Second language acquisition

Second language acquisition is the process by which people learn languages in addition to their native language(s). The term second language is used to describe any language whose acquisition starts after early childhood (including what may be the third or subsequent language learned). The language to be learned is often referred to as the "target language" or "L2", compared to the first language, "L1". Second language acquisition may be abbreviated "SLA", or L2A, for "L2 acquisition".

The term "language acquisition" became commonly used after Stephen Krashen contrasted it with formal and non-constructive "learning." Today, most scholars use "language learning" and "language acquisition" interchangeably, unless they are directly addressing Krashen's work. However, "second language acquisition" or "SLA" has become established as the preferred term for this academic discipline.

Though SLA is often viewed as part of applied linguistics, it is typically concerned with the language system and learning processes themselves, whereas applied linguistics may focus more on the experiences of the learner, particularly in the classroom. Additionally, SLA has mostly examined naturalistic acquisition, where learners acquire a language with little formal training or teaching.

Describing learner language

Through the descriptive study of learner language, SLA researchers seek to better understand language learning without recourse to factors outside learner language. Researchers may adopt an interlanguage perspective, exploring learner language as a linguistic system, or they may study how learner language compares to the target language. Research is centered on the question: What are the unique characteristics of learner language? Much of the research has focused on the English language as the L2, because of the huge number of people around the world learning and teaching it.

Error analysis

The field of error analysis in SLA was established in the 1970s by S. P. Corder and colleagues. A widely-available survey can be found in chapter 8 of Brown, 2000. Error analysis was an alternative to contrastive analysis, an approach influenced by behaviorism through which applied linguists sought to use the formal distinctions between the learners' first and second languages to predict errors. Error analysis showed that contrastive analysis was unable to predict a great majority of errors, although its more valuable aspects have been incorporated into the study of language transfer. A key finding of error analysis has been that many learner errors are produced by learners making faulty inferences about the rules of the new language.

Error analysts distinguish between errors, which are systematic, and mistakes, which are not. They often seek to develop a typology of errors. Error can be classified according to basic type: omissive, additive, substitutive or related to word order. They can be classified by how apparent they are: overt errors such as "I angry" are obvious even out of context, whereas covert errors are evident only in context. Closely related to this is the classification according to domain, the breadth of context which the analyst must examine, and extent, the breadth of the utterance which must be changed in order to fix the error. Errors may also be classified according to the level of language: phonological errors, vocabulary or lexical errors, syntactic errors, and so on. They may be assessed according to the degree to which they interfere with communication: global errors make an utterance difficult to understand, while local errors do not. In the above example, "I angry" would be a local error, since the meaning is apparent.

From the beginning, error analysis was beset with methodological problems. In particular, the above typologies are problematic: from linguistic data alone, it is often impossible to reliably determine what kind of error a learner is making. Also, error analysis can deal effectively only with learner production (speaking and writing) and not with learner reception (listening and reading). Furthermore, it cannot account for learner use of communicative strategies such as avoidance, in which learners simply

do not use a form with which they are uncomfortable. For these reasons, although error analysis is still used to investigate specific questions in SLA, the quest for an overarching theory of learner errors has largely been abandoned. In the mid-1970s, Corder and others moved on to a more wide-ranging approach to learner language, known as interlanguage.

Error analysis is closely related to the study of error treatment in language teaching. Today, the study of errors is particularly relevant for focus on form teaching methodology.

Interlanguage

Interlanguage scholarship seeks to understand learner language on its own terms, as a natural language with its own consistent set of rules. Interlanguage scholars reject, at least for heuristic purposes, the view of learner language as merely an imperfect version of the target language. Interlanguage is perhaps best viewed as an attitude toward language acquisition, and not a distinct discipline. By the same token, interlanguage work is a vibrant microcosm of linguistics. It is possible to apply an interlanguage perspective to learners' knowledge of L2 sound systems (interlanguage phonology), and language-use norms found among learners (interlanguage pragmatics).

By describing the ways in which learner language conforms to universal linguistic norms, interlanguage research has contributed greatly to our understanding of linguistic universals in SLA. See below, under "linguistic universals".

Developmental patterns

Ellis (1994) distinguished between "order" to refer to the pattern in which different language features are acquired and "sequence" to denote the pattern by which a specific language feature is acquired.

Order of acquisition

Researchers have found a very consistent order in the acquisition of first language structures by children, and this has drawn a great deal of interest from SLA scholars. Considerable effort has been devoted to testing the "identity hypothesis", which asserts that first-language and second-language acquisition conform to the same patterns. This has not been confirmed, probably because second-language learners' cognitive and affective states are so much more advanced. However, orders of acquisition in SLA do often resemble those found in first language acquisition, and may have common neurological causes.

Most learners begin their acquisition process with a "silent period", in which they speak very little if at all. For some this is a period of language shock, in which the learner actively rejects the incomprehensible input of the new language. However, research has shown that many "silent" learners are engaging in private speech (sometimes called "self-talk"). While appearing silent, they are rehearsing important survival phrases and lexical chunks. These memorized phrases are then employed in the subsequent period of formulaic speech. Whether by choice or compulsion, other learners have no silent period and pass directly to formulaic speech. This speech, in which a handful of routines is used to accomplish basic purposes, often shows few departures from L2 morphosyntax. It eventually gives way to a more experimental phase of acquisition, in which the semantics and grammar of the target language are simplified and the learners begin to construct a true interlanguage.

The nature of the transition between formulaic and simplified speech is disputed. Some, including Krashen, have argued that there is no cognitive relationship between the two, and that the transition is abrupt. Thinkers influenced by recent theories of the lexicon have preferred to view even native speaker speech as heavily formulaic, and interpret the transition as a process of gradually developing a broader repertoire of chunks and a deeper understanding of the rules which govern them. Some studies have supported both views, and it is likely that the relationship depends in great part on the learning styles of individual learners.

A flurry of studies took place in the 1970s, examining whether a consistent order of morpheme acquisition could be shown. Most of these studies did show fairly consistent orders of acquisition for selected morphemes. For example, among learners of English the cluster of features including the suffix "-ing", the plural, and the copula were found to consistently precede others such as the article, auxiliary, and third person singular. However, these studies were widely criticized as not paying sufficient attention to overuse of the features (idiosyncratic uses outside what are obligatory contexts in the L2), and sporadic but inconsistent use of the features. More recent scholarship prefers to view the acquisition of each linguistic feature as a gradual and complex process. For that reason most scholarship since the 1980s has focused on the sequence, rather than the order, of feature acquisition.

Sequence of acquisition

A number of studies have looked into the sequence of acquisition of pronouns by learners of various Indo-European languages. These are reviewed by Ellis (1994), pp. 96-99. They show that learners begin by omitting pronouns or using them indiscriminately: for example, using "I" to refer to all agents. Learners then acquire a single pronoun feature, often person, followed by number and eventually by gender. Little evidence of interference from the learner's first language has been found; it appears that learners use pronouns based entirely on their inferences about target language structure.

Studies on the acquisition of word order in German have shown that most learners begin with a word order based on their native language. This indicates that certain aspects of interlanguage syntax are influenced by the learners' first language, although others are not.

Research on the sequence of acquisition of words is exhaustively reviewed by Nation (2001). Kasper and Rose (2002) have thoroughly researched the sequence of acquisition of pragmatic features. In both fields, consistent patterns have emerged and have been the object of considerable theorizing.

Variability

Valid though the interlanguage perspective may be, which views learner language as a language in its own right, this language varies much more than native-speaker language, in an apparently chaotic way. A learner may exhibit very smooth, grammatical language in one context and uninterpretable gibberish in another. Scholars from different traditions have taken opposing views on the importance of this phenomenon. Those who bring a Chomskyan perspective to SLA typically regard variability as nothing more than "performance errors", and not worthy of systematic inquiry. On the other hand, those who approach it from a sociolinguistic or psycholinguistic orientation view variability as a key indicator of how the situation affects learners' language use. Naturally, most research on variability has been done by those who presume it to be meaningful.

Research on variability in learner language distinguishes between "free variation", which takes place even within the same situation, and "systematic variation", which correlates with situational changes. Of course, the line between the two is often subject to dispute.

Free variation, variation without any determinable pattern, is itself highly variable from one learner to another. To some extent it may indicate different learning styles and communicative strategies. Learners that favor high-risk communicative strategies and have an other-directed cognitive style are more likely to show substantial free variation, as they experiment freely with different forms.

Free variation in the use of a language feature is usually taken as a sign that it has not been fully acquired. The learner is still trying to figure out what rules govern the use of alternate forms. This type of variability seems to be most common among beginning learners, and may be entirely absent among the more advanced.

Systematic variation is brought about by changes in the linguistic, psychological, social context. Linguistic factors are usually extremely local. For instance, the

pronunciation of a difficult phoneme may depend on whether it is to be found at the beginning or end of a syllable.

Social factors may include a change in register or the familiarity of interlocutors. In accordance with communication accommodation theory, learners may adapt their speech to either converge with, or diverge from, their interlocutor's usage.

The most important psychological factor is usually taken to be planning time. As numerous studies have shown, the more time that learners have to plan, the more regular and complex their production is likely to be. Thus, learners may produce much more target-like forms in a writing task for which they have 30 minutes to plan, than in conversation where they must produce language with almost no planning at all.

Affective factors also play an important role in systematic variation. For example, learners in a stressful situation (such as a formal exam) may exhibit much less target-like forms than they would in a comfortable setting. This clearly interacts with social factors, and attitudes toward the interlocutor and topic also play important roles.

Learner-external factors

The study of learner-external factors in SLA is primarily concerned with the question: How do learners get information about the target language? Study has focused on the effects of different kinds of input, and on the impact of the social context.

Social effects

The process of language learning can be very stressful, and the impact of positive or negative attitudes from the surrounding society can be critical. One aspect that has received particular attention is the relationship of gender roles to language achievement. Studies across numerous cultures have shown that women, on the whole, enjoy an advantage over men. Some have proposed that this is linked to gender roles. Doman (2006) notes in a journal devoted to issues of Cultural affects on

SLA, "Questions abound about what defines SLA, how far its borders extend, and what the attributions and contributions of its research are. Thus, there is a great amount of heterogeneity in the entire conceptualization of SLA. Some researchers tend to ignore certain aspects of the field, while others scrutinize those same aspects piece by piece."

Community attitudes toward the language being learned can also have a profound impact on SLA. Where the community has a broadly negative view of the target language and its speakers, or a negative view of its relation to them, learning is typically much more difficult. This finding has been confirmed by research in numerous contexts. A widely-cited example is the difficulty faced by Navajo children in learning English as a second language.

Other common social factors include the attitude of parents toward language study, and the nature of group dynamics in the language classroom.

Early attitudes may strengthen motivation and facility with language in general, particularly with early exposure to the language.

Input and intake

Learners' most direct source of information about the target language is the target language itself. When they come into direct contact with the target language, this is referred to as "input." When learners process that language in a way that can contribute to learning, this is referred to as "intake."

Generally speaking, the amount of input learners take in is one of the most important factors affecting their learning. However, it must be at a level that is comprehensible to them. In his Monitor Theory, Krashen advanced the concept that language input should be at the "L+1" level, just beyond what the learner can fully understand; this input is comprehensible, but contains structures that are not yet fully understood. This has been criticized on the basis that there is no clear definition of L+1, and that factors other than structural difficulty (such as interest or presentation) can affect

whether input is actually turned into intake. The concept has been quantified, however, in vocabulary acquisition research; Nation (2001) reviews various studies which indicate that about 98% of the words in running text should be previously known in order for extensive reading to be effective.

A great deal of research has taken place on input enhancement, the ways in which input may be altered so as to direct learners' attention to linguistically important areas. Input enhancement might include bold-faced vocabulary words or marginal glosses in a reading text. Research here is closely linked to research on pedagogical effects, and comparably diverse.

Interaction

Long's interaction hypothesis proposes that language acquisition is strongly facilitated by the use of the target language in interaction. In particular, the negotiation of meaning has been shown to contribute greatly to the acquisition of vocabulary (Long, 1990). In a review of the substantial literature on this topic, Nation (2000) relates the value of negotiation to the generative use of words: the use of words in new contexts which stimulate a deeper understanding of their meaning.

In the 1980s, Canadian SLA researcher Merrill Swain advanced the output hypothesis, that meaningful output is as necessary to language learning as meaningful input. However, most studies have shown little if any correlation between learning and quantity of output. Today, most scholars contend that small amounts of meaningful output are important to language learning, but primarily because the experience of producing language leads to more effective processing of input.

Pedagogical effects

The study of the effects of teaching on second language acquisition seeks to systematically measure or evaluate the effectiveness of language teaching practices. Such studies have been undertaken for every level of language, from phonetics to pragmatics, and for almost every current teaching methodology. It is therefore

impossible to summarize their findings here. However, some more general issues have been addressed.

Research has indicated that many traditional language-teaching techniques are extremely inefficient. However, today a broad consensus of SLA scholars acknowledge that formal instruction can help in language learning.

Another important issue is the effectiveness of explicit teaching: can language teaching have a constructive effect beyond providing learners with enhanced input? Because explicit instruction must usually take place in the learner's first language, many have argued that it simply starves learners of input and opportunities for practice. Research on this at different levels of language has produced quite different results. Traditional areas of explicit teaching, such as phonology, grammar and vocabulary, have had decidedly mixed results. The positive effect of explicit instruction at this level seems to be limited to helping students notice important aspects of input. Interestingly, the higher-level aspects of language such as sociopragmatic and discourse competence have shown the most consistently strong effects from explicit instruction. Research has also shown a distinct effect of age on the effectiveness of explicit instruction: the younger learners are, the less benefit they show.

However, research has again and again shown that early exposure to a second language increases a child's capacity to learn language, even their first language.

Learner-internal factors

The study of learner-internal factors in SLA is primarily concerned with the question: How do learners gain competence in the target language? In other words, given effective input and instruction, with what internal resources do learners process this input to produce a rule-governed interlanguage?

The critical period research to date

How children acquire native language (L1) and the relevance of this to foreign language (L2) learning has long been debated. Although evidence for L2 learning ability declining with age is controversial, a common notion is that children learn L2s easily and older learners rarely achieve fluency. This assumption stems from 'critical period' (CP) ideas. A CP was popularised by Eric Lenneberg in 1967 for L1 acquisition, but considerable interest now surrounds age effects on second language acquisition (SLA). SLA theories explain learning processes and suggest causal factors for a possible CP for SLA, mainly attempting to explain apparent differences in language aptitudes of children and adults by distinct learning routes, and clarifying them through psychological mechanisms. Research explores these ideas and hypotheses, but results are varied: some demonstrate pre-pubescent children acquire language easily, and some that older learners have the advantage, and yet others focus on existence of a CP for SLA. Recent studies (e.g. Mayberry and Lock, 2003) have recognised that certain aspects of SLA may be affected by age, though others remain intact. The objective of this study is to investigate whether capacity for vocabulary acquisition decreases with age.

A review of SLA theories and their explanations for age-related differences is necessary before considering empirical studies. The most reductionist theories are those of Penfield and Roberts (1959) and Lenneberg (1967), which stem from L1 and brain damage studies; children who suffer impairment before puberty typically recover and (re-)develop normal language, whereas adults rarely recover fully, and often do not regain verbal abilities beyond the point reached five months after impairment. Both theories agree that children have a neurological advantage in learning languages, and that puberty correlates with a turning point in ability. They assert that language acquisition occurs primarily, possibly exclusively, during childhood as the brain loses plasticity after a certain age. It then becomes rigid and fixed, and loses the ability for adaptation and reorganisation, rendering language (re)learning difficult.

Cases of deaf and feral children provide evidence for a biologically determined CP for L1. Feral children are those not exposed to language in infancy/childhood due to being brought up in the wild, in isolation and/or confinement. A classic example is 'Genie', who was deprived of social interaction from birth until discovered aged thirteen (post-pubescent).

Such studies are however problematic; isolation can result in general retardation and emotional disturbances, which may confound conclusions drawn about language abilities. Studies of deaf children learning American Sign Language (ASL) have fewer methodological weaknesses. Newport and Supalla (1987) studied ASL acquisition in deaf children differing in age of exposure; few were exposed to ASL from birth, most of them first learned it at school.

Results showed a linear decline in performance with increasing age of exposure; those exposed to ASL from birth performed best, and 'late learners' worst, on all production and comprehension tests. Their study thus provides direct evidence for language learning ability decreasing with age, but it does not add to Lennerberg's CP hypothesis as even the oldest children, the 'late learners', were exposed to ASL by age four, and had therefore not reached puberty, the proposed end of the CP.

Other work has challenged the biological approach; Krashen (1975) reanalysed clinical data used as evidence and concluded cerebral specialisation occurs much earlier than Lenneberg calculated. Therefore, if a CP exists, it does not coincide with lateralisation.

Although it does not describe an optimal age for SLA, the theory implies that younger children can learn languages more easily than older learners, as adults must reactivate principles developed during L1 learning and forge an SLA path: children can learn several languages simultaneously as long as the principles are still active and they are exposed to sufficient language samples (Pinker, 1995).

There are, however, problems with the extrapolation of the UG theory to SLA: L2 learners go through several phases of types of utterance that are not similar to their

L1 or the L2 they hear. Other factors include the cognitive maturity of most L2 learners, that they have different motivation for learning the language, and already speak one language fluently.

Other directions of research

Empirical research has attempted to account for variables detailed by SLA theories and provide an insight into L2 learning processes, which can be applied in educational environments. Recent SLA investigations have followed two main directions: one focuses on pairings of L1 and L2 that render L2 acquisition particularly difficult, and the other investigates certain aspects of language that may be maturationally constrained. Flege, Mackay and Piske (2002) looked at bilingual dominance to evaluate two explanations of L2 performance differences between bilinguals and monolingual-L2 speakers, i.e. a maturationally defined CP or interlingual interference.

Flege, Mackay and Piske investigated whether the age at which participants learned English affected dominance in Italian-English bilinguals, and found the early bilinguals were English (L2) dominant and the late bilinguals Italian (L1) dominant. Further analysis showed that dominant Italian bilinguals had detectable foreign accents when speaking English, but early bilinguals (English dominant) had no accents in either language. This suggests that, though interlingual interference effects are not inevitable, their emergence, and bilingual dominance, may be related to a CP.

Sebastián-Gallés, Echeverría and Bosch (2005) also studied bilinguals and highlight the importance of early language exposure. They looked at vocabulary processing and representation in Spanish-Catalan bilinguals exposed to both languages simultaneously from birth in comparison to those who had learned L2 later and were either Spanish- or Catalan-dominant. Findings showed 'from birth bilinguals' had significantly more difficulty distinguishing Catalan words from non-words differing in specific vowels than Catalan-dominants did (measured by reaction time).

These difficulties are attributed to a phase around age eight months where bilingual infants are insensitive to vowel contrasts, despite the language they hear most. This affects how words are later represented in their lexicons, highlighting this as a decisive period in language acquisition and showing that initial language exposure shapes linguistic processing for life. Sebastián-Gallés et al (2005) also indicate the significance of phonology for L2 learning; they believe learning an L2 once the L1 phonology is already internalised can reduce individuals' abilities to distinguish new sounds that appear in the L2.

Most studies into age effects on specific aspects of SLA have focused on grammar, with the common conclusion that it is highly constrained by age, more so than semantic functioning. B. Harley (1986) compared attainment of French learners in early and late immersion programs. She reports that after 1000 exposure hours, late learners had better control of French verb systems and syntax. However, comparing early immersion students (average age 6.917 years) with age-matched native speakers identified common problem areas, including third person plurals and polite 'vous' forms. This suggests grammar (in L1 or L2) is generally acquired later, possibly because it requires abstract cognition and reasoning (B. Harley, 1986).

B. Harley also measured eventual attainment and found the two age groups made similar mistakes in syntax and lexical selection, often confusing French with the L1. The general conclusion from these investigations is that different aged learners acquire the various aspects of language with varying difficulty. Some variation in grammatical performance is attributed to maturation (discussed in B. Harley, 1986), however, all participants began immersion programs before puberty and so were too young for a strong critical period hypothesis to be directly tested.

Mayberry and Lock (2003) questioned whether age restrains both L1 and L2 acquisition. They examined grammatical abilities of deaf and hearing adults who had their initial linguistic exposure either in early childhood or later. They found that, on L2 grammatical tasks, those who had acquired the verbal or signed L1 early in life showed near-native performance and those who had no early L1 experience (i.e. born deaf and parents did not know sign-language) performed weakly. Mayberry and Lock

concluded early L1 exposure is vital for forming life-long learning abilities, regardless of the nature of the exposure (verbal or signed language). This corresponds to Chomsky's UG theory, which states that while language acquisition principles are still active, it is easy to learn a language, and the principles developed through L1 acquisition are vital for learning an L2.

Scherag, Demuth, Rösler, Neville and Röder (2004) also suggest learning some syntactic processing functions and lexical access may be limited by maturation, whereas semantic functions are relatively unaffected by age. They studied the effect of late SLA on speech comprehension by German immigrants to the U.S.A. and American immigrants to Germany. They found that native-English speakers who learned German as adults were disadvantaged on certain grammatical tasks but performed at near-native levels on lexical tasks. These findings are consistent with work by Hahne (2001, cited in Scherag et al, 2004).

One study that specifically mentions semantic functions acquisition is that of Weber-Fox and Neville (1996). Their results showed that Chinese-English bilinguals who had been exposed to English after puberty, learned vocabulary to a higher competence level than syntactic aspects of language. They do, however, report that the judgment accuracies in detecting semantic anomalies were altered in subjects who were exposed to English after sixteen years of age, but were affected to a lesser degree than were grammatical aspects of language. It has been speculated (Neville and Bavelier, 2001, and Scherag et al, 2004) that semantic aspects of language are founded on associative learning mechanisms, which allow life-long learning, whereas syntactical aspects are based on computational mechanisms, which can only be constructed during certain age periods. Consequently, it is reasoned, semantic functions are easier to access during comprehension of an L2 and therefore dominate the process: if these are ambiguous, understanding of syntactic information is not facilitated. These suppositions would help explain the results of Scherag et al's (2004) study.

Some researchers have focused exclusively on practical applications of SLA research. Asher (1972) insists teenagers and adults rarely successfully learn an L2, and attributes this to teaching strategies. He presents an L2 teaching strategy based on

infants' L1 acquisition, which promotes listening as central in language learning: listening precedes, and generates a 'readiness' for, speaking, assumptions supported by Carroll (1960). Asher shows that in L2 acquisition, in this case German, listening fluency is achieved in around half the usual time if the teaching is based on L1 acquisition, and that learners taught in this way still develop reading and writing proficiency comparable with those whose training emphasises literacy skills.

Similarly Horwitz (1986) summarises findings of SLA research, and applies to L2 teaching some principles of L2 acquisition honed from a vast body of relevant literature. Like Asher, Horwitz highlights the importance of naturalistic experience in L2, promoting listening and reading practice and stressing involvement in life-like conversations. She explicitly suggests teaching practices based on these principles; 'much class time should be devoted to the development of listening and reading abilities', and 'teachers should assess student interests and supply appropriate…materials' (Horwitz, 1986, p.685-686). The 'audio-lingual' teaching practices used in the present study are based on principles explicated by Asher and Horwitz; listening featured heavily, closely followed by reading and speaking practice. The vocabulary items taught were deemed relevant for all learners, regardless of age, and, according to Pfeffer (1964), they are among the most commonly used nouns in everyday German language.

Cognitive approaches

A great deal of research and speculation has taken place on the cognitive processes underlying SLA. Ellen Bialystok has modelled the process of acquisition in terms of gaining increasing attentional control over language use. In other words, as the processes of word selection and utterance construction become increasingly automatic, learners' language ability also improves.

Language transfer

Language transfer typically refers to the learner's trying to apply rules and forms of the first language into the second language. The term can also include the transfer of

features from one additional language to another (such as from a second to a third language), although this is less common.

Contrastive analysis, discussed above, sought to predict all learner errors based on language transfer. As subsequent research in error analysis and interlanguage structure showed, this project was flawed: most errors are not due to transfer, but to faulty inferences about the rules of the target language.

Transfer is an important factor in language learning at all levels. Typically learners begin by transferring sounds (phonetic transfer) and meanings (semantic transfer), as well as various rules including word order and pragmatics. As learners progress and gain more experience with the target language, the role of transfer typically diminishes.

In the UG-based framework (see Linguistic universals below), "language transfer" specifically refers to the linguistic parameter settings defined by the language universal. Thus, "language transfer" is defined as the initial state of second language acquisition rather than its developmental stage.

Linguistic universals

Research on universal grammar (UG) has had a significant effect on SLA theory. In particular, scholarship in the interlanguage tradition has sought to show that learner languages conform to UG at all stages of development. A number of studies have supported this claim, although the evolving state of UG theory makes any firm conclusions difficult.

A key question about the relationship of UG and SLA is: is the language acquisition device posited by Chomsky and his followers still accessible to learners of a second language? Research suggests that it becomes inaccessible at a certain age (see Critical Period Hypothesis), and learners increasingly depended on explicit teaching (see pedagogical effects above, and age below). In other words, although all of language is

governed by UG, older learners might have great difficulty in gaining access to the target language's underlying rules from positive input alone.

Individual variation

Research on variation between individual learners seeks to address the question: Why do some learners do better than others? A flurry of studies in the 1970s, often labelled the "good language learner studies", sought to identify the distinctive factors of successful learners. Although those studies are now widely regarded as simplistic, they did serve to identify a number of factors affecting language acquisition. More detailed research on many of these specific factors continues today.

Language aptitude

Tests of language aptitude have proven extremely effective in predicting which learners will be successful in learning. However, considerable controversy remains about whether language aptitude is properly regarded as a unitary concept, an organic property of the brain, or as a complex of factors including motivation and short-term memory. Research has generally shown that language aptitude is quite distinct from general aptitude or intelligence, as measured by various tests, and is itself fairly consistently measurable by different tests.

Language aptitude research is often criticized for being irrelevant to the problems of language learners, who must attempt to learn a language regardless of whether they are gifted for the task or not. This claim is reinforced by research findings that aptitude is largely unchangeable. In addition, traditional language aptitude measures such as the Modern Language Aptitude Test strongly favor decontextualized knowledge of the sort used in taking tests, rather than the sort used in conversation. For this reason little research is carried out on aptitude today. However, operators of selective language programs such as the United States Defense Language Institute continue to use language aptitude testing as part of applicant screening.

Age

It is commonly believed that children are better suited to learn a second language than are adults. However, general second language research has failed to support the Critical Period Hypothesis in its strong form, which argues that full language acquisition is impossible beyond a certain age.

Strategy use

The effective use of strategies has been shown to be critical to successful language learning, so much so that Canale and Swain (1980) included "strategic competence" among the four components of communicative competence. Research here has also shown significant pedagogical effects. This has given rise to "strategies-based instruction."

Strategies are commonly divided into learning strategies and communicative strategies, although there are other ways of categorizing them. Learning strategies are techniques used to improve learning, such as mnemonics or using a dictionary. Learners (and native speakers) use communicative strategies to get meaning across even when they lack access to the correct language: for example, by using pro-forms like "thing", or non-linguistic means such as mime. Communicative strategies may not have any direct bearing on learning, and some strategies such as avoidance (not using a form with which one is uncomfortable) may actually hinder learning.

Learners from different cultures use strategies in different ways, as a research tradition led by Rebecca Oxford has demonstrated. Related to this are differences in strategy use between male and female learners. Numerous studies have shown that female learners typically use strategies more widely and intensively than males; this may be related to the statistical advantage which female learners enjoy in language learning.

Affective factors

Affective factors relate to the learner's emotional state and attitude toward the target language. Research on affect in language learning is still strongly influenced by Bloom's taxonomy, which describes the affective levels of receiving, responding, valuing, organization, and self-characterization through one's value system. It has also been informed in recent years by research in neurobiology and neurolinguistics.

Affective Filter Furthermore, researchers believe that language learners all possess an affective filter which affect language acquisition. If a student possesses a high filter they are less likely to engage in language learning because of shyness, concern for grammar or other factors. Students possessing a lower affective filter will be more likely to engage in learning because they are less likely to be impeded by other factors. The affective filter is an important component of second language learning.

Anxiety

Although some continue to propose that a low level of anxiety may be helpful, studies have almost unanimously shown that anxiety damages students' prospects for successful learning. Anxiety is often related to a sense of threat to the learner's self-concept in the learning situation, for example if a learner fears being ridiculed for a mistake.

Personality Factors

Second language acquisition is defined as the learning and adopting of a language that is not your native language. Once you have acquired a foreign language, you have mastered that language.

Second language acquisition may be more difficult for some people due to certain social factors. One highly studied social factor impeding language development is the issue of extraverts versus introverts.

Studies have shown that extraverts (or unreserved and outgoing people) acquire a second language better than introverts (or shy people).

One particular study done by Naiman reflected this point. The subjects were 72 Canadian high school students from grades 8, 10 and 12 who were studying French as a second language.

Naiman gave them all questionnaires to establish their psychological profiles, which also included a French listening test and imitation test. He found that approximately 70% of the students with the higher grades (B or higher) would consider themselves extraverts.

Extraverts will be willing to try to communicate even if they are not sure they will succeed. Two scientists, Kinginger and Farrell, conducted interviews with U.S. students after their study abroad program in France in 2003. They found that many of the students would avoid interaction with the native speakers at all costs, while others jumped at the opportunity to speak the language. Those who avoided interaction were typically quiet, reserved people, (or introverts).

Logically, fear will cause students not to try and advance their skills, especially when they feel they are under pressure. Just the lack of practice will make introverts less likely to fully acquire the second language.

Motivation

The role of motivation in SLA has been the subject of extensive scholarship, closely influenced by work in motivational psychology. Motivation is internally complex, and Dörnyei (2001a, p. 1) begins his work by stating that "strictly speaking, there is no such thing as motivation." There are many different kinds of motivation; these are often divided into types such as integrative or instrumental, intrinsic or extrinsic. Intrinsic motivation refers to the desire to do something for an internal reward. Most studies have shown it to be substantially more effective in long-term language learning than extrinsic motivation, for an external reward such as high grades or

praise. Integrative and instrumental orientations refer to the degree that a language is learned "for its own sake" (integratively) or for instrumental purposes. Studies have not consistently shown either form of motivation to be more effective than the other, and the role of each is probably conditioned by various personality and cultural factors.

Some research has shown that motivation correlates strongly with proficiency, indicating both that successful learners are motivated and that success improves motivation. Thus motivation is not fixed, but is strongly affected by feedback from the environment. Accordingly, the study of motivation in SLA has also examined many of the external factors discussed above, such as the effect of instructional techniques on motivation. An accessible summary of this research can be found in Dörnyei (2001a).

In their research on Willingness to communicate, MacIntyre et al (1998) have shown that motivation is not the final construct before learners engage in communication. In fact, learners may be highly motivated yet remain unwilling to communicate.

Understanding SLA

The systematic modelling of SLA is concerned with the question: What are the most important overall factors in language acquisition? Models of SLA have played an important role in laying out directions for future research, and also for informing practice in language teaching.

Different models of SLA have focused on different aspects of SLA and general linguistic research. For example, Schumann's Acculturation Model, which viewed second language acquisition as just one part of adapting to a new culture, emphasized findings related to language socialization. Krashen's Monitor Model prioritized research on input and affective factors. Long's Interaction Hypothesis took a social constructivist view of research on input. Caleb Gattegno based The Silent Way on the principle of the education of awareness. No single model of SLA has gained wide acceptance. Given that the field is complex and interdisciplinary, few scholars expect that any model will do so in the foreseeable future.

Concepts of ability

Numerous notions have been used to describe learners' ability in the target language. The first such influential concept was the competence-performance distinction introduced by Chomsky. This distinguishes competence, a person's idealized knowledge of language rules, from performance, the imperfect realization of these rules. Thus, a person may be interrupted and not finish a sentence, but still know how to make a complete sentence. Although this distinction has become fundamental to most work in linguistics today, it has not proven adequate by itself to describe the complex nature of learners' developing ability.

The notion of communicative competence was first raised by Dell Hymes in 1967, reacting against the perceived inadequacy of Chomsky's distinction between linguistic competence, and has proven extremely popular in SLA research. It broadens the notion of the kind of rules that competence can include. Whereas Chomsky treated competence as primarily grammatical, communicative competence embraces all of the forms of knowledge that learners must have in order to communicate effectively.

A closely related concept is proficiency. Proficiency is usually distinguished from competence, which refers to knowledge: "proficiency refers to the learner's ability to use this knowledge in different tasks" (Ellis, 1994, p. 720). Because any test of competence is a task of some sort, it may be argued that all measures of competence are in effect measuring some form of proficiency.

Both proficiency and competence are internally complex; they do not reflect a single attribute, but many different forms of knowledge in complex interrelationship. Research, such as much of that discussed here, requires some unitary concept of ability, but it has been clearly shown that different aspects of language ability progress at vary different rates. For example, Kasper and Rose (2002) review numerous studies of the complex relationship between grammatical and pragmatic proficiency. The measurement of language ability, although necessary for both research and teaching, is inevitably problematic.

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