, such as the concepts of 'noun' and 'verb.' These basic features shared by all languages are called linguistic universals, and the theoretically inborn set of structural characteristics shared by all languages is known as
universal grammar. No one knows exactly what the contents of universal grammar are, though this is currently an active area of research in linguistics.

The claim that linguistic ability is innate in humans is supported by, for example, the work of biologist Eric Lenneberg. He studied animal behavior and developed a list of characteristics that are typical of innately determined behaviors. Innate behaviors are present in all normal individuals of a species, whereas learned behaviors are not. Walking, for instance, is a behavior for which humans are genetically predisposed (that is, humans learn to walk as a natural part of development, without being explicitly taught), but playing the piano or riding a bicycle must be specifically taught. Is talking like walking, or is it like playing the piano?

To answer this, let's examine Lenneberg's characteristics of biologically controlled behaviors. If language acquisition has each of these characteristics, we can safely assume that it is a genetically triggered behavior.

(1) Lenneberg's characteristics of biologically controlled behaviors:\(^1\)
1. The behavior emerges before it is necessary.
2. Its appearance is not the result of a conscious decision.
3. Its emergence is not triggered by external events (though the surrounding environment must be sufficiently "rich" for it to develop adequately).
4. Direct teaching and intensive practice have relatively little effect.
5. There is a regular sequence of "milestones" as the behavior develops, and these can usually be correlated with age and other aspects of development.
6. There is likely to be a "critical period" for the acquisition of the behavior.

Consider the first criterion. In what sense is language necessary? From a biological standpoint, language is a behavior that has encouraged the survival and predominance of the human species. Each individual needs the ability to use language in order to take care of other basic needs. But children ordinarily begin to speak a language between the ages of twelve and twenty-four months, long before their parents have stopped providing them with the necessities of life. So language is a behavior that, like walking, emerges well before children have to fend for themselves.

As for the second and third criteria, language is neither the result of a conscious decision nor triggered by external events. Children decide whether or not they want to learn to play baseball or checkers, but they do not make a conscious choice about acquiring a native language; it's just something that all children do. Also, language is not learned as a result of something special triggering the learning. It is not taught the way (for example) piano playing is taught. Think about this: if you grew up hearing brilliantly played piano music, would you automatically pick up that skill the way we all seem to have automatically picked up language? Clearly not. While it is true that a child has to be exposed to language—this is what is meant by the environment being "rich"—it is not the case that a child's caretakers need to make a special effort to teach the child to speak. Other than hearing normal conversation and being spoken to, the child needs no special external stimulus to begin the process of acquiring language.

But doesn't intensive teaching help children learn language? Surprisingly, it does not seem to have much of an effect. Children don't necessarily perceive (or correct!) their mistakes just because an adult points them out (see Section 8.1.4).

Language acquisition also exhibits Lenneberg's fifth characteristic of having a sequence of "milestones" or identifiable stages associated with its development. Specifically, children master linguistic skills in a certain order. You will read about these stages in more detail in subsequent files. Although there is some variability in the milestones and the ages

\(^1\)From Aitchinson (1976), adapted from Lenneberg (1967).
at which children achieve them, there is a path of developmental stepping stones that all children follow.

Lenneberg further proposes that innate behaviors have a critical period associated with their emergence. The term critical period describes a period of time in an individual's life during which a behavior—in this case language—must be acquired; that is, the acquisition will fail if it is attempted either before or after the critical period.

The critical period for language acquisition is assumed to extend from birth to approximately the onset of puberty. During this time, a child needs exposure to language in order to develop the brain structures necessary for language acquisition. If a child is not exposed to language during all this time, then the child will never acquire normal language skills and, in fact, may not acquire language skills at all. If a child has acquired a native language during the critical period and starts learning a second language before the age of twelve, the child will likely achieve native competence in this second language as well. However, if the second language is learned after about age twelve, the child is likely never to acquire complete native competence in the language.

How can we tell whether there really is a critical period for first-language acquisition? To prove this, we would have to show that language skills could not be acquired normally or even at all if the learning began after the critical period had ended. This could be accomplished by depriving a child of linguistic input for the early years of life, but obviously it would be highly unethical to submit a child to such treatment. However, there are at least two sources of information available to linguists which support the claims that there is a critical period for first-language acquisition.

First, evidence for the critical period hypothesis comes from children who, owing to unfortunate circumstances, were exposed to little or no language during their early lives. These children were either neglected by their caretakers (neglected children) or grew up in the wild, often with animals (feral children). When these children were rescued or discovered, researchers attempted to help them acquire language. The success of these attempts depended largely on the age at which the children were discovered. We will consider two such cases, outlined in (2) and (3).

(2) Genie was found in 1970 when she was nearly fourteen years old. She had been abused and isolated since the age of twenty months. When first discovered, Genie was completely silent. Thereafter her language acquisition was extremely slow, and although she did learn to speak, her speech was abnormal. She was able to memorize many vocabulary items, but her expressions were formulaic, as in "what is X and give me X." She never learned grammar.

(3) Isabelle was discovered in 1937 at the age of six and a half. Her mother was deaf and could not speak. Isabelle's grandfather had kept Isabelle and her mother isolated but had not otherwise mistreated them. Isabelle then began lessons at The Ohio State University, and although her progress was at first slow, it soon accelerated. In two years her intelligence and her language use were completely normal for a child her age.

At first sight, the cases of Genie and Isabelle seem to provide good evidence for the critical period hypothesis: Genie, discovered after the supposed critical period was over, never learned language; Isabelle, discovered before the end of the period, did. But evidence from feral or neglected children is problematic. Such children are usually traumatized or are not socialized before they are rescued or found. So it is possible that it is not the lack of exposure to language but rather a larger trauma that prevents them from acquiring language properly. For example, Genie had been beaten by her father for making noises, so her difficulty with language could have had multiple causes. The case of Isabelle is problematic for the opposite reason: prior to being found, she was locked in a room with her mother, and although her mother could not speak, they developed a rudimentary personal gesture sys-
tem to communicate. Thus, Isabelle did have some exposure to a communication system during the early years of her life. It is possible that Isabelle acquired language not because she was discovered at an earlier age than Genie, but because she had access to a rudimentary communication system. Likewise, it is possible that Genie didn’t learn language not because she was discovered at an older age than was Isabelle, but rather because she had been abused.

Stronger evidence supporting both the innateness of language and the critical period hypothesis for first-language acquisition can be found in instances of deaf children and adults who were initially raised in environments without access to signed language input. One particularly illustrative example is the case of the deaf population of Nicaragua in the late twentieth century. At the end of the 1970s, following Nicaragua’s civil war, the country founded a new state school for the deaf. In the late 1970s and early 1980s, deaf children and adults were able to come together in a way that had not been possible earlier in the country’s history. Most children and adults arrived at the schools with idiosyncratic and rudimentary homesign gesture systems. Homesign gestures are communicative gestures (a form associated with a meaning) that are invented by deaf children and the people with whom they routinely interact in cases where a signed language is not made available. Homesigns may represent the names of individuals such as family members and the names of common activities (‘eat’) or common objects (‘house’) that are often referred to. However, a homesign system is not a language: it is an extremely limited lexicon without a grammar. Thus the students arrived at the school with backgrounds that involved social interactions and communication and that were normal in every way except that they did not include exposure to language.

Soon, combining the homesigns that the students brought with them as well as some newly created signs, the children at the school created a pidgin (a type of simplified language—see File 11.3) to communicate with each other. After the pidgin was created by the first students at the school, younger children came and were exposed to the pidgin. Without instruction, and based only on their exposure to the pidgin used by their older peers, these younger children created Idioma de Signos Nicaragense (ISN), which is a full-fledged language with a complex system of grammatical rules.

The creation of ISN has been cited as evidence for the innateness of language, because within two or three generations of students, children created a new and complete language. Because they did not have exposure to any other linguistic system, all of the grammatical principles that were developed in ISN must have arisen through some innate ability in the children to create a complete grammatical system.

However, those students who first came to the school as older children, and who had not acquired any linguistic communication system prior to the time that they enrolled but had otherwise grown up in a caring environment, did not perfectly acquire this new language: in adulthood, their language use still resembles the pidgin, and there are inconsistencies in their use of phonological, morphological, and syntactic principles of the sort that one would not see in a native speaker of the language. This evidence supports the critical period hypothesis because the older children came from backgrounds similar to those of the younger children, yet they were unable to fully acquire language.

Support for a critical period for second-language acquisition involves comparing the acquisition of a second language by children and by teenagers and adults. Teenagers and adults have more difficulty learning languages than do children. People who have learned a language as an adult almost always have a foreign accent, indicating that they have not acquired the phonological rules of the second language perfectly. They may also find syntactic and other rules difficult to master completely. Children, however, can acquire a second (or third) language easily and completely as long as they have sufficient input from those languages. This ability tapers off around the age of puberty. However, the idea of a
critical period for second-language acquisition is very controversial. Critics argue that there are (rare) cases of adults learning a second language perfectly. Furthermore, it is possible to learn a second language at any age. Rather than a critical period, there seems to be a steady decline in how well one can learn a second language. Finally, factors such as teaching methods, motivation, identity, dedication, utility, and so on, play a role in how successfully a second language is learned, and these factors may also change with age, confounding studies looking for critical period effects in second-language acquisition.

Another concern related to the critical period hypothesis is that different aspects of language acquisition may behave differently relative to the critical period. For example, many feral or neglected children gain the ability to learn vocabulary and to understand others' speech, but they are not able to learn to use syntax productively. Second-language learners are able to learn large amounts of vocabulary and frequently master the language's syntax, but they rarely master the phonological system. This suggests that a critical period may exist for certain aspects of language (syntax in first-language acquisition and phonology in second-language acquisition), but not for others.

Despite our lack of a complete understanding of the acquisition process, we can conclude that language acquisition shows characteristics of being an innate human behavior.

8.1.3 Imitation Theory

Moving on to how the specifics of language are acquired, we will first consider Imitation Theory, which claims that children learn language by listening to the speech around them and reproducing what they hear. According to this theory, language acquisition consists of memorizing the words and sentences of some language. The idea that acquiring a language is a process of learning to imitate the speech of others is at least partly true. Since the connection between the way a word sounds and what it means is largely arbitrary (see File 1.4), children cannot guess what the words of their target language are. They must hear the words used by other speakers and then reproduce or "imitate" them. This theory also helps explain the fact that children learn the language that is spoken around them by parents, caretakers, and others, regardless of what the language of their ancestors may have been. Thus a Korean child, for instance, will speak Korean if raised in a Korean-speaking environment, but Arabic if raised in an Arabic-speaking environment. In other words, a child's genetic makeup has nothing to do with which language the child will acquire.

Unfortunately, however, Imitation Theory explains little else of what we know about language acquisition. Children's speech differs from adult norms: it is full of "errors" of many types. A two-year-old might say *nana* for adult *banana*, a three-year-old might say *Mommy tie shoe*, and a four-year-old might say *hitted* or *goed* rather than *hit* or *went*.

The last example clearly cannot be a case of imitation because children would not have heard an adult say *hitted* or *goed*. Rather, it seems that the child who says *hitted* has a rule in her internal grammar which adds *-ed* (pronounced as /d/) to a verb to make it past tense. The child has not mastered the fact that there are exceptions to this rule, such as the use of *hit* rather than *hitted* in the past tense. However, Imitation Theory fails to acknowledge that a child has any sort of internal mental grammar that includes rules for combining words and other elements in systematic ways, so it would incorrectly predict that a child would not produce words like *hitted*.

The most serious fault of Imitation Theory is that it cannot account for how children and adults are able to produce and understand new sentences. If children learned only by imitation, the only way they could understand a sentence is if they had heard it before. However, we know that there are an infinite number of possible sentences in any language, and speakers (even children) are able to understand and produce completely novel utterances.
8.1.4 Reinforcement Theory

Reinforcement Theory asserts that children learn to speak like adults because they are praised, rewarded, or otherwise reinforced when they use the right forms and are corrected when they use wrong forms. However, the claim that parents and other caretakers frequently correct their children's grammatical mistakes and praise their correct forms is unfounded. Such corrections seldom happen, for although parents often do correct their children, their corrections generally have more to do with the accuracy or truth of a statement than with its grammatical form. Thus, *The dog wants to eat* may receive the response *No, the dog doesn’t want to eat* if the dog has just finished its dinner, whereas the sentence *Robin goed to school today* may receive the response *Yes, he did if Robin did go to school that day.*

Reinforcement Theory is also contradicted by the fact that even when adults do try to correct a child's grammar, the attempts usually fail entirely. Consider the following conversation:

(4) Child: Nobody don’t like me.
Mother: No, say "nobody likes me."
Child: Nobody don’t like me.
(repeated 8 times)
Mother (now exasperated): Now listen carefully! Say, "Nobody likes me."
Child: Oh! Nobody don’t likes me.

Notice that although the child does not form negative sentences in the same way the adult does, the child’s utterances follow a pattern just as the adult’s do. The child’s way of forming negative sentences involving *nobody* is completely regular: every such sentence contains *nobody* + a negative auxiliary verb, such as *Nobody can’t spell that or Nobody won’t listen*. If the child produces a variety of such sentences, then he or she must possess a rule that defines this pattern, but the rule is not the same as the one in the adult’s grammar. Reinforcement Theory can explain neither where the child’s rule came from nor why the child seems impervious to correction. (Incidentally, the conversation sample above is a good example of how direct teaching does not help children to acquire language—recall the criteria for innate behaviors in Section 8.1.2.)

8.1.5 Active Construction of a Grammar Theory

The Active Construction of a Grammar Theory, the most influential theory of language acquisition, holds that children actually invent the rules of grammar themselves. The theory assumes that the ability to develop rules is innate, but that the actual rules are based on the speech children hear around them; this is their input or data for analysis. Children listen to the language around them and analyze it to determine the patterns that exist. When they think they have discovered a pattern, they hypothesize a rule to account for it. They add this rule to their growing grammar and use it in constructing utterances. For example, a child’s early hypothesis about how to form the past tense of verbs will be to add an allomorph of *-ed*. All past tense verbs would then be constructed with this rule, producing forms such as *holded* and *eated* alongside *needed* and *walked*. Notice that at this point the child would have already learned the rules of when the regular past tense ending is pronounced /ɛd/, /ɹ/, or /ɜd/. When children discover that there are forms in the language that do not match those produced by this rule, they modify the rule or add another one to produce the additional forms. Eventually, the child has created and edited his or her own grammar to the point where it matches an adult’s grammar. At this point, there are no significant discrepancies between the forms produced by the child and those
produced by the adults. Clearly, the child has a complete working grammar all along, even before it is essentially adultlike. The child uses this grammar to produce utterances; when those utterances differ from adult speech, they are reflecting the differences in the two grammars.

Within this framework, children's mistakes are expected to occur and to follow non-random patterns. This is because the child is forming utterances according to grammatical rules even though the rules are often different from those that adults use. It is important to note also that active reinforcement by adults about a child's mistakes is not enough to help the child "discover" what is wrong with his or her own utterances; the child must make the connection in his or her own time.

8.1.6 Connectionist Theories

Connectionist theories of language acquisition assume that children learn language by creating neural connections in the brain. A child develops such connections through exposure to language and by using language. Through these connections, the child learns associations between words, meanings, sound sequences, and so on. For example, a child may hear the word *bottle* in different circumstances and establish neural connections every time the word is heard. Such connections can be to the word itself, to the initial sound /b/, to the word *milk*, to what the bottle looks like, to the activity of drinking, and so on. Eventually, all of these connections become the child's mental representation of the meaning and the form of the word (see Section 1.4.7). Connections can have different strengths, and language acquisition involves adjusting the strengths of the connections appropriately. The strength of a connection is dependent on input frequency. For example, if a child hears the word *bottle* more frequently in connection with *milk* than with *water*, then the connection between *bottle* and *milk* will be stronger than that between *bottle* and *water*. Thus, instead of developing abstract rules, according to connectionist theories, children exploit statistical information from linguistic input. Such theories assume that the input children receive is indeed rich enough to learn language without an innate mechanism to invent linguistic rules (though note that the ability to make statistical generalizations must be innate).

To get a better feel for how this theory works and how it differs from other theories, let's look at the acquisition of the past tense of verbs again. The Active Construction of a Grammar Theory assumes that children produce words like *goed* or *growed* because they have formed a rule that tells them to add -ed to a verb to form the past tense. Connectionist models assume that the child merely exploits statistical information about forming past tenses. Thus, the child says *goed* and *growed* because the existence of forms like *showed*, *mowed*, *towed*, and *glowed* makes this pattern statistically likely.

Evidence for the exploitation of statistics as opposed to the development of abstract rules comes from experiments in which, for example, children create the past tense of nonsense verbs. For instance, when asked to complete the phrase "This man is fringing; Yesterday, he _____", many children create nonsense irregular forms such as *frang* or *frought* instead of the nonsense regular form *fringed*. Such data pose a problem for the Active Construction of a Grammar Theory, but the data can be explained in terms of a connectionist model. If children invent rules and then learn exceptions to the rules, they should produce *fringed* as the past tense of *fring* because it is not one of the learned exceptions. However, if children exploit statistical data, they would be expected to sometimes produce irregular forms because of their exposure to words like *sing*, *ring*, or *bring*.

Of course, it is possible that children both develop rules and also make use of statistical data. That is, it is possible that acquisition of grammatical rules proceeds according to a hybrid model and that children actively construct a grammar by establishing and exploiting neural connections.
8.1.7 Social Interaction Theory

Social Interaction Theory assumes that children acquire language through social interaction, with older children and adults in particular. This approach holds that children prompt their parents to supply them with the appropriate language experience they need. Thus, children and their language environment are seen as a dynamic system: children need their language environment to improve their social and linguistic communication skills, and the appropriate language environment exists because it is cued by the child. Like those who advocate the Active Construction of Grammar Theory, social interactionists believe that children must develop rules and that they have a predisposition to learn language. However, social interaction theorists place a great deal of emphasis on social interaction and the kind of input that children receive, instead of assuming that simply being exposed to language use will suffice. According to this approach, the ways in which older children and adults talk to infants play a crucial role in how a child acquires language. In many Western societies, speech to infants (so-called child-directed speech) is slow and high-pitched and contains many repetitions, simplified syntax, exaggerated intonation, and a simple and concrete vocabulary (see File 8.4). Consider the following examples from Berko Gleason and Bernstein Ratner (1998):

(5) See the birdie? Look at the birdie! What a pretty birdie!

(6) Has it come to your attention that one of our better-looking feathered friends is perched upon the windowsill?

When pointing out a bird on the windowsill to an infant, adults and older children are likely to say something like (5) in a slow, high-pitched voice with exaggerated intonation. In addition, they are likely to point at the bird. The social aspect of the interaction involves sharing an observation with the child. All of this helps the child to decode what the speech might mean. No adult would point out a bird to an infant by uttering something like (6). Social interactionists believe that the way adults speak to children and interact with children is crucial to acquiring language.

Of course, one of the problems with this theory is that children eventually do acquire the ability to utter and understand sentences like those in (6). While child-directed speech may be crucial early on, it is unclear how long a child must be exposed to it. Furthermore, the characteristics of child-directed speech vary from culture to culture, and we do not at this point know what specific aspects of such speech might, in fact, be crucial.

At the same time, this theory is also not completely incompatible with either of the two previous theories. That is, the types of social interactions that infants have may, in fact, be invaluable to language acquisition, which may develop through neural connections and involve the hypothesizing of particular grammatical rules on the part of the child.
8.5 Scenarios of Bilingual Language Acquisition

In a country like the United States, where the vast majority of people consider themselves to be monolingual, it may come as a surprise that the majority of people in the world are bilingual (speakers of two languages) or multilingual (speakers of more than two languages). But when exactly can a person be called bilingual? Definitions of bilingualism are very diverse, ranging from having native-like control of two languages (Bloomfield 1933) to being a fluent speaker of one language and also being able to read a little in another language (Macnamara 1969). Neither of these extreme definitions is satisfactory. We certainly wouldn't want to call a person who speaks English and can read a little French a bilingual. One reason is that while spoken or signed language is primary, written language is secondary (see File 1.3). Thus, a bilingual should be a person who is able to speak or sign two languages, not just read them. The main problem, however, with both definitions mentioned above bears on the central issue: how well does someone need to know two languages to be called bilingual? Bloomfield’s definition excludes too many people: for example, second-language learners who are fluent in their second language, but speak with a foreign accent. Macnamara’s definition, on the other hand, includes too many people. A better definition lies somewhere in between. For the purposes of this file, we will define being bilingual as being able to hold a conversation with monolingual speakers of two different languages.

There are different ways that a person may become bilingual. Some people learn more than one language from birth (simultaneous bilingualism) or begin learning their second language as young children (sequential bilingualism). Some children grow up with two or more languages from birth because their parents speak two different languages at home or because their parents speak a language at home that is different from the local language. This is often the case for children when one or two parents are immigrants. Children may also grow up bilingually from birth or early childhood because they grow up in a bilingual or multilingual society, for example, in parts of Belgium or Switzerland, where multiple languages are commonly heard and controlled by most speakers. Finally, children may become bilingual because the language used at school is not their native language. This is the case in many countries where many languages are spoken. Instead of offering instructions in all the languages natively spoken, a neutral language or one that is perceived to be advantageous is chosen as the language of instruction (refer to File 13.2). This is frequently the case in African and Asian countries.

Another way of becoming bilingual is to learn a second language not as a young child but rather later in life. This is called second-language acquisition and is the process used, for example, by immigrants who come to a new country as adults and have to learn the local language. Other late learners are often people who learned a second, third, etc., language through formal education and/or travel.

These different ways of becoming bilingual tend to have different characteristics and results; we will discuss each of them in turn below.
8.5.2 Bilingual First-Language Acquisition

When children acquire two languages from birth or from young childhood, we usually talk of bilingual first-language acquisition. Any child who receives sufficient input from two languages will grow up fully bilingual in the sense that Bloomfield meant of having native control over two languages. Research by Barbara Pearson and her colleagues in 1997 suggests that children will become competent speakers of a language only if at least 25% of their input is in that language. In addition, not just any input will do, as was discussed in File 8.4. Children learn language by interacting with speakers of that language. It’s not enough, for example, to sit a child in front of a Spanish television program and expect him to learn Spanish. The child will learn Spanish only if interacted with in Spanish.

One typical feature of bilingual children’s speech is language mixing or code-switching: using more than one language in a conversation or even within a phrase. Mario, a boy who grew up mostly in the United States and whose parents spoke Spanish to him, frequently used both English and Spanish in the same sentence, as in the following examples (Fantini 1985):

(1) *Sabes mi* school bus *no tiene un* stop sign.
   “You know, my school bus does not have a stop sign.”

   *Hoy, yo era line leader en mi escuela.*
   “Today, I was line leader at school.”

   *Ponemos cranberries y marshmallows y después se pone el glitter con glue.*
   “Let’s put cranberries and marshmallows and then we put the glitter on with glue.”

The fact that bilingual children mix their languages has led some early researchers to believe that they speak neither of their languages really well. It has even been suggested that mixing in young children shows that their languages are fused into one system. That is, children have not yet figured out that they are using two different languages. However, more recent research has shown that bilingual children can differentiate their languages by the time they are four months old—long before they utter their first words. Laura Bosch and Nuria Sebastián-Gallés (2001) found that four-month-old Spanish-Catalan bilingual infants could distinguish between even these rhythmically similar languages. Since infants can differentiate two rhythmically similar languages like Spanish and Catalan, it is reasonable to hypothesize that four-month-old bilingual infants would also be able to differentiate languages that are rhythmically different (because this would be an easier task). However, more research in this area is needed to confirm this hypothesis.

If bilingual children can differentiate their languages well before they utter their first word, why do they mix languages? Let’s take a closer look at Mario’s utterances in (1). We can see that Mario does not just randomly mix English and Spanish. Instead, he seems to use some English nouns in what are basically Spanish sentences. Furthermore, all of the English nouns he uses are related either to his school experience in the United States (*school bus, line leader, etc.*) or to typically American items (*cranberries, marshmallows, etc.*). It’s then possible that he knows these words only in English or that he uses them more frequently in English. Even if we assume that Mario does not know these words in Spanish, we certainly can’t conclude that he’s unable to differentiate between Spanish and English.

Alternatively, Mario may mix his languages in the examples above because he knows that the people he is talking to understand both languages. Children are very sensitive to which languages their listeners can understand. If they believe that their listeners speak, say, only Spanish, they would try to stick to Spanish. But if they believe that their listeners know, for instance, English and Spanish, there is no reason for them to make an effort to stick to one language in particular, since many bilingual children grow up in an environment in which adults also frequently code-switch.
Finally, children's language mixing can be a strategy to avoid words that are difficult to pronounce. For example, Werner Leopold (1947) observed that his German-English bilingual daughter Hildegard preferred to use the German da [da] instead of English there [ðeə], but the English high [haɪ] over hoch [hɔxt] because they were easier for her to pronounce.

8.5.3 Bilingual vs. Monolingual First-Language Acquisition

Let's go back to the idea that Mario may not know words like stop sign or school bus in Spanish. Does this mean that his language acquisition is lagging behind monolingual children of his age? Some early researchers have suggested that learning two languages from birth would exceed the limitations of the child's brain. They assumed that bilingual children would lag behind their monolingual peers, and, indeed, studies from that time indicate that bilingual children's language skills are inferior to those of monolingual children.

During the 1980s, however, researchers began reevaluating the earlier studies and found that many of them were methodologically flawed. For example, some studies compared monolinguals' language skills with bilinguals' skills in their non-dominant language. The studies conducted in the 1980s suggested that, on the contrary, growing up bilingualally is advantageous. In particular, studies found that bilingual children develop some metalinguistic skills, such as understanding arbitrariness (see File 1.4), earlier than monolingual children.

Current studies on bilingual language acquisition display a more balanced view. On the one hand, bilingual children may lag behind their monolingual peers in certain specific areas, like the vocabulary of one of their two languages (after all, they have to learn twice as much), but they have usually caught up by the time they reach puberty. This doesn't mean that they can't communicate their ideas; instead, it usually just means that there are some concepts that are easier to express in one language than the other. On the other hand, growing up bilingually may have some cognitive advantages, as mentioned above; and, of course, the end result is the ability to communicate fluently in two different languages. Other than that, bilingual children go through the same stages of language acquisition as monolingual children of each of the languages.

It should be mentioned that there are cases of problematic bilingual language acquisition. Sometimes children who grow up bilingually do not become functional bilinguals, usually because they are confronted with a bad attitude toward bilingualism, or one of their languages is not valued in their community and its use is discouraged. Thus, it is not the limitations of a child's brain or capabilities that cause problems in bilingual language acquisition, but rather a negative social environment: any child exposed to two languages in a positive social environment can grow up to be fully bilingual.

8.5.4 Second-Language Acquisition

As mentioned above, not every bilingual speaker acquired both languages during childhood. Many people become bilingual later in life, after already acquiring their native language. This is called second-language acquisition. While children exposed to two languages from birth or early childhood will usually grow up mastering both languages as do monolingual native speakers of those languages, people learning a language later in life usually attain different levels of competence. Some people achieve native-like competence in a second language, but the vast majority of second-language learners do not. Speakers may learn the syntax and vocabulary of a second language perfectly (although even this is rare), but few learn the phonological system that well. Thus, most second-language speakers speak with a foreign accent (refer to the discussion in Section 3.3.3; also see accent in File 10.1).

It seems that non-native forms, as part of either the morpho-syntax or pronunciation, can become fixed and not change, even after years of instruction. This is called fossilization.
There are a number of individual differences that contribute to how well a learner learns a second language. First, the learner's native language plays an important role. A Dutch speaker will have an easier time learning English than, for example, a Chinese speaker, because Dutch and English are closely related languages with similar grammatical and phonological systems, while Chinese and English are not. By the same token, a Burmese speaker will have a much easier time learning Chinese than a Dutch speaker. A speaker's native language also plays a role in second-language acquisition because having learned one language influences the subsequent learning of another language. This is called transfer. Transfer can be positive or negative, depending on whether it facilitates or inhibits the learning of the second language. For example, having a native language, regardless of which language it is, facilitates the learning of a second language because we already know much about how language works. In fact, evidence from featural children and deaf children suggests that it's not possible to learn a language later in life without having already learned a native language earlier (see File 8.1).

But a learner's native language can also inhibit learning the second language. For example, we learn the phonological system of our native language early in life. In fact, by the time we are twelve months old, we perceive speech in terms of the phonemic categories of our native language (see File 8.2). This specialization for the sounds of our native language interfere with learning the phonological system of a second language and is one of the reasons why second-language learners usually have a foreign accent. Let's consider the sounds [p] and [ph]. In English, aspirated [pʰ] occurs only syllable-initially (e.g., in pin, pot, etc.), whereas unaspirated [p] occurs only after [s] (e.g., in spin, spot, etc., as was discussed in File 3.1). Most native speakers of English are not even aware they are using two "different kinds" of /p/ in their speech. In Thai, on the other hand, [p] and [pʰ] are allophones of different phonemes, namely, of the phonemes /p/ and /pʰ/. That is, [p] and [pʰ] are not restricted in their distribution as they are in English. Instead, both [p] and [pʰ] can occur syllable-initially in Thai, as in the words [paɪ] to go and [pʰai] danger, for example. Negative transfer occurs when native English speakers learning Thai apply English phonological rules to the Thai words and incorrectly pronounce both to go and danger as [pʰai]. Negative transfer is not limited to pronunciation; it may affect all levels of second-language acquisition.

A number of other factors influence how successfully a learner will learn a second language. They include the learner's age, working memory, motivation, and context. Motivation plays a particularly large role in the level of fluency second-language learners will achieve. Some learners are perfectly content speaking a second language with a foreign accent and making an occasional mistake here and there. A study by Theo Bongaerts and his colleagues (1997) found that Dutch second-language learners of English who had achieved native competence in English were highly motivated learners and considered not having a foreign accent to be one of their goals.

Finally, the context in which speakers learn a second language and the amount of exposure to the second language also play a role. For example, the highly competent learners in Bongaerts and colleagues' study all learned English in an immersion setting where English was the language of instruction and learners were constantly exposed to native speakers of English. Trying to learn a second language later in life in a situation where you receive forty-five minutes of instruction a day, five days a week, may not result in the same high degree of native-like fluency.
The study of how children learn to speak has proved to be one of the most fascinating, important, and complicated branches of language study in recent years. The fascination of the subject stems from the natural interest people take in the developing abilities of young children. Its importance lies in the way that language acquisition research can assist our understanding of language as a whole, and also in the many applications of this research – especially in the field of child language handicap (Part VIII). The complexity arises from the enormous difficulties that are encountered as soon as anyone attempts to establish and explain the facts of language development, especially in the very young child.

Part VII begins, therefore, with a discussion of some of the approaches and methods that have been used to find out about children's language – diaries, recordings, experiments, tests, profiles, and other procedures. The result of this enquiry has been an explosion of information about many details of language acquisition, and an increased awareness of such general issues as the nature of developmental stages, and the relationship between speech production and comprehension in the course of early learning. Several major theoretical accounts of child language acquisition have also been proposed in recent years, and these are reviewed in the final part of this section.

Following these general observations, sections 39–43 examine different aspects of the language acquisition process in somewhat greater detail. We begin with the early development of vocalization in infants during the first year of life, and the associated emergence of the skills of speech perception and speech interaction. Around 1 year of age, a more clearly defined linguistic ability is apparent, and it then proves possible to begin analysis in conventional linguistic terms, using the distinctions recognized in Parts III and IV. We look separately at phonological, grammatical, semantic, and pragmatic development, with particular reference to studies of preschool children.

Once children arrive in school, they meet a completely fresh range of factors that influence their language development. The final section of this Part therefore reviews recent and contemporary educational approaches to the question of how linguistic skills should be fostered in school. We begin with a discussion of the issues that arise in relation to spoken language (or "oracy"), proceed to a review of the corresponding approaches that have been proposed in relation to the teaching of reading, and conclude with an account of current thinking about the most neglected area of all, the child's developing awareness of written language.
ANCIENT QUESTIONS
Child language study has exercised its fascination on
rules and scholars alike for
over 2,000 years, especially in
relation to such questions as
the origins and growth of lan
guage (§49). Many felt that the
study of linguistic develop
ment in the child (language
acquisition) was impossible.
Some interesting similarities
have been noted between the
voicetracts of infants and
non-human primates (§49),
but there is still a great gap
between the emotional
expression of infants and the
propositional content of adult
language, which studies of
acquisition have not yet been
able to bridge.

Anakor the Great (1542-1605).
He believed that speech arose
from people listening to oth
ers, and that children who
were isolated from human
contact would not be able to
speak. A contemporary Per
sian account, the Al-Mirab
al-Kabir (1545), takes up the
story:

As someone who heard this
appeared to deny it, he,
in order to convince them, had a
several (marriage) built in a
place which civilized sounds
did not reach. The newly born
were put into that place of
experience, and honest and
active guards were put over
them. For a time, tongue-tied
wet-nurses were admitted
there. As they had closed the
door of speech, the place was
called the Gang Malah (the dumb-house).

On the 9th August 1582 he went
out to hunt. That night he
stayed in Faizabad, and next
day he went with a few spe
cial attendants to the house
of experiment. No cry came
from that house of silence nor
was any speech heard there.
In spite of their four years,
they had no part of the tais
man of speech, and nothing
came out except the noise of
the dumb.

From (H. Beveridge, 1897-1910, pp. 581-2.)

PARENTAL DIARIES
The earliest approach to the
study of child language was
made in a diary study, by the
German philosopher Dietrich Tiede
mann (1748-1803), who kept a
diary study, by the German
philosopher Dietrich Tiede
mann (1748-1803), about his
son, Friedrich, kept between
1782 (when the child was 6
months) and 1784. On
February 18th he showed the
first sign of surprise and
approval; so far his only
expressions of pain, anger,
impatience, and pleasure
had been crying, wirthing,
laughing. Now, when he saw
something new and delight
ful, he greeted it with the
exclamation 'ach!' - the nat
ural sign of admiration...

After all manner of exer
cise in the production of
noises, and after the acquisi
tion of some skill in using the
speech organs variously, he
commenced, on the 14th of
March, to articulate con
sciously and to repeat
sounds. His mother said to
him the syllable 'Ma', he
gazed attentively at her
mouth, and attempted to
imitate the syllable...

A few words he pro
nounced clearly on Novem
ber 27th and knew also their
meanings exactly; these were
'poor' and 'Mama'...

On the 8th of March, at
the sight of an object, he
would repeat its name if he
frequently heard it, but
he still found it hard to pro
nounce words of several
syllables.

On the 30th of July he
finally succeeded in uttering
complete, though short sen
tences, for example. There
he stands. Tere lie lies...

(February 14, 1784) This is
as far as my observations go.
Other business prevented
me from their continuation. I
greatly desire that others
may make similar ones, it
will then be possible to
determine various things by
comparison, and that impor
tant branch of psychology,
too little explored as yet,
which studies the develop
ment of human faculties
- the foundation of pedagogy
- will make appreciable
progress thereby.

(From C. H. Muntz and S. K. Langer, 1927.)
RESEARCH PARADIGMS
There is no single way of studying children's language. Linguistics and psychology have each brought its own approach to the subject, and many variations have been introduced to cope with the variety of activities in which children engage, and the great age range that they present. Two main research paradigms are found.

Naturalistic sampling. A sample of a child's spontaneous use of language is recorded in familiar and comfortable surroundings. One of the best places to make the recording is in the child's own home, but it is not always easy to maintain good acoustic quality, and the presence of the researcher or the recording equipment can be a distraction (especially if the proceedings are being filmed). Alternatively, the recording can be made in a special setting, such as a research centre, where the child is allowed to play freely with toys while talking to parents or other children, and the observers and their equipment are unobtrusive.

A good quality, representative, naturalistic sample is generally considered an ideal datum for child language study. However, the method has several limitations. These samples are informative about speech production, but they give little guidance about the way children understand what they hear around them. Moreover, the samples can contain errors, and they can easily miss some important features of a child's linguistic ability. They may also not provide enough instances of a developing feature to enable the analyst to make a decision about the way the child is learning. For such reasons, the description of samples of child speech has to be supplemented by other methods.

Experimentation. The methods of experimental psychology have been widely applied to child language research. The investigator formulates a specific hypothesis about children's ability to use or understand an aspect of language, and devises a relevant task for a group of subjects to carry out. A statistical analysis is made of the subjects' behaviour, and the results provide evidence that supports or falsifies the original hypothesis; or, at least, suggest ways in which the experiment might be better designed next time!

Using this approach, as well as other methods of controlled observation, researchers have come up with many detailed findings about the production and comprehension of groups of children. However, it is not easy to generalize the findings of these studies. What may obtain in a carefully controlled setting may not apply in the rush of daily interaction. Different kinds of subjects, experimental situations, and statistical procedures may produce different results or interpretations. Experimental research is therefore a slow, painstaking business; it may take years before researchers are convinced that all variables have been considered and a finding is genuine.

Sampling: how much? how often? Those who do research in child language are always being pulled in two directions, when they have to decide questions of sampling. They can choose to follow a single child, or a small group of children, in an intensive way, taking relatively large samples at frequent intervals. Or they can select a large number of children and take smaller samples at less frequent intervals. Both procedures have their strengths and limitations. The former enables the researcher to plot the gradual emergence of linguistic patterns from absence to acquisition; but it is unable to provide confident generalizations about these patterns, given the small number of children examined. The latter permits such generalizations, but is likely to miss points of significant progress that fall between the sampling intervals.

Depending on the method used, therefore, sampling intervals can range from every few days, especially when the children seem to be undergoing a period of rapid progress, to 3 months or more. The major research programme launched by the American psychologist Roger Brown (1925-) in the 1960s sampled three children for at least two hours a month—in one case, for half an hour a week. By contrast, a British programme of the 1970s, directed by the psycholinguist Gordon Wells (1935- ), involved 128 children, and took a half-hour sample from each child every three months. Even larger numbers of children are sometimes used, but this restricts the research to the study of a very small set of linguistic features. It should be borne in mind, too, that large samples do not guarantee the occurrence of important features. In the Wells project, a search for passive verbs (e.g., was kicked) in 18,000 utterances from 60 children who were recorded three times between 3 and 3½ years of age, produced next to nothing: 12 children used such a verb a total of 19 times!

Half-hour samples are a popular measure, though often people use a sample consisting of a fixed number of utterances (e.g., 100 utterances taken from some point in a recording session). Whatever the length, samples need to be as representative as possible of the child's language, and researchers therefore need to anticipate the influence of such factors as time of day, the nature of the setting, and the presence of observers (p. 233).

LONGITUDINAL VS CROSS-SECTIONAL
Studies that follow the progress of a set of variables over time in the same set of children are known as longitudinal studies. Most child language research is of this form. However, it is also possible to build up a 'composite' picture of language emergence, by studying a set of variables in a group of children of different ages, using different subjects at each age. This is known as a cross-sectional study. Combined designs are also possible.
TALKING DOLLS

How do we know when young children are able to recognize errors in what people say? One ingenious research technique made use of a doll that was able to "talk." A toy panda, about 75 cm tall, was brought into a nursery where children (aged between 3 and 5) were playing. They were told that this was a very special kind of panda, because he was learning to talk. He wanted the children to come and see him one at a time, and talk to him so that his speech would improve. They were all very willing to help.

In the test sessions, two experimenters were involved. One stayed in the room with the panda and the child, playing with various materials. The other was outside the room, observing the session through one-way glass and speaking into a microphone linked to a loudspeaker in the panda's head. The children were trained to press a bell when the panda said something they thought was right, and to press a buzzer when he was wrong. The panda would also ask the children why he was wrong, if they did not spontaneously give a reason. The children adapted to this situation enthusiastically, and so the technique was used in several kinds of study. It proved to be a very good way of testing sentence comprehension and conversational skills. In one of the comprehension studies, for example, a car was placed in each of four garages, and a fifth car was left outside. The doll then said such sentences as "all the garages have cars in them" (which was true) and "all the cars are in the garages" (which was false). The children's reactions then showed how far they were able to grasp the distinction between the sentences.

The main reason for developing this method was to reduce the extent to which a child might be influenced by an adult experimenter, or overawed by an artificial test situation. It proved to be an extremely successful technique, and it has since been used in studies of speech production as well as of comprehension and interaction. By putting the children 'in charge', researchers are able to elic it a natural speaking style, and to observe several structures (such as the use of commands) that are often avoided when talking to adults. (After P. Lloyd & M. Donaldson, 1976.)

Chu-Chu and child exchanging names at the beginning of a session.

TASK EFFECTS

Setting up an experimental task so that it does not hinder a child's performance is never easy. Even the simplest tasks can hide snags that make it difficult or impossible to interpret a response correctly. Where the child is seated, how the toys are arranged, and how the experimenter gives the instructions can all cause problems. The apparently simple instruction to "Put the car behind the lorry," to test knowledge of "behind" illustrates some of the difficulties.

1. The child is sitting opposite the experimenter. Should she put the car behind the lorry from her own point of view, at X, or from the experimenter's, at Y, or should she use her knowledge of the real world, and place the car at the back end of the lorry, at Z, as it would appear when travelling along the road? A failure to respond, or a wrong placement, may reflect only her confusion, not her lack of knowledge of what the preposition means.

2. Now the child is alongside the experimenter, but there is still a problem. The tail end of the lorry is facing her. So she is still faced with the problem of what the experimenter intends.

3. A ball does not have a front and a back end, so there should be no difficulties from the real world here. Unfortunately, it has been placed near the back of the table, so that the child has difficulty reaching behind it. Also, she might think that the car will fall off the table if she places it so far away. Such factors could once again lead her to act indeterminately, or to put the car somewhere else, thus giving a misleading impression about her linguistic knowledge.
INDIVIDUAL DIFFERENCES

There has been a natural emphasis in language acquisition research on the universal characteristics of development. However, there are many individual differences which also need to be taken into account. Children may vary in their rate and strategies of learning for a variety of reasons, to do with such factors as sex, intelligence, personality, and social background (§6-10). There are "fast developers" and "slow developers." But it has not yet been possible to generalize about the way these variables affect the course of language development.

Popular notions nonetheless exist. For example, it is widely believed that girls learn to speak more rapidly than boys, and several researchers have noticed a trend for girls to be linguistically superior, at early ages. But there is negligible evidence for a definite effect. Samples tend to be very small, and measures selective. Such differences as are found seem to be due more to the effect of the different ways in which boys and girls are brought up, rather than to physiological or genetic factors. Parental style and expectations seem to be far more important.

Observer effects

The presence of research observers in a recording session may affect the mother more than the child! But it has taken some time for this point to be appreciated by researchers.

One of the first findings about maternal language concerned the presense of grammatical expansions, which are often used when talking to a child. Mothers would often provide a gloss for their child's utterance which added elements that were not present:

CHILD: Go car.
MOTHER: Yes, daddy's going in his car.

In Brown's research project (p. 229), it was found that expansions appeared in nearly a third of mother's interactions, in early stages of learning. Their function seemed to be as a teaching aid for the child, in that the mothers were providing their children with a target that was slightly ahead of their performance. However, in Well's project (p. 229), very few expansions were found. How is this discrepancy to be explained?

The main factor is thought to be the presence or absence of observers. In Brown’s approach, there were always researchers present; in Well’s there were no researchers present, and the mother was alone with the child most of the time. Wells made use of radio microphones and a sampling programme in which 90-second recordings were made automatically at 20-minute intervals throughout the day, so that the parent would be unaware when a recording was taking place. With these parents, the frequency of expansions increased only when another adult was present. This suggests that the main function of expansions is to act as a gloss for the benefit of an observer, and not, as was first thought, solely to provide the child with extra grammatical information.

CHILDES

Modern methods of computational analysis and data processing could well revolutionize the study of language acquisition. One of the main problems facing the child language researcher is that the collection and transcription of data samples is extremely time-consuming. An hour of recorded conversational data can take 10 or more hours to transcribe, check, edit, and type. It has therefore been proposed that, once scholars have made their transcriptions, the data should be made available to the wider research community through the use of an international computer network. This is the main aim of the Child Language Data Exchange System (CHILDES), which was established in 1984 by an international group of language acquisition researchers.

It is now possible to transcribe tape-recorded data directly into computer files, where the material can be edited, analysed, and duplicated. Files of data can thus be shared between researchers who have computer access to the central database, making a considerable saving of time and money. The process could also lead to a raising of standards of data analysis, because errors can be readily checked and corrected, and extra analytical observations incorporated. However, a sharing of resources is possible only if researchers can agree on a set of policies and standard conventions for obtaining, transcribing, and storing child language data in a computerized form. These are currently under discussion. It will take some years before all the methodological problems can be solved, but the outlook for child language research is extremely promising.

TECHNOLOGICAL REVOLUTIONS

The invention of the audio tape recorder led to the first revolution in child language research methodology. The invention of the video recorder may well prove to be a second. Each technique has its strengths and limitations.

The audio tape recorder is the more widely used means of obtaining child language data. Audio tapes and equipment cost less, and the technique is relatively unobtrusive. If radio microphones attached to the child's clothes are used, the actual recorder need not even be in the same room, and recordings of excellent quality can be made.

However, an audio recording gives no information about what a child is doing. Gestures and facial expressions, which are often used to supplement speech or show comprehension, are not available. It may not be possible to interpret sentences clearly on an audio tape. Put that over there makes very little sense. It is possible to get round these problems to some extent, by having an observer present who makes notes on what is happening. But this is far inferior to a video record of the event, which can be viewed several times by different researchers.

With video, the tiniest features of non-verbal behaviour, and the role of the accompanying context, can be transcribed and analysed. It is thus a frequently used tool in modern child language research — especially in studies of comprehension and parent-child interaction. But video studies are never straightforward: lighting, camera angles, sound recording, the intrusion of the camera, and other matters need to be carefully thought out if an informative picture is to be obtained.

'Fell down', says the child — a totally obscure utterance with out the picture.
PRODUCTION, COMPREHENSION, IMITATION

"Acquiring a language" involves two distinct skills: the ability to produce speech in a spontaneous way; and the ability to understand the speech of others. The former is relatively easy to study: all we have to do is turn a tape recorder on, and analyse what comes out. Research into speech comprehension is far more difficult because we need to take into account not only what is spoken to the child, but the situation in which it is uttered, and the child's prior knowledge of the world. In one study, a 2-year-old child was observed to respond correctly when his mother said, at bedtime, "Go and get your pyjamas out of the drawer in your bedroom." But it is not at all clear, without a careful investigation, which parts of this sentence the child had understood — it might simply be the word pyjamas, said at bedtime, and coupled with the knowledge of where pyjamas are kept, was enough to produce the appropriate action.

What is the relationship between production and comprehension when it comes to language learning? There are three possibilities. The traditional, commonsense view is that comprehension always precedes production: children need to understand a word or grammatical construction before they use it. However, there is increasing evidence that this simple relationship does not always obtain. Production may precede comprehension, or the two processes may be so intimately connected that they develop in parallel. There is certainly a great deal of evidence to show that children produce a word or construction without having a full understanding of it. Doggie, says one young child, pointing to a car. He got hat on, says another, and then later says Take that hat on off — as if hat were a noun.

This kind of thing happens frequently from around age 2 — and, indeed, it could be argued that our readiness to use linguistic forms we do not fully understand stays with us throughout life.

It has also been recognized that imitation is a distinct skill in language acquisition — many children spend a great deal of time imitating what their parents have just said. This is most noticeable when new sounds or vocabulary are being learned, but it has been shown that imitation may be important in the development of grammar too. Often, children imitate sentence patterns that they are unable to produce spontaneously, and then stop imitating these structures when they start to use them in their speech — suggesting that imitation is a kind of 'bridge' between comprehension and spontaneous production.

ELICITED IMITATION

The technique of 'elicited imitation' can be used to find out what a child knows about language. The experimenter reads out a sentence to be repeated. If the child makes any changes, these can indicate aspects of the language which are still being learned or not yet acquired. One 2½-year-old child, 'Echo', had the following imitations:

1. The owl eats candy and the owl runs fast. Echo: Owl eat candy and he run fast.
2. The owl who eats candy runs fast. Echo: Owl eat a candy and he run fast.

The first imitation suggests that Echo understands the meaning and structure of the sentence coordinate (p. 95). She uses the same strategy in the second case, which suggests that she cannot yet cope with the more difficult sentence containing a subordinate clause introduced by who, though she does follow its meaning. (After D. I. Simon & C. A. Welch, 1967.)

PLOTTING THE COURSE OF LANGUAGE DEVELOPMENT

A popular metaphor in child development is to talk of 'milestones' — the age at which a child takes a significant step forward in behaviour (such as sitting, crawling, standing). The metaphor does not work so well when it comes to language: too much happens too quickly. There is simultaneous development of sounds, grammar, meaning, and interaction skills; and significant progress can be made on several different fronts in a matter of days. It is thus no easy matter to quantify the amount of language learned by a child within a particular period (as we need to do in deciding what counts as 'normal' development), and in plotting departures from this norm (p. 281).

Several attempts have been made to find important single measures of development, within particular linguistic levels ($13$) — notably the notions of sentence length and vocabulary size, both of which steadily increase as children grow older. Such indices can provide general indications of progress, but they have serious limitations. Two sentences may consist of exactly the same number of words, morphemes, or syllables, and yet be very different in terms of their syntactic complexity: I see a cat and a dog and a cow is much simpler than I see a cat that is next to a dog, though both are the same length. Similarly, two children may both have vocabularies of 100 words, yet differ in the range of words used and in their meanings: one child may use cold to mean only 'cold weather', whereas the other may use it to apply to water, food, and grim facial expressions. In these circumstances, a single score, based on one developmental parameter, conceals more than it illuminates: it needs to be supplemented by a wider and more detailed series of measures that take into account the qualitative range of linguistic features used by the child.

After several years of acquisition research, in which many measures have been investigated, it is possible to isolate certain broad trends with some confidence, and these are the subject matter of §§39-43. It appears that most children do follow the same general path as they acquire sounds and grammatical structures, and a few common trends are evident in the learning of vocabulary and pragmatics ($24$) also. However, there seems to be considerable variation in rate of development, and there are many individual differences in the order of acquisition of specific features that have to be taken into account (p. 233). The study of these variations is a major emphasis of current child language research.

VOCABULARY SIZE

The average vocabulary size of ten samples of children between the ages of 1 and 6. (After M. E. Smith, 1952.) To interpret such totals, a great deal needs to be known about the method for defining 'words' used by the investigator (p. 104). Were go, goes, going, etc. counted as one word or several? Were words of radically different meaning (e.g. bear 'animal' barry) counted separately? Decisions of this kind have a major influence on the totals reached at in a word count.
Measuring the mean length of utterance (MLU) has been one of the most widely practised indices of grammatical development in young children. The total number of utterances in a sample is divided by the total number of words (in some procedures) or morphemes (in others) (p. 90).

The best-known measure, which uses morphemes, was devised by Roger Brown (p. 231) in the 1960s. The diagram shows the way Brown's three subjects gradually ship between MLU and the range of constructions found. Grammatical complexities are recognized, based on a division of the language continuum into intervals of 0.5 morphemes. There is a good correlation between MLU and age, but the relationship between MLU and the range of constructions found in a sample is less clear. Predicting the grammatical complexity of a speech sample from length alone is by no means straightforward, especially as length increases. (R. Brown, 1973.)

**LANGUAGE TESTS**

A language test takes a selection of linguistic features—such as a set of nouns, grammatical constructions, or items of vocabulary—and establishes whether a child has knowledge of them, in either production or comprehension. The child's responses are scored, according to some predetermined criterion. As language ability progresses, higher scores are obtained.

Tests are widely used in the field of language handicap (§46), because they provide a convenient means of identifying children who require special teaching or therapy, and a way of monitoring the success of intervention. But they are often misleading in fundamental research in child language, because they deal with only a fraction of the linguistic features being acquired. By their nature, tests have to be short and highly selective. They can give useful background information about a child's general level, but they cannot provide the detailed account of the emergence of linguistic skills that acquisition research requires.

A task from a language test is illustrated below. The Screening Test of Spanish Grammar is based on the language of the Mexican and Puerto Rican populations in the U.S. and is designed to identify Spanish-speaking children who do not demonstrate native syntactic proficiency commensurate with their age. In the comprehension part of the test, the examiner reads a sentence to the child, who has to point to the appropriate picture. The illustration shows four pictures used to test knowledge of a contrast involving two prepositions. El perro está detrás de la silla and El perro está debajo de la silla ("The dog is behind/underneath the chair"). The remaining two pictures are 'decoys.' (From A. S. Toronto, 1973.)

**PROFILES**

An extract from a profile of grammatical development used in the study of language handicap and based on a synthesis of findings from the study of normal language acquisition. The abbreviations in this procedure, known as LARSP (Language Assessment, Remediation and Screening Procedure), refer to different grammatical constructions, e.g.

- SVO = "Subject + Verb + Object"  
- PRN = "Preposition + Noun" (§16).

The totals refer to the number of instances of a category used by a child in a sample of spontaneous speech.

Profiles permit a more detailed impression of the range of structures used than can be obtained from a test, and enable the analyst to plot emerging strengths and weaknesses in several areas of grammar simultaneously. In the present case, the child has begun to use constructions at Stage II (typically age 18 months-2 years), but there are several gaps, and he has not yet made much progress in Stage III. As the child in the sample had in fact reached the chronological age of 2 years 3 months, he would seem to be a somewhat slow developer, as far as the acquisition of grammar is concerned. (D. Crystal et al., 1993.)
IMITATION

Language acquisition has long been thought of as a process of imitation and reinforcement. Children learn to speak, in the popular view, by copying the utterances they hear around them, and by having their responses strengthened by the repetitions, corrections, and other reactions that adults provide. In recent years, it has become clear that this principle will not explain all the facts of language development. Children do imitate a great deal, especially in learning sounds and vocabulary; but little of their grammatical ability can be explained in this way. Two kinds of evidence are commonly used in support of this criticism— one based on the kind of language children produce, the other on what they do not produce.

The first piece of evidence derives from the way children handle irregular grammatical patterns. When they encounter such irregular past-tense forms (p. 90) as went and took, or such plural forms as mice and sheep, there is a stage when they replace these by forms based on the regular patterns of the language. They say such things as wented, taked, mice, mouses, and sheeps. Evidently, children assume that grammatical usage is regular, and try to work out for themselves what the forms 'ought' to be—a reasoning process known as analogy (p. 332). They could not have learned these forms by a process of imitation. Adults do not go around saying such things as wented and sheeps!

The other kind of evidence is based on the way children seem unable to imitate adult grammatical constructions exactly, even when invited to do so (elicited imitation, p. 234). The best-known demonstration of this principle in action is the dialogue reported by the American psychologist, David McNeill (1935- ), where a child proved unable to use a pattern, even though the parent presented the correct adult model several times:

CHILD: Nobody don’t like me.
MOTHER: No, say ‘Nobody likes me.’
CHILD: Nobody don’t like me.

(Eight repetitions of this dialogue.)

MOTHER: No, now listen carefully: say ‘Nobody likes me.’
CHILD: Oh! Nobody don’t likes me.

The child, at this point in its learning of grammar, was clearly not ready to use the 'single negative' pattern found in this dialect of English. Such examples suggest that language acquisition is more a matter of maturation than of imitation.

INNATENESS

The limitations of an imitation/reinforcement view of acquisition led in the 1960s to an alternative proposal, arising out of the generative account of language ($65). It was argued that children must be born with an innate capacity for language development: the human brain is 'ready' for language, in the sense that when children are exposed to speech, certain general principles for discovering or structuring language automatically begin to operate. These principles constitute a child's 'language acquisition device' (LAD).

The child uses its LAD to make sense of the utterances heard around it, deriving from this 'primary linguistic data' hypotheses about the grammar of the language—what the sentences are, and how they are constructed. This knowledge is then used to produce sentences that, after a process of trial and error, correspond to those in adult speech: the child has learned a set of generalizations, or rules, governing the way in which sentences are formed. This sequence of events can be summarized in the following way:

There have been many differences of opinion over how best to characterize LAD. Some have argued that LAD provides children with a knowledge of linguistic universals ($14), such as the existence of word order and word classes; others, that it provides only general procedures for discovering how language is to be learned. But all of its supporters are agreed that some such notion is needed in order to explain the remarkable speed with which children learn to speak, and the considerable similarity in the way grammatical patterns are acquired across different children and languages. Adult speech, it is felt, cannot of itself provide a means of enabling children to work out the regularities of language for themselves, because it is too complex and disorganized (p. 52). However, it has proved difficult to formulate the detailed properties of LAD in an uncontroversial manner, in the light of the changes in generative linguistic theory that have taken place in recent years; and meanwhile, alternative accounts of the acquisition process have evolved.

COGNITION

The main alternative account argues that language acquisition must be viewed within the context of a child's intellectual development. Linguistic structures will emerge only if there is an already-established cognitive foundation—for example, before children can use structures of comparison (e.g. This car is bigger than that), they need first to have developed the conceptual ability to make relative judgments of size. Several early child language scholars maintained that such a relationship exists, but the most influential account stems
from the model of cognitive development proposed by the Genevan psychologist Jean Piaget (1896–1980).

Several controlled studies have been carried out investigating the link between the stages of cognitive development proposed by Piaget and the emergence of linguistic skills. The links have been most clearly shown for the earliest period of language learning (up to 18 months), relating to the development of what Piaget called ‘sensori-motor’ intelligence, in which children construct a mental picture of a world of objects that have independent existence. For example, during the later part of this period, children develop a sense of object permanence—they will begin to search for objects that they have seen hidden—and some scholars have argued that the ability to name classes of objects (i.e. to give them a comparably ‘permanent’ linguistic status) depends on the prior development of this cognitive ability. However, it is difficult to show precise correlations between specific cognitive behaviours and linguistic features at this early age. The issue is a highly controversial one, which increases in complexity as children become linguistically—and cognitively—more advanced.

**INPUT**

For many years, in the wake of the innateness hypothesis, the importance of the language used by adults (especially mothers) to children was minimized. But studies of ‘motherese’, as it came to be called in the 1970s, showed that maternal input is by no means as complex and fragmentary as proponents of innateness theory claimed it to be. Many parents do not talk to their children in the same way as they talk to other adults. Rather, they seem capable of adapting their language to give the child maximum opportunity to interact and learn. Several of these adaptations have been noted (after C. A. Ferguson, 1977).

- The utterances are considerably simplified, especially with respect to their grammar and meaning. Sentences are shorter: one study showed that the average length of maternal sentences to 2-year-olds was less than four words—half that found when the mothers talked to other adults. There is a more restricted range of sentence patterns, and a frequent use of sentence ‘frames’, such as Where?—or That’s a—. The meanings are predominantly ‘concrete’, relating to the situation in which mother and child are acting.

- There are several features whose purpose seems to be clarification. Extra information is provided that would be considered unnecessary when talking to other adults. Sentences are expanded and paraphrased and may be repeated several times. The speed of speaking is much slower than that used to other adults.

- There is also an expressive, or affective, element in motherese, shown by the use of special words or sounds. Diminutives or reduplicative words (e.g. doggie, choo-choo) are common. English makes particular use of a /ye/ ending, and similar forms have been noted in several other languages, such as Japanese—ka, Gilyak -k/i-/q, Berber -fi-/l.l/. Occasionally, totally different words will be used, e.g. bunny for ‘rabbit’. There may be special use of particular words, such as the use of rounded lips in English, or special palatal sounds in Latvian and Marathi.

- Some of these features also seem to function as ways of holding the child’s attention, or of identifying particular words and sounds. This may well be the reason for the very common use of high, wide pitch-range in maternal speech. Mothers also devote a great deal of time to obtaining feedback from their children, especially in the first three years. Their speech contains a very high frequency of question forms, and many utterances have a high rising intonation (yes?, all right?).

These modifications are evidently important ways of establishing and maintaining meaningful communication with the child, as they can be found in the earliest mother–child interactions ($<$3). It has even been suggested that these features are universal, but this claim is premature in the absence of empirical studies, and there is already some counter-evidence from other cultures—several of these features are lacking in Samoan and Quechue Mayan, for instance. However, the highly structured character of maternal input is not in doubt, and its possible influence on the course of language acquisition is now taken very seriously.

Unfortunately, it is difficult to show correlations between the features of motherese and the subsequent emergence of these features in child speech, and even more problematic to move from talk about correlations to talk about causes. Some earlier studies, searching for such relationships, have found very few; others have found occasional correlations between specific structures, though often with an appreciable time gap between the use of a feature by the mother and its subsequent use by the child; yet others argue that input structures are very closely tailored to the needs of the child (the ‘fine tuning’ hypothesis). The use of different research methodologies clouds the picture, but it is now plain that the nature and frequency of linguistic features in maternal input can no longer be neglected in devising theories of language acquisition.

**CONCLUSIONS**

It is not possible, in the present state of knowledge, to choose between these various approaches. The number of definite, general facts known about language acquisition is still very small. In particular, much more information is needed about the way children learn languages other than English. Doubtless imitative skills, a general language-learning-mechanism, cognitive awareness, and structured input all play their part in guiding the course of language acquisition. Unravelling the interdependence of these factors constitutes the main goal of future child language research.
WHY LEARN FOREIGN LANGUAGES?

The question requires an answer, in a world where we frequently find indifference or hostility expressed towards foreign languages and foreign people, where teaching resources are limited, and where other subjects clamour for extra slots within the school timetable. The criticisms come mainly from within the English-speaking world, where FLT has often been attacked on the grounds that the time would be better spent on science, mathematics, or the mother tongue. Many people think that FLT is unnecessary in a world where an increasing number of people understand English (559). Moreover, even in places where FLT instruction is provided, the use of traditional teaching methods has meant that many pupils find FLT work boring and difficult. In British secondary schools, for example, 60% drop their FLT after three years, and even those who pass their exams are often unable to use the language for everyday purposes. Such facts fuel the arguments of those who think that FLT should become a minority subject or even be dropped from the curriculum altogether.

Arguments of this kind are rarely encountered in non-English-speaking countries, where there is a great demand for FLT courses. In German secondary schools, for example, all pupils take a foreign language to an advanced level. In France the figure is around 85%. In Britain, the figures are much lower, but the climate is slowly changing. In the 1960s, only 20% of schoolchildren took a foreign language; in the early 1980s, well over 80% were taking one for up to three years. In the USA, a Commission on Foreign Language and International Studies was set up in 1978 to consider the FL situation; it concluded that American incompetence in FLT had reached the stage where it threatened national security and economic development (e.g. only 2% of American scientists could understand material published in Russian). Several recommendations have since been made to improve the status and facilities for FLT work, at both school and college levels. Extra funding has been allocated, both federally and privately. Some states (e.g. Michigan) have already mandated an FL component as part of high school certification.

In Europe, the Committee of Ministers of the Council of Europe has recommended that FLT in schools should be increased and diversified, that children should learn more than one foreign language if possible, that they should start as early as possible, and that facilities should be made longer-term. There should be a single language policy for a school, in which all language work (L1 and L2) should be integrated. In the 1980s, several languages associations and committees have reiterated this plea, though limited funding has led to limited implementation.

WHICH LANGUAGE?

In most non-English-speaking countries, English is first choice (559). In English-speaking countries, this position is unusual language, French, which has a highly prestigious literature and culture, and which has been used as an international lingua franca since the 18th century (e.g. the official languages of the Council of Europe are English and French). In Britain, the proximity of France and the connection of French in which the subject is established, the need to provide continuity of teaching makes it difficult to leave.

After French, Spanish and German both have substantial followings in schools, especially in the UK. Because of the proximity of Spanish-speaking countries and the high level of immigration from these areas, Spanish is a very considerable international language. Spanish is the world's third most-spoken language, being used in over 22 countries. German is an important lingua franca throughout much of Eastern Europe. It is not easy to predict which languages children will need most in adult life. Patterns of language choice in the various settings of adult education are quite different from those found in school. A recent BBC TV Italian series was watched by 1.8 million people, and a Russian series by about 1 million people, though neither language is much taught in British schools. Japanese and Chinese are now being offered in several centres of further education in the U.K. Trade and tourism seem to be particularly influential factors.

ANSWERING THE CRITICS

The FLT world has not been slow to meet the challenge of the critics. An enormous outpouring of intellectual and practical effort has been devoted to overthrowing the traditional machine of language teaching. At the same time, the rationale for FLT has come to be publicly defended.

• FLT is no longer a luxury, in an international world. It is a necessity, if a country is to exercise a role in world affairs. Especially in Europe, it is seen as a criterion of responsible international citizenship. It is a strength to be able to meet people from other countries on equal linguistic terms.

• FLT has an essential role in preparing children to cope with the new perspectives brought about by a rapidly changing society—not only abroad, but within their own community. It can help overcome their insecurity and develop their confidence as they face up to the demands of social and personal relationships not usually encountered in a mother-tongue context.

• There is no doubt that language is prerequisite for full mutual understanding and cooperation between nations. FLT promotes understanding, tolerance, and respect for the cultural values, rights, and duties of others, whether abroad, or at home in minority groups. People become less ethnocentric, as they come to see themselves and their society in the eyes of the rest of the world, and encounter other ways of thinking about things.

•FLT is a primary educational tool, which should be made available to all people, whether they avail themselves of it or not.

• FLT is becoming increasingly important as unemployment and reduced working hours add to people's leisure time. Tourist travel is a major motivation, but many have come to find FLT a satisfying leisure activity in its own right, enabling them to have direct access to the world of foreign cinema, radio and television, music, literature, and the history of ideas.

• FLT provides a valuable perspective for those whose interest is primarily in the mother tongue. Ultimately, the only way to appreciate the unique identity and power of a language is by contrasting it with others.

• FLT is a primary educational right, which should be made available to all people, whether they avail themselves of it or not.
Recommendation R (82) 18 of the Committee of Ministers of the Council of Europe, adopted in September 1982, is a clear statement of the issues involved in the teaching and learning of modern languages. The statement recognizes three general premises, following these by a set of general and specific recommendations to do with language learning in schools and higher education, language learning by migrants and their families, initial and further teacher training, and measures of international cooperation. The premises, and the statement of general measures to be implemented, are given below.

The Committee of Ministers...

Considering that the rich heritage of diverse languages and cultures in Europe is a valuable common resource to be protected and developed, and that a major educational effort is needed to convert that diversity from a barrier to communication into a source of mutual enrichment and understanding; Considering that it is only through a better knowledge of European modern languages that it will be possible to facilitate communication and interaction among Europeans of different mother tongues in order to promote European mobility, mutual understanding and co-operation, and overcome prejudice and discrimination; Considering that member states, when adopting or developing national policies in the field of modern language learning and teaching, may achieve greater convergence at the European level, by means of appropriate arrangements for ongoing co-operation and co-ordination of policies; Recommends the governments of member states, in the framework of their national educational policies and systems, and national cultural development policies, to implement by all available means and within the limits of available resources, the measures set out in the appendix to the present recommendation.

Measures to be implemented concerning the learning and teaching of modern languages

General measures

1. To ensure, as far as possible, that all sections of their populations have access to effective means of acquiring a knowledge of the languages of other member states (or of other communities within their own country) as well as the skills in the use of those languages that will enable them to satisfy their communicative needs and in particular:
   1.1 to deal with the business of everyday life in another country, and to help foreigners staying in their own country to do so;
   1.2 to exchange information and ideas with young people and adults who speak a different language and to communicate their thoughts and feelings to them;
   1.3 to achieve a wider and deeper understanding of the way of life and forms of thought of other peoples and of their cultural heritage.

2. To promote, encourage and support the efforts of teachers and learners at all levels to apply in their own situation the principles of the construction of language-learning systems (as these are progressively developed within the Council of Europe ‘Modern languages’ programme):
   2.1 by basing language teaching and learning on the needs, motivations, and characteristics and resources of learners;
   2.2 by defining worthwhile and realistic objectives as explicitly as possible;
   2.3 by developing appropriate methods and materials;
   2.4 by developing suitable forms and instruments for the evaluation of learning programmes.

3. To promote research and development programmes leading to the introduction, at all educational levels, of methods and materials best suited to enabling different classes and types of students to acquire a communicative proficiency appropriate to their specific needs.
SUCCESSFUL LANGUAGE LEARNING

There is as yet no single theory that can account for the diversity of FL learners and explain why some learners succeed in their task, whereas others fail. A hint of the complexity of the task facing researchers can be obtained from the résumé of relevant factors on this page.

• It is unclear how far there may be a genuine aptitude for FL. Given sufficiently strong motivation, intelligence, and opportunity, anyone can learn a language; but the task is likely to be less onerous if certain general personal qualities are present.

Among these, it has been suggested, are empathy and adaptability, assertiveness and independence, with good drive and powers of application. People need to be capable of assimilating knowledge in difficult conditions. They should have a good memory, and be good at finding patterns in samples of data (non-linguistic as well as linguistic). Of particular importance is an ability to cope with phonetic differences (e.g. of stress, melody, vowel qualities) something which can manifest itself in other domains, such as drama or music.

• Motivation is a central factor. Students need to see that foreign languages are taken seriously by those with whom they respect, especially in the community at large (encouragement from local employers, civic interest in town twinning, etc.). It is critical to take the language out of the classroom, so that students see its use in a native community. Parental support seems to be a critical factor with younger children. Moreover, motivation applies to teachers as well as students: it is difficult to teach enthusiastically if it is known that most of the class are going to drop their language at the earliest opportunity, or that some particularly little store by it.

• Attitude towards the foreign language is important. If a student perceives a country or culture to be unpleasant, for whatever reason (e.g. its politics, religion, eating habits), the negative attitude is likely to influence language learning achievement and conversely.

• Students can benefit from being taught 'how to learn' foreign languages - useful strategies, such as silent rehearsal, techniques of memorization, and alternative ways of expressing what they want to say. They may also benefit from training in the kinds of basic skills involved in FL, such as those identified above.

• Exposure to (and practice in) the foreign language needs to be regular - a problem with which affects FLL in schools, where timetable pressure, examinations, and holidays may lead to discontinuities. Whenever possible, the aim should be to teach 'little and often'. Too much exposure at any one time can be as ineffective as too little, leading rapidly to fatigue and superficial assimilation ('quickly learned is quickly forgotten').

• Even to native users of the foreign language is a real benefit, through the use of authentic materials (e.g. audio tape, video tape, newspaper library) and, in school, foreign language teaching assistants. A parallel emphasis on output, as well as input, is desirable: 'practice makes perfect'. An important dimension of the use of educational visits abroad - but these need to be followed up in class, and the experience should enable children to be genuinely integrated within the FL environment. Out-of-school activities should be encouraged, such as pen friends, private exchanges, and weekend culture-simulation courses.

• Teaching objectives need to be carefully selected and graded, to permit realistic progress with underachievers, as well as gifted. Different kinds of objectives should be expected from various linguis­ tic modes to be introduced (speaking, listening, reading, writing), and so, in which order? Might limited competence in two languages be better than an excellent command of one? Should the foreign be exposed to only certain varieties (L1) of the foreign language? Should the focus be on communicative skills or on formal techniques (such as translation) (p. 378)?

When should L2s be taught?

Traditionally, L2s have been introduced at a relatively late stage of development - usually around the age of 10 or 11. In recent decades, the needs of an early start have been urged, given the natural way in which young children learn language (cf. critical period hypothesis). The positive results of some immersion programmes (p. 369), and the likely L1 learners, have focused more time to the task. Several experimental FL programmes have been tried out in primary school, and their effectiveness evaluated.

The results of this mixed FLL with young children can work well, but only if learners' conditions are optimal. The teaching objectives need to be limited, graded, and clearly defined. Specialist teachers need to be available. Methods need to be devised that are appropriate to the interests and cognitive level of the children. And the transition to secondary school needs to be born in mind, because a lack of continuity can negate previous work. Unfortunately, these conditions do not often obtain, and many early FLT projects have achieved disappointing results (the greatest success coming in second lan­ guage situations, such as in Africa). Children who start at age 1 or 2, soon catch up on their 8-year-old peers. However, even if formal FLT is not possible, it is at least feasible to develop young children's general language awareness - to foster the enjoyment that can come from being in contact with foreign languages. Children can learn FL games, songs, rhymes, sayings, even greetings, and many basic notions (e.g. counting, parts of the body), telling time, and so on. In particular, if pupils from other language backgrounds are present, the multilingual setting can be used to generate a mutual linguistic and cultural interest. The experience can provide a valuable foundation for the systematic study of foreign languages at later ages in the 1990s, an increasing number of countries are introducing a foreign language at an early age.
THEORIES OF LANGUAGE LEARNING

As with the study of first language acquisition (p. 236), several theories of the nature of the FLL process have been propounded, with similar issues being addressed. Indeed, comparisons are frequently made with the way children learn their first language (L1), as a means of providing hypotheses to guide FL research.

THE BEHAVIOURIST VIEW

A great deal of language learning and teaching in the 1950s and 1960s was influenced by the tenets of behaviourism (pp. 236, 412). In this view, FLL is seen as a process of imitation and reinforcement: learners attempt to copy what they hear, and by regular practice they establish a set of acceptable habits in the new language. Properties of the L1 are thought to exercise an influence on the course of L2 learning: learners 'transplant' from English to French. Differences cause 'negative transfer', generally known as 'interference': the L1 habits cause errors in the L2 (e.g. the assumption that the subject goes before the verb satisfactorily transfers from English to French). Differences cause 'negative transfer', generally known as 'interference': the L1 habits cause errors in the L2 (e.g. the same assumption about subject–verb order does not satisfactorily transfer into Welsh). Typical interference errors include: *I wait here since 3 hours* (from French) and *How long must my hand in plaster stay?* (from German). Problems of negative transfer are thought to provide a major source of FLL difficulty. The main aim of behaviourist teaching is thus to form new, correct linguistic habits through intensive practice, eliminating interference errors in the process.

There are several problems presented by this account of FLL. Imitation alone does not provide a means of identifying the task facing learners, who are continuously confronted with the need to create and recognize novel utterances that go beyond the limitations of the model sentences they may have practiced. Nor does imitation suffice as an explanation of the way learners behave: not many of the errors that are theoretically predicted by the differences between L1 and L2 in fact occur in the language of learners; and conversely, other errors are found that seem unrelated to the L1. In a frequently-cited early study (H. C. Dulay & M. K. Burt, 1973), 145 Spanish-speaking children aged 5 to 8 were observed while learning English. Six structures were selected and the error patterns analysed. It emerged that interference errors (such as *They have hunger from Ellos tienen hambre*) accounted for only 3% of the errors made. The majority of the errors (85%, with a further 12% unclear) were thought to resemble those that appear in the course of L1 acquisition (e.g. *They hungry*). Analyses of this kind have proved to be controversial (largely because of difficulties in validating the error analysis – see below), but their general conclusion is widely supported. The systematic comparison of L1 and L2, in order to predict areas of greatest learning difficulty – a procedure known as contrastive analysis – explains only a small part of what goes on in FLL.

THE COGNITIVE VIEW

The main alternative to the behaviourist approach sees as central the role of cognitive factors in language learning (pp. 236–7). In this view, learners are credited with using their cognitive abilities in a creative way to work out hypotheses about the structure of the FL. They construct rules, try them out, and alter them if they prove to be inadequate. Language learning, in this account, proceeds in a series of transitional stages, as learners acquire more knowledge of the L2. At each stage, they are in control of a language system that is equivalent to neither the L1 nor the L2 – an interlanguage (L. Selinker, 1972).

Error analysis plays a central role in this approach. Errors are likely to emerge when learners make the wrong deductions about the nature of the L2, such as assuming that a pattern is general, when in fact there are exceptions. The errors provide positive evidence about the nature of the learning process, as the learner gradually works out what the FL system is. For example, learners who say *vous dites* instead of *vous dites* 'you say' have assumed, wrongly, that the -ez ending found after *saw* in most other French verbs (*marchez, donnez, etc.*) also applies to *dire* 'say'. The error in this case indicates that a faulty generalization (or analogy, p. 236) has been made.

Since the 1970s, cognitive approaches to FLL have been in the ascendant, and error analysis in particular has attracted a great deal of attention. However, the analysis of errors turns out to be a highly complex matter, involving other factors than the cognitive. Some errors are due to the influence of the mother tongue, as contrastive analysis claims. Some come from external influences, such as inadequate teaching or materials. Some arise out of the need to make oneself understood by whatever means possible (e.g. replacing words by pictures).

TWO MODELS OF FOREIGN LANGUAGE LEARNING

Behaviorist

- L2 input obtained from controlled, formal, instruction
- Imitation and reinforcement (conscious) strategies
- L2 habits established
- L2 output

Cognitive

- Exposure to authentic use of L2 in near-native situations
- Input processed using natural (universal, unconscious) strategies
- Transitional stages of learning (interlanguage)
- L2 output

THE MONITOR MODEL

In the 1970s, an influential view of the relationship between acquisition and learning was propounded by Stephen Krashen (1941– ). This account recognizes a subconscious process (acquisition), which is the primary force behind FL fluency. Learning is seen as a conscious process that monitors, or edits, the progress of acquisition and guides the monitor for the speaker. Its role is to ensure that students should try to replicate in the classroom the conditions which occur in L1 acquisition. The parallel is drawn between the input of teacher to student and that from mother (or caretaker) to child (see facing page).

In this view, FL ability, are in this view a function of the psychological processes involved in processing the input of the FL. As a result, they are credited with using their cognitive abilities in a creative way to work out hypotheses about the structure of the FL. They construct rules, try them out, and alter them if they prove to be inadequate. Language learning, in this account, proceeds in a series of transitional stages, as learners acquire more knowledge of the L2. At each stage, they are in control of a language system that is equivalent to neither the L1 nor the L2 – an interlanguage (L. Selinker, 1972).

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Since the 1970s, cognitive approaches to FLL have been in the ascendant, and error analysis in particular has attracted a great deal of attention. However, the analysis of errors turns out to be a highly complex matter, involving other factors than the cognitive. Some errors are due to the influence of the mother tongue, as contrastive analysis claims. Some come from external influences, such as inadequate teaching or materials. Some arise out of the need to make oneself understood by whatever means possible (e.g. replacing words by pictures).
The natural order hypothesis

During the 1970s, several studies drew attention to the fact that different FL learners make similar errors, regardless of their language background. Such errors as /g/ going to this a book were observed in Spanish, Russian, Japanese, and several other learners of English. The conclusion was drawn that there must be a universal creative process at work; learners were said to be following a natural internal syllabus (as opposed to the external syllabus of the classroom). Several of the errors closely resembled those made by children learning their mother tongue. Analyses were therefore drawn with the language acquisition device postulated by some child-language analysts (p. 234), and a parallel was posed between the natural order of L1 acquisition and the way people acquired a foreign language. Particular attention was focused on the way in which foreign learners of English used a set of grammatical morphemes (§16), such as -ing, -ed, and plural, which L1 studies had already found to be acquired in a certain order (p. 244). The errors learners made with each item were counted, and the morphemes were ranked on the basis of how accurately they were used. This ranking was then assumed to reflect the order in which the learners were acquiring these morphemes. Similar orders were found in several different FL contexts, in both spoken and written language, thus supporting the idea of a natural, universal sequence of acquisition that was independent of the influence of the learner's first language. If natural order exists, there would be major implications for external syllabuses, which would presumably be modified in that direction. However, criticisms have been made of this kind of approach. One study is based on a cross-sectional study of speech samples may not correspond to the order of acquisition that would emerge from a longitudinal study (§231). The findings are of limited generality: only a very small number of grammatical items have been analysed, and there have been very few studies (most of which to date have focused on English), so that it is unclear how genuine the claimed universals are. And differences in acquisition order have already begun to emerge, casting doubt on the universality of the natural order hypothesis.

Child vs. adult acquisition

The similarities between L1 and L2 acquisition errors are striking, but there are many differences between the two kinds of learning situation (over and above issues of neurological development, p. 269), which makes it difficult to see a parallel between adult foreign language learners and young children acquiring their mother tongue.

• The adult has a set of formed cognitive skills and strategies that should make the FL task easier (e.g. the ability to memorize, imitate, and use dictionaries). A major asset is the ability of most adults to read and write.
• Adults already have a language, and this inevitably reduces their motivation to learn another beyond minimal needs. Migrants, for example, generally learn only enough to enable them to survive in their new country.
• There are several emotional differences between adults and children when it comes to learning. In particular, adults are more self-conscious about FLL, and are less able to assimilate cultural differences.
• Adults meet a greater variety of situations than do children learning their L1. Children's needs are also very different (e.g. they need language for play and emotional expression). Accordingly, the range of teaching objectives will differ in each case.
• The adult has less time and opportunity than the child for FLL. Some estimates suggest that it takes well over a year to accumulate as much L2 experience as a young child gets from the L1 in a month.
• Adults usually find themselves in a less natural learning environment than children. It is rarely possible to devise a teaching situation which closely resembles that encountered by the L1 child, with its one-to-one interaction and strong emotional (caregiver) support.
• There is an uncertain parallel between the way in which mothers talk to their children and the way in which people talk to adults using a foreign language (foreigner talk). Certainly, adult L1 speakers adapt to learners, and (often unconsciously) use speech that is slower, louder and softer, repeating words, simplifying, and using stereotyped expressions (of which pidgin savvy is probably the most famous). They also ignore many errors. But is it unclear how universal or how systematic these input strategies are.

Similarly, it is unclear how far teacher language displays correspondences with motherese (p. 237); the differences, at present, are more striking than the similarities. To facilitate learning, in the early stages, teachers need to keep their input relatively simple, interesting, comprehensible, relevant to the learning task, sufficiently repetitive to enable patterns to be perceived, and capable of providing appropriate feedback. Generalization proves difficult, and the input is often highly varied. Teaching methods (p. 378).