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Second Language Acquisition

The psycholinguistics of bilingualism

The main questions addressed in the psycholinguistics of bilingualism concern *the representation, storage, organization, accessing, and processing of a bilingual's languages, and the degree to which the bilingual's languages are functionally dependent or independent*.

The most promising account of how a bilingual's languages are stored and related is that given by Paradis,[1] according to whom the bilingual has one set of experiential and conceptual information, that is, *one "world-knowledge" store*, and *two language stores*, one for each language, each connected to the world-knowledge store. In the language stores, conceptual features of the world knowledge are grouped together differently, so that, for instance, the English word *ball* is connected to conceptual features such as "round" and "bouncy," whereas the French word *balle* is connected, in addition, to the feature "small" and the French word *ballon* is connected, in addition, instead, to the feature "large."

The ability of bilinguals to keep their languages apart or to mix them at will, as in *code mixing* and *code switching* is of special interest in psycholinguistic studies of bilingualism. It is an ability which seems to be lost in aphasic patients: Perecman[2] reviews studies reporting aphasic patients using words from different languages in the same utterance, combining a stem from one language with a stem from another, blending syllables from different languages in a single word, using the intonation of one language with the vocabulary of another, using the syntax of one language with the vocabulary of another, replacing a word with a phonetically similar word from another language, responding in a language different from the language of address, and engaging in *spontaneous translation*: the immediate and unsolicited translation of an utterance, the patient's own, or that of another speaker, into another language. How is it, then, that a healthy bilingual is able to speak either language, to switch from one to the other at will, and to prevent themselves from producing a haphazard mixture?

Penfield's[3] answer to this question is that there is an automatic switching system which ensures that when one language is being used—is switched on—any other language is kept switched off. However, as some bilinguals, such as simultaneous interpreters, are able to listen to one language while speaking another, a single switching system cannot be enough. Instead, Macnamara[4] proposes that there is one system for production and another for perception. The bilingual has control of an output switch, which enables her or him to select a language for speaking or writing, whereas the input switch is automatically controlled by the input, the language being heard or read.

However, as Taylor[5] has pointed out, and as the experience of many bilinguals confirms, it can often take a bilingual a few seconds to comprehend part of an utterance if the language spoken has suddenly been switched, a phenomenon which tends to contradict the

[1] Paradis, M., *Contributions of Neurolinguistics to the Theory of Bialingualism*.

[2] Perecman, E., *Language Processing in the Bilingual: Evidence from Language Mixing*.

[3] Penfield, W.P., *Epilogue: The Learning of two Languages*.

[4] *The Linguistics Encyclopedia*.

[5] Ibid.

automatic input-switch hypothesis. Nor can a switch model account for interference by one language on another, as occurs when, for instance, a bilingual inadvertently uses a word from the language he/she is not using at the time, something which most bilinguals have experienced themselves doing.

It can also be argued that there is no need to posit switches for turning the languages on or off at all. According to Paradis a bilingual simply decides to use one language rather than another, just as he/she may decide to speak or to remain silent; and according to Obler and Albert[6] the bilingual relies on a number of linguistic clues to which language is being used. It may thus be that both a bilingual's languages are "on" all the time, although the one being used predominates.

The analysis of the speech of bilingual aphasics[7] has been used extensively in attempts to answer questions concerning the organization in the brain and the processing of a bilingual's languages. This approach complements studies of healthy bilinguals' performance in dichotic-listening tasks and tachistoscope[8] tests. Recent studies using these methods suggest that bilinguals process language mainly in the left hemisphere, just as monolinguals appear to do.

6 Obler, L. and Albert, M., *A Monitor System for Bilingual Language Processing*.

7 "Aphasia: loss of the ability to use and understand language, usually caused by damage to the brain. The loss may be total or partial, and may affect spoken and/or written language ability. There are different types of aphasia: agraphia is difficulty in writing; alexia is difficulty in reading; anomia is difficulty in using proper nouns; and agrammatism is difficulty in using grammatical words like prepositions, articles, etc. Aphasia can be studied in order to discover how the brain processes language" (*Longman Dictionary of Applied Linguistics*).

8 "Tachistoscope: a mechanical apparatus which presents printed material (eg words, sentences) very briefly when a shutter or similar device is opened and closed rapidly, and which is used in research on perception and reading and sometimes in speed reading courses" (*Longman Dictionary of Applied Linguistics*).

Most bilingual aphasic patients recover all their languages at the same rate. Some patients, however, experience only selective recovery. Minkowski,[9] for instance, reports on a patient who never regained use of his mother tongue, Swiss German. He had learnt German, French, and some Italian at school and had, at the age of thirty moved to a French-speaking town where he became a professor of physics. After suffering a stroke, at the age of forty-four, the patient lost the use of all his languages and, although comprehension in all of them was soon restored, the patient had to relearn to speak French, which had become the patient's predominant language, returned first, followed by standard German and some Italian.

Minkowski also reports a case of *successive restitution*: a patient who had become aphasic following a motor-cycle accident at the age of thirty-two first regained almost full use of German, then of his first language, Swiss German, and then, after at least sixteen months, of Italian and French.

Minkowski reports a case of yet another pattern of recovery, namely *antagonistic recovery* of an aphasic's languages. The patient first recovered French, but as other languages were recovered, French was gradually lost. In some cases, there is *alternate antagonism*: a language is recovered, then lost as another is recovered, but is recovered again with subsequent loss of the other language, and so on.

Apparently, several factors influence the pattern of recovery of languages lost through aphasia:

- One is the degree of use of the languages just before injury occurs.
- Another is the patient's psychological state before and after the injury, that is, if a patient has a particular emotional bond with one language, that language will tend to be recovered first.
- Third, the language used with the aphasic during therapy will obviously also influence the recovery process.

9 *The Linguistics Encyclopedia*.

• It may also be the case that a language in which the bilingual was literate before the injury stands a better chance of being recovered than a language which he/she could only speak.

In addition, the patient's age and the severity of the injury influence the recovery pattern.

However, as many aphasics who do not regain the ability to use all their languages are still able to comprehend them, and in view of the phenomenon of alternate antagonism, it has been suggested that the languages are not lost at all, but that the retrieval of the stored language is inhibited, i.e. while both languages may be stored identically in one single extended system, the elements of each language form separate subsystems within the extended system. Each of the subsets can be impaired individually, leading to the various types of nonparallel recovery just discussed, or the whole set may be inhibited, in which case parallel recovery will occur.

Societal bilingualism

A bilingual or multilingual society is one in which two or more languages are used by large groups of the population, although not all members of each group need be bilingual. Canada, Belgium, and Finland, for example, are bilingual countries, and India, the Soviet Union, and many African and Asian countries are multilingual. If the languages spoken in a bilingual society have equal status in the official, cultural, and family life of the society, the situation is referred to as *horizontal bilingualism*, whereas *diagonal bilingualism* obtains when only one language has official "standard" status. Some linguists include diglossia as a third type of bilingualism, *vertical bilingualism*, but this involves dialects of the same language, rather than different languages. And, as it has also been pointed out, even countries such as Japan and Germany, which we might think of as monolingual, contain sizable minority groups speaking languages other than the official language; they are classified as monolingual,

nevertheless, because the great majority of the inhabitants have the official language as their mother tongue, and none of the minority languages has official status.

In many African and Asian countries, political boundaries conflict with linguistic boundaries, largely as a result of colonization. After independence, such multilingual countries have typically chosen either one of the native languages or a language from outside the nation, normally that of the colonizers, for use as an official language. Thus Tanzania uses Swahili as the official language, while Ghana uses English and Senegal uses French.

The reason why Tanzania chose Swahili was not, as one might first imagine, that this was the native language of the majority of the population: quite the opposite is the case. Swahili was the mother tongue of only around 10 per cent of the population, but it was the medium of education in primary schools, was linked to the movement for independence, and was already in use as a *lingua franca*—a language known to, and used for communication between groups who do not speak each other's language—in Tanzania, and also in Kenya and Uganda. It was thus a language known by a large proportion of the population—around 90 per cent are bilingual with Swahili as one of their languages—but, since it was the first language of so few, its choice as an official language would not be interpreted as favouritism towards any one group. Tanzania is a diagonally bilingual country.

Canada is probably the best known example of a horizontally bilingual country. Others include Czechoslovakia, Cyprus, Ireland, Israel, and Finland; Belgium is officially trilingual with Flemish, French, and German. Official bilingualism may, as in Canada, operate throughout a country so that any person anywhere in that country can choose to be educated in and use cither language for official business; or a country, such as Switzerland, may

be divided into areas in which only one of the languages is used in education and for official purposes.

In Canada, the Official Languages Act, passed in 1968–9, declared French and English official languages, and granted them equal status in all aspects of federal administration. Such a policy need not promote individual bilingualism; indeed, it can actively discourage it, because its aim is to ensure that speakers of either language have access to all official documents in their own language. Thus, in Canada, only 13 per cent of the population use both languages regularly; in Paraguay, by contrast, where Spanish is the official language in so far as it is used for official government business, while the Indian language Guarani is the national language used on public occasions and in the media, about 55 per cent of the population is bilingual.[10]

In Canada, although it was intended that wherever at least 10 per cent of the population spoke whichever of the two languages was the minority language for the area, the federal government would fund bilingual education programmes, this part of the Act has not been fully implemented. One of the reasons for this is that while bilingual education may seem advantageous to speakers of the majority language, English (67 per cent), it may appear to threaten the French-speaking minority (26 per cent) with assimilation. To counter this threat, the government of Quebec province, in which French is the majority language, passed the Chartre de la Langue Française in 1977, which, contrary to federal policy, made French the only official language in the province. Clearly, the fact that Canada consists of a number of self-governing provinces has hampered the full implementation of federal policy; however, bilingualism appears to be growing among the school-age population in Canada.

[10] *Encyclopaedia Britannica 2001.*

What is second language acquisition?

The systematic study of how people acquire a second language (often referred to as an L2) is a fairly recent phenomenon, belonging to the second half of the twentieth century. Its emergence at this time is perhaps no accident. This has been a time of the "global village" and the World Wide Web, when communication between people has expanded well beyond their local speech communities. As never before, people have had to learn a second language, not just as a pleasing pastime, but often as a means of obtaining an education or securing employment. At such a time, there is an obvious need to discover more about how second languages are learned.

At first sight, the meaning of the term "second language acquisition" seems transparent but, in fact, it requires careful explanation. For one thing, in this context "second" can refer to any language that is learned subsequent to the mother tongue. Thus, it can refer to the learning of a third or fourth language. Also, "second" is not intended to contrast with "foreign." Whether you are learning a language naturally as a result of living in a country where it is spoken, or learning it in a classroom through instruction, it is customary to speak generically of "second" language acquisition.

"L2 acquisition, " then, can be defined as the way in which people learn a language other than their mother tongue, inside or outside of a classroom, and "Second Language Acquisition" (SLA) as the study of this.

SLA: a closer look

Second language acquisition (SLA) is a complex process, involving many interrelated factors. We will examine the main issues that have arisen in the study of this process but first we will take a closer look at what is meant by "second language acquisition" and then go on to discuss briefly the issues that have preoccupied SLA researchers.

In order to study SLA, it is important to establish clearly what is meant by the term. A number of key questions need to be addressed so that we will clearly see what positions researchers have taken up in order to study how a second language (L2) is learnt. The points considered below are all central to an understanding of how researchers have set about examining SLA.

- SLA as a uniform phenomenon
- Second language acquisition vs. first language acquisition
- Second language acquisition vs. foreign language acquisition
- The centrality of syntax and morphology
- Competence vs. performance
- Acquisition vs. learning

SLA as a uniform phenomenon SLA is not a uniform and predictable phenomenon. There is no single way in which learners acquire a knowledge of a second language (L2). SLA is the product of many factors pertaining to the learner on the one hand and the learning situation on the other. It is important, therefore, to start by recognizing the complexity and diversity that results from the interaction of these two sets of factors. Different learners in different situations learn a L2 in different ways. Nevertheless, although the variability and individuality of language learning need to be emphasized, the study of SLA assumes interest only if it is possible to identify aspects that are relatively stable and hence generalizable, if not to all learners, then, at least, to large groups of learners. The term "second language acquisition" is used to refer to these general aspects; we will examine both what seems to be invariable and what is apparently variable about the process of acquisition.

Second language acquisition vs. first language acquisition Second language acquisition stands in contrast to first language acquisition. It is the study of how learners learn an additional language after they have acquired their mother tongue. The study of language-learner language began with the study of first language (L1) acquisition. SLA research has tended to follow in the footsteps of L1 acquisition research, both in its methodology and in many of the issues that it has treated. It is not surprising that a key issue has been the extent to which SLA and L1 acquisition are similar or different processes.

Second language acquisition vs. foreign language acquisition Second language acquisition is not intended to contrast with foreign language acquisition. SLA is used as a general term that embraces both untutored (or "naturalistic") acquisition and tutored (or "classroom") acquisition. It is, however, an open question whether the way in which acquisition proceeds in these different situations is the same or different.

The centrality of syntax and morphology Second language acquisition refers to all the aspects of language that the language learner needs to master. However, the focus has been on how L2 learners acquire grammatical sub-systems, such as negatives or interrogatives, or grammatical morphemes such as the plural {s} or the definite and indefinite articles. Research has tended to ignore other levels of language. A little is known about L2 phonology, but almost nothing about the acquisition of lexis. SLA researchers have only recently turned their attention to how learners acquire the ability to communicate and started to examine how learners use their knowledge to communicate their ideas and intentions (i.e. pragmatic knowledge).

Competence vs. performance A distinction is often made between competence and performance in the study of language. According to Chomsky (1965), *competence* consists of the mental representation of linguistic

rules which constitute the speaker-hearer's internalized grammar. *Performance* consists of the comprehension and production of language. Language acquisition studies—both first and second—are interested in how competence is developed. However, because the rules the learner has internalized are not open to direct inspection, it has been necessary to examine how the learner performs, mainly in production. The utterances that the learner produces are treated as windows through which the internalized rule system can be viewed. In one sense, therefore, SLA research is about performance; it looks at actual utterances. But these are treated as evidence for what is going on inside the learner's head. One of the major problems of SLA research has been precisely to what extent competence can be inferred from performance.

Acquisition vs. learning Second language acquisition is sometimes contrasted with second language learning on the assumption that these are different processes. The term "acquisition" is used to refer to picking up a second language through exposure, whereas the term "learning" is used to refer to the conscious study of a second language. However, I wish to keep an open mind about whether this is a real distinction or not, so I shall use "acquisition" and "learning" interchangeably, irrespective of whether conscious or subconscious processes are involved.

To summarize:

- The term "second language acquisition" refers to the subconscious or conscious processes by which a language other than the mother tongue is learnt in a natural or a tutored setting.
- It covers the development of phonology, lexis, grammar, and pragmatic knowledge, but has been largely confined to morphosyntax.
- The process manifests both variable and invariable features.
- The study of SLA is directed at accounting for the learner's competence, but in order to do so has set out to investigate empirically how a learner performs when he or she uses a second language.

Now, we will turn our attention to a number of *key issues* in the study of SLA:

- The role of the first language
- The "natural" route of development
- Contextual variation in language-learner language
- Individual learner differences
- The role of the input
- Learner processes
- The role of formal instruction

The role of the first language

Beginning in the post-war years and carrying on into the 1960s, there was a strong assumption that most of the difficulties facing the L2 learner were imposed by his/her first language. It was assumed that where there were differences between the L1 and L2, the learner's L1 knowledge would interfere with the L2, and where the L1 and L2 were similar, the L1 would actively aid L2 learning. The process that was held responsible for this was called *language transfer*. In the case of similarities between the L1 and L2 it functioned positively, while in the case of differences it functioned negatively. Teachers were encouraged (e.g. by Brooks 1960 and Lado 1964) to focus their teaching on the areas of difficulty created by negative transfer. They were exhorted to apply massive practice to overcome these difficulties.

In order to identify the areas of difficulty, a procedure called *Contrastive Analysis*[11] was developed. This was founded on the belief that it was possible, by establishing the linguistic differences between the learner's L1 and L2, to predict what problems the learner of a

[11] "Contrastive Analysis: (CA) the comparison of the linguistic systems of two languages, for example the sound system or the grammatical system. Contrastive analysis was developed and practised in the 1950s and 1960s, as an application of structural linguistics to language teaching, and is based on the following assumptions: (a) the main difficulties in learning a new language are caused by interference from the first language (language transfer); (b) these difficulties can be predicted by contrastive analysis; (c) teaching materials can make use of contrastive analysis to reduce the effects of interference. CA was more successful in phonology than in other areas of language, and declined in the 1970s as interference was replaced by other explanations of learning difficulties (error analysis, interlanguage)" (*Longman Dictionary of Applied Linguistics*).

particular L2 would face. To this end, descriptions of the two languages were obtained and an interlingual comparison carried out. This resulted in a list of features of the L2 which, being different from those of the L1, were presumed to constitute the problem areas and which were given focal attention in the teaching syllabus.

It was not until the late 1960s that the Contrastive Analysis hypothesis was submitted to empirical investigation. Were learners' errors traceable to the effects of the L1? The findings of researchers such as Dulay and Burt raised grave doubts about negative transfer as a major factor in the process of SLA. A large proportion of grammatical errors could not be explained by L1 interference. As a result of such studies, the role of the L1 was played down and Contrastive Analysis became less fashionable.

There were, however, many questions left unanswered by the early empirical studies. In particular no consideration was given to the possibility that the effects of the L1 operated in ways other than through transfer. The theory of transfer was linked to a particular view of language learning as a series of habits which could be developed only through practice and reinforcement. In order to challenge this view of language learning, it was necessary to demonstrate that the "old" habits of the L1 did not get in the way of learning the "new" habits of the L2. Hence the attempt to show that L2 errors were not predominantly the result of interference. However, the L1 may contribute to learning in entirely different ways. For instance, learners may not *transfer* L1 rules into the L2, but may *avoid* using those rules that are absent in their L1 system. Or there may be linguistic constraints on which differences between the L1 and the L2 constitute difficulties so that transfer occurs only under certain linguistic conditions. Or learners may use the L1 as a resource from which they consciously *borrow* in order to improve their performance

(i.e. they "translate"). If a more cognitive perspective on the role of the L1 is adopted, it remains an issue which is very much alive.

We will later examine the Contrastive Analysis hypothesis and its rejection as a result of studies of learner errors, and will look at more recent research in which a positive role for the L1 in SLA is once again advanced.

The "natural" route of development

One of the assumptions of the Contrastive Analysis hypothesis was that learners with different L1s would learn a L2 in different ways, as a result of negative transfer imposing different kinds of difficulty. Challenging the Contrastive Analysis hypothesis led to a consideration of the possibility that L2 learners followed a universal route in acquiring a L2. This possibility was encouraged by research in L1 acquisition which showed that children learning their mother tongue followed a highly predictable route in the acquisition of structures such as negatives and interrogatives and a range of grammatical morphemes. If this was true for L1 acquisition and if, as the studies of L2 learner errors showed, negative transfer was not the major factor in SLA that it was once assumed to be, then it was not unreasonable to hypothesize that SLA followed a "natural" sequence of development. That is, that all learners, irrespective of their L1, learnt the grammar of the L2 in a fixed order.

A key issue, then, was whether there was a "natural" route of development and if so, what it consisted of.

A related issue was whether the route of development in L1 acquisition matched that of SLA. This issue became known as the L2 = L1 hypothesis:

This states that the processes of SLA and L1 acquisition are very similar as a result of the strategies learners employ. The task of "cracking the code," which every language learner faces,

is met through the application of a common set of mechanisms which have their origin in the special characteristics of the human language faculty.

The L2 = L1 hypothesis was investigated in two different ways:

(1) One was through the analysis of learner errors. Samples of language-learner language were collected and then examined in order to discover the different types of error that learners made. The errors were classified according to whether they could be predicted by contrastive analysis or whether they resembled the developmental errors that occurred in L1 acquisition. A large proportion of developmental-type errors was evidence that the processes of L1 acquisition and SLA were similar. Error analysis was also used in another way to examine the L2 = L1 hypothesis. If it was assumed that structures in which errors were very common were learnt later than structures containing few errors, then it was possible to work out an order of development based on error frequencies. For instance, if a larger proportion of errors occurred in the use of plurals than in the use of pronouns, then it could be assumed that plurals were acquired later than pronouns. By equating the order of difficulty with the order of acquisition, a developmental route could be established and the L2 = L1 hypothesis tested.

(2) The second way in which the L2 = L1 hypothesis was examined was in longitudinal studies[12] of L2 learners. A number of

[12] "Cross-sectional study: a study of a group of different individuals or subjects at a single point in time, in order to measure or study a particular topic or aspect of language (for example use of the tense system of a language). This can be contrasted with a longitudinal study, in which an individual or group is studied over a period of time (for example, to study how the use of the tense system changes and develops with age). This approach has been used to study first language learning" (*Longman Dictionary of Applied Linguistics*).

longitudinal studies of L1 acquisition had already taken place, so there was a basis for comparison. The 1970s saw a remarkable growth in the number of longitudinal studies of SLA, many of them originating in the University of California, Los Angeles, under the supervision of Evelyn Hatch.

Both Error Analysis and the longitudinal studies show that there are striking similarities in the ways in which different L2 learners learn a L2.

Strong claims have been made that these amount to a "natural" sequence of development. This route resembles that reported for L1 acquisition but is not identical with it. (We will later examine the "natural" route and the L2 = L1 hypothesis.)

Contextual variation in language-learner language

Language-learner language contains errors. That is, some of the utterances produced by learners are not well formed according to the rules of the adult grammar. Errors are an important source of information about SLA, because they demonstrate conclusively that learners do not simply memorize target language rules and then reproduce them in their own utterances. They indicate:

• that learners construct their own rules on the basis of input data, and,
• that in some instances at least these rules differ from those of the target language.

The existence of errors in language-learner language, however, is only of interest if they can be shown to be *systematic*—that is, that their occurrence is in some way regular. One of the major problems of investigating SLA is that learner errors are not systematic in any simple way. It is rare that a learner produces the same error in all contexts of use. It is much more likely that a learner produces an error in some contexts but not in others. However, accepting that errors are variable does not mean rejecting the notion that they are in some way regular

and therefore rule-based. If it is accepted that learners perform differently in different situations, but that it is possible to predict how they will behave in specific situations, then the systematicity of their behaviour can be captured by means of variable rules. These are "If…then" rules: They state that if *x* conditions apply, then *y* language forms will occur.

For instance, we may find that *subject-verb inversion* in *WH questions* occurs in some questions but not in others. The learner's performance may seem entirely haphazard, but on closer inspection it may be possible to specify when subject-verb inversion occurs and when it does not. A variable rule might be constructed to show that inversion occurs in "what" and "who" questions but not in "where" and "when" questions. Although "If…then" rules are much more complex than simple invariable rules, they are necessary if the true systematicity of language-learner language is to be understood.

There are two types of contextual variation.

> • Language-learner language varies according to the *situational context*. That is, learners use their knowledge of the L2 differently in different situations. For example, when learners are under pressure to communicate instantly, they will not have time to maximize their existing knowledge and are likely to produce errors that would not occur in situations when they have the opportunity to monitor their output more carefully.
> • Language-learner language also varies according to the *linguistic context*. That is, learners produce errors in one type of sentence but not in another. For example, errors in the third person singular of the English Present Simple Tense may not occur in sentences of a single clause (e.g. "He buys her a bunch of flowers"), but may occur regularly in the second clause of complex sentences (e.g. "He visits her every day and *buy* her a bunch of flowers"). A full account of contextual variability needs to consider both types.

The notion of a "natural" route of development and the notion of contextual variation need to be reconciled. If learners vary in their use of a L2, in what sense is it possible to talk about a general developmental route? How can there be an invariable route if language-learner language is inherently variable? In many respects this is the single most important issue in SLA research (to be discussed later).

Individual learner differences

Variability in language-learner language is the result not only of contextual factors. It also occurs because of differences in the way learners learn a L2 and the way they use their L2 knowledge. It is probably accurate to say that no two learners learn a L2 in exactly the same way. The learner factors that can influence the course of development are potentially infinite and very difficult to classify in a reliable manner. SLA research has examined five general factors that contribute to individual learner differences in some depth. These are:

Age A question that has aroused considerable interest is whether adults learn a L2 in the same way as children. A common-sense approach to this issue suggests that adult and child SLA are not the same. Adults have a greater memory capacity and are also able to focus more easily on the purely formal features of a language. However, these differences need not lead to differences in the route through which learners pass, which may be the product of a language faculty that does not change with age. The comparison of child and adult SLA needs to be undertaken in two parts:

> • First it needs to be shown whether the learning route differs. Is there a "natural" route for adults and a different one for children?
> • Second, the rate at which adults and children learn needs to be investigated.

The commonly held view that children are more successful learners than adults may not be substantiated by empirical research:

> • It is possible, therefore, that differences exist with regard to, both route and rate of learning.
> • It is also possible that differences exist in rate (but not necessarily with children as the most successful learners) but not in route.
> • Finally, it is possible that no significant differences exist in either route or rate.

Aptitude Aptitude is to be contrasted with intelligence. *Intelligence* refers to the general ability that governs how well we master a whole range of skills, linguistic and non-linguistic. *Aptitude* refers to the special ability involved in language learning. The effects of aptitude have been measured in terms of proficiency scores achieved by classroom learners. A number of studies have reported that aptitude is a major factor determining the level of success of classroom language learning, but doubts remain about the value of such studies, mainly because it is not entirely clear what cognitive abilities constitute aptitude.

Motivation Learner *motivation* and *needs* have always had a central place in theories of SLA. Learners who are interested in the social and cultural customs of native speakers of the language they are learning are likely to be successful. Similarly when learners have a strong instrumental need to learn a L2 (e.g. in order to study through the medium of the L2), they will probably prosper. Conversely, learners with little interest in the way of life of native speakers of the L2 or with low instrumental motivation can be expected to learn slowly and to stop learning some way short of native speaker competence. A full explanation of the role played by motivation and needs requires an account of how these affect the process of learning. Such an explanation has been provided by Dulay and Burt (1977),[13] They propose that the learner has a "socio-affective filter" which governs how much of the input gets through to the language processing mechanisms. As a result of conscious or unconscious motives or needs, attitudes or emotional states, the learner is "open" or "closed" to the L2. Thus, once learners have obtained sufficient L2 knowledge to meet their communicative and emotional needs, they may stop learning. This results in what Selinker has called *fossilization*: No matter how much input and no matter in what form the input is provided, the learner does not learn.

Personality and cognitive style Little is known about how personality and cognitive style influence SLA, although there is a general conviction that both are potentially extremely important. Some of the questions usually posed are:

- What kind of personality is most successful in learning a L2?
- Are extroverts more successful than introverts because they are prepared to take more risks and try to get more exposure to the L2?
- What role does inhibition play in SLA?

Unfortunately, there are few clear answers. Similarly, research has not been able to show that cognitive style (i.e., "the way we learn things in general and the particular attack we make on a problem")[14] affects learning in any definite way. One of the major problems of investigating both personality and cognitive style is the lack of testing instruments that can reliably measure different types.

The role of the input

It is self-evident that SLA can take place only when the learner has access to L2 input.

- This input may be, in the form of exposure in natural settings or formal instruction.
- It may be spoken or written.

A central issue in SLA is what role the input plays. Early theories of SLA, based on the notion of *habit formation through practice and reinforcement*, emphasized the importance of the input. The whole process of learning could be controlled:

- by presenting the L2 in the right-sized doses, and
- by ensuring that the learner continued to practise until each feature was "overlearned" (i.e. *became automatic*).

[13] Ellis, R., *Study of Second Language Acquisition*.

[14] *The Linguistics Encyclopaedia*.

Learning a L2 was like any other kind of learning. It consisted of building up chains of stimulus-response links which could be controlled and shaped by reinforcement. In this behaviourist[15] view of learning there was little room for any active processing by the learner. Language learning—first or second—was an external not an internal phenomenon.

In the 1960s this view of learning was challenged, most notably by Chomsky. It was pointed out that in many instances there was no match between the kind of language to be observed in the input and the language that learners produced. This could best be explained by hypothesizing a set of mental processes inside the learner's mind which were responsible for working on the input and converting it into a form that the learner could store and handle in production.

Chomsky's mentalist[16] view of language learning emphasized what he called the learner's "language acquisition device" (LAD)[17]

and played down the role of the linguistic environment. Input served merely as a trigger to activate the device.

A major issue in SLA, therefore, is whether the input shapes and controls learning or is just a trigger. Currently, there is considerable interest in the input, which is directed both at discovering how native speakers talk to L2 learners and what part is played in SLA by the way they talk. The research is beginning to show that:

- mere exposure to the L2 is not enough;
- learners appear to need L2 data that are specially suited to whatever stage of development they are at.

There is somewhat less agreement, however, about precisely what constitutes an *optimal input*:

- Is it, as teachers assume, an input *selected* and *graded* according to formal and logical criteria, or,
- is it, as Krashen argues, simply a matter of "comprehensible input,"[18] providing learners with language that they can understand?

The role of input in the process of SLA remains one of the most controversial issues in current research. We will later discuss these issues in greater depth and also seek to show that the importance of "Input" (i.e. getting L2 data) vs. "Interaction" (i.e. taking part in communicative activities) in SLA.

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[15] "Behaviourism: a theory of psychology which states that human and animal behaviour can and should be studied in terms of physical processes only. It led to theories of learning which explained how an external event (a stimulus) caused a change in the behaviour of an individual (a response) without using concepts like "mind" or "ideas," or any kind of mental behaviour. Behaviourism was an important influence on psychology, education, and language teaching, especially in the United States, and was used by psychologists like Skinner, Osgood, and Staats to explain first language learning" (*Longman Dictionary of Applied Linguistics*).

[16] "Innateness/nativist theory: a theory held by some philosophers and linguists which says, that human knowledge develops from structures, processes, and "ideas" which are in the mind at birth (i.e. are innate), rather than from the environment, and that these are responsible for the basic structure of language and how it is learned. This hypothesis has been used to explain how children are able to learn language. The innatist hypothesis contrasts with the belief that all human knowledge comes from experience" (*Longman Dictionary of Applied Linguistics*).

[17] "LAD: the capacity to acquire one's first language, when this capacity is pictured as a sort of mechanism or apparatus. In the 1960s and 1970s Chomsky and others claimed that every normal human being was born with an LAD which included basic knowledge about the nature and structure of human language. The LAD was offered as an explanation of why children develop Competence in their first language in a relatively short time, merely by being exposed to it" (*Longman Dictionary of Applied Linguistics*).

[18] Krashen, Stephen D., *Second Language Acquisition and Second Language Learning*.

Learner Processes

Learners need to sift the input they receive and relate it to their existing knowledge. How do they do this? There are two possible explanations:

(1) They may use *general cognitive strategies* which are part of their procedural knowledge and which are used in other forms of learning. These strategies are often referred to as *learner strategies*.

(2) Alternatively they may possess a *special linguistic faculty* that enables them to operate on the input data in order to discover the L2 rules in maximally efficient ways. This linguistic faculty is referred to as *Universal Grammar*.

Tarone[19] distinguishes three sets of learner strategies:

(1) There are *learning strategies*. These are the means by which the learner processes the L2 input in order to develop linguistic knowledge. Learning strategies can be *conscious* and *behavioural* (e.g. memorization or repetition with the purpose of remembering), or they can be *subconscious* and *psycholinguistic* (e.g. inferencing or overgeneralization).

(2) The second type consists of *production strategies*. These involve learners' attempts to use the L2 knowledge they have already acquired efficiently, clearly, and with minimum effort. Examples are the rehearsal of what should be said and discourse planning, working out a way of structuring a series of utterances.

(3) The third type is *communication strategies*. Like production strategies, these are strategies of use rather than of learning, although they can contribute indirectly to learning by helping the learner to obtain more input. Communication strategies consist of learners' attempts to communicate meanings for which they lack the requisite linguistic knowledge. Learners, particularly in natural settings, constantly need to express ideas which are beyond their linguistic resources. They can either give up and so avoid the problem, or try to find some way around it. Typical communication strategies are *requests for assistance* (e.g. "What d'you call —?") and paraphrase (e.g. "wow wow" for "bark"). Communication strategies involve compensating for non-existent knowledge by improvising with existing L2 knowledge in incorrect and inappropriate ways.

The investigation of learner strategies has a central place in SLA. The current reconsideration of the importance of the linguistic environment has not meant a return to behaviourist views.

Rather, it emphasizes the relationship between the input and internal processing in order to discover how each affects the other, i.e,

• An optimal input is one that learners can handle by means of learning strategies.
• Learners adjust the strategies they use to suit the type of input they are getting.
• Learners can also attempt to control the type of input they are exposed to through the use of production and communication strategies.

Input, learner strategies, and output are all interrelated in a highly complex manner.

Learner strategies cannot be observed directly. They can only be inferred from language-learner behaviour. Inevitably the literature on learner strategies is speculative and rather theoretical. It is a bit like trying to work out the classification system of a library when the only evidence to go on consists of the few books you have been allowed to take out. Early studies of learner strategies were based on Error Analysis.[20] The data were isolated learner utterances. Later research recognized the importance of using continuous stretches of discourse in order to identify how the learner negotiates meaning in collaboration with his/her interlocutor. In this way the interrelationship between input, internal processing, and output can be more clearly witnessed.

The alternative view of learner processing is that proposed by Chomsky. It has already been noted that Chomsky's view of language learning is mentalist; that is, he emphasizes the contribution of the learner, rather than that of the environment. Chomsky is also specific

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[19] Ellis, R., *Study of Second Language Acquisition*.

[20] "Error analysis: the study and analysis of the errors made by second and foreign language learners. Error analysis may be carried out in order to: (a) find out how well someone knows a language; (b) find out how a person learns a language; (e) obtain information on common difficulties in language learning, as an aid in teaching or in the preparation of teaching materials. Error analysis may be used as well as or instead of contrastive analysis" (*Longman Dictionary of Applied Linguistics*).

about the nature of the learner's contribution. Although he does not rule out the possibility that the language processing of the young child may ultimately be explained in terms of general cognitive development, he believes that it can be best explained in terms of an independent language faculty. That is, Chomsky claims that language acquisition is primarily the result of mental mechanisms that are specifically linguistic.

What does this linguistic faculty consist of? Chomsky describes it as a "Language Acquisition Device" that contains a knowledge of linguistic universals. These are *innate* and provide the child with a starting point for acquiring the grammar of the language he/she is exposed to. Chomsky believes that natural languages are governed by highly abstract and complex rules that are not immediately evident in actual utterances or, as Chomsky calls it, "Surface Structure." If the child were totally reliant on the data available in the input, he would not be able to acquire these rules. Therefore, the child must possess a set of innate principles which guide language processing. These principles comprise Universal Grammar: the linguistic features and processes which are common to all natural languages and all language learners.

Chomsky's "Language Acquisition Device" operates in L1 acquisition. However, the idea that there is an independent linguistic faculty which determines SLA is tenable. Recently it has been explored as the Universal Hypothesis. This is based on the notion of "core" rules that are to be found in all natural languages. There are also rules that are language-specific; that is, they are found in only one or two languages. The Universal Hypothesis states that L2 learners find it easier to learn "core" rules than language-specific rules. It has also been suggested that the effects of L1 transfer may be restricted to non-core features. That is, if learners discover that a L2 rule is not in agreement with a universal rule, they will seek to interpret that rule in terms of the equivalent rule in their L1. (We will later devote our attention to: learner strategies, Chomsky's LAD, and the Universal Hypothesis in SLA.)

The role of formal instruction

From the teacher's point of view, the role that formal instruction plays in SLA is of central importance. It has been left to the end because it is an issue that is related to many of the issues discussed in the previous sections. It must be considered in two parts:

- the effect that instruction has on the *route* of learning, and
- the effect that it has on *rate* of learning.

There has been little direct study of either of these aspects, largely because of the pedagogic assumption that it is possible to determine both route and rate through teaching.

Earlier it has been pointed out that learners may pass through a relatively invariable route in acquiring linguistic competence in a L2. This may be:

- the result of the operation of *universal learning strategies* which are part of the human faculty for language, or,
- the result of *exposure to particular kinds of input* which models at different stages of development just those features which the learner is ready to acquire.

Thus:

- If SLA is the result of some kind of "Language Acquisition Device, " which is triggered off only by the linguistic environment, then the learner must be credited with his/her own "syllabus" which is more or less immune to influence from the outside.
- If, however, SLA is the result of attending to those features that are frequent and salient in the input, then the possibility arises that there is more than one "syllabus" for SLA and that a specially constructed input, such as that provided by formal instruction, can influence the order in which the grammar of a L2 is acquired.

The few studies of the effects of formal instruction on the developmental route suggest that the "natural" route cannot be changed. These are not conclusive, however. Formal instruction can take many different forms and it is possible that the route of development is amenable to influence by certain methods but not by others. The research undertaken so far may not have investigated the right methods in the right conditions. It is also possible that the "natural" route reflects a particular type of language use—free, spontaneous conversation—and will be found whenever this is investigated. Formal instruction may not easily influence this type of language use, but it may aid other types, for example those associated with planned speech or writing. Such a view is in accordance with what is known about contextual variability in SLA. Formal instruction may help learners to perform in some types of situation but not in others.

Irrespective of whether formal instruction affects the order of learning or not:

- it may enhance SLA by accelerating the whole process;
- learners who receive formal instruction may learn more rapidly than those who do not—the experience of countless classroom learners testifies to this;
- even if the L2 knowledge derived from formal instruction is not immediately available for use in spontaneous conversation (a common enough experience), it soon becomes serviceable once the learner has the opportunity to use the L2 in this kind of communication;
- formal instruction can have a powerful delayed effect; and,
- there is also some research that suggests that formal instruction speeds up SLA.

(The role of instruction in SLA will be considered later.)

Conclusion

Having considered the key issues in SLA research, I shall conclude now by outlining a framework for investigating SLA. This serves to draw together the various components considered in the discussion of the key areas.

The framework posits a number of interrelated factors. These are:

(1) Situational factors
(2) Input
(3) Learner differences
(4) Learner processes
(5) Linguistic output.

Each of these factors is considered briefly below, together with some ideas on how they interrelate.

(1) Situational factors Situational factors influence both the nature of the linguistic input and the strategies used by the learner. The situation and the input together constitute the linguistic environment in which learning takes place.

Two major types of acquisition can be identified in respect of environmental factors:

- naturalistic SLA,
- and classroom SLA.

A key issue is the extent to which the process of SLA is similar or different in the two environments. Within each general situational type a host of "micro" situations can be identified, according to:

- who the interlocutors are,
- the context of interaction (e.g. a supermarket or a crowded classroom), and,
- the topic of communication.

The linguistic product is likely to vary situationally.

(2) Linguistic input The central issue here is the extent to which the input determines the process of SLA. *Does the input merely activate the learning process or does it structure it?* There is now considerable research to show that native-speakers adapt their speech to suit the level of the L2 learners they are talking to. Another important issue, then, is *what part these adaptations play in facilitating learning.*

(3) Learner differences There is a whole range of learner factors that potentially influence the **way** in which a L2 is acquired. The key ones are: age, aptitude and intelligence, motivation and needs, personality and cognitive

style. Another type of difference lies in the learner's L1. The role that the L1 plays in SLA was a dominant issue in much of the research that took place in the late 1960s and early 1970s. It was motivated by the need to submit the Contrastive Analysis hypothesis to an empirical test.

(4) Learner processes Learner processes may be

- cognitive, or
- linguistic.

Cognitive learner processes can be divided into three categories:

- *learning strategies* are used to internalize new L2 knowledge;
- *production strategies* are the means by which the learner utilizes his/her existing L2 knowledge; and,
- *communication strategies* are employed when there is a hiatus caused by the need to communicate a message for which the learner lacks L2 resources. These strategies are general in nature and mediate between the linguistic input and the language the learner produces.

Linguistic processes involve universal principles of grammar with which the learner is innately endowed. They provide the learner with a starting point. The task is then to scan the input to discover which rules of the target language are universal and which are specific.

(5) The linguistic output Language-learner language is highly variable, but it is also systematic. The learner uses his/her knowledge of the L2 in predictable ways, but not in the same way in every context. The linguistic output is developmental**,** i.e. it changes as the learner gains more experience of the language. One possibility that has received a lot of attention is that there is a "natural" order of acquisition. That is, that all learners pass along a more or less invariable route. The linguistic output is the main source of information about

how a learner acquires a L2. In particular the errors that learners make give clues concerning the strategies they employ to handle the joint tasks of learning and using a L2.

In order to account for the complexity of SLA, it is necessary to consider all the factors discussed above. For the sake of convenience the issues reflected in the overall framework will be treated separately. They are all interrelated, however.

A theory of SLA is an attempt to show how *input*, *internal processing*, and *linguistic output* are related.

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