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How Languages are Learned

Second edition

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Before we begin . . .

It is probably true, as some have claimed, that most of us teach as we were taught or in a way that reflects our ideas and preferences about learning. Take a moment to reflect on your views about how languages are learned and what the implications are for how they should be taught. On page xv are twelve popular views about language learning. Think about whether you agree or disagree with some of these views. Complete the questionnaire and keep these ideas in mind as you read about current research and theory in second language learning.

In the last chapter of this book, we will return to these popular views and examine them in the light of the research on language learning which is discussed in Chapters 1–6.

1 LEARNING A FIRST LANGUAGE

Language acquisition is one of the most impressive and fascinating aspects of human development. We listen with pleasure to the 'coos' and 'gurgles' of a three-month-old baby. We laugh and 'answer' the conversational 'ba-ba-ba' babbling of older babies, and we share in the pride and joy of parents whose one-year-old has uttered the first 'bye-bye'. Indeed, learning a language is an amazing feat—one which has attracted the attention of linguists and psychologists for generations. How do children accomplish this? What is it that enables a child not only to learn words, but to put them together in meaningful sentences? What pushes children to go on developing complex grammatical language even though their early simple communication is successful for most purposes?

In this chapter, we will look briefly at some of the characteristics of the language of young children. We will then consider several theories which have been offered as explanations for how language is learned.

Milestones and patterns in development

One remarkable thing about first language acquisition is the high degree of similarity which we see in the early language of children all over the world. The earliest vocalizations are simply the involuntary crying that babies do when they are hungry or uncomfortable. Soon, however, we hear the cooing and gurgling sounds of contented babies, lying in their beds looking at bright shapes and colours around them. Even in these early weeks and months of life, however, infants are able to hear very subtle differences between the sounds of human language. In cleverly designed experiments, scientists have been able to show that tiny babies can hear the difference between 'pa' and 'ba', for example. And yet, it will be many months before their own vocalizations (babbling) begin to reflect the characteristics of the different languages they are learning.

By the end of their first year, most babies understand quite a few frequently repeated words. They wave when someone says 'bye-bye'; they clap when someone says 'pat-a-cake'; they eagerly hurry to the kitchen when 'juice and cookies' are announced. At 12 months, most babies will have begun to produce a word or two that everyone recognizes. From this time on, the number of words they understand and produce grows rapidly. By the age of two, most children reliably produce at least fifty different words and some produce many many more. About this time, they begin to combine words into simple sentences such as 'Mommy juice' and 'baby fall down'. These sentences are sometimes called 'telegraphic' because they often leave out such things as articles, prepositions, and auxiliary verbs. We recognize them as sentences because, even though function words and *grammatical morphemes* are missing, the word order reflects the word order of the language they are hearing and the combined words have a meaning relationship between them which makes them more than just a list of words. Thus, for an English-speaking child, 'kiss baby' does not mean the same thing as 'baby kiss'. Remarkably, we also see evidence, even in these early sentences, that children are doing more than imperfectly imitating what they have heard. Their two- and three-word sentences show signs that they are creatively combining words: 'more outside' in a situation where the meaning seems to be 'I want to go outside again' or 'Daddy uh-oh' which seems to mean 'Daddy fell down'.

By the age of three-and-a-half or four years, most children can ask questions, give commands, report real events, and create stories about imaginary ones—complete with correct grammatical morphemes. In fact, it is generally accepted that by age four, children have mastered the basic structures of the language or languages which have been spoken to them in these early years. In addition to the evidence we have from simply talking and listening to children, some carefully designed procedures have been developed to explore children's knowledge of language. One of the best known is the so-called 'wug test' developed by Jean Berko Gleason. In this 'test', children are shown pictures of imaginary creatures with novel names or people performing mysterious actions. For example, they are told, 'Here is a wug. Now there are two of them. There are two ____.' or 'Here is a man who knows how to bod. Yesterday he did the same thing. Yesterday, he _____.' By completing these sentences with 'wugs' and 'bodded', children demonstrate that they actually know the rules for the formation of plural and simple past in English, not just a list of memorized word pairs such as 'book/books' and 'nod/nodded', and can apply these rules to words which they have never heard before.

Children's ability to understand language and to use it to express themselves develops rapidly in the pre-school years. *Metalinguistic awareness*—the ability to treat language as an object, separate from the meaning it conveys—develops more slowly. A dramatic development in metalinguistic awareness [illegible] to learn to read. Although metalinguistic awareness begins to develop well before this time, seeing words represented by letters on a page leads children to a new level of awareness of language as separate from the meaning it represents. Three-year-old children can tell you that it's 'wrong' to say 'drink the chair', but while they would never say 'cake the eat' they will not be able to say what is wrong with it. A five-year-old on the other hand, knows that 'drink the chair' is silly in a different way from 'cake the eat'. Unlike a three-year-old, a child who can read comes to understand that 'caterpillar' is a longer word than 'train' even though the object it represents is substantially shorter! Metalinguistic awareness also includes the discovery of such things as ambiguity—words and sentences that have multiple meaning. This gives children access to word jokes, trick questions, and riddles which they love to share with their friends and family.

Early childhood bilingualism

Many children, perhaps the majority of children in the world, are exposed to more than one language in early childhood. Children who hear more than one language virtually from birth are sometimes referred to as 'simultaneous bilinguals', whereas those who begin to learn a *second language* later are referred to as 'sequential bilinguals'. There is a considerable body of research on the ability of young children to learn more than one language in their earliest years. The evidence suggests that, when simultaneous bilinguals are in contact with both languages in a variety of settings, there is every reason to expect that they will progress in their development of both languages at a rate and in a manner which are not different from those of monolingual children. Naturally, when children go on to have schooling in only one of those languages, there may be considerable differences in the amount of metalinguistic knowledge they develop and in the type and extent of the vocabulary they eventually acquire in the two languages. Nevertheless, there seems to be little support for the myth that learning more than one language in early childhood slows down the child's linguistic or cognitive development.

There may be reason to be concerned, however, about situations where children are virtually cut off from their family language when they are 'submerged' in a second language for long periods in early schooling or day care. In such cases, children may begin to lose the family language before they have developed an age-appropriate mastery of the new language. This is referred to as *subtractive bilingualism*, and it can have serious negative consequences for children from minority groups. In some cases, children seem to continue to be caught between two languages: not having mastered the second language, they have not continued to develop the first. Unfortunately, the 'solution' which educators often propose to parents is that they should stop speaking the family language at home and concentrate instead on speaking the majority language with their children. The evidence seems to suggest that the opposite would be more effective. That is,

parents who themselves are learners of the majority language should continue to use the language which is most comfortable for them. The children may eventually prefer to answer in the majority language, but at least they will maintain their comprehension of their family language. This also permits the parents to express their knowledge and ideas in ways that are likely to be richer and more elaborate than they can manage in their second language.

There is no evidence that a child's brain has a limited capacity for languages such that their knowledge of one language must shrink if their knowledge of the other one grows. Most minority language children do eventually master the majority language, but second language acquisition takes time. It may take several years for children to know the language well enough to use it for school learning with the same ease as children who have learned the language from birth. Eventually, however, it is likely to become their preferred language. Demographic research shows that minority languages are usually lost in the second generation after immigration. Children who have the opportunity to learn multiple languages from early childhood and to maintain them throughout their lives are fortunate indeed, and families that can offer this opportunity to their children should be encouraged to do so.

Developmental sequences

As children progress through the discovery of language in their early years, there are predictable patterns in the emergence and development of many features of the language they are learning. For some of these features, these patterns have been described in terms of *developmental sequences* or 'stages'. To some extent, these stages in language acquisition are related to children's cognitive development. For example, children do not use temporal adverbs such as 'tomorrow' or 'last week' correctly until they develop an adequate understanding of time. In other cases, the developmental sequences seem to be determined more by the gradual mastery of the linguistic elements for expressing ideas which have been present in children's cognitive understanding for a long time.

Grammatical morphemes

Much research has focused on how children develop grammatical morphemes in English. One of the best-known studies of this development in child first language development was carried out by Roger Brown and his colleagues in the 1960s. He studied the development of three children (whom he called Adam, Eve, and Sarah) whose mother tongue was English. One aspect of the research was how the children acquired 14 grammatical morphemes over time. He found that they acquired them in a remarkably

similar sequence (Brown 1973). Below is a partial list of the grammatical morphemes studied by Roger Brown, in the approximate order of their acquisition by Adam, Eve, and Sarah.

present progressive *-ing* (Mommy runn*ing*)
plural *-s* (two book*s*)
irregular past forms (Baby *went*)
possessive *'s* (daddy*'s* hat)
copula (Annie *is* a nice girl)
articles 'the' and 'a'
regular past *-ed* (She walk*ed*)
third person singular simple present *-s* (She run*s*)
auxiliary 'be' (He *is* coming)

A child who had mastered the grammatical morphemes at the bottom of the list was sure to have mastered those at the top, but the reverse was not true. Thus, Brown could claim there was evidence for a developmental sequence or *order of acquisition*. The children did not master the morphemes at the same *rate*, however. For example, Eve had mastered nearly all the morphemes before she was two-and-a-half years old while Sarah and Adam were still working on them when they were three-and-a-half or four. The study carried out by Brown was a *longitudinal* study, that is, he studied the same learners over an extended period of time.

In other first language research on morpheme acquisition, Jill and Peter de Villiers did a *cross-sectional* study (1973). They studied 21 children who were at different ages and stages of development. They found that children who correctly used the morphemes which Adam, Eve, and Sarah had acquired late were also correct in using the ones which Adam, Eve, and Sarah had acquired earlier. Those children who accurately used the 'early' morphemes, however, had not necessarily mastered the 'late' ones. The children mastered the morphemes at different ages, just as Adam, Eve, and Sarah had done, but again the *order* of their acquisition was very similar. They were similar to each other *and* similar to Adam, Eve, and Sarah.

Negation

Lois Bloom's longitudinal study of three children, Kathryn, Gia, and Eric, included a detailed analysis of the development of negation when they were less than three years old. The children learned the functions of negation very early. That is, they learned to deny, reject, disagree with, and refuse something. However, even though they had this awareness of how negation functions, it took some time before they learned the grammatical rules to express these negative functions (see Bloom and Lahey 1978). The following stages in the development of negation have been observed.

Stage 1
The child's first negatives are usually expressed by the word 'no', either all alone or as the first word in the utterance.

No go. No cookie. No comb hair.

Some children even adopt the word 'any' as a negator, perhaps with an accompanying shake of the head.

Any bath!

Stage 2
As utterances grow longer, and the sentence subject is included, the negative usually appears just before the verb:

Daddy no comb hair.

Stage 3
At this stage, the negative element is inserted into a more complex sentence. Children may add forms of the negative other than *no*, including words like '*can't*' and '*don't*'. These sentences appear to follow the correct English pattern of attaching the negative to the auxiliary or modal verb. However, the negative words do not yet vary these forms for different persons or tenses:

I can't do it. He don't want it.

Stage 4
Later, children begin to attach the negative element to the correct form of auxiliary verbs such as 'do' and 'be', and modal verbs such as 'can':

You didn't have supper. She doesn't want it.

They may still have difficulty with some other features related to negatives.

I don't have no more candies.

Questions

There is a remarkable consistency as well in the way children learn to form questions in English. For one thing, there is a predictable order in which the '*wh*- words' emerge (for more details see Bloom and Lahey 1978).

'What' is generally the first *wh*- question word to be used. It is often learned as part of a whole ('Whatsat?' or 'Whatsit?') and it is some time before the child learns that there are variations of the form, such as 'What is that?' and 'What are these?'

'Where' and 'who' emerge very soon, reflecting the fact that the child can generally ask questions that they can already answer, questions about the here and now. This is reinforced by the fact that adults tend to ask children just [illegible] questions in the early days of language learning.

'Why' emerges around the end of the second year and becomes a favourite for the next year or two! Children seem to ask an endless number of questions beginning with 'why'. At this age, the child does not always seem to have a very good understanding of the meaning of the word, but has clearly discovered the usefulness of this little word in getting adults to engage in conversation.

Finally, when the child begins to understand manner and time, 'how' and 'when' emerge. In contrast to 'what', 'where', and 'who' questions, children sometimes ask the more cognitively difficult 'why', 'when', and 'how' questions without fully understanding their meaning, as the following conversation with a four-year-old clearly shows:

Child When can we go outside?
Parent In about five minutes.
Child 1-2-3-4-5!! Can we go now?

Since the ability to use these question words is at least partly tied to children's cognitive development and to the types of questions which children are asked, it is perhaps not surprising that there is consistency in the sequence of their acquisition. Perhaps more remarkable is the consistency in the acquisition of word order in questions. This development is not based on learning new meanings, but rather on learning different linguistic forms to express meanings which are already clear—both to the child and to the interlocutor.

Stage 1
Children's earliest questions are single words or simple two- or three-word sentences with rising intonation:

Cookie? Mommy book?

At the same time, of course, they may produce some correct questions—correct because they have been learned as *formulaic* 'chunks':

Where's Daddy? What's that?

Stage 2
When their sentences grow longer, and they begin to ask more new questions, children use the word order of the declarative sentence. With 'yes/no' questions, they simply add rising intonation. With *wh*- questions, they put a question word at the beginning:

You like this? I have some? Why you catch it?

At this stage, they may continue to produce the correct 'chunk-learned' forms such as 'What's that?' alongside their own created questions.

Stage 3
Gradually, they notice that the structure of questions is different and begin to produce questions such as:

But at this stage they may generalize that all questions are formed by putting a verb at the beginning of a sentence. Thus:

Is the teddy is tired? Do I can have a cookie?

Furthermore, at this stage, *wh-* questions usually retain the declarative word order:

Why you don't have one?

The children seem to have worked out that, in a question, some element must appear at the beginning of the sentence, but they are not yet aware that there must also be some change in the internal word order of the sentence itself. We can call this stage 'fronting', because the children place some sort of question marker—an auxiliary verb or a *wh-* word—at the front of the sentence, but they do not yet change the order of the elements within the sentence.

Stage 4
Later, children begin to use subject–auxiliary inversion and can even add 'do' in sentences in which there would be no auxiliary in the declarative version of the sentence:

Do you like ice cream?

Even at this stage, however, it sometimes seems that they can either use inversion or use a *wh-* word, but not both. Therefore, we may find inversion in 'yes/no' questions but not in *wh-* questions, except formulas such as 'What's that?' which may still be used:

Can he eat the cookie? Where I can draw them?

Stage 5
Eventually, children combine both operations:

Why can he go out?

However, it may still be beyond their ability to carry out a third or fourth operation, for example to negate the question as well as invert it:

Why he can't go out?

Stage 6
Finally, when performance on questions is correct and well established, there is still one more hurdle. When *wh-* words appear in subordinate clauses or embedded questions, children overgeneralize the inverted form and produce sentences such as:

I don't know why can't he go out.

Learning a first language

By the age of four, most English speaking children have passed through these developmental stages and ask questions that are both grammatical and appropriate. This does not mean that they never slip back to an earlier stage. Overall, however, their speech shows that they have acquired this part of their language.

Summary

These descriptions of early milestones and acquisition sequences for grammatical morphemes, negatives, and questions show that we have considerable knowledge of *what* children learn in their early language development. More controversial, however, are questions about *how* this remarkable development takes place. Over the past fifty years, there have been three main theoretical approaches to explaining it: behaviourist, innatist, and interactionist approaches.

Theoretical approaches to explaining first language learning

Behaviourism: Say what I say

Behaviourism is a psychological theory of learning which was very influential in the 1940s and 1950s, especially in the United States. Traditional behaviourists believed that *language learning* is the result of imitation, practice, feedback on success, and habit formation. Children imitate the sounds and patterns which they hear around them and receive positive reinforcement (which could take the form of praise or just successful communication) for doing so. Thus encouraged by their environment, they continue to imitate and practise these sounds and patterns until they form 'habits' of correct language use. According to this view, the quality and quantity of the language which the child hears, as well as the consistency of the reinforcement offered by others in the environment, should have an effect on the child's success in language learning.

The behaviourist view of how language is learned has an intuitive appeal. And there is no doubt that it can offer a partial explanation of some aspects of children's early language learning. However, it is useful to examine actual language data to see how well this view accounts for the development of some more complex aspects of their language.

The behaviourists view imitation and practice as primary processes in language development. To clarify what is meant by these two terms, consider the following definitions and examples.

Imitation: Word-for-word repetition of all or part of someone else's utterance.

Mother Would you like some bread and peanut butter?
Katie Some bread and peanut butter.

Practice: Repetitive manipulation of form.

Michel I can handle it. Hannah can handle it. We can handle it.

Activity

Analysing children's speech

Examine these transcripts from Peter, Cindy, and Kathryn, who are about the same age. The transcripts are based on recordings made while the children were playing with a visiting adult. Look for examples of imitation and practice.

Transcription conventions:

xxx = incomprehensible speech
. . . = pause
parentheses = description of non-verbal events

Peter (24 months)
(Peter is playing with a dump truck while two adults, Patsy and Lois, look on.)

Peter Get more.
Lois You're gonna put more wheels in the dump truck?
Peter Dump truck. Wheels. Dump truck.

(later)

Patsy What happened to it (the truck)?
Peter (looking under chair for it) Lose it. Dump truck! Dump truck! Fall! Fall!
Lois Yes, the dump truck fell down.
Peter Dump truck fell down. Dump truck.

Peter (25 months)
(Peter, Patsy, and Lois are playing with pencil and paper.)

Peter (indicating he wants Patsy to draw) Lois. Lois too. Patsy. Lois too!
Patsy You want me to make a car? OK.

(Patsy draws a tiny car like Lois's.)

Patsy Oh, you want Lois to have some paper?
Peter Lois have some paper?

(later)

Patsy Let's see if I can draw what you draw. Draw something!
Peter Draw something!

(Unpublished data from P. M. Lightbown)

It is easy to see that Peter imitates a great deal. However, it should be stressed that not all children imitate to the extent that Peter does. Some 30–40 per cent of Peter's speech consists of imitations while, for some children, the rate of imitation may be less than 10 per cent.

It is also important to note that children's imitations are not random; they don't imitate everything they hear. Very detailed analyses showed that Peter imitated new words and sentence structures until they became solidly grounded in his language system, and then he stopped imitating these and went on to imitate other new words and structures. Thus, unlike a parrot who imitates the familiar and continues to repeat the same things again and again, children's imitation is selective and based on what they are currently learning. In other words, even when the child imitates, the choice of what to imitate seems to be based on something the child has already begun to understand, not simply on what is 'available' in the environment.

Cindy (24 months, 16 days)
(Cindy is looking at a picture of a carrot in a book and trying to get Patsy's attention.)

Cindy Kawo? kawo? kawo? kawo? kawo?
Patsy What are the rabbits eating?
Cindy They eating . . . kando?
Patsy No, that's a carrot.
Cindy Carrot. (pointing to each carrot on the page) The other . . . carrot. The other carrot. The other carrot.

(A few minutes later, Cindy brings Patsy a stuffed toy rabbit.)

Patsy What does this rabbit like to eat?
Cindy (xxx) eat the carrots.

(Cindy gets another stuffed rabbit.)

Cindy He (xxx) eat carrots. The other one eat carrots. They both eat carrots.

(One week later, Cindy opens the book to the same page.)

Cindy Here's the carrots. (pointing) Is that a carrot?
Patsy Yes.

Cindy (25 months, 1 day)

Cindy (playing with several dolls, one of which she calls a 'tiger') Doll go to sleep.
Patsy Does the doll want to go to sleep?

Cindy (not answering Patsy, but talking to dolls in 'motherly' tones) Okay, I take you. Come on, Doll . . . (xxx). Go to sleep with the tiger (xxx) go to sleep. Doll wants to go to sleep.
Patsy Does the tiger want to go to sleep?
Cindy Tiger wants to go to sleep. The doll wants to go to sleep. He go to sleep.

(Unpublished data from P. M. Lightbown)

Cindy appears to be working hard on her language acquisition. She practises new structures in a way that sometimes makes her sound like a student in a foreign language classroom! Her 'He eat carrots. The other one eat carrots. They both eat carrots' is reminiscent of a *substitution drill*. However, again it should be stressed that not all children 'practise' to the extent that Cindy does in these examples, and Cindy herself is practising more here than in some other samples of her speech. Most important, it's Cindy who has chosen what she will imitate and practise.

The samples of speech from Peter and Cindy would seem to lend some support to the behaviourist explanation of language acquisition. But such imitation and practice do not account for how these children learn all aspects of their native language. Furthermore, we also need to account for the normal language development of children who rarely imitate and practise in the way that Peter and Cindy do in these examples. Look for examples of imitation and practice in the following conversation between Kathryn and Lois. Who is in charge of this conversation?

Kathryn (24 months)

Lois Did you see the toys I brought?
Kathryn I bring toys? Choo choo? Lois brought the choo choo train?
Lois Yes, Lois brought the choo choo train.
Kathryn (reaching for bag) I want play with choo choo train. I want play with choo choo train. (taking out slide) Want play. What's this?
Lois Oh you know what that is.
Kathryn Put down on floor. This. I do this.

(Kathryn puts the slide on the floor.)

Kathryn (taking out two cars of train) Do this. I want do this. (trying to put train together) I do this. I do this.
Lois OK. You can do it. You can do it. Look I'll show you how.

(Lois puts it together.)

Kathryn (searching in box) I get more. Get a more. No more choo choo train. Get truck. (taking out truck) Kathryn truck. Where? Where a more choo choo train?

Lois Inside. It's in the box.
Kathryn A choo choo? (taking out part of train) This is a choo choo train.

(Bloom and Lahey 1978)

Like Cindy, Kathryn sometimes repeats herself or produces a series of related 'practice' sentences but rarely imitates the other speaker. Instead, she answers questions or poses them. She also elaborates on the other speaker's questions or statements. She is very much in charge of the conversation and the activity here!

Other children

Look at the following examples taken from various children in which imitation does not appear to be involved. Think about how the children arrive at the forms they produce. (These examples are from unpublished data collected by P. M. Lightbown and J. Rand.)

(Note: The ages of children are shown in years and months: for example, 6,10 means six years and ten months.)

1 Kyo (6,10) I'm hungry.
Dad We'll have some poppy seed bread in a little while.
Kyo No. I want it now.
Dad We have to wait 'til it's defrosted.
Kyo But I like it *frossed*.

2 Randall had a little bump on his hand and his mother said that they'd have to take him to the doctor.

Randall (3,0) Why? So he can *doc* my little bump?

3 Michel (2,10) Mummy, I'm *hiccing up* and I can't stop.

4 Mother Get undressed (after many repetitions)
David (3,11) I'm getting undressed.
I'm getting *on dressed*.
I'm getting on dressed.
I'm getting *off dressed*.

Numbers 1–4 are all examples of children in the process of learning the rules of word formation and overgeneralizing them to new contexts.

(1) Kyo recognizes the prefix *de-* as negating the root word, so his version of the opposite of 'defrosted' comes out as 'frossed'.

(2) Randall forms the verb 'doc' from the noun 'doctor', by analogy with farmers who farm, swimmers who swim, and actors who act.

(3) Michel has heard many two-word verbs with *up*, such as 'standing up' and 'picking up'. On that basis, his generalization is perfectly sensible.

(4) David isn't sure what he hears. He doesn't yet understand the prefix *un-*. After repeating what he has heard, he analyses the sounds and concludes that it is 'on dressed'. Then he analyses the situation and concludes that this time he's supposed to be taking things *off* and so he arrives at the conclusion that he should be getting 'off dressed', not 'on dressed'.

5 At Lucy's twelfth birthday party, toasts were proposed with grape juice in stemmed glasses:

Father I'd like to propose a toast.

After a long period without toasts, David raised his glass:

David (5,1) I'd like to propose a piece of bread.

Only after all the laughter sent David slinking from the table did the group realize that he wasn't joking!

6 **Mother** I love you to pieces.
David (4,1) I love you *three* pieces.

Numbers 5 and 6 are examples of a child in the process of discovering the full (or limited) meaning of the word in question.

(5) David is fascinated by the ritual language which accompanies this strange new event of lifting glasses. He is concentrating so hard on performing the gesture and the formulaic expression 'I'd like to propose ...' that he fails to realize that the word he already knows—'toast'—is not the same toast and can't be replaced with a phrase which is its near-synonym in other contexts—a piece of bread.

(6) What does 'to pieces' mean anyway? At least *two* pieces would give some indication of how much she loves me! So David increases the quantity of love: Three pieces!

7 **Randall** (2,9) Are dogs can wiggle their tails?

8 **Randall** (3,5) You took all the towels away because I can't dry my hands.

Numbers 7 and 8 are both examples of systematic misuse of basic sentence construction which has not been fully acquired.

(7) Randall is in stage 3 of question formation. He has concluded that the trick of asking questions is to put a certain word at the beginning of the sentence—somewhat like the French *est-ce que* form. Other examples from this stage in his development include 'Are those are my boots?' and 'Are this is hot?'

(8) He means 'I can't dry my hands because you took all the towels away'. He has made a mistake about which clause comes first. Children at this age tend to state events in the order of their occurrence. In this case, the towels disappeared before Randall attempted to dry his hands, so that's what he says first. He doesn't understand how a word like 'before' or 'because' can change that order around.

These examples of children's speech provide us with a window on the process of language learning. Imitation and practice alone cannot explain some of the forms created by the children. They are not sentences that they heard from adults. Rather, children appear to pick out patterns and then generalize them to new contexts. They create new forms or new uses of words until they finally figure out how the forms are used by adults. Their new sentences are usually comprehensible and often correct.

The behaviourist explanations for language acquisition offer a reasonable way of understanding how children learn some of the regular and routine aspects of language. However, their acquisition of the more complex grammatical structures of the language requires a different sort of explanation and we will see below some of the proposals for going beyond imitation and practice.

Innatism: It's all in your mind

The linguist Noam Chomsky claims that children are biologically programmed for language and that language develops in the child in just the same way that other biological functions develop. For example, every child will learn to walk as long as adequate nourishment and reasonable freedom of movement are provided. The child does not have to be taught. Most children learn to walk at about the same age, and walking is essentially the same in all normal human beings. For Chomsky, language acquisition is very similar. The environment makes a basic contribution—in this case, the availability of people who speak to the child. The child, or rather, the child's biological endowment, will do the rest. This is known as the innatist position. Chomsky proposed his theory in reaction to what he saw as the inadequacy of the behaviourist theory of learning based on imitation and habit formation (Chomsky 1959).

Chomsky argues that the behaviourist theory fails to recognize what has come to be called 'the logical problem of language acquisition'. This logical problem refers to the fact that children come to know more about the structure of their language than they could reasonably be expected to learn on the basis of the samples of language which they hear. According to Chomsky, the language the child is exposed to in the environment is full of confusing information (for example, false starts, incomplete sentences, or slips of the tongue) and does not provide all the information which the child needs. Furthermore, the evidence seems very strong that children are by no means systematically corrected or instructed on language. Parental corrections of language errors have been observed to be inconsistent or even non-existent for children of pre-school age. When parents do correct, they tend to focus on meaning and

not on language form, often simply repeating the child's incorrect utterance in a more complete grammatical form. When parents do correct errors, children often ignore the correction, continuing to use their own ways of saying things.

According to Chomsky, children's minds are not blank slates to be filled merely by imitating language they hear in the environment. Instead he claims that children are born with a special ability to discover for themselves the underlying rules of a language system.

Chomsky originally referred to this special ability as a *language acquisition device* (LAD). This device was often described as an imaginary 'black box' which exists somewhere in the brain. This 'black box', thought to contain all and *only* the principles which are universal to all human languages, prevents the child from going off on lots of wrong trails in trying to discover the rules of the language. For the LAD to work, the child needs access only to samples of a natural language. These language samples serve as a trigger to activate the device. Once it is activated, the child is able to discover the structure of the language to be learned by matching the innate knowledge of basic grammatical relationships to the structures of the particular language in the environment. In recent writings, Chomsky and his followers no longer use the term LAD, but refer to the child's innate endowment as *Universal Grammar* (UG). UG is considered to consist of a set of principles which are common to all languages. If children are pre-equipped with UG, then what they have to learn is the ways in which their own language makes use of these principles and the variations on those principles which may exist in the particular language which they hear spoken around them (Chomsky 1981, Cook 1988, White 1989).

Chomsky drew attention to the fact that children seem to develop language in similar ways and on a similar schedule, in a way not very different from the way all children learn to walk. Environmental differences may be associated with some variation in the rate of acquisition (how quickly children learn), but adult linguistic *competence* (the knowledge of how their language works) is very similar for all speakers of one dialect or language. In acquiring the intricate and complex systems that make up a language, young children, whose cognitive abilities are fairly limited in many ways, accomplish something which adult second language learners may envy.

Here is a summary of the kinds of evidence which have been used to support Chomsky's innatist position:

1 Virtually all children successfully learn their native language at a time in life when they would not be expected to learn anything else so complicated. Children who are profoundly deaf will learn sign language if they are exposed to it in infancy, and their progress in language acquisition is similar to that of hearing children. Even children with very limited cognitive ability develop quite complex language systems if they are brought up in environments in which people talk to them and engage them in communication.

2 Children successfully master the basic structure of their native language or dialect in a variety of conditions: some which would be expected to enhance language development (for example, caring, attentive parents who focus on the child's language), and some which might be expected to inhibit it (for example, abusive or rejecting parents). Children achieve different levels of vocabulary, creativity, social grace, and so on, but virtually all achieve mastery of the structure of the language spoken around them. This is seen as support for the hypothesis that language is somehow separate from other aspects of cognitive development and may even be located in a different part of the brain. The term 'modular' is sometimes used to represent the notion that the brain has different 'modules' which serve different kinds of knowledge and learning.

3 The language children are exposed to does not contain examples (or, in any case, not very many examples) of all the linguistic rules and patterns which they eventually know.

4 Animals—even primates receiving intensive training from humans—cannot learn to manipulate a symbol system as complicated as the natural language of a three- or four-year-old human child.

5 Children seem to accomplish the complex task of language acquisition without having someone consistently point out to them *which* of the sentences they hear and produce are 'correct' and which are 'ungrammatical'.

One example of the kind of complex language systems which children seem to learn without special guidance is the system of reflexive pronouns. This system of pronouns has been studied by a number of linguists working from a Chomskyan perspective.

Consider the following sentences which we have taken from a book by Lydia White (1989). These English sentences contain the reflexive pronoun 'himself'. Both the pronoun and the noun it refers to (the antecedent) are printed in *italics*. An asterisk at the beginning of a sentence indicates that the sentence is ungrammatical.

What do children have to discover about the relationship between the reflexive pronoun and its antecedent? Could they learn what they need to know by imitation of sentences they hear?

a. *John* saw *himself.*
b. **Himself* saw *John.*

In (a) and (b), it looks as if the reflexive pronoun must follow the noun it refers to. But (c) disproves this:

c. Looking after *himself* bores *John.*

If we consider sentences such as:

d. John said that *Fred* liked *himself.*
e. **John* said that Fred liked *himself.*
f. John told *Bill* to wash *himself.*
g. **John* told Bill to wash *himself.*

we might conclude that the closest noun phrase is usually the antecedent. However, (h) shows that this rule won't work either:

h. *John* promised Bill to wash *himself.*

And it's even more complicated than that. Usually the reflexive must be in the same clause as the antecedent as in (a) and (d), but not always, as in (h). Furthermore, the reflexive can be in the subject position in (i) but not in (j).

i. *John* believes *himself* to be intelligent (non-finite clause).
j. **John* believes that *himself* is intelligent (finite clause).

In some cases, more than one antecedent is possible, as in (k) where the reflexive could refer to either John or Bill:

k. *John* showed *Bill* a picture of *himself.*

By now, you are probably quite convinced of the complexity of the rules pertaining to interpreting reflexive pronouns in English. The innatists argue that children could not discover the rules about reflexive pronouns by trial

they simply do not make enough mistakes for this explanation to be plausible. The innatists conclude that a child's acquisition of these grammatical rules is guided by principles of an innate Universal Grammar which could apply to all languages. Children come to 'know' certain things about the specific language being learned through exposure to a limited number of examples. Different languages have different rules about, for example, reflexives, and children seem able to learn, on hearing *some* sentences, which *other* ones are possible and which are *not* in the language they are learning.

The biological basis for the innatist position

Chomsky's ideas are compatible with those of the biologist Eric Lenneberg, who also compares learning to talk with learning to walk: children who for medical reasons cannot move about when they are infants may soon stand and walk if their problems are corrected at the age of a year or so. Similarly, children who can hear but who cannot speak can nevertheless learn language, understanding even complex sentences.

The Critical Period Hypothesis

Lenneberg observed that this ability to develop normal behaviours and knowledge in a variety of environments does not continue indefinitely and that children who have never learned language (because of deafness or extreme isolation) cannot do so if these deprivations go on for too long. He argued that the language acquisition device, like other biological functions, works successfully only when it is stimulated at the right time—a time called the 'critical period'. This notion that there is a specific and limited time period for language acquisition is referred to as the Critical Period Hypothesis (CPH). Read the following case studies and think about whether they support the CPH.

Natural experiments: Victor and Genie

It is understandably difficult to find evidence for the Critical Period Hypothesis, since all normal children are exposed to language at an early age and consequently acquire language. However, history has documented a few 'natural experiments' where children have been deprived of contact with language. One of the most famous cases is that of a child called Victor. François Truffaut created a film, *L'Enfant sauvage* (*The Untamed Child*), about him and about the efforts to teach him to speak.

In 1799, a boy of about 12 years old was found wandering naked in the woods of Aveyron in France. Upon capture, he was found to be completely wild, apparently having had no contact with humankind. A young doctor, Jean-Marc-Gaspard Itard, devoted five years to the task of socializing Victor and trying to teach him language.

Although Itard succeeded to some extent in developing Victor's sociability, memory, judgement, and all the functions of his senses, Victor remained unreceptive to all sounds other than those which had meaning for him in the

forest, such as the cracking of a nut, animal sounds, or the sound of rain. He only succeeded in speaking two words, his favourite food 'lait' (milk) and his governess's frequent exclamation 'O Dieu!' (Oh, God!). Moreover, his use of 'lait' was only uttered as an excited exclamation at the sight of a glass of milk. He never uttered the word to request milk, even though it was the one thing he could name, and something of which he was very fond. Even when Itard took Victor's milk away in hopes of making him ask for it, Victor never used the word to communicate his need. Finally, Itard gave up.

Another famous case of a child who did not learn language normally in her early years is that of Genie. Genie was discovered in California in 1970, a 13-year-old girl who had been isolated, deprived, neglected, and abused. Because of the irrational demands of a disturbed father and the submission and fear of an abused mother, Genie had spent more than eleven years tied to a chair or a crib in a small, darkened room. Her father had forbidden his wife and son to speak to her and had himself only growled and barked at her. She was beaten every time she vocalized or made any kind of noise, and she had long since resorted to complete silence. Genie was unsocialized, primitive, and undeveloped physically, emotionally, and intellectually. Needless to say, she had no language.

After she was discovered, Genie was cared for and educated in the most natural surroundings possible, and to the fullest extent possible, with the participation of many teachers and therapists. After a brief period in a rehabilitation centre, Genie lived in a foster home and attended special schools. Although far from being 'normal', Genie made remarkable progress in becoming socialized and cognitively aware. She developed deep personal relationships and strong individual tastes and traits. But despite the supportive environment for language acquisition, Genie's language development has not paralleled natural first language development. After five years of exposure to language, a period during which a normal child would have acquired an elaborated language system, Genie's language contained many of the features of abnormal language development. These include a larger than normal gap between comprehension and production, inconsistency in the use of grammatical forms, a slow *rate of development*, overuse of formulaic and routine speech, and the absence of some specific syntactic forms and mechanisms always present in normal grammatical development (Curtiss 1977). For discussion of further developments in Genie's life, see Rymer (1993).

Genie's language shares features of language development exhibited by adults with brain damage who have had to relearn language in adulthood, by children in the earliest stage of language acquisition, and by chimps attempting to learn language. It is the most carefully documented and tested case of a child brought up in isolation, allowing linguists to study the

Although these cases appear to support the CPH, it is difficult to argue that the hypothesis is confirmed on the basis of evidence from such unusual children and the unknown circumstances of their early lives. We cannot know what other factors besides biological maturity (for example, social isolation or physical abuse) might have contributed to their inability to learn language. For now, the best evidence for the CPH is that virtually every child learns language on a schedule which is very similar in spite of quite different circumstances of life.

Both Victor and Genie were deprived of a normal home environment, which may account for their abnormal language development. There are other individuals, however, who come from loving homes, yet do not receive exposure to language at the usual time. This is the case of many profoundly deaf children who have hearing parents.

Natural experiments: Deaf signers

Elissa Newport and her colleagues have studied deaf users of American Sign Language (ASL) who acquired it as their first language at different ages. Such a population exists because only 5–10 per cent of the profoundly deaf are born to deaf parents, and only these children would be likely to be exposed to ASL from birth. The remainder of the profoundly deaf population begin learning ASL at different ages, often when they start attending a residential school where sign language is used for day-to-day communication.

In one study, there were three distinct groups of ASL users: Native signers who were exposed to sign language from birth, Early learners whose first exposure to ASL began at ages four to six at school, and Late learners who first came into contact with ASL after the age of 12 (Newport 1990).

Just like oral languages, ASL makes use of grammatical markers (like *-ed* and *-ing* in English); the only difference is that these markers are indicated through specific hand or body movements. The researchers were interested in whether there was any difference between Native signers, Early learners, and Late learners in the ability to produce and comprehend grammatical markers.

Results of the research showed a clear pattern. On word order, there was no difference between the groups. But on tests focusing on grammatical markers, the Native group outperformed the Early learner group who outperformed the Late learner group. The Native signers were highly consistent in their use of the grammatical forms. Although the other two groups used many of the same forms as the Native group, they also used forms which are considered ungrammatical by the Native signers. For example, they would omit certain grammatical forms, or use them in some obligatory contexts but not in others. The researchers conclude that their study supports the hypothesis that there is a critical period for first language acquisition.

We will return to a discussion of the CPH in Chapter 3 when we look at the age issue in second language acquisition.

Summary

The innatist position has been very persuasive in pointing out how complex the knowledge of adult speakers is and how difficult it is to account for the acquisition of this complex knowledge. Some researchers, however, have argued that the innatists have placed too much emphasis on the 'final state', that is, the competence of adult native speakers, and not enough on the developmental aspects of language acquisition.

A recent view of language acquisition which is attracting much attention is *connectionism*. Connectionists differ sharply from the Chomskyan innatists because they hypothesize that language acquisition does not require a separate 'module of the mind' but can be explained in terms of learning in general. Furthermore, connectionists argue that what children need to know is essentially available in the language they are exposed to. They use computer simulations to show that a computer program (relatively uncomplicated when compared to the human brain!) can 'learn' certain things if it is exposed to them often enough. The program can even generalize beyond what it has actually been exposed to and make the same kinds of creative 'mistakes' that children make. Linguists working in the UG framework challenge connectionists to show that their theory can account for complex syntax as well as for the learning of words and grammatical morphemes, and the debate between the proponents of these two positions promises to be lively for many years to come.

The interactionist position: A little help from my friends

A third theoretical view of first language acquisition focuses on the role of the linguistic environment in interaction with the child's innate capacities in determining language development.

The *interactionists*' position is that language develops as a result of the complex interplay between the uniquely human characteristics of the child and the environment in which the child develops. Interactionists attribute considerably more importance to the environment than the innatists do. For example, unlike the innatists, most interactionists claim that language which is modified to suit the capability of the learner is a crucial element in the language acquisition process. They emphasize the importance of *child-directed speech*—the language which is not only addressed to children but adjusted in ways that make it easier for them to understand. In addition, interactionists are inclined to see language acquisition as similar to and

influenced by the acquisition of other kinds of skill and knowledge, rather than as something which is largely independent of the child's experience and cognitive development. However, interactionists represent a wide range of theories about the relative contributions of innate structures of the human mind and the environment which provides the samples of the language to be learned.

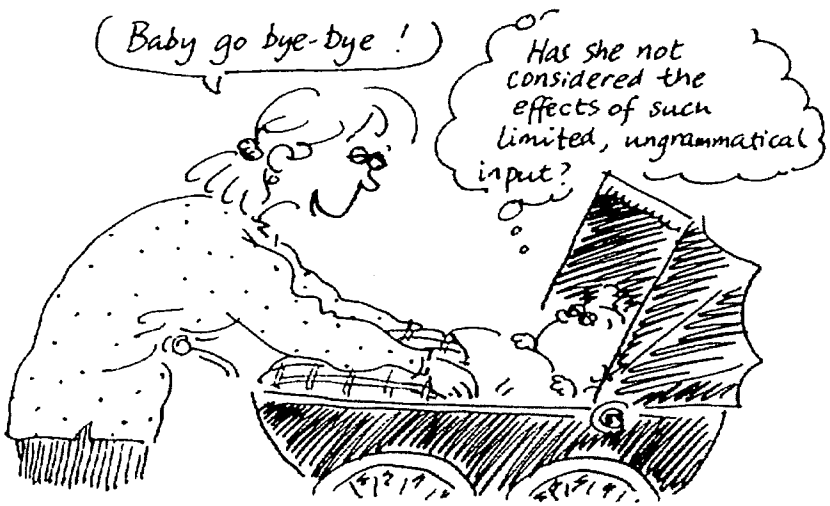
Among interactionist positions we could include those which were articulated much earlier in this century by the Swiss psychologist/epistomologist, Jean Piaget (see Ginsburg and Opper 1969). Piaget observed infants and children in their play and in their interaction with adults. He was able to trace the development of their cognitive understanding of such things as object permanence (knowing that things which are hidden from sight are still there), the stability of quantities regardless of changes in their appearance (knowing that ten pennies spread out to form a long line are not more numerous than ten pennies in a tightly squeezed line), and logical inferencing (figuring out which properties of a set of rods—size, weight, material, etc.—cause some rods to sink and others to float on water). It is easy to see from this how children's cognitive development would partly determine how they use language. For example, the use of certain terms such as 'bigger' or 'more' depend on the children's understanding of the concepts they represent. The developing cognitive understanding is built on the interaction between the child and the things which can be observed, touched, and manipulated.

Unlike the innatists, Piaget did not see language as based on a separate module of the mind. For him, language was one of a number of symbol systems which are developed in childhood. Language can be used to represent knowledge that children have acquired through physical interaction with the environment.

A strongly interactionist view was the sociocultural theory of human mental processing held by the psychologist Lev Vygotsky who worked in the Soviet Union in the 1920s and 1930s (Vygotsky 1978). He concluded that language develops entirely from social interaction. He argued that in a supportive interactive environment, the child is able to advance to a higher level of knowledge and performance than he or she would be capable of independently. Vygotsky referred to what the child could do in interaction with another, but not alone, as the child's *zone of proximal development*. He observed the importance of conversations which children have with adults and with other children and saw in these conversations the origins of both language and thought. Vygotsky's view differs from Piaget's. Piaget hypothesized that language developed as a symbol system to express knowledge acquired through interaction with the physical world. For Vygotsky, thought was essentially internalized speech, and speech emerged in social interaction.

Child-directed speech

Many researchers have studied child-directed speech, the language which adults use with children. We are all familiar with the way adults frequently modify the way they speak when addressing little children. In English, child-directed speech involves a slower rate of delivery, higher pitch, more varied intonation, shorter, simpler sentence patterns, frequent repetition, and paraphrase. Furthermore, topics of conversation may be limited to the child's immediate environment, the 'here and now', or to experiences which the adult knows the child has had. Adults often repeat the content of a child's utterance, but they expand it into a grammatically correct sentence. If you examine the transcripts presented earlier in this chapter, you will see examples of some of these features. For example, when Peter says, 'Dump truck! Dump truck! Fall! Fall!', Lois responds, 'Yes, the dump truck fell down.'



Researchers working among parents and children from a variety of cultural groups have found that the child-directed speech which was described on the basis of studies of families in middle-class American homes is not universal. In some societies, adults do not engage in conversation or verbal play with very young children. And yet these children achieve full competence in the community language. Thus, it is difficult to judge the importance of these modifications which some adults make in speech addressed to children. Children whose parents do not consistently provide such *modified interaction* will still learn language; however, they may have access to modified language when they are in the company of older siblings or other children. To the theorist, this suggests that more important than simplification is the conversational give-and-take in which the more proficient speaker intuitively

responds to the clues the child provides as to the level of language he or she is capable of processing. The importance of such interaction becomes abundantly clear in the atypical cases where it is missing. Such is the case of Jim.

Case study: Jim

Jim, the hearing child of deaf parents, had little contact with hearing/speaking adults up to the age of three years and nine months (3,9). His only contact with oral language was through television, which he watched frequently. The family was unusual in that the parents did not use sign language with Jim. Thus, although in other respects he was well cared for, Jim did not begin his linguistic development in a normal environment in which a parent communicated with him in either oral or sign language. Language tests administered indicated that he was very much below age level in all aspects of language. Although he attempted to express ideas appropriate to his age, he used unusual, ungrammatical word order.

When Jim began conversational sessions with an adult, his expressive abilities began to improve. By the age of 4,2 most of the unusual speech patterns had disappeared, replaced by structures more typical of Jim's age. It is interesting to note that Jim's younger brother Glenn did not display the same type of lag and performed normally on language tests when he was the age at which Jim was first tested. Glenn's linguistic environment was different in that he had his older brother as a conversational partner (Sachs, Bard, and Johnson 1981).

Jim showed very rapid acquisition of the structures of English once he began to interact with an adult on a one-to-one basis. The fact that he had failed to acquire language normally prior to this experience suggests that the problem lay in the environment, not the child. That is, it seems that exposure to impersonal sources of language such as television or radio alone is insufficient for the child to learn the structure of a particular language.

One-to-one interaction gives the child access to language which is adjusted to his or her level of comprehension. When a child does not understand, the adult may repeat or paraphrase. The response of the adult may also allow children to find out when their own utterances are understood. Television, for obvious reasons, does not provide such interaction. Even in children's programs, where simpler language is used and topics are relevant to younger viewers, there is no immediate adjustment made for the needs of an individual child.

Summary

We have presented three different broad theoretical approaches to explaining first language acquisition, each of which can be corroborated by evidence. As we have seen in the transcripts from Peter and Cindy (pages 10–12), children

do imitate and practise, and practice can explain how some aspects of the language such as word meanings and some language routines are learned. We saw in the example of reflexive pronouns, however, that imitation and practice alone cannot account for the complexity of the knowledge that all children eventually attain. The acquisition of such complex language seems to depend on children's possession of some knowledge which permits them to process the language they hear and to go well beyond this and even beyond simple generalizations. The discussion of the interactionist position (especially the case of Jim) showed that children who are exposed to language in the absence of one-to-one interaction do not develop language normally.

One way to reconcile the behaviourist, innatist, and interactionist theories is to see that each may help to explain a different aspect of children's language development. Behaviourist and connectionist explanations may explain the acquisition of vocabulary and grammatical morphemes. Innatist explanations seem most plausible in explaining the acquisition of complex grammar. Interactionist explanations may be useful for understanding how children relate form and meaning in language, how they interact in conversations, and how they learn to use language appropriately.

In Chapter 2 we will begin to look at the acquisition of second languages by children and older learners. We will see that many of the issues raised in this chapter will be relevant to our discussion of second language acquisition.

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2 THEORETICAL APPROACHES TO EXPLAINING SECOND LANGUAGE LEARNING

In this chapter we look at some of the theories that have been proposed to account for *second language acquisition* (SLA). In many ways, theories which have been developed for SLA are closely related to those discussed for first language acquisition in Chapter 1. That is, some theories give primary importance to learners' innate characteristics; some emphasize the essential role of the environment in shaping language learning; still others seek to integrate learner characteristics and environmental factors in an explanation for how second language acquisition takes place.

It is clear that a child or adult learning a second language is different from a child acquiring a first language in terms of both personal characteristics and conditions for learning. Questions to consider include:

1 Does the learner already know a language?

2 Is the learner cognitively mature, that is, is he or she able to engage in problem solving, deduction, and complex memory tasks?

3 How well developed is the learner's metalinguistic awareness? That is, can the learner treat language as an object—for example, define a word, say what sounds make up that word, or state a rule such as 'add an *-s* to form the plural'?

4 How extensive is the learner's general knowledge of the world? This kind of knowledge makes it easier to understand language because one can sometimes make good guesses about what the interlocutor is probably saying even when the language carrying the message is new.

5 Is the learner nervous about making mistakes and sounding 'silly' when speaking the language?

6 Does the learning environment allow the learner to be silent in the early stages of learning, or is he or she expected to speak from the beginning?

7 Is there plenty of time available for language learning to take place, plenty of contact with proficient speakers of the language?

8 Does the learner receive *corrective feedback* when he or she makes errors in grammar or pronunciation, or does the listener overlook these errors and pay attention to the message?

9 Does the learner receive corrective feedback when he or she uses the wrong word, or does the listener usually try to guess the intended meaning?

10 Is the learner exposed to language which is modified, in terms of speed of delivery, complexity of grammatical structure, and vocabulary, so that it matches the learner's ability to comprehend and interact?

Activity

Learner profiles

Table 2.1 helps to illustrate possible answers to these questions with respect to the profiles of four language learners:

- a child learning its first language (L1)
- a child learning a second language (L2) informally
- an adolescent learning a second language in a *formal language learning setting*
- an adult learning a second language informally (in the workplace or among friends).

Fill in the chart, giving your opinion about the presence or absence of the characteristics or conditions referred to in the questions above. Use the following notation:
+ = a characteristic which is usually present
– = a characteristic which is usually absent
? = where the characteristic or condition is sometimes present, sometimes absent, or where you are not sure.

The discussion below summarizes our views about the profiles of these four language learners in terms of their characteristics and the conditions in which their learning takes place.

Learner characteristics
All second language learners, regardless of age, have by definition already acquired at least one language. This prior knowledge may be an advantage in the sense that the learner has an idea of how languages work. On the other hand, as we shall see, knowledge of other languages can also lead learners to make incorrect guesses about how the second language works and this may cause errors which a first language learner would not make.

Young language learners begin the task of language learning without the benefit of some of the skills and knowledge which adolescent and adult learners have. The first language learner does not have the same *cognitive*

	L1	L2		
Learner characteristics	*Child*	*Child (informal)*	*Adolescent (formal)*	*Adult (informal)*
1 knowledge of another language				
2 cognitive maturity				
3 metalinguistic awareness				
4 knowledge of the world				
5 nervousness about speaking				
Learning conditions				
6 freedom to be silent				
7 ample time				
8 corrective feedback: grammar and pronunciation				
9 corrective feedback: word choice				
10 modified input				

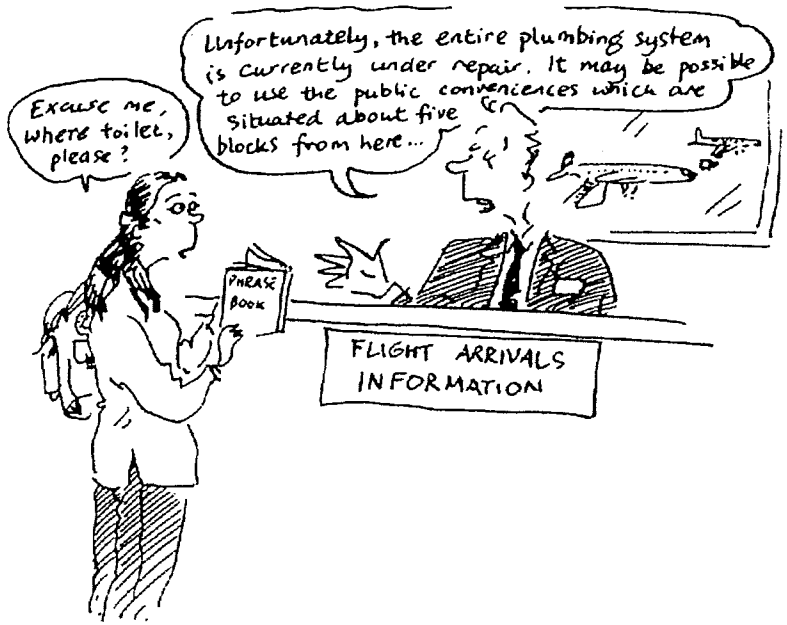
maturity, metalinguistic awareness, or world knowledge as older second language learners. Although young second language learners have begun to develop cognitive maturity and metalinguistic awareness, they will still have far to go in these areas, as well as in the area of world knowledge, before they reach the levels already attained by adults and adolescents.

Most child learners do not feel nervous about attempting to use the language—even when their proficiency is quite limited, but adults and adolescents often find it very stressful when they are unable to express themselves clearly and correctly. Nevertheless, even very young (pre-school) children differ in their nervousness when faced with speaking a language they do not know well. Some children happily chatter away in their new language; others prefer to listen and participate silently in social interaction with their peers. Fortunately for these children, the learning environment rarely puts pressure on them to speak when they are not ready.

Learning conditions
Younger learners, in an informal second language learning environment, are usually allowed to be silent until they are ready to speak. Older learners are often forced to speak—to meet the requirements of a classroom or to carry out everyday tasks such as shopping, medical visits, or job interviews. Young children in informal settings are usually exposed to the second language for

many hours every day. Older learners, especially students in language classrooms, are more likely to receive only limited exposure to the second language.

One condition which appears to be common to learners of all ages—though perhaps not in equal quantities—is access to *modified input*. This adjusted speech style, which is called child-directed speech for first languages, is sometimes called *foreigner talk* or *teacher talk* for second languages. Many people who interact regularly with language learners seem to have an intuitive sense of what adjustments are needed to help learners understand. Of course, some people are better at this than others. We have all witnessed those painful conversations in which insensitive people seem to think that they can make learners understand better if they simply talk louder! Some Canadian friends recently told us of an experience they had in China. They were visiting some historic temples and wanted to get more information about them than they could glean from their guidebook. They asked their guide some questions about the monuments. Unfortunately, their limited Chinese and his non-existent English made it difficult for them to exchange information. The guide kept speaking louder and louder, but our friends understood very little. Finally, in frustration, the guide concluded that it would help if these hopeless foreigners could *see* the information—so he took a stick and began writing in the sand—in Chinese characters!



As we saw in Chapter 1, error correction in first language acquisition tends to be limited to corrections of meaning—including errors in vocabulary choice. In informal second language acquisition, errors which do not interfere with

meaning are usually overlooked. Most people would feel they were being impolite if they interrupted and corrected someone who was trying to have a conversation with them! Nevertheless, they may react to an error if they cannot understand what the speaker is trying to say. Thus, errors of grammar and pronunciation are rarely remarked on, but the wrong word choice may receive comment from a puzzled interlocutor. The only place where feedback on error is typically present with high frequency is the language classroom. As we shall see, however, it is not present in all classrooms.

Summary
A general theory of SLA needs to account for language acquisition by learners with a variety of characteristics, learning in a variety of contexts. The emphasis in this chapter is on the theories which have been proposed to explain the learning mechanisms which are common to all second language learners. In Chapter 3, we will look at proposals for how differences among learners may lead to differences in their learning success.

Behaviourism

In this section, we will discuss the impact of behaviourism on our understanding of second language learning. Later in this chapter, we will discuss some more recent theories based on cognitive psychology.

As we saw in Chapter 1, behaviourists account for learning in terms of imitation, practice, reinforcement (or feedback on success), and habit formation. According to the behaviourists, all learning, whether verbal or non-verbal, takes place through the same underlying processes. Learners receive linguistic input from speakers in their environment and they form 'associations' between words and objects or events. These associations become stronger as experiences are repeated. Learners receive encouragement for their correct imitations, and corrective feedback on their errors. Because language development is viewed as the formation of habits, it is assumed that a person learning a second language starts off with the habits formed in the first language and that these habits interfere with the new ones needed for the second language (Lado 1964).

Behaviourism was often linked to the *Contrastive Analysis Hypothesis* (CAH) which was developed by structural linguists in Europe and North America. The CAH predicts that where there are similarities between the first language and the *target language*, the learner will acquire target-language structures with ease; where there are differences, the learner will have difficulty.

There is little doubt that a learner's first language influences the acquisition of a second language. However, researchers have found that not all errors predicted by the CAH are actually made. Furthermore, many of the errors

which learners do make are not predictable on the basis of the CAH. For example, adult beginners use simple structures in the target language just as children do: 'No understand,' or 'Yesterday I meet my teacher.' Such sentences look more like a child's first language sentences than like translations from another language. Indeed, many of the sentences produced by second language learners in the early stages of development would be quite ungrammatical in their first language. What is more, some characteristics of these simple structures are very similar across learners from a variety of backgrounds, even if the structures of their respective first languages are different from each other and different from the target language.

In Chapter 4, we will see that learners are reluctant to transfer certain features of their first language to the second language, even when the translation equivalent would be correct. All this suggests that the influence of the learner's first language may not simply be a matter of the transfer of habits, but a more subtle and complex process of identifying points of similarity, weighing the evidence in support of some particular feature, and even reflecting (though not necessarily consciously) about whether a certain feature seems to 'belong' in the structure of the target language.

For second language acquisition, as for first language acquisition, the behaviourist account has proven to be at best an incomplete explanation for language learning. Psychologists have proposed new, more complex theories of learning. Some of these are discussed later in this chapter.

Innatism

Universal Grammar

As we saw in Chapter 1, Chomsky's theory of language acquisition is based on the hypothesis that innate knowledge of the principles of Universal Grammar (UG) permits all children to acquire the language of their environment, during a critical period in their development. Chomsky has not made specific claims about the implications of his theory for *second* language learning. Nevertheless, some linguists working within this theory have argued that Universal Grammar offers the best perspective from which to understand second language acquisition (SLA). Others argue that, although it is a good framework for understanding first language acquisition, UG is no longer available to guide the acquisition of a second language in learners who have passed the critical period for language acquisition. In their view, this means that second language acquisition has to be explained by some other theory, perhaps one of the more recent psychological theories described below.

Even those who believe that UG has an important explanatory role in SLA do not all agree on how UG works in second language development. Some argue

that, even if second language learners begin learning the second language after the end of the critical period and even if many fail to achieve complete mastery of the target language, there is still a logical problem of (second) language acquisition: learners eventually know more about the language than they could reasonably have learned if they had to depend entirely on the input they are exposed to. They infer from this that UG must be available to second language learners as well as to first language learners. Some of the theorists who hold this view claim that the nature and availability of UG in SLA is no different from that which is hypothesized to guide first language learners. Others argue that UG may be present and available to second language learners, but that its exact nature has been altered by the acquisition of other languages.

Researchers working within the UG framework also differ in their hypotheses about how formal instruction or error correction will affect the learner's knowledge of the second language. Some argue that, like young children, adult second language learners neither need nor benefit from error correction and metalinguistic information. They conclude that these things change only the superficial appearance of language performance and do not really affect the underlying systematic knowledge of the new language (Schwartz 1993 and see the discussion of Krashen's theory, on pages 38–40). Other UG linguists, especially those who think that UG has been affected by the prior acquisition of the first language, suggest that second language learners may need to be given some explicit information about what is *not* grammatical in the second language. Otherwise, they may assume that some structures of the first language have equivalents in the second language when, in fact, they do not. (See further discussion and an example in Chapter 4.)

Researchers who study SLA from the UG perspective are usually interested in the language *competence* (knowledge) of advanced learners rather than in the simple language of early stage learners. They argue that, while a variety of different theories might be sufficient to explain some early language *performance* (use), a theory such as UG is necessary to explain learners' knowledge of complex syntax. They are interested in whether the competence which underlies the language performance of second language learners resembles the competence which underlies the language performance of native speakers. Thus their investigations often involve comparing the *judgements of grammaticality* made by the two groups, rather than observations of actual speaking. In doing this, they hope to gain insight into what learners actually know about the language, using a task which avoids at least some of the many things which affect the way we ordinarily *use* language.

Krashen's 'monitor model'

An innatist theory of second language acquisition which has had a very great influence on second language teaching practice is the one proposed by Stephen Krashen (1982). Five 'hypotheses' constitute what Krashen originally called the 'monitor model'. He claims that research findings from a number of different domains are consistent with these hypotheses: (1) the acquisition–learning hypothesis; (2) the monitor hypothesis; (3) the natural order hypothesis; (4) the input hypothesis; and (5) the affective filter hypothesis.

1 The acquisition–learning hypothesis

According to Krashen, there are two ways for adult second language learners to develop knowledge of a second language: 'acquisition' and 'learning'. In his view, we *acquire* as we are exposed to samples of the second language which we understand. This happens in much the same way that children pick up their first language—with no conscious attention to language form. We *learn*, on the other hand, via a conscious process of study and attention to form and rule learning.

For Krashen, acquisition is by far the more important process. He asserts that only acquired language is readily available for natural, fluent communication. Further, he asserts that learning cannot turn into acquisition. He cites as evidence for this that many speakers are quite fluent without ever having learned rules, while other speakers may 'know' rules but fail to apply them when they are focusing their attention on *what* they want to say more than on *how* they are saying it.

2 The monitor hypothesis

Krashen argues that the acquired system acts to initiate the speaker's utterances and is responsible for fluency and intuitive judgements about correctness. The learned system, on the other hand, acts only as an editor or 'monitor', making minor changes and polishing what the acquired system has produced. Moreover, Krashen has specified that learners use the monitor only when they are focused more on being 'correct' than on what they have to say, when they have sufficient time to search their memory for the relevant rules, and when they actually know those rules! Thus, writing may be more conducive than speaking to monitor use, because it usually allows more time for attention to form. He maintains that since knowing the rules only helps the speaker supplement what has been acquired, the focus of language teaching should be on creating conditions for 'acquisition' rather than 'learning'.

It is very difficult to show evidence of 'monitor' use. In any given utterance, it is impossible to determine what has been produced by the acquired system and what is the result of monitor use. Krashen's claim that language which is produced quickly and apparently spontaneously must have been acquired rather than learned leaves us with a somewhat circular definition.

3 The natural order hypothesis

Krashen based this hypothesis on the observation that, like first language learners, second language learners seem to acquire the features of the target language in predictable sequences. Contrary to intuition, the rules which are easiest to state (and thus to 'learn') are not necessarily the first to be acquired. For example, the rule for adding an *-s* to third person singular verbs in the present tense is easy to state, but even some advanced second language speakers fail to apply it in rapid conversation. Further, Krashen observes that the *natural order* is independent of the order in which rules have been learned in language classes. Most of Krashen's original evidence for this hypothesis came from the 'morpheme studies', in which learners' speech was examined for the accuracy of certain *grammatical morphemes*. While there have been many criticisms of the morpheme studies, subsequent research has confirmed that learners pass through sequences or stages in development. In Chapter 4, we will look at some of these sequences in second language acquisition.

4 The input hypothesis

Krashen asserts that one acquires language in only one way—by exposure to *comprehensible input*. If the input contains forms and structures just beyond the learner's current level of competence in the language (what Krashen calls 'i + 1'), then both comprehension and acquisition will occur.

Krashen cites many varied lines of evidence for this hypothesis, most of which appeal to intuition, but which have not been substantiated by empirical studies. In recent years, he has emphasized the value of undirected pleasure reading as a source of comprehensible input. While he acknowledges that some people who are exposed to extensive comprehensible input do not achieve high levels of proficiency in the second language, he retains his conviction that input is the source of acquisition. He points to the affective filter hypothesis to explain lack of success when comprehensible input is available.

5 The affective filter hypothesis

The 'affective filter' is an imaginary barrier which prevents learners from acquiring language from the available input. 'Affect' refers to such things as motives, needs, attitudes, and emotional states. A learner who is tense, angry, anxious, or bored may 'filter out' input, making it unavailable for acquisition. Thus, depending on the learner's state of mind or disposition, the filter limits what is noticed and what is acquired. The filter will be 'up' (blocking input)

when the learner is stressed, self-conscious, or unmotivated. It will be 'down' when the learner is relaxed and motivated.

What makes this hypothesis attractive to practitioners is that it appears to have immediate implications for classroom practice. Teachers can understand why some learners, given the same opportunity to learn, may be successful while others are not. It also appeals intuitively to those who have tried unsuccessfully to learn a language in conditions where they felt stressed or uncomfortable. One problem with the hypothesis, however, is that it is difficult to be sure that affective factors *cause* the differences in language acquisition. It seems likely that success in acquisition may in itself contribute to more positive motivation or, in Krashen's terms, to a 'lowered affective filter'. In Chapter 3, we will discuss further the relationship between attitudes/motivation and success in second language learning.

Krashen's writing has been very influential in supporting *communicative language teaching* (CLT), particularly in North America. On the other hand, the theory has also been seriously criticized for failing to propose hypotheses which can be tested by empirical research. Most teachers and researchers see much which is intuitively appealing in his views. There is little doubt that communicative language teaching, with its primary focus on using language for meaningful interaction and for accomplishing tasks, rather than on learning rules, has won support from many teachers and learners. Nevertheless, it will be seen in Chapter 6 that some classroom-centred research shows that attention to language form may be more important than Krashen acknowledges. We will also see that instruction which focuses on language form can be incorporated within communicative language teaching.

Recent psychological theories

Information processing

Cognitive psychologists working in an *information processing* model of human learning and performance tend to see second language acquisition as the building up of knowledge systems that can eventually be called on automatically for speaking and understanding. At first, learners have to pay attention to any aspect of the language which they are trying to understand or produce. It is assumed that there is a limit to the amount of information a human can pay attention to at one time. Thus, for example, a learner at the earliest stages of second language learning will probably pay attention to the main words in a message and not be able to also notice the grammatical morphemes which are attached to some of those words. Gradually, through experience and practice, learners become able to use certain parts of their knowledge so quickly and automatically that they are not even aware that they are doing it. This frees them to focus on other aspects of the language which, in turn, gradually become automatic (McLaughlin 1987). The performance which will eventually become automatic may originate from intentional learning, for example in formal study, but this is not always the case. Anything which uses up our mental 'processing space', even if we are not aware of it or attending to it 'on purpose', is a possible source for information or skills which can eventually be available automatically, if there has been enough practice. Note that, in this context, 'practice' is not seen as something mechanical, but as something which involves effort on the part of the learner.

One theorist who has emphasized the role of 'noticing' in second language acquisition is Richard Schmidt. He argues that everything we come to know about the language was first 'noticed' consciously. This contrasts sharply with Krashen's views, of course. Schmidt, like the cognitive psychologists, does not assume that there is a difference between acquisition and learning (Schmidt 1990).

In addition to the development of automaticity through practice, some psychologists suggest that there are changes in skill and knowledge which are due to 'restructuring'. This notion is needed to account for the observation that sometimes things which we know and use automatically may not be explainable in terms of a gradual build-up of automaticity through practice. They seem rather to be based on the interaction of knowledge we already have, or on the acquisition of new knowledge which—without extensive practice—somehow fits into an existing system and causes it to be transformed or 'restructured'. This may lead to what appear to be sudden bursts of progress for the learner, but it can also sometimes lead to apparent backsliding when a systematic aspect of learner language incorporates too much or incorporates the wrong things. For example, when a learner finally masters the use of the

regular *-ed* ending to show past tense, irregular verbs, which had previously been 'practised' correctly, may be affected. Thus, after months of saying 'I saw a film', the learner may say 'I seed' or even 'I sawed', overapplying the general rule.

Connectionism

As seen in the discussion of first language acquisition, connectionists, unlike innatists, see no need to hypothesize the existence of a neurological module which is designed for language acquisition alone. Like most cognitive psychologists, connectionists attribute greater importance to the role of the environment than to any innate knowledge in the learner, arguing that what is innate is simply the ability to learn, not any specifically linguistic structure.

Connectionists argue that learners gradually build up their knowledge of language through exposure to thousands of instances of the linguistic features they eventually learn. Thus, while innatists see the language input in the environment mainly as a 'trigger' to activate innate knowledge, connectionists see the input as the principal source of linguistic knowledge. After hearing language features in specific situational or linguistic contexts over and over again, learners develop stronger and stronger mental or neurological 'connections' between these elements. Eventually, the presence of one situational or linguistic element will activate the other(s) in the learner's mind. These connections may be very strong because the elements have occurred together very frequently or they may be relatively weaker because there have been fewer opportunities to experience them together. For example, learners might get the subject–verb agreement correct, not because they know a rule but because they have heard examples such as 'I say' and 'he says' so often that each subject pronoun activates the correct verb form.

As noted in Chapter 1, connectionist research has shown that a learning mechanism, simulated by a computer program, can not only 'learn' what it hears but can also generalize, even to the point of making overgeneralization errors. These studies have so far dealt almost exclusively with the acquisition of vocabulary and grammatical morphemes, that is, aspects of the language which even innatists will grant may be acquired largely through memorization and simple generalization. How this model of cumulative learning can lead to knowledge of complex syntactic structures is a question which is currently under investigation.

The interactionist position

Some interactionist theorists, while influenced by psychological learning theories, have developed their ideas mainly within SLA research itself. Evelyn

Hatch (1992), Teresa Pica (1994) and Michael Long (1983), among others, have argued that much second language acquisition takes place through conversational interaction. This is similar to the first language theory that gives great importance to child-directed speech. Michael Long's views are based on his observation of interactions between learners and native speakers. He agrees with Krashen that comprehensible input is necessary for language acquisition. However, he is more concerned with the question of *how* input is made comprehensible. He sees modified interaction as the necessary mechanism for this to take place (Long 1983). In his view, what learners need is not necessarily simplification of the linguistic forms but rather an opportunity to interact with other speakers, in ways which lead them to adapt what they are saying until the learner shows signs of understanding. According to Long, there are no cases of beginning-level learners acquiring a second language from native-speaker talk which has *not* been modified in some way. In fact, he says, research shows that native speakers consistently modify their speech in sustained conversation with non-native speakers.

Long infers that modified interaction must be necessary for language acquisition. This relationship has been summarized as follows:

1 Interactional modification makes input comprehensible;

2 Comprehensible input promotes acquisition.

Therefore,

3 Interactional modification promotes acquisition.

Modified interaction does not always involve linguistic simplification. It may also include elaboration, slower speech rate, gesture, or the provision of additional contextual cues. Some examples of these conversational modifications are:

1 Comprehension checks—efforts by the native speaker to ensure that the learner has understood (for example, 'The bus leaves at 6:30. Do you understand?').

2 Clarification requests—efforts by the learner to get the native speaker to clarify something which has not been understood (for example, 'Could you repeat please?'). These requests from the learner lead to further modifications by the native speaker.

3 Self-repetition or paraphrase—the native speaker repeats his or her sentence either partially or in its entirety (for example, 'She got lost on her way home from school. She was walking home from school. She got lost.').

Research has demonstrated that conversational adjustments can aid comprehension. There is evidence that modification which takes place during interaction leads to better understanding than linguistic simplification or modification which is planned in advance. While some recent research has shown that

specific kinds of interaction behaviours aid learning in terms of immediate production, more research is needed on how access to modified interaction affects second language acquisition in the long term.

Another perspective on the role of interaction in second language acquisition is Vygotsky's sociocultural theory of human mental processing. As we saw in Chapter 1, Vygotsky's theory assumes that all cognitive development, including language development, arises as a result of social interactions between individuals. Extending Vygotskyan theory to second language acquisition, Jim Lantolf and others claim that second language learners advance to higher levels of linguistic knowledge when they collaborate and interact with speakers of the second language who are more knowledgeable than they are, for example, a teacher or a more advanced learner. Critical to Vygotsky's theory is the notion of the zone of proximal development, the level of performance which a learner is capable of when there is support from interaction with a more advanced interlocutor. This may be observed in a variety of speech strategies used by more advanced speakers to create supportive conditions for the second language learner to comprehend and produce language (for example, repetition, simplification, modelling). One example of this is the conversation below, reported by Richard Donato, who investigated how adult learners of French were able to co-construct language learning experiences in a classroom setting.

Speaker 1 . . . and then I'll say . . . *tu as souvenu notre anniversaire de mariage* . . . or should I say *mon anniversaire*?
Speaker 2 *Tu as* . . .
Speaker 3 *Tu as* . . .
Speaker 1 *Tu as souvenu* . . . 'You remembered?'
Speaker 3 Yea, but isn't that reflexive? *Tu t'as* . . .
Speaker 1 Ah, *tu t'as souvenu*.
Speaker 2 Oh, it's *tu es*
Speaker 1 *Tu es*
Speaker 3 *Tu es, tu es, tu* . . .
Speaker 1 *T'es, tu t'es*
Speaker 3 *Tu t'es*
Speaker 1 *Tu t'es souvenu*

(Donato 1994: 44)

According to Vygotskyan theorists, the difference between this perspective and that of other researchers who also view interaction as important in second language acquisition is that sociocultural theorists assume that language acquisition actually takes place in the interactions of learner and interlocutor, whereas other interactionist models assume that input modification provides learners with the linguistic raw material which they will process internally and invisibly.

Summary

In the end, what all theories of language acquisition are meant to account for is the working of the human mind. All of the theories discussed in this chapter and in Chapter 1 use metaphors to represent this invisible reality. Both linguists and psychologists draw some of their evidence from neurological research. However, in light of the present state of technology as well as research ethics, most of the research must be based on other kinds of evidence.

Many claims from behaviourist theory were based on experiments with animals learning a variety of responses to laboratory stimuli. Their applicability to the natural learning of languages by humans was strongly challenged by psychologists and linguists alike, primarily because of the inadequacy of behaviourist models to account for the complexity involved in language learning.

Information processing and connectionist research often involves computer simulations or very controlled laboratory experiments where people learn a specific set of carefully chosen linguistic features, often in an invented language. Many linguists argue that this does not entitle connectionists to generalize to the complexities of normal human language learning.

In contrast, the innatists draw much of their evidence from studies of the complexities of the proficient speaker's language knowledge and performance and from analysis of their own intuitions about language. Critics of this view argue that it is not enough to know what the final state of knowledge is and that more attention should be paid to the developmental steps leading up to this level of mastery.

Interactionists emphasize the role of the modification of interaction in conversations. This helps us understand some of the ways in which learners can gain access to new knowledge about the language when they have support from an interlocutor. However, critics of the interactionist position argue that there is much which learners need to know which is not available in the input, and so they put greater emphasis on innate principles of language which learners can draw on.

Researchers and educators who are hoping for language acquisition theories which give them insight into language teaching practice are often frustrated by the lack of agreement among the 'experts'. But the complexities of SLA, like those of first language acquisition, represent a puzzle for linguistic, psychological, and neurological scientists which will not soon be solved. Research which has theory development as its goal has very important long-term significance for language teaching and learning, but agreement on a 'complete' theory of language acquisition is probably, at best, a long way off. Even if such agreement were reached, there would still be questions about how the theory should be

interpreted for language teaching. Many teachers watch theory development with interest, but must continue to teach and plan lessons and assess students' performance in the absence of a comprehensive theory of second language learning.

There is a growing body of 'applied' research being carried out within these different theoretical frameworks, as well as others. This often starts from observations of second language acquisition, in both 'natural' or 'instructional' settings. The research draws on a wide range of theoretical orientations, sometimes explicitly stated, sometimes merely implied. It may provide a more immediately accessible basis for teachers' reflections about teaching. In the following chapters, we will look at research which has sought to explain the processes and outcomes of second language acquisition in a variety of settings.

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3 FACTORS AFFECTING SECOND LANGUAGE LEARNING

In Chapter 1, it was pointed out that all normal children, given a normal upbringing, are successful in the acquisition of their first language. This contrasts with our experience of second language learners, whose success varies greatly.

Many of us believe that learners have certain characteristics which lead to more or less successful language learning. Such beliefs are usually based on anecdotal evidence, often our own experience or that of individual people we have known. For example, many teachers are convinced that extroverted learners who interact without inhibition in their second language and find many opportunities to practise language skills will be the most successful learners. In addition to personality characteristics, other factors generally considered to be relevant to language learning are intelligence, aptitude, motivation, and attitudes. Another important factor, as suggested in our discussion of the Critical Period Hypothesis for first language acquisition, is the age at which learning begins.

In this chapter, we will see whether anecdotal evidence is supported by research findings. To what extent can we predict differences in the success of second language acquisition in two individuals if we have information about their personalities, their general and specific intellectual abilities, their motivation, or their age?

Activity

Characteristics of the 'good language learner'

It seems that some people have a much easier time of learning than others. Rate of development varies widely among first language learners. Some children can string together five-, six-, and seven-word sentences at an age when other children are just beginning to label items in their immediate environment. Nevertheless, all normal children eventually master their first language.