Contexts of Acquisition: Effects of Formal Instruction and Naturalistic Exposure on
Second Language Acquisition
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1. Introduction

Languages consist of symbols which refer to things in the world and which can be combined in systematic ways according to syntactic principles. We learn language in order to communicate: Our primary motivation is to share meanings. It is no more the aspiration of most language users to demonstrate sophisticated and elegant syntax in speech than it is of most pedestrians to demonstrate formalized ballet technique in walking. Of course we must and do acquire syntax in order to properly decode and express meanings. But simple structures can allow the transmission of most messages, particularly when utterances are made in naturalistic contexts where predictable reference and redundancy of communication allow the correct interpretation of intended meaning even from grammatically flawed language. There are lots of grammatical errors in everyday conversation, even in the native language (L1). Yet in many naturalistic situations an absence of syntactic sophistication is no more a handicap than is a limp - goals may be reached a little more tortuously, but they are usually attained none the less. Like two year old children, foreign language (FL) learners of but a few months experience can negotiate what they wish to eat for dinner; their artless grammar does not prejudice their survival.

However, the clear communication of meanings out of context is a different matter - this requires both more thoughtful construction and decoding of messages. It is hard to write in order to properly communicate a message to a reader who you do not know (q. e. d.). In contrast with everyday spoken interaction, the construction and content of written

language involves considerably greater grammatical sophistication. The academic survival of undergraduate students is seriously affected by their grammatical skills.

This fact that there are different language proficiencies prompts a variety of inter-related questions relating to both L1 and second language (L2) acquisition: (a) Are language fluency and language accuracy acquired in the same way? (b) Do different contexts of acquisition result in the same profiles of language ability? (c) What are the best ways of helping learners acquire these different language proficiencies?

2. The History of Teaching Foreign and Second Languages

The histories of FL and L2 teaching methodologies demonstrate radical swings in favored methodology. Traditional Grammar-Translation methods emphasized study by literacy and translation and had an explicit bias with formal explanation of L2 rules and a deductive approach to learning. Come the Second World War the Behaviorist Zeitgeist in America led to Structural Approaches and Audiolingual methods which outlawed the teaching of metalingual rules and which regarded L2 as just another specific domain to be understood by general laws of learning - L2 acquisition involved discrimination and generalization from structured examples by analogy, not analysis, that is, implicit, inductive learning through patterned practice. By the 1960s critics began to observe that these methods produced fluent but flawed speakers (e.g., "Audiolingual methods have been teaching speech but not language", Donaldson, 1971, p. 123) and explicit instruction of grammatical rules was reintroduced in the Cognitive Code Method, "a modified, up-to-date translation theory" (Carroll, 1966, p. 102), which held that perception and awareness of L2 rules precede their use. In the 1970s and 1980s the pendulum swung back to methods like Total Physical

Response (Asher, 1993) and the Natural Approach (Krashen, 1982, 1985), which emphasize comprehensible input and which renounce explicit instruction. Krashen's underlying theory, the Input Hypothesis, is a radical non-interface position which posits that although adults can both subconsciously acquire languages and consciously learn about language, nevertheless (a) subconscious acquisition dominates in second language performance; (b) learning cannot be converted into acquisition; and (c) conscious learning can be used only as a Monitor, that is, an editor to correct output after it has been initiated by the acquired system. In Krashen's theory, second language acquisition (SLA) comes naturally as a result of implicit processes occurring while the learner is receiving comprehensible L2 input.

In the last decade or so a range of alternative views of SLA has been proposed which unlike the Input Hypothesis all suggest either a weak or strong interface between conscious knowledge and implicit performance:

1. The Skill-Building hypothesis holds that rules are first learned consciously and then gradually automatized through practice (see e.g. McLaughlin, 1987, 1990a, 1990b; Sharwood-Smith, 1981).

2. The Simple Output hypothesis posits that we acquire language as a result of output practice in speech and writing (see studies gathered in Chaudron, 1988).

3. The Output plus Correction hypothesis claims that we acquire language by trying out new rules or vocabulary items in production - if we receive negative feedback, we alter our conscious hypothesis about what the rule or new word is (see e.g. Lightbown, 1991; Lightbown & Spada, 1990).

4. The <u>Comprehensible Output</u> hypothesis suggests that we acquire new language when we attempt to produce a message, but our conversational partner has trouble understanding us - when we experience communicative failure, we adjust our output and try a new version of the rule we are acquiring (see e.g. Pica, 1988; Swain, 1985).

All of these hypotheses hold that SLA accrues from practice in L2 production. Both the Skill-Building and Output plus Correction hypotheses see a role for explicit conscious learning. The Output plus Correction and Comprehensible Output hypotheses implicate negative evidence (either explicit or implicit) in tuning the learner's language representations.

5. The <u>Input Processing</u> hypothesis, in contrast, focuses on the strategies and mechanisms followed by language learners to process input. It holds that learners concentrate on lexical items and that they process input for meaning before they process it for form. Therefore it sees a role for focusing subjects' attention on important grammatical markers in the input, thus making non-salient grammatical meaning-form relationships (such as tense markers) more salient in the learners' input. Unlike the Natural Approach, Input Processing involves formal instruction, but in contrast to the Output hypotheses, it focuses on learners' interpretation and comprehension of input, providing them with opportunities to interpret meaning-form relationships in a correct way rather than giving them practice in how to produce the targeted linguistic items (see e.g. Terrell, 1991; VanPatten, in press; VanPatten & Cadierno, 1993a, 1993b).

Such pendulum swings in educational practice make it clear that there is no simple answer to the question which of these methods is 'best' and there is clearly a need for (a) detailed theoretical analyses of the processes of SLA and (b) proper applied evaluations of the outcomes of

these different teaching practices. The key questions on which these theories of SLA differ are: (a) Does provision of negative evidence promote SLA? (b) Is SLA a conscious process or does it result from implicit learning processes? (c) Is there a role of formal explicit instruction in SLA? (d) Does 'grammatical consciousness raising' (Sharwood-Smith, 1981) or input processing instruction (making certain form-meaning relationships salient by focusing learners' attention on them) facilitate SLA? (e) Does output practice result in increased fluency and/or accuracy?

This chapter will address these questions in turn. Each of such issues is informed, to a lesser or greater degree, by (a) psychological and applied linguistic theory, (b) evaluations comparing the outcomes of different contexts of SLA, (c) more controlled laboratory experiments involving the learning of artificial languages. The questions are accordingly subsectioned.

3. Does the Provision of Negative Evidence Facilitate SLA?

Theories

The last fifty years has evinced contradictory views on the role of negative feedback in language acquisition (Sokolov & Snow, 1994). Although behaviorist theories of language acquisition held that feedback or reinforcement was the only mechanism which effected learning (Skinner, 1957), early analyses of L1 transcripts of mother-child interaction by Brown and Hanlon (1970) failed to find any explicit feedback by mothers contingent on the grammaticality of the child's speech - there were no Well done!'s following grammatical utterances or No!'s following ungrammatical ones. Instead the mothers responded positively to the truth values of the utterances.

But there is a logical argument that natural language (L1 or L2) is not learnable from positive evidence alone. Gold (1967) presented a formal

demonstration that negative evidence is necessary for testing certain Type-N overgeneralisation hypotheses: for example, (a) <u>The man is sick</u>; <u>I visited the sick man</u> / <u>The boy is intelligent</u>; <u>I talked with the intelligent boy</u> / ...[VP —>Copula Adj.]; [NP —> (Det.) (Adj.) N] / but, <u>The child is afraid</u>; *<u>I comforted an afraid child today</u> (Bley-Vroman, 1986); (b) <u>Marie a mangé rapidement le diner</u> / but *<u>Mary ate rapidly her dinner</u> (White, 1991). If the input data contains no negative data, a learner who makes these kinds of overgeneralisations could not figure out which non-occurring sentences could not occur.

<u>Field Studies of SLA</u>

There are now a number of demonstrations both that negative evidence is provided for learners and that they do indeed use it. Chaudron (1977) analyzed student performance in the classroom to show that they are able to repair an utterance after a teacher had corrected it. The teacher corrections that worked best were those which clearly indicated the locus of the error by prosodic and/or intonational cues. More recently, Pica (1988) reported that beginning ESL acquirers, in response to interlocutors' signals of non-comprehension, modified their spoken output 31% of the time in a way that made the utterance closer to correct English, while intermediate acquirers did so 51% of the time (Pica, Holliday, Lewis, & Morgenthaller, 1989).

Furthermore, attended negative evidence can affect long-term performance. Lightbown and Spada (1990) examined the effects of corrective feedback in the context of intensive communicative ESL teaching in Quebec. Across a range of classrooms, although the teaching was mainly communicative in focus, some teachers paid more attention to the students' formal errors than did others. Learners who received error correction

achieved greater accuracy in the production of some structures (e.g., the use of the correct <u>There is ...</u> in place of the L1 induced error <u>It has...</u>) but not of others (e.g., adjectival placement). Testing one year later (Lightbown, 1991) revealed continued high performance on <u>There is/are</u>.

Tomasello and Herron (1988, 1989) assessed the efficacy of recastings in SLA. They compared the effects of two kinds of instruction directed at problematic constructions that lead to overgeneralisation and transfer errors in early L2 learners of French. In one condition the problems were explained and illustrated to the students. In the 'garden path' condition the typical errors were induced and then recast as corrections. The garden path treatment was more effective and Tomasello and Herron suggest it allows the learners to carry out cognitive comparison between their own deviant utterances and the correct target-language recasts.

White (1991) examined the effects of explicit instruction on the learning of adverb placement restrictions in English by native speakers of French. The control group was given no information on adverb placement, but was instructed in question formation. Before instruction, both groups accepted sentences in accordance with French parameter settings (French permits sentences such as <u>Marie regarde souvent la télévision</u>, with the adverb placed between the verb and its direct object, but English does not: *<u>Mary watches often television</u>), accepting SVAO structures as a possible English word order. After instruction, the adverb placement group learned that such sentences are not permitted in English and the question group did not, although this effect had disappeared when subjects were retested a year later.

Carroll and Swain (1993) investigated the relative effects of different types of negative feedback on the acquisition of English dative alternation

by 100 adult Spanish-speaking learners of ESL. Students were randomly allocated to one of five groups. Upon making an error, Group A subjects were given explicit metalinguistic information about the generalization that was being taught; Group B subjects were simply told their responses were wrong; Group C subjects were corrected when they erred and given a model of the desired response along with implicit negative evidence that their response was incorrect (this is essentially a recasting condition); Group D subjects, having made an error, were asked if they were sure about their response; the subjects in the comparison group received no feedback. Subjects were tested twice on the feedback items plus a number of novel items to test for generalization. All of the feedback groups outperformed the comparison group on the tests, demonstrating that adult L2 learners can and do use feedback to learn specific linguistic rules and abstract generalizations and correctly narrow the application of those rules. Moreover, the subjects in Group A, who received negative evidence and general metalinguistic guidance, and the subjects in Group C, who received negative evidence and a correcting recast, outperformed the subjects in the other groups.

Oliver (in press) demonstrates in naturalistic native speaker/non-native speaker (NS/NNS) child conversations that (i) NS children modify their interactions for NNS peers by providing reactive and implicit negative feedback to the NNS in the form of (a) negotiation strategies, including repetition, clarification requests and comprehension checks, and (b) recasts; (ii) this negative feedback was incorporated by the NNSs into their interlanguage systems. Thus not only does negative feedback exist for child second language learners in conversations with their NS peers, but it is also usable and used by them in the language acquisition process.

These studies demonstrate that provision of negative evidence, especially that which incorporates recasts, that is, responses to utterances that provide corrected or alternative versions, does indeed facilitate the development of L2 syntactic ability.

<u>Laboratory Studies Involving Learning Artificial Languages</u>

In contrast to the questions which follow, there is a dearth of controlled research into the role of negative evidence in learning artificial languages (Schmidt, 1994). This surprising research lacuna needs to be filled.

4. Implicit and Explicit Language Learning:
The Role of Consciousness in SLA

<u>Theories</u>

Some things we just come to be able to do, like walking, recognizing happiness in others, knowing that <u>th</u> is more common than <u>tg</u> in written English, or making simple utterances in our native language. We have little insight into the nature of the processing involved - we learn to do them implicitly like swallows learn to fly. Other of our abilities depend on our knowing <u>how</u> to do them, like multiplication, playing chess, speaking pig Latin, or using a computer programming language. We learn these abilities explicitly like aircraft designers learn aerodynamics.

Knowledge attainment can thus take place implicitly (a nonconscious and automatic abstraction of the structural nature of the material arrived at from experience of instances), explicitly through selective learning (the learner consciously searching for information and building then testing hypotheses), or, because we can communicate using language, explicitly via given rules (assimilation of a rule following explicit instruction). The last fifteen years has evinced an explosion of psychological investigations into

implicit and explicit learning (see N. C. Ellis, 1994a, for reviews relating to language acquisition).

What of language - is it acquired implicitly or learned explicitly? This section considers explicit learning; explicit instruction will be addressed in section 5.

<u>Field Studies of SLA</u>

Various SLA researchers hold that attention to input is necessary for input to become intake that is available for further mental processing (e.g., N. C. Ellis, 1994b; R. Ellis, 1993; Long, 1991; Van Lier, 1991). Schmidt (1990, 1993, 1994) proposed that the subjective experience of "noticing" is the necessary and sufficient condition for the conversion of input to intake in SLA, that is, that in order to acquire phonology one must attend to phonology; in order to acquire pragmatics, one must notice both linguistic forms and the relevant contextual features; etc.

It is difficult if not impossible to demonstrate in contexts of natural language acquisition that all learning requires noticing. However, there are a few field studies which usefully bear on this issue.

Schmidt (1990) discusses the evidence from his own learning of Brazilian Portuguese (Schmidt & Frota, 1986) in support of the hypothesis that intake is the subset of input that is attended to and noticed, finding an extremely close connection between his recorded noticings (diary entries) and what could be shown through the analysis of tape-recorded interactions with native speakers to have been learned. It is particularly compelling evidence in that it included cases in which incorrect use could be traced to specific misanalyses of what was heard in the input.

This diary study has the advantage of a longitudinal design which better informs interpretation of causation - noticing was logged before

performance was assessed. There is also evidence from logically weaker cross-sectional studies which attempt to correlate aspects of fluent performance with accuracy of verbalizable knowledge concerning language structure at any one point in time. Seliger (1979) tested monolingual and bilingual children and adult ESL learners for their use of the a/an allomorphs of the indefinite article and their ability to verbalize the rule underlying their performance, finding no relationship between performance on the task and learners having a conscious rule. In contrast, Hulstijn and Hulstijn (1984) assessed second language learners' awareness of two Dutch word order rules, finding that learners with explicit knowledge had significantly higher performance scores, but also that learners who were unable to verbalize the rules performed at better than chance levels on one of the structures tested. Green and Hecht (1992) also demonstrate this dissociation between awareness and performance. German ESL learners were asked to correct twelve common errors and state the rules that were violated. Results indicated that if learners had the correct rule explicitly available then they could produce a correction in nearly every case, suggesting a link between rule knowledge and performance. However, formal grammar teaching did not guarantee that learners would learn the rules that were taught, and learners produced many corrections even when they could not articulate the rules or gave incorrect rules. Some pedagogical rules were relatively easy to learn, including those that referred to easily recognized categories, and could be applied mechanically. Rules that were more difficult to learn involved aspect or other subtle semantic distinctions and those not governed by the immediate linguistic context.

Weighing these findings in the balance, it appears that (i) explicit knowledge and implicit performance are correlated, with explicit knowledge

generally being associated with better performance, but (ii) there may be instances of implicitly acquired fluent performance in the absence of explicit verbalizable knowledge of the underlying rule structure. This may particularly be the case for structures which are less obvious or salient.

However these key issues of consciousness and salience are essentially too intractable to be properly assessed in naturalistic situations and are better pinned down in the laboratory.

Laboratory Studies Involving Learning Artificial Languages

Any theory of implicit learning of language must demonstrate (not simply assume) that learners lack conscious awareness of syntactic patterns during acquisition. And, more difficult still, for any particular grammatical pattern it is necessary to demonstrate that the learner has never consciously analyzed it. The empirical rigor that this requires is not traditionally the stuff of Applied Linguistics. It is very difficult to properly determine just what people are aware of at any particular time. It is even more difficult to keep a record of the contents of their consciousness throughout their learning experiences. It is impossible to exhaustively log the on-line contents of language learners' consciousness in real-world learning situations. For these reasons questions concerning the role of consciousness in language learning have been studied with more empirical control (but at the cost of less ecological validity) using artificial languages or grammars.

In a typical artificial language learning experiment (e.g., Reber, 1969) subjects are exposed to strings of letters (e.g., MXRMXT, VMTRRR) generated by an underlying "grammar" or rule system, usually a finite-state system (Markov grammar) that generates strings of symbols in a left-to-right, non-hierarchical fashion. These finite state systems are formally

simple but psychologically complex since the underlying grammars are not readily apparent from their surface forms. In many experiments (see Reber, 1993, and N. C. Ellis, 1994, for reviews), groups of subjects are exposed to such input with instructions simply to memorize the examples for a memory test. These are implicit learning instructions - the subjects at this stage are neither told about the underlying structure, nor are they directed to search for it. The acquisition phase, typically a few hours but sometimes longer, is followed by a testing phase to assess what subjects have learned. At this point the subjects are told for the first time that there was a "grammatical system" which underlay the strings which they had previously studied, and they are now required to judge whether new letter strings are grammatical (i.e., generated by the rules of that underlying grammar) or ungrammatical (items that violate the grammar). The testing phase in some experiments also included probing subjects' awareness in order to find out whether they had discovered and could verbalize the underlying rules of the system. The basic findings from such experiments are: (a) Through simple exposure to exemplars, subjects become sensitive to underlying regularities in input and can accurately characterize new strings which they have never seen before as grammatical or ungrammatical at above chance levels. (b) They are generally unable to verbalize the rules of the underlying grammar used to generate the strings.

Thus Reber claims that subjects implicitly learn such artificial grammars: Information is abstracted out of the environment without learners' recourse to explicit strategies for responding or explicit knowledge of the system and their implicitly learned information can be applied efficiently to a transfer recognition task.

But what happens if subjects are encouraged to explicitly search for the underlying rules?

<u>Explicit search for rules.</u> Reber (1976) investigated this effect of instructional set on implicit learning of an artificial language. Here one group of subjects was given neutral implicit instructions and the other was given general information about artificial grammars and encouraged to undertake an explicit search for rules. He found that although both groups could discriminate grammatical strings from non-grammatical strings the implicit group could do so much better than the explicit group. Subjects in the explicit group were poorer at memorizing exemplars from the language, they learned less about the underlying structure despite being taken to the same learning criterion, and they had a tendency to invent rules which were not accurate representations of the structure. In this experiment the complex structure was too rich to be explicitly analyzed by the subject in the short time allowed and the explicit instruction to search for rules disrupted performance as subjects searched in vain and elaborated irrelevant rule systems, which in turn masked the implicit learning processes.

Yet this is not invariably the case. Reber, Kassin, Lewis, and Cantor (1980) compared explicit and implicit learning instructions as a function of complexity of the stimulus display of an artificial grammar. In one experiment subjects received either neutral instructions telling them simply to try to memorize the strings of letters or explicit instructions telling them that the letter strings were rule-governed and that discovering these rules would assist them in the memorization task. Half of each group was then presented with a large array of letter strings from the grammar arranged haphazardly; the other subjects saw the same strings but arranged in a systematic manner that reflected the underlying structure of the grammar.

Reber et al. (1980) found that the explicit instructions were helpful only when subjects worked with the structured display; they were, in fact, useless or detrimental when the display was haphazard. Clearly, explicit and implicit modes of learning interact with the nature of the display.

Berry and Broadbent (1988) reach similar conclusions from investigations of subjects learning complex control tasks. They distinguish between two types of learning: unselective (implicit) and selective (explicit). In an unselective mode many possible variables are stored by the learner and only through experience will condition-action links become established allowing effective performance. This process is slow and usually results in inaccurate verbal knowledge. The selective mode means only a few variables are chosen and the contingencies between them are studied by the learner. If the correct variables are chosen then this is a speedy process and leads to knowledge that can be made explicit. Of course if the wrong variables are selected then this slows down the process. Berry and Broadbent suggest that explicit instructions to search for rules induces the selective mode whereas in the absence of explicit instructions the unselective mode will be chosen.

These ideas parallel Reber's explanation of the Reber et al. (1980) findings. He attributes the interaction of implicit/explicit learning mode and structure of learning presentations to one variable: salience, that is, the degree to which the critical pattern of letter ordering that make up the language are "obvious". If the stimulus array's structure is simple, then the likelihood of inducing appropriate rules increases and explicit learning is optimal; if the displays are more random, explicit subjects' search for obscure rules results in worse performance than implicit learning.

In summary, when the material to be learned is relatively complex but there is only a limited number of variables and the critical features are salient, then learners gain from being told to adopt a selective mode of learning where hypotheses are to be explicitly generated and tested and the model of the system updated accordingly. As a result they are also able to verbalize this knowledge and transfer to novel situations. When the material to be learned is more randomly structured with a large number of variables and when the important relationships are not obvious, then explicit instructions only interfere and an unselective mode of learning is more effective. This unselective learning is instance-based but, with sufficient exemplars, an implicit understanding of the structure will be achieved. Although this knowledge may not be explicitly available, the learner is nonetheless able to transfer to conceptually or perceptually similar tasks.

5. Is there a Role of Formal Explicit Instruction in SLA?

Theories

We have already reviewed the broad theoretical positions in section 2. However, before we assess the available evidence concerning the effectiveness of explicit instruction on SLA, we should first clarify the relevant outcome measures. What aspects of SLA are we concerned with: route of acquisition and developmental sequence, rate of acquisition, and/or eventual levels of accuracy and fluency?

Routes of acquisition. Language development follows well defined developmental sequences. Children first utter single words and holophrases before they begin to use rudimentary positional grammar; active structures appear before passive ones; etc. With increasing competence, so mean length of utterance and structural complexity increases. The natural developmental sequence is well charted and remarkably consistent across

native learners: There is a fixed sequence of overlapping stages, each characterized by the relative frequencies of structures, which learners apparently have to traverse on the way to complete mastery of language (Crystal, 1987). Many skills are like this, indeed so much so that the phenomenon is crystallized in the English language: Trying to break a natural order is "trying to run before you can walk".

Pretty much the same developmental sequences are found in L2 interlanguage acquisition (Johnston, 1985; the Natural Order Hypothesis in Krashen & Terrell, 1982). For example, just as a young child goes through No + X (no is happy), before no/not/don't V (they not working), before analyzed don't (she doesn't live there) in the acquisition of English negation, so also do Spanish, Japanese, and other ESL learners (Schumann, 1979). Long (1991, p. 42) summarizes the general point as follows: "the same developmental sequences are observed in the interlanguages of children and adults, of naturalistic, instructed and mixed learners, of learners from different L1 backgrounds, and of learners performing on different tasks... Passage through each stage, in order, appears to be unavoidable... As would be predicted if this definition is accurate, it also seems that developmental sequences are impervious to instruction."

Various zero-option positions take this lack of effect of instruction on developmental sequence as their justification for eschewing all instruction in SLA (e.g., Dulay & Burt, 1973; Krashen & Terrell, 1983; Prabhu, 1987). Chomsky (1988) used the same argument to support the idea that language is an independent faculty separate from non-linguistic cognitive abilities.

However, we need to clarify the natural in Natural Order: Does it refer to human biological nature or the nature of the world? It is too easy to slip into the error that invariance of sequence of development is a necessary

and sufficient index of innately-given skills like walking. It is indeed a characteristic of innate skills, but so also does it apply to a wide range of learned abilities. For example, we are neither innately pre-programmed to read nor to do arithmetic - both have appeared too late in our cultural development to be evolutionarily-given - yet there are characteristic stages of reading development (logographic then alphabetic then orthographic - see Frith, 1985; N. C. Ellis & Cataldo, 1990), and in mathematics (counting precedes addition precedes multiplication precedes integration, etc.). Sequences of development are as much, or even more, a consequence of epistemology, of the structure of knowledge in the relevant problem-space, as they are a consequence of learners' biological processing capacity and neural development. Invariant developmental sequences of language acquisition are essentially interesting because they inform us about the informational content of language and how more complicated structures arise from simpler, more basic forms. They are as consistent with empiricist as with linguistic nativist theories of language.

This does not deny the question of 'effect of instruction on route of acquisition' as an important empirical issue, but it does weaken the logical role of any null answer in either denying any involvement of consciousness in language acquisition (L1 or L2) or implying innate language acquisition devices.

Rate and accuracy. Even if the structure of language entails that there are fixed stages of acquisition, there remain the separate issues of whether instruction can affect the rate of acquisition or ultimate levels of accuracy. Section 2 outlined some of the theories which posit instruction advantages via mechanisms such as skill-building, conscious analysis of negative evidence, or input processing/grammatical consciousness-raising.

The first step in their testing is to look for any advantages of instruction before looking at the mechanisms in detail (section 6).

Field Studies of SLA

Routes of acquisition. It has repeatedly been demonstrated that there is little or no effect of instruction on route of acquisition. Studies of L2 morphology and especially of L2 syntax indicate that the overall sequence of acquisition is the same in classroom and naturalistic settings (for reviews see R. Ellis, 1994, and Long, 1991). For example, morpheme accuracy orders and developmental sequences do not reflect instructional sequences (R. Ellis, 1989; Lightbown, 1983), and tuition in a German SL word order structure beyond students' current processing abilities has been shown not to result in acquisition (Pienemann, 1984).

Rate and accuracy. Adequate evaluation of explicit teaching on rate of SLA is difficult because comparisons of the effectiveness of one or two years of training of one type or another are confounded by the content of these years varying in all attendant factors such as amount of exposure, comprehensibility of input, pragmatics, motivation and affect. There is insufficient space here to go into the necessary detail on all of the relevant studies, and the reader is referred to the more comprehensive meta-analytic comparisons of exposure methods with those involving exposure and instruction (Long, 1983; R. Ellis, 1990). Long (1983) reviewed eleven studies relevant to instructional effects and concluded that there is sufficient evidence to indicate that classroom instruction is more effective than exposure in promoting L2 acquisition, (a) for children as well as adults, (b) for intermediate and advanced learners as well as beginners, (c) on integrative as well as discrete-point tests, and (d) in acquisition-rich as well as acquisition-poor environments. R. Ellis (1990, 1994, chapter 14) collates

additional studies reported since 1983 and similarly concludes that although grammar instruction may prove powerless to alter the natural sequence of acquisition of developmental structures, (a) it can be effective in enabling learners to progress along the natural order more quickly, (b) grammatical features that are not subject to developmental constraints may be amenable to instruction, (c) even in situations where formal instruction fails to enable learners to use structures in production it may nevertheless help learners to comprehend their meaning.

Thus there are many demonstrations that formal instruction <u>can</u> affect SLA. However, there are also reported studies which fail to demonstrate any generalized or lasting effect (e.g., Lightbown, Spada, & Wallace, 1980; Schumann, 1978; Terrell, Baycroft, & Perrone, 1987). Such results caution that instruction can too simply result in students having explicit knowledge which is dissociated from, and which fails to influence, their fluent implicit performance. The challenge is to achieve this influence. The studies reviewed in Long (1983) and R. Ellis (1994) demonstrate that this can be done. What is next needed is to determine the conditions which optimize the interface - issues which we will return furtheron in this section and in section 6.

'Formal instruction' is too catch-all a category, as 'method' is too poorly defined a term (Long, 1991), to allow much sense from putting all of these studies in the same meta-analysis and reviewing them together. We are only just beginning to gather a sufficient quantity of studies to allow us finer categories of comparison where we can investigate the effects of particular methods of instruction with particular content and focus on particular outcome measures (fluency vs. accuracy, comprehension vs. production, etc.) in particular learners of particular learning styles at

particular stages of development (e.g., Long, 1988). Indeed this is the ultimate goal of SLA research and it has a long way still to go. But there is already evidence to suggest that these are the important factors which qualify the potential effectiveness of instruction.

Teachability. These dissociable influences of instruction on route and rate of acquisition are central to the Multidimensional Model of SLA (Meisel, Clahsen, & Pienemann, 1981). This holds that SLA follows an ordered sequence of developmental stages. The model distinguishes between two sets of linguistic features: Developmental features which are constrained by developing speech-processing mechanisms, and variational features which are not. Pienemann, Johnston, and Brindley (1988) describe each point in the developmental sequence in terms of learners' competence at processing syntactic elements in grammatical strings, and they argue that acquiring the operations involved in any one stage entails competence to perform the operations of the immediately preceding stage.

Research on the Multidimensional model (e.g., Pienemann, 1984, 1985, 1986; Pienemann & Johnston, 1987) aimed at investigating whether formal instruction is powerful enough to alter the sequence of acquisition, has led to the Teachability Hypothesis (Pienemann, 1985, 1987) which states: "Instruction can only promote language acquisition if the interlanguage is close to the point when the structure to be taught is acquired in the natural setting." (1985, p. 37). The teachability hypothesis denies any possibility that instruction can alter the natural route of development of developmental features. However, as Pienemann (1987b) points out, this negative constraint does not imply that instruction has no effect on acquisition whatsoever. Rather, instruction can facilitate SLA processes if it occurs when the learner is ready, that is, if the interlanguage

development of the learner fulfills the requirements for such an influence. If this condition is met, then instruction can also improve acquisition with respect to (a) the speed of acquisition, (b) the frequency of rule application and (c) the different contexts in which the rule has to be applied. In addition, the teachability hypothesis also allows for the positive effect that instruction can have on the acquisition of variational features.

Laboratory Studies Involving Learning Artificial Languages

Reber et al. (1980, Experiment 2) investigated the effects of explicit instruction on the acquisition of complex artificial grammars (AG). Subjects in the implicit (I) group were asked to observe closely a large set of exemplars from the AG, a procedure that earlier work had indicated is sufficient for subjects to learn (implicitly) a good bit about the underlying structure of the grammar. Subjects in the explicit-only (E) group were provided with complete knowledge of the underlying AG by the simple device of giving them an instructional session involving a schematic description of the underlying rule system and showing them how the grammar generated letter strings. They were also required to generate several strings themselves to ensure that they understood how the AG worked. There were three other groups of subjects who had both explicit instruction and the same amount of exposure to instances as the I group. One-third of these subjects were given the explicit training before the observation phase (EI), one-third had it in the middle (IEI), and one-third after the observation session was complete (IE). Following this training all subjects were run through the standard well-formedness task where they had to determine the grammatical status of novel strings.

Group percentage accuracy on the grammaticality task was ordered as follows: EI (76%) > IEI (71%) ≈ IE (70%) > I (62%) ≈ E (66%) > chance

(50%); i.e., grammatical accuracy was directly related to the point in time that the explicit instructions were introduced, the earlier the better. The point is simple: If explicit instructions are given at the outset then the appropriate structural relations are made salient, subjects set themselves to process information in particular relevant ways and are facilitated in the observation of the exemplars. In contrast, subjects who are left to their own devices will induce representations that are legitimate reflections of the stimulus displays (as indicated by the success of observation-only implicit subjects) but these representations are not necessarily complete descriptions of the AG. Indeed, as we know from other work (Dulany, Carlson, & Dewey, 1984; Perruchet & Pacteau, 1990; Reber & Lewis, 1977), they are likely to be building representations based on smaller chunks made up of two and three letter groups.

N. C. Ellis (1993) investigated the effects of three different types of instruction and language exposure on the learning of a complicated morphological rule structure of Welsh, the soft mutation. During exposure the subjects' task was to learn the English L1 translation equivalents of Welsh phrases which incorporated examples of mutations. 'Random' learners, the operational definition of more implicit, naturalistic exposure, saw randomly ordered instances. 'Rule' learners were first explicitly instructed in the content of the soft-mutation rule system and they explicitly learned these rules before being exposed to the language. 'Rule&Instances' learners saw a more structured blend of rules and examples of their use where every statement of a rule was followed by two phrases which gave examples of its application. In this case the rule statement made the use of this structure in L2 more salient. Initial learning, generalizations to new words and constructions, implicit fast performance in

a reaction time well-formedness decision task, and explicit knowledge of the rules demonstrated that: (1) Random learners quickly achieved competence on original learning material, but showed little implicit learning, performing poorly on well-formedness (or 'grammaticality') judgments, and showing little explicit knowledge of the underlying rule-structure. (2) Rule learners took many trials to learn the rules but this facilitated their understanding of the natural language. Unfortunately, they often knew rules explicitly yet failed to apply them in practice. (3) Initially Rule&Instances learners learn slowest. However, they alone abstracted a working knowledge of soft-mutations. When exposed to new constructions they generalized and were able both to explicitly formulate the new rules and to succeed on implicit well-formedness judgments. The first two findings clearly demonstrate the potential double-dissociation between explicit and implicit knowledge. However, the performance of the 'Rule&Instances' learners also shows that these two types of knowledge can be brought into mutual influence or 'interface'.

De Keyser (in press) compares the effects of explicit instruction in grammar rules and implicit learning as a function of the type of underlying systematicity (categorical rules vs. fuzzy prototypicality patterns) in an artificial language, Implexan, which subjects learned from computer exercises where they studied sentence-picture pairs over 20 learning sessions of 25 minutes each. Implexan has a lexicon of 98 words and five different morphological rules. Some of these rules were categorical (e.g., plural marking on nouns (-on) and gender marking in verbs (-in) in Implexan A), whereas others showed prototypical allomorphy (e.g., object marking on nouns (-is/-us) and plural marking on verbs (-at/-it)). Like Berry and Broadbent (1988) and Reber et al. (1980, Experiment 1), De Keyser was

interested in the way in which the comparative effectiveness of implicit/explicit learning was modified by the salience of the underlying structural properties, but De Keyser's research focuses more on explicit instruction than explicit learning. Implicit learners simply studied Implexan sentences and the pictures which they described. Explicit-deductive learners had additional instruction which comprised ten minutes' study of statements of the grammar rules of Implexan before the second, third and eleventh sessions of exposure. The categorical rules were succinctly stateable, for example, "Implexan forms the plural of a noun by adding -on to the stem. For instance the plural of <u>perakt</u> (<u>book</u>) is <u>perakton</u>, the plural of <u>pemekt</u> (<u>clown</u>) is <u>pemekton</u>." In contrast, the prototypical allomorphs, as for natural language, took much more explaining: "The plural of the verb in Implexan is formed by adding -at or -it to the stem. Compare <u>pemekt wost</u> (<u>the clown is reading</u>) and <u>pemekton wostit</u> (<u>the clowns are reading</u>). Compare <u>pemekt dufk</u> (<u>the clown is driving</u>) and <u>pemekton dufkat</u> (<u>the clowns are driving</u>). There are no fool-proof rules that can tell you how to choose between -it and -at. But there are some good rules of thumb: When the verb ends in a single consonant, the plural ending is almost always -it. When the verb ends in -ust, the plural ending is always -at. In all other cases, that is, when the verb ends with a combination of consonants, but not in -ust, it is harder to choose between -it and -at. But -at is used for the majority of those verbs, and the more the end of the stem resembles -ust, the more likely it is that the ending will be -at. The verb is always plural when the subject is in the plural." We quote this at length because it demonstrates just how complicated some 'pedagogical rules' can be. How much of it can you remember from reading it once? And how much after ten minutes' study? And how much does it make sense without considerable

exposure to the language? Yet this is by no means a ridiculous extreme of the type of grammar description which is necessary to explain fuzzy rules of natural language grammar (compare, for example, grammatical descriptions of how English forms the past tense or the structural clues to French noun gender). Learners' performance showed a significant advantage of explicit instruction on production of new generalized forms of sentences using the easily-stated categorical rule. Effects of instruction on the fuzzy rules was more mixed: Explicit instruction resulted in productions which more often used one or other of the appropriate markers (e.g., choosing -at/-it as a plural verb marker), but choice between these two options (which one was appropriate for which particular verb stems) seemed better in the implicit learning groups (although numbers were too small to allow significance testing on this contrast).

The results of these experiments suggest that implicit and explicit modes of operation interact in interesting ways. Perhaps the best gloss on this interaction is that given by Mathews et al. (1989), who characterized it as synergistic in that the conscious and unconscious processes are coordinated in a way such that the totality of the cognitive processes associated with the acquisition of complex knowledge of complex displays is richer and more sophisticated than it could be if but one or the other of the systems operated totally independent of the other (see readings in N. C. Ellis, 1994a, for further theoretical discussion of these interactions).

The practical conclusions are more straightforward. The results of Reber et al. (1980, Experiment 2) with AGs, like N. C. Ellis' (1993) controlled study of the acquisition of Welsh morphology, demonstrate that a blend of explicit instruction and implicit learning can be superior to either just explicit instruction or implicit learning alone. Explicit instruction on its own

may indeed result in verbalizable rules which the subject can state but which are not reflected in their performance, like the case of "P" (Krashen & Pon, 1975), who had "learned" rules like the third person singular -s, but was not able to use them in casual conversations because she had not yet "acquired" them (see also N. C. Ellis, 1993; Krashen, 1982, 1985; Seliger, 1979). Implicit learning on its own can result in the slow acquisition of partial descriptions of the underlying structure. But early explicit rule instruction which makes salient particular patterns in the surface form can affect the learners' subsequent processing of language exemplars so that they are more likely to acquire the underlying systematicity.

In conclusion, it is clear that the advantages of explicit instruction depend on a wide range of factors: Whether the learner already has the language representations which are necessary foundations for the new structure, the type of underlying rule structure, its salience, the clarity, intelligibility, and memorability of the explicit statement of the rule, and the way in which the rule is married to examples, etc. There is a clear need for further theoretical clarification of the factors which moderate the effectiveness of explicit instruction (see Hulstijn & De Graaf, 1994, for a useful starting classification in terms of (a) rule complexity, (b) rule scope and reliability, and (c) retrieval of learned examples vs. rule application) and for further experimental research into these issues.

However, in the interim, the experimental studies reviewed here are alike in their theoretical interpretations, which emphasize that an important role of explicit instruction lies in affecting the salience of structural patterns by directing learners' attention towards them. The next section will investigate these processes of 'grammatical consciousness raising' in more detail.

6. Does Focusing Learners' Attention on Grammar Facilitate SLA?

<u>Theories</u>

Seliger (1979) proposed that pedagogic rules have a role in L2 instruction, not by coaching output practice, but by focusing attention on structural patterns in order to facilitate implicit learning. This idea now features in an impressive range of contemporary input-oriented theories of instructed SLA (R. Ellis, 1990, 1993, 1994; Long, 1988, 1991; Rutherford, 1987; Schmidt, 1990, 1993; Sharwood-Smith, 1981; Terrell, 1991; VanPatten, in press; VanPatten & Cadierno, 1993a, 1993b). The underlying argument is that attention to target language forms is necessary and they will not be acquired unless they are noticed (Schmidt, 1994). Therefore, instruction can usefully increase the salience of target language forms in input, thus making them more likely to be noticed.

Terrell (1991) is an illustrative case. He characterizes explicit grammar instruction (EGI) as "the use of instructional strategies to draw the students' attention to, or focus on, form and/or structure" (p. 53). His "binding/access framework" postulates that learners' primary motivation is to understand language and therefore that the acquisition of grammatical form comes as a result of establishing a connection between meaning and form. They do not acquire grammatical rules, but rather individual meaning-form relationships. Three different ways are suggested in which EGI can facilitate this:

1. As an <u>advance organizer</u>, by providing the learner with comprehension strategies that highlight key grammatical elements that the learner should attend to; for example, "Spanish uses a device called grammatical gender for nouns and adjectives. What this means is that the ending of some adjectives like the Spanish words for <u>big</u>, <u>old</u>, and <u>pretty</u> will

change. For example, the Spanish word for pretty is <u>bonito</u> or <u>bonita</u>, depending on the grammatical gender of the word being described as pretty" (Terrell, 1991, p. 59).

2. As a <u>meaning-form focuser</u> for relations that are not salient or essential for understanding the meaning of an utterance. While some grammatical meaning-form relationships are both salient and essential to understanding the meaning of an utterance (e.g., Spanish interrogatives <u>qué</u> (<u>what</u>?) and <u>quién</u> (<u>who</u>?)), others are not (e.g., grammatical particles and many inflections). Inflections marking grammatical meanings such as tense are often redundant since they are usually accompanied by temporal adverbs which indicate the temporal reference. The high salience of these temporal adverbs leads L2 learners to attend them and ignore the grammatical tense verb morphemes. Terrell recommends EGI as a way of making the inflections more salient by, firstly, explaining their existence and, secondly, by providing meaningful input that contains many instances of the same grammatical meaning-form relationship (again binding rules and instances as in N. C. Ellis, 1993, described above).

3. By providing grammatical information that can be used by the "monitor". In Krashen (1982, 1985) explicit knowledge can only be used as a monitor, that is, an editor to correct output after it has been initiated by the acquired system. Terrell sees an additional role for this feeding back on acquisition: Explicit knowledge helps the learner to produce more accurate and more complete L2 sentences, but, because this very output can serve as input to the acquisition process, it can also become intake.

<u>Field Studies of SLA</u>

Doughty (1991) compared the effects of "meaning-oriented instruction" and "rule-oriented" instruction on the acquisition of relative

clauses. Adult ESL students read texts presented sentence-by-sentence by computer. For ten days they read five or six sentences, each containing the target structure, object-of-preposition type relative clauses. The sentences made up three coherent stories. The "exposure only" group simply read the texts, a "meaning-oriented" group (MOG) received "lexical or semantic rephrasings and overall sentence-clarification ..." (p. 448) on the lower part of the screen, and a "rule-oriented" group (ROG) received an "animated grammar" program that "provided instruction on relativization through a combination of explicit rule statement and on-screen sentence manipulation" (p. 448). All three groups had daily comprehension testing, and took pre- and post-tests focusing on the target structure. The results showed that (a) the meaning-oriented group demonstrated an advantage with regard to comprehension of the content of the text, and (b) both the meaning-oriented and rule-oriented groups outperformed the control group in their ability to relativize. Given that the ROG-group was receiving input enhancement without extra output practice, this result suggests that these effects of rule-oriented instruction resulted from increasing salience in input.

Alanen (1992) reported a randomized control study of the learning of semi-artificial Finnish as a second language, in which the learning targets were two locative suffixes and a rule of consonant gradation. The study compared a group for whom the target structures were made more salient by italicization with a simple exposure control. When subjects were scored for their ability to produce the correct target suffixes -lla and -ssa after training, there were no significant differences between the two groups. However, analysis of their productions showed that subjects in the control group were likely to omit the suffixes altogether, whereas most subjects in the enhanced input condition produced incorrect variants such as -ousa,

-ous, -osi, -osso, -asso, -sse, and -sa (all for -ssa). This suggested that italicization had caused them to notice the presence of the suffix but was insufficient for them to acquire the exact form.

VanPatten and Cadierno (1993a, 1993b) report a randomized control comparison of input processing and traditional instruction on English learners of Spanish non-SVO strings. The control group received no instruction. The processing instruction group received instruction which involved teaching the subjects how to counteract the SVO=agent-action-object strategy. It made salient and had subjects respond to the meaning of OV strings, but "at no point did processing instruction involve the production of the pronoun forms by the learners" (pp. 48-49). The traditional instruction group received instruction which involved presenting the subjects with explanations concerning the form and position of direct object pronouns and then giving them practice in how to make sentences with those pronouns. On a post-test interpretation task, the processing group's scores were significantly higher than those of the other two groups, with no significant difference between traditional and control groups. On a post-test of production, the traditional and the processing groups' scores were about the same and both were significantly higher that those of the control group. These results suggest that (a) making form/meaning relations salient can facilitate their acquisition; (b) processing instruction impacted both on how subjects processed input and on what they could access for production; (c) traditional instruction, on the other hand, affected what learners could access for production, but seemed to have little impact on how they processed future input.

These three studies alike support a role of 'grammatical consciousness raising' on SLA even in the absence of output practice.

Laboratory Studies Involving Learning Artificial Languages

The same conclusion is warranted from AG research. The studies reviewed in the corresponding sub-section (on laboratory studies) in section 5 all manipulated input salience while holding constant across groups the amount of output practice. In all cases explicit instruction which made structural relations more salient resulted in better language acquisition.

7. Does Output Practice Facilitate SLA?

Section 6 demonstrated the benefits of explicit instruction in the absence of output practice but this does not deny a role of output practice per se. This is a separate question. Should learners be encouraged to repeat new L2 utterances or not?

Theories

Many language practitioners advocate that speech be prohibited in the early stages of language acquisition. Thus Asher (1969) developed the Total Physical Response method where the learner responds with his or her whole body rather than through speech, and Krashen and Terrell (1983) originated the Natural Approach, which holds that L2 learners acquire language in much the same way as children acquire L1, that is, through comprehensible input, focusing on meaning, not form, and with no pressure to speak.

These views are in total contradiction to skill-acquisition theories of SLA which suggest, in essence, that 'practice makes perfect'. One early version of this is to be found in Sharwood-Smith's (1978, 1981) interactive theory of explicit and implicit knowledge: Some aspects of language performance can be planned from the start entirely on the basis of explicit knowledge, and sufficient repetition of these pre-planned utterances results in fluency by means of this productive practice and through these

utterances themselves providing feedback as input to implicit knowledge. Cognitive psychologists describe this transfer from explicit to implicit knowledge in terms of restructuring and the development of automaticity - in the development of novel skills one begins slowly, haltingly, often with a great deal of conscious awareness, and then, in the course of time, we are able to automatize (or 'proceduralize' - turning declarative knowledge into procedural knowledge) the whole process and execute the relevant programs and routines swiftly and without reflection (Anderson, 1983; Bialystok, 1979; Bialystok & Bouchard Ryan, 1985; Bialystok & Fröhlich, 1977; McLaughlin 1987, 1990a, 1990b; McLeod & McLaughlin, 1986).

It is clear that these contradictory positions are only empirically resolvable.

Field Studies of SLA

There is surprisingly little SLA research related to this core question. Our best efforts to find evidence supporting a silent period resulted in the following rather thin pickings. (a) Classroom research which shows that allowing an initial period of silence facilitates listening comprehension which transfers to reading and writing skills (Asher, Kusado, & De La Torre, 1974; Postovsky, 1975), but there is very little documented about the accuracy of the speech that results from a silent period (Gary, 1975; Thiele & Scheiber-Herzig, 1983). (b) Anecdotal evidence which suggests that learners feel more comfortable when they are allowed to remain silent until they feel ready to speak (Daniels, Pringle, & Wood, 1986; Gary & Gary, 1981). (c) Suggestions that requiring learners to speak from the start may interfere with their listening comprehension and resultant inability to understand the grammatical structure of the language (Krakowian, 1981; Nord, 1980; Van Parreren, 1983).

In contrast, there are a number of studies which show positive correlations between second language proficiency and student oral output in classes as well as outside of school (see Chaudron, 1988, for review).

The paucity and the inherent weaknesses of the correlational nature of such field research entail that more controlled laboratory studies are in order to properly answer this question.

Laboratory Studies of Output Practice

Vocabulary. Seibert (1927) showed that, for productive learning of French vocabulary, saying words aloud led to faster learning with better retention than silent rote repetition of vocabulary lists. She emphasized that learning the novel pronunciation of FL words is as much a matter of motor skill as of auditory perceptual memory, that "it is impossible to memorize speech material without articulating it in some form or another", and that this must be practised "since the golden rule of sensori-motor learning is much repetition" (p. 309). There are now a number of experimental studies which confirm this role of output practice on vocabulary acquisition.

Some training studies compare the effectiveness of oral repetition of new vocabulary against silence. For example, N. C. Ellis and Beaton (1993a) contrasted keyword mnemonic methods, rehearsal, and learners' own strategies in a random group allocation controlled study involving the teaching of German vocabulary to English students. Although keyword techniques were efficient means for receptive vocabulary learning, for productive learning they were less effective than repetition (at least for learners naïve to the pronunciation patterns of the foreign language). Furthermore, the easier words were to orally rehearse, the easier they were to learn in the long term (N. C. Ellis & Beaton, 1993b).

Other studies look for a detrimental effect of preventing rehearsal. Papagno, Valentine and Baddeley (1991) showed that preventing rehearsal practice by means of articulatory suppression interfered with the learning of Russian vocabulary. N. C. Ellis and Sinclair (in press) showed that English students' acquisition of novel Welsh vocabulary and morphology was (a) facilitated by encouraging learners to repeat novel utterances and (b) hindered by preventing repetition by means of articulatory suppression. They proposed the following sequence of vocabulary acquisition. Repetition of L2 forms promotes long-term retention. As learners' L2 vocabulary extends, as they practise hearing and producing L2 words, so they automatically and implicitly acquire knowledge of the statistical frequencies and sequential probabilities of the phonotactics of the L2. Their input and output modules for L2 processing begin to abstract knowledge of L2 regularities, thus to become more proficient at short-term repetition of novel L2 words. The more they repeat novel words, the more these are consolidated in their long-term vocabulary. And so L2 vocabulary learning lifts itself up by its bootstraps.

It is now generally accepted that there are separate specialist processing modules for recognizing words (the visual input lexicon and the auditory input lexicon) and for producing words (the speech output lexicon) and that these systems for dealing with the form of words are quite dissociable from the cognitive systems representing word meaning (N. C. Ellis, 1994c, 1994d; see also Kroll & De Groot, this volume, and Poulisse, this volume). Acquisition of fluency in these input/output lexicons, like other perceptual and motor skill learning, is influenced by frequency, recency, and regularity. The frequency effect is simply that of 'practice makes perfect' - pronunciation accuracy and speed grows over the lifespan according to the

power law of practice (Kirsner, 1994). Furthermore, such practice effects are quite specific - practice at visually recognizing a word facilitates its future visual recognition, practice at auditorily recognizing a word facilitates its future auditory recognition, practice at saying a word facilitates its future pronunciation, but, with skilled language users at least, there are no cross-module priming or transfer. There is a specific role for output practice in lexical development - it consolidates the form of the word, but for acquiring the meanings of words, and associating them with this form, very different 'deep processing strategies' are more appropriate (N. C. Ellis, 1994c, 1994d).

Phrases and Syntax. It is becoming clear that fluent language is not as open as the followers of Chomsky (1963) would have us believe. Sinclair (1991), as a result of his experience directing the Cobuild project, the largest lexicographic analysis of the English language to date, proposed the principle of idiom - "a language user has available to him or her a large number of semi-preconstructed phrases that constitute single choices, even though they might appear to be analyzable into segments. To some extent this may reflect the recurrence of similar situations in human affairs; it may illustrate a natural tendency to economy of effort; or it may be motivated in part by the exigencies of real-time conversation. However it arises, it has been relegated to an inferior position in most current linguistics, because it does not fit the open-choice model" (Sinclair, 1991, p. 110). Rather than its being a rather minor feature, compared with grammar, Sinclair suggests that for normal texts, the first mode of analysis to be applied is the idiom principle, since most of text is interpretable by this principle.

Lexical phrases are as basic to FL and L2 acquisition as they are to L1 (Kjellmer, 1991; Nattinger & DeCarrico, 1989; Renouf & Sinclair, 1991) and so instruction relies as much on teaching useful stock phrases as it does

on teaching vocabulary and grammar. The L2 learner is introduced to phrases such as <u>Excuse me</u>, <u>How do you say _____ in English?</u>, <u>I have a headache</u>, etc. Most methods encourage learners to pick up such holophrases (Corder, 1973), prefabricated routines and patterns (Hakuta, 1974), formulaic speech (Wong-Fillmore, 1976), memorized sentences and lexicalized stems (Pawley & Syder, 1983), or formulas (R. Ellis, 1994): "for a great deal of the time anyway, language production consists of piecing together the ready-made units appropriate for a particular situation and ... comprehension relies on knowing which of these patterns to predict in these situations. Our teaching therefore would center on these patterns and the ways they can be pieced together, along with the ways they vary and the situations in which they occur" (Nattinger, 1980, p. 341).

Native-like selection is not a matter of syntactic rule alone. Speaking natively is speaking idiomatically using frequent and familiar collocations, and the job of the language learner is to learn these familiar word sequences. "In the store of familiar collocations there are expressions for a wide range of familiar concepts and speech acts, and the speaker is able to retrieve these as wholes or as automatic chains from the long-term memory; by doing this he minimizes the amount of clause-internal encoding work to be done and frees himself to attend to other tasks in talk-exchange, including the planning of larger units of discourse" (Pawley & Syder, 1983, p. 192).

For present purposes such collocations can simply be viewed as big words and it follows that the role of the phonological loop in learning such structures should be the same as for words - just as repetition aids the consolidation of vocabulary, so it should the long-term acquisition of phrases. N. C. Ellis and Sinclair (in press) confirmed this hypothesis experimentally. English subjects encouraged to rehearse foreign language

utterances were better than both silent controls and subjects who were prevented from rehearsal by articulatory suppression at (a) learning to comprehend and translate L2 words and phrases, (b) explicit metalinguistic knowledge of the detailed content of grammatical regularities, (c) acquisition of the L2 forms of words and phrases, (d) accuracy in L2 pronunciation, and (e) some aspects of productive (but not receptive) grammatical fluency and accuracy.

The role of output practice in the abstraction of syntactic regularities is a more open question which our research team is currently investigating. But this current review has clearly demonstrated that, at least for beginning learners, there are strong benefits of output practice in both the SLA of vocabulary and of phrases and collocations.

8. Conclusions

Research progress is easiest when positions are cast as black or white - it is easiest to empirically test simple non-interactive hypotheses which hold that a particular variable either results in SLA or does not. But the acquisition of natural languages is a complex interaction of many variables involving cognition, motivation and opportunity for language exposure, use, and feedback. The role of the psychologist is to dissect in order to properly investigate the roles of potential independent variables while controlling all others. It is the opposite of the applied linguist whose job is to synthesize and bring together optimal levels of all of these factors in order to best facilitate SLA. The studies reviewed in this chapter have demonstrated that there are roles for the provision of negative evidence and recasts, for explicit instruction, particularly that which involves grammatical consciousness raising, and for output practice. But each of the

experimental demonstrations looked at each factor in isolation and therefore their findings do not imply exclusivity of cause in real-world SLA.

There are differing, additive advantages of different instructional processes and contexts of acquisition. The problem that remains is how best to achieve the best balance. Many aspects of language acquisition are like other skills in that a major predictor is the amount of experience and practice. If, for example, learners are to be fluent in pronunciation then they need lots of practice at pronunciation. An environment which maximizes useful experience is one in which there is lots of comprehensible input. Naturalistic environments provide motivation and plenty of opportunity for output practice as well. These are situations which guarantee sufficient quantity of language. But without any focus on form, formal accuracy is an unlikely result. The research reviewed here suggests that there are ways of speeding the learners' SLA from a given amount of language exposure, to increase the quality of the learning. These ways, which include grammatical consciousness raising or input processing as well as corrective feedback and recasts, permit the acquisition of sophisticated grammatical proficiency. There is some benefit in a focus on form in second language instruction (see R. Ellis, 1994; Long, 1988, 1991; Terrell, 1991, for reviews of instructional programs which incorporate these ideas). Even so, it must be remembered that there are constraints on the forms which can be taught at particular stages of linguistic development. Just as there is the issue of Learnability in L1, so there is that of Teachability in L2 - any empirical findings about natural developmental sequences should be respected in the design of instructional materials (Pienemann, 1985), and attempts to teach structures or transformations which build on still-to-be acquired procedures or representations are likely to fail.

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