

# LINGUISTIC EVIDENCE IN L2 ACQUISITION

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## 1. *Introduction*

The nature of linguistic evidence available to second language (L2) learners has recently been the focus of considerable interest and research. This is manifest, for example, in the range of different types of evidence proposed for L2 acquisition and in continuing debates, both theoretical and empirical, about their status and contribution to the mastery of non-native grammars. The parameter setting model of grammar (Chomsky 1981) has not only allowed a fairly precise specification of what may constitute direct positive evidence for an L2 learner of a particular linguistic background, but has also motivated a new, broader notion of the kind of linguistic facts which may provide the relevant linguistic information, resulting in proposals for indirect positive evidence (Zobl 1988; Haegeman 1992). Negative evidence of both the direct and indirect kind has also become accepted as a (possibly) inevitable feature of L2 acquisition (Bley-Vroman 1989), leading to considerable interest in its role in the process. Attempts have been made to accommodate the operation of indirect negative evidence within current perspectives on hypothesis testing and cognitive learning principles (Rutherford 1989), while lively debates surround the ability of direct negative evidence to lead to L2 competence (White 1991, 1992; Schwartz and Gubala-Ryzak 1992).

The nature of the linguistic evidence available to L2 learners is of considerable interest for Second Language Acquisition (SLA) research, since it may provide some explanation for two features of L2 acquisition which make it fundamentally different from first language (L1) acquisition, namely imperfect attainment and learner variability. Imperfect attainment refers to the well-recognized phenomenon whereby L2 learners, in contrast to children, who achieve a perfect command of their native grammar, generally fail to master their target grammar and fossilize short of the native level (Selinker 1972; Bley-Vroman 1989; Rutherford 1989). Learner variability manifests itself in the degree of non-native grammar mastery among L2 learners: while all children achieve the same level of L2 competence, L2 learners vary considerably in this respect, some achieving a near-native command, others failing to do so.

In this paper we focus on the four types of linguistic evidence currently proposed for L2 acquisition: *direct positive*, *indirect positive*, *direct negative* and *indirect negative evidence*, and comment on their forms and implications for the process. In particular, we raise some points about their potential contribution to the attainment of non-native grammars and consider how they may lead to learner differences in this respect. Our discussion is organized as follows. In section 2, we provide a short characterization of the four types of evidence. Section 3 discusses their motivation in the context of the Government and Binding (GB) theory (Chomsky 1981). In section 4, we comment on the four types of evidence, pointing out briefly some theoretical problems that they raise and concentrating mainly on their contribution to the mastery of L2 grammars and learner variability. Finally, in section 5, we summarize the theoretical and acquisitional implications of current insights into the nature of linguistic evidence available to L2 learners.

We would like to note in passing that the types of evidence discussed here derive from theoretical proposals which are highly controversial in the context of L2 acquisition. These include the status of the Subset Condition (Berwick 1985) and the parameter setting model of grammar, the accessibility of Universal Grammar (UG) (see White 1989b for a summary of the controversy surrounding the issue) and the operation of the Subset Principle (Wexler and Manzini 1987; Manzini and Wexler 1987). A full discussion of their implications for the nature of evidence in L2 acquisition would fill more than a single paper of the present scope. We cannot, therefore, hope to do more than scratch the surface of the theoretical issues raised by the current proposals for evidence types in L2 acquisition, hoping nevertheless that this will provide a source of further discussion.

## 2. Four types of linguistic evidence in L2 acquisition

Very broadly, linguistic evidence could be described as information in the L2 input which enables the learner to arrive at his target grammar. Taking grammar to be a mental phenomenon, we can say that what a learner essentially does is formulate a certain representation of the grammar under acquisition, which he subsequently tests against the linguistic information in the input.<sup>1</sup> If the data in the input can be generated by this representation, its correctness is confirmed. Otherwise, the learner has to revise it. Attaining a target grammar is, therefore, paramount to arriving at a representation which is compatible with the facts of that grammar. Thus, two things bear on the notion of evidence: the learner's assumption about the form of his target grammar, reflected in a specific (mental) representation of that grammar and the linguistic information that either confirms or disconfirms this representation.

<sup>1</sup> The L2 learner's reliance on his native grammar as the source of hypothesis about his target grammar follows from the Cross-Linguistic Influence perspective on L2 acquisition (Van Buren and Sharwood-Smith 1985). Disregard of L1 is consistent with the Creative Construction Hypothesis (Dulay and Burt 1974).

Let us now consider the predicaments of different L2 learners faced with particular linguistic information, as illustrated by situations (1)-(4).

- (1) a. Avec qui as-tu parlé?  
With whom have you talked?  
b. Whom have you talked with?
- (2) Z kim pani rozmawia?  
With whom are you talking?
- (3) Native Polish speaker: 'You cannot say "Kim pani rozmawia z" ('Whom are you talking with') in Polish, i.e. you cannot strand prepositions'.
- (4) It is raining.

The linguistic data in (1), (2) and (3) involve the phenomenon of preposition stranding (P-stranding). Situation (4) involves the so-called pro-drop parameter.

We assume that every L2 learner formulates a particular hypothesis, such as the assumption of equivalence between his target and his native grammar with respect to the possibility of P-stranding, or the particular setting of the pro-drop parameter. We also assume that this hypothesis generates a particular set of facts, such as the possibility (or impossibility) of NP movement out of PP, or the presence (or absence) of the lexical subject.

We start with the two cases of linguistic information under (1), which illustrate the operation of direct positive evidence. Let us assume that a situation like (1a) involves a Polish learner of French and a situation like (1b) a Polish learner of English. The Polish learner, who hypothesises that Polish and French are alike in their restriction on NP extraction out of PP, comes across the primary linguistic data (pld) 'avec qui' in the L2 input (1a), which is compatible with his representation of the target grammar, i.e. can be generated by it. Consequently, the data directly confirm the correctness of this representation.

The Polish learner of English, on the other hand, will come across the pld 'who... with' in utterances such as (1b), which cannot be generated by the representation of the target grammar he has formulated for himself, i.e. the linguistic evidence directly disconfirms his assumption that in English nouns cannot be extracted from PP. Both learners are faced with direct positive evidence: the pld present in the L2 input directly confirms, or disconfirms their representations of their respective target grammars, in that these representations either can or cannot generate the data.

Let us now consider situation (2), which illustrates the operation of indirect negative evidence. If an English learner formulates for himself a representation of Polish grammar where P-stranding is possible, he will find no pld in the input which directly confirms or disconfirms this representation: the data present in utterance (2) 'z kim' merely confirms the movement of a whole PP and says nothing about the NP extraction out of PP (in fact, the situation is more complex, as will become apparent from the discussion of the Subset Condition in section 3). In other words, this learner will have to notice that the L2 input does not contain the pld compatible with the facts that his representation of Polish generates. This

observation may indirectly disconfirm it: never hearing any examples of P-stranding, he will have to conclude, ultimately, that it is systematically absent from the input, i.e. prohibited by Polish grammar.

Situation (3), where an English learner of Polish receives an explicit correction, illustrates the operation of direct negative evidence. In this case, the linguistic evidence that directly disconfirms the learner's representation of his L2 grammar is metalinguistic in nature, i.e. it is information about the L2 grammar and not an exemplar generated by that grammar.

An Italian learner of English faced with the pld under (4) is exposed to indirect positive evidence. Since this case involves consideration of the cluster effects of the pro-drop parameter, let us reiterate the relevant proposals (Chomsky 1981). GB theory postulates that the form of possible human grammars is innately determined by UG, a set of universal principles which vary along a number of parameters, with a limited number of values. Languages differ as to the settings of the parameters that they adopt, the setting appropriate for a particular language being determined on the basis of the pld in the learner's input. The choice of one of the possible values of a particular parameter may have a cluster of consequences in different parts of the grammar. For example, the [+] setting of the pro-drop parameter in the grammar of, say, Italian will produce the optional absence of a lexical subject ((6a) and (6b)), the obligatory absence of the pleonastic subject (7), the possibility of subject-verb inversion in declaratives (8) and the (apparent) violation of the 'that-trace' effect (9).

- (6) a. Io ho comprato un gelato  
I have bought an ice cream  
b. pro ho comprato un gelato  
Have bought an ice cream
- (7) pro piove  
Rains
- (8) pro sono arrivati degli studenti  
Have arrived some students
- (9) Chi dici che pro sta arrivando?  
Who are you saying that is going to arrive?

The [-] setting of the pro-drop parameter, as in English, will have a different cluster of effects: the obligatory presence of a lexical (6') and a pleonastic subject (7'), the absence of subject-verb inversion in the declaratives (8') and the impossibility of violation of 'that-trace' effect (9').

- (6') a. I have bought an ice cream  
b. \*pro have bought an ice cream
- (7') It is raining
- (8') Some students have arrived
- (9') Who are you saying is going to arrive

Notice that, while in English the lexical subject is obligatory (6'a), in Italian

the presence of lexical subject is optional, i.e. both (6a) and (6b) are compatible with the [+] setting of the pro-drop parameter. This means that for an Italian learner of English (6'a) cannot provide the necessary information to correct his representation of the English grammar from [+] to [-] parameter setting, since it corresponds to the data (6a) generated by this [+pro drop] representation. However, the learner can revise it, if he comes across the pld like (7') and recognizes it as one of the cluster effects of the pro-drop parameter. Since this particular linguistic fact is incompatible with his [+] pro-drop hypothesis, as illustrated by (7), it will force him to revise it and to adopt the alternative setting. In this way, it will also indirectly disconfirm his original representation of English grammar, where lexical subjects can be optionally dropped.

The notion of indirect positive evidence involves expanding the definition of what pld in the L2 input counts as positive evidence. In contrast to the pld which bears directly on the learner's representation of his L2 grammar and thus constitutes direct positive evidence, as in the examples under (1), the pld that operates as indirect positive evidence is related to the phenomenon in question through abstract properties of grammar, such as cluster effects resulting from a particular parameter setting. Once the learner perceives this data and recognizes its relation to a particular parameter, thus its relevance to the representation of the L2 grammar he has formulated for himself, he is in a position to revise it.

From the above discussion, we can see that the operation of evidence in L2 acquisition revolves essentially around the learner's representation of L2 grammar and linguistic information that either confirms or disconfirms it. This information may take different forms. It may be present in the L2 input as pld which is either directly or indirectly pertinent to the learner's representation of his L2 grammar (direct positive evidence or indirect positive evidence). Alternatively, it might consist of metalinguistic information directly telling the learner that his representation of L2 grammar is incorrect (direct negative evidence). Finally, there may be no pld in the L2 input which is compatible with the learner's representation of L2 grammar and this absence may indirectly disconfirm it (indirect negative evidence).

### 3. GB theory and linguistic evidence

Before we comment on the four types of evidence and their implication for L2 acquisition, let us sketch briefly the GB proposals that motivate their postulation. These include the parameter setting model of grammar, the Subset Condition and the Subset Principle. Although they were proposed initially to explain L1 acquisition, they have nevertheless provided a framework for some SLA research which has led to considerable progress and insights into the phenomenon of L2 acquisition.

The significant contribution of GB theory to discussions of language acquisition rests in its postulation of the parameter setting model and in its assignment of a crucial role to linguistic evidence which 'triggers' the choice of parameter values for the grammar under acquisition. The theory postulates that the form of possible human grammars is innately determined by UG. The parameters have a set of

values (binary, open or multiple) which can be set on the basis of linguistic evidence available in the input. By fixing the parameters of UG in the way determined by the data, the learner arrives at a particular grammar.

The postulation of the system of principles and parameters enables GB theory to account simultaneously for interlingual similarity and variation, since it suggests that while languages are alike with respect to the principles and parameters available to them, they differ as to the parameter settings they adopt. In the context of L2 acquisition, this means that the learner's L1 can have parameters set in the same, or in a different way from his L2. For example, both Italian and Spanish have the pro-drop parameter fixed in the same way, but differently from English. The theory, thus, provides the means of a finely-tuned contrastive analysis of the learner's native and target grammars. In other words, it defines a particular contrastive linguistic predicament of an L2 learner and, by implication, the type of linguistic evidence available to him.

The two other proposals of the GB theory which motivate the types of evidence proposed for L2 acquisition are the Subset Condition and the Subset Principle.

The Subset Condition defines the relationship between grammars: it proposes that grammars may yield languages which are in a subset/superset relationship. This relationship derives from the markedness status of the parameter settings which particular grammars adopt. In terms of UG, the parameter settings are either marked (involve a relaxation of the restrictive principles of UG) or unmarked, and the relationship between these can be described as follows:

"Given the marked setting M of an arbitrary parameter P plus the unmarked setting U of P, the set of syntactic structures generated by M is greater than and includes the set of structures generated by U. In other words U is a (proper) subset of M". (Van Buren 1988:34).

Thus, the grammar that has the setting M and generates the sentences X also generates the sentences Y, with the effect that Y is a proper subset of X.

The Subset Condition defines essentially a relationship where a superset grammar entails its subset counterpart, but not vice versa. This means that a language like Italian, which allows the marked setting for the pro-drop parameter (6b), will also include structures compatible with the unmarked setting of that parameter (6a), since they constitute the subset of the former. The reverse will not hold: e.g. English, which has the unmarked setting (6'a), has no structures compatible with the marked setting (6'b).

As the Subset Condition may be characterizing the relationship between the learner's native and target grammars, it has in principle significant implications for the evidence available to that learner. The data which motivates the superset (6b) is compatible only with that grammar. Thus, a learner who incorrectly assumes that his target grammar belongs to a subset, e.g. an English learner who assumes that Italian, like English, does not allow pro-drop and is like (6a), will get direct positive evidence in the form of pld like (6b), which will disconfirm this representation. On the other hand, the data that motivates the subset (6a) is compatible with both that subset and superset (6b). Thus, an Italian learner who assumes that

English belongs to a superset, i.e. allows pro-drop, like Italian, will get no direct indication that his representation of English is wrong (6'b). He will only hear (6'a), which is compatible with the assumption of the superset as well as the subset grammar. Consequently, he will have to rely on negative evidence of a direct or an indirect kind, or on indirect positive evidence.

If, or where the Subset Condition does not apply, different settings of a particular parameter operating in the learner's L1 and L2 grammars will not generate structures that belong to grammars in a subset/superset relationship and the learner will be faced with direct positive evidence.<sup>2</sup> Thus, both an English learner of Dutch and a Dutch learner of English will find pld in their respective L2 inputs which will show them the settings of the head-parameter appropriate for their respective target grammars: head-initial for English (10) and head-final for Dutch (11).

- (10) I know that he has done it  
 (11) Ik weet dat hij het gedaan heeft  
 I know that he it done has  
 I know that he has done it

The second construct relevant to the discussions of evidence types in L2 acquisition is the Subset Principle. This is a learning principle, initially proposed in the context of L1 acquisition, which interacts with the principles and parameters of UG and the Subset Condition, and which proposes that a child will initially choose the parameter value generating the smallest (subset) grammar. He will choose a wider grammar only if the available direct positive evidence justifies this.

The operation of the Subset Principle in L2 acquisition has been challenged on both theoretical and empirical grounds (Fodor and Crain 1987; McLaughlin 1991; Van Buren 1988; White 1989a). This has implications for the nature of the linguistic evidence available to L2 learners. If the Subset Principle operates in L2 acquisition, the learner, like a child, will always assume a subset grammar and, where the target grammar belongs to a superset, he will get direct positive evidence from the input to disconfirm his original representation of the target grammar. On the other hand, if the Subset Principle does not operate, the L2 learner may assume a superset grammar and will have to rely on direct or indirect negative evidence to revise this representation of his L2 grammar.

There are two situations where the Subset Principle may fail to operate and the L2 learner may adopt a superset grammar, where the target grammar belongs to a subset, namely *overgeneralization* and *transfer*. Overgeneralization arises when a learner incorrectly assumes too wide an operation of a particular (marked) rule or parameter setting: for example, an English learner who believes, on the basis of pld like (12), that in Dutch any NP can move out of a PP:

- (12) Waar heb je over gepraat?  
 Where have you about talked?  
 What have you talked about?

<sup>2</sup> This will happen in the case of, so-called, open parameters such as the head-parameter.

- (13) \*Wie heb je over gepraat?  
 Who have you about talked?  
 Who have you talked about?

In the case of transfer, the L2 learner incorrectly assumes that the setting of a particular parameter in his native grammar corresponds to that in his target grammar. He, therefore, transfers this setting to his L2 and, if his L1 belongs to a superset, adopts the setting which generates a grammar that is too wide.

Thus, in the light of the proposals discussed above and assuming their applicability to L2 acquisition, learnability considerations suggest a role for a range of different evidence types in the process. Their operation may be one of the factors leading to the differences in the outcome between L1 and L2 acquisition.

#### 4. *The role of evidence in L2 acquisition*

We will now discuss each of the four types of linguistic evidence proposed for L2 acquisition. Most of our discussion focusses on their implication for the mastery of L2 grammars: we consider how the inherent nature of different types of evidence can generally assist or impede L2 learners in arriving at the correct representation of their target grammar and how it can lead to (potential) learner differences. We relate this discussion to current proposals for the modularity of mind (Fodor 1983). We also comment briefly on the theoretical status and motivation of indirect negative and indirect positive evidence.

##### 4.1. *Direct positive evidence*

The significance of direct positive evidence for L2 acquisition lies in the fact that its form makes it potentially the 'best' type of evidence which the L2 learner can get to attain his target grammar. There are two reasons for this. As direct positive evidence consists of pld actually present in the L2 input, in the cases where it disconfirms the learner's hypothesis, it also simultaneously provides him with an indication of what linguistic fact is generated by the target grammar. In other words, it suggests to the learner what form his revised representation of L2 grammar should have in order to comply with the facts of that grammar.

The second reason why direct positive evidence may help the L2 learner to attain his target competence involves the considerations of the modularity of mind (Fodor 1983). Briefly, the modularity proposal views the mind as consisting of two separate systems. The input system is autonomous and domain-specific, comprising among others a language module (UG). The central system is non-modular and performs computational operations and global processing, such as induction, problem solving, etc. Central processor can use a range of information, including the information that is made accessible to it through computational analysis in the language module. The domain-specific modules in the input system, on the other hand, can only read 'encapsulated information': the language module, for example, can only 'read' language input, i.e. the pld. The property of 'information encapsulation' makes a module autonomous: input of inappropriate form cannot

feed into it. This means that information other than pld, including feedback from the central processor, is unavailable for computational analysis in the language module. Only pld will enable the learner to construct a correct representation of the grammar under acquisition.

However, the mere presence of pld in the input may not necessarily lead to a correct representation of target grammar or to its revision. For a start, the effects of saliency or ambiguity may intervene (Sharwood-Smith 1991; Haegeman 1992). Moreover, the presence of presence of pld in the L2 input does not necessarily imply that the learner will use it: he may be 'filtering' the evidence either because he views it selectively through his native grammar (Liceras 1985) or because he has formed certain assumptions about the target grammar (Sharwood-Smith 1988). Finally, some of the representations which the L2 learners entertain may not be amenable to revision by direct positive evidence (Birdsong 1989).

Saliency is a matter of the perceptual impact of information on the learner's mind. The relative saliency of pld in the input is important, since it may influence the learner's perception and assimilation of the particular data, thus assisting hypothesis revision and subsequent attainment of target grammar. Saliency of particular pld can be a function of its frequency in the L2 input, processing ease or markedness status. Tokens of P-stranding in English, for example, are salient on all these accounts. As saliency of pld can also be manipulated, either by the learner himself or by the teacher, it is of potential pedagogical interest and raises the old issues of 'input enhancement' and the benefits of form-focussed instruction (Sharwood-Smith 1991).

Ambiguity of some pld may be caused by its similarity to the linguistic data in the learner's native grammar. For example, interrogatives and negatives with 'do' support (14a) may provide unambiguous information to French learners that the verb raising parameter (Pollock 1989) does not operate in English, since such forms have no parallel in French (14b).<sup>3</sup> On the other hand, utterances containing impersonal object pronouns such as (15a) might provide ambiguous evidence against the operation of the object pro-drop (Rizzi 1986) in English, because although they have no exact parallels in French as seen from (15b), they resemble other French forms such as (16) and thus lose their contrastive power (Haegeman 1992).<sup>4</sup>

- (14) a. John does not often eat bread  
 b. John ne mange pas souvent du pain  
 John not eat NEG often bread

<sup>3</sup> Under verb movement parameter (Pollock 1989), adverbs are generated left to VP and the verb can either raise obligatorily from V to INFL (as in French) or not (as in English). This accounts for contrasts in adverb position: in English adverb cannot intervene between a verb and its complement; in French it can.

<sup>4</sup> Object pro-drop operates in Italian but not in English:

(1) Questo conduce a concludere quanto segue.

'This leads to conclude what follows'

(2) This leads us/one to conclude that....

- (15) a. John considers it crazy that Marie will leave  
 b. \*John le trouve stupide que Marie soit partie  
 John it considers crazy that Marie should leave
- (16) John trouve a stupide  
 Jean finds this crazy

Another form of ambiguity may arise when the function of the input, as a confirmation or disconfirmation of the learner's representation, is essentially unclear, as illustrated by the example below:

- (17) Non-native speaker: The cat bited me  
 Native speaker: Yes, the cat bit you

Potentially, the pld in the native speaker's utterance ('bit') may operate as a direct disconfirmation of the non-native speaker's overgeneralization, but its operation will depend essentially on how the L2 learner interprets the whole utterance. As the native speaker appears to agree with him, the significance of the pld 'bit' might be unclear and he may interpret the native speaker's utterance as a confirmation of his representation of English grammar, where the past tense form is 'bited'.

Such a form of ambiguity raises an important general point about linguistic evidence, i.e. about its actual impact on the learner versus the mere presence of the form. It is easy to forget, when discussing the nature of evidence available to learners, that its effect on their representation of L2 grammar is not so much the function of its form or (even less) the linguist's classification (is the above a case of direct positive or direct negative evidence?), but depends on what the learner actually does with it, i.e. whether he uses it to confirm or disconfirm his representation of L2 grammar and whether, to begin with, he actually notices it at all.

This brings us to the learner's selective attention to evidence. Some empirical studies suggest that L2 learners may not be utilizing direct positive evidence available in the input (Van Buren and Sharwood-Smith 1985; White 1989a). This phenomenon has been discussed in the literature in the context of 'filtering' of evidence and 'acquisitional strategies'. Liceras (1985), for example, suggests that L2 learners may be 'filtering' the evidence available to them through their L1, ignoring some linguistic facts present in the input, while attending to other aspects of it. White (1989a) uses the same explanation to account for the unexpected conservatism of her subjects in the face of disconfirming direct positive evidence present in the L2 input.

Individual learners may also selectively accept or reject the linguistic evidence available in the input, because of their 'acquisitional strategies', i.e. certain assumptions which they hold about the status of the grammar under acquisition (Sharwood-Smith 1988). For example, an English learner who believes that French is equivalent to his native grammar with respect to adjacency (adopting an Equivalence Strategy) may ignore any direct positive evidence in the input such as (18) which disconfirms this assumption. At the same time, another English learner who

assumes that the two grammars differ in this respect (adopting a Non-Equivalence Strategy) may readily accept this evidence and revise his representation of the L2 grammar accordingly.

- (18) Marie regarde souvent la television  
 Marie watches often television  
 Marie often watches television

Finally, learners' representations of L2 grammar may be such that direct positive evidence fails to lead to their revision. There are three circumstances when this may happen: when a learner holds the so-called 'free variation hypothesis', when he undergeneralizes and when he assumes that the target grammar is wider than it actually is.

A meta-linguistically sophisticated L2 learner may be 'resistant' to the impact of disconfirming direct positive evidence, because as a result of his increased awareness of the formal properties of grammar, he may be prepared to accept that multiple forms can express single meaning. In other words, by assuming 'free variation', he may view a particular pld in the L2 input not so much as evidence of incorrectness of his representation of L2 grammar, but as the data that is still compatible with it.

Equally, when a learner assumes that the target grammar is more conservative than it actually is, i.e. when he undergeneralizes, the pld in the L2 input may fail to lead to revision, since it will be compatible with the representation the learner has adopted. Thus, a Polish learner who believes that no extraction of NP out of PP is possible in English will find the pld in the input which is consistent with this representation of English in (19).

- (19) With whom are you talking?

Admittedly, he will also come across instances of P-stranding, but he might be 'blind' to the presence of this information. At the same time, the instances of pied-piping such as (19) will confirm his incorrect (conservative) representation of the English grammar.

Finally, as already mentioned, direct positive evidence may be unavailable when the L2 learner incorrectly adopts a superset grammar by either overgeneralizing a rule in the L2 grammar or by assuming equivalence between his native and target grammars, where L1 is wider than the L2 grammar. The pld in the input, being generated by the narrower grammar, will be included in, i.e. be compatible with, the wider grammar assumed by the learner.

In all three cases, L2 learners will have to rely on negative evidence of either an indirect or a direct kind. Both of these, as we shall see, may lead to imperfect attainment and learner variability.

#### 4.2. Indirect negative evidence

There are two issues which we want to raise in our discussion of indirect negative evidence: its motivation in L2 acquisition and the implications of its nature

for the mastery of target grammars. The rationale for indirect negative evidence in L2 acquisition is provided by the Subset Condition and the Subset Principle. The two acquisitional predicaments where this type of evidence is evoked, i.e. transfer or adoption of a superset grammar, where the target grammar belongs to a subset, involve a dual assumption that (a) the learner's L1 and L2 meet the Subset Condition and (b) that the Subset Principle fails to operate in L2 acquisition.

Assumption (b) may be correct. As pointed out earlier, there are theoretical and empirical arguments which suggest that the Subset Principle may not operate in L2 acquisition (Fodor and Crain 1987; Van Buren 1988; White 1989a). Assumption (a), however, presents problems. The proposal that parameters of UG meet the Subset Condition (Wexler and Manzini 1987) has been challenged (McLaughlin 1991) and the status of the condition in L2 acquisition is neither clear nor agreed upon.

If the Subset Condition does not operate in L2 acquisition, this will have crucial consequences for the motivation of indirect negative evidence in the process. While the failure of the Subset Principle creates the acquisitional predicaments where indirect positive evidence has to be evoked, this principle logically presupposes the operation of the Subset Condition. Only if a superset/subset relationship holds between the learner's native and target grammars, is there the possibility that he may incorrectly assume that the target grammar belongs to a superset, with the consequence that there will be no pld in the L2 input to disconfirm this representation.

Thus, the motivation of indirect negative evidence in L2 acquisition hinges essentially on the status of the Subset Condition. At present, there are doubts about whether this condition operates in L2 acquisition, or what form it takes. And if the Subset Condition is shown not to operate in L2 acquisition, indirect negative evidence may lose its theoretical motivation.

Apart from its controversial status, indirect negative evidence is also inherently connected with hypothesis testing, since it operates in the absence of the relevant pld in the L2 input. This in turn may lead to fossilization (White 1989b) and learner variability.

The absence of the relevant pld in the L2 input is the crux of the acquisitional problem posed by the situations involving indirect evidence which can be summarized as follows: how is the L2 learner to revise his representation of the target grammar in the absence of two pieces of information: (a) an indication that this representation is incorrect and (b) information what the (correct) alternative is (Sharwood-Smith 1991). Of the two, it is the (b) aspect of indirect negative evidence which creates more serious problems for acquisition.

In the context of the operation of indirect negative evidence, the indication to the learner that his representation of L2 grammar is incorrect is provided by the absence of pld in the L2 input which is compatible with this representation. In other words, it depends on the learner's ability to estimate systematic absence of the relevant pld and on his judiciousness to compare his output with that of other speakers. Both of these can be accommodated within the current views on L2

learners' cognitive development: the ability to perform abstract operations, the use of inference rules to extract regularities (Felix 1985), and the reliance on cognitive comparison procedures (Nelson 1987).

The second half of the attainment problem posed by the nature of indirect negative evidence, i.e. (b), presents a more serious acquisitional problem. Even if the L2 learner detects the anomaly of his representation of L2 grammar, the problem still remains of how is he to revise it, when the absence of the pld does not provide him with any indication of the location of error and, even more importantly, with the form of the correct alternative (Sharwood-Smith 1991).

One possible way in which the L2 learner could arrive at the correct representation of his target grammar is through hypothesis testing. Although this process has been traditionally accepted as an integral feature of L2 acquisition (MacWhinney 1987) and is often invoked in the contexts where the learner has to rely on indirect negative evidence, its contribution to L2 acquisition is debatable. Potentially it can lead to imperfect attainment and differences in competence among the L2 learners.

One type of mechanism involved in hypothesis testing relies on the idea of 'critical rules' (Klein 1986). This account proposes that interlanguage grammars are regarded by the learner as 'test grammars', where rules are associated with a degree of confirmation (indicated by the certainty with which the learner perceives his knowledge of these rules) and a degree of criticalness, representing the stability of these rules, i.e. whether the rules are undergoing a process of change at the time. In other words, it suggests that L2 learners may be treating their newly hypothesized rules as 'critical' (unstable), unless they are confirmed. If, after a while, such rules do not gain a confirmation index of an appropriate value, they will be dropped. This proposal links well with the nature of indirect negative evidence in that it suggests that, if a rule does not show up in a certain time in a number of utterances, it becomes critical, i.e. subject to subsequent confirmation or disconfirmation.

Essentially, the 'critical rules' account proposes that the L2 learner engages in the process of matching his output against some standard. Learning proceeds as long as he considers his rules as hypotheses and as critical/unstable. When he cannot detect any discrepancy, learning comes to an end. This suggests a potential source of learner variability: L2 learners may differ in when and how they perceive their rules as critical and also in their persistence in engaging and continuing with the testing of their unstable rules against the input. Fossilization and imperfect attainment would be the likely outcomes of such a process.

Hypothesis testing leads to both attainability problems and learner variability. In the predicament which involves the absence of pld in the L2 input, it is the only way of learning, but it is an inefficient one: the L2 learner does not get all the data at once, he may make ad hoc decisions or refrain from further hypotheses (White 1989b). Furthermore, hypothesis testing puts a considerable processing burden on the learner: not only must he attend to the meaning of an utterance and test his representation of his L2 grammar against positive data, but he must also

sift through masses of irrelevant pld in search of the data of which the absence is supposed to be significant (Birdsong 1989).

The success of hypothesis testing is also closely linked to the L2 learner's cognitive profile and metalinguistic experience (Birdsong 1989). It depends on the way he attends to the features of the input and on the procedures he chooses, or is capable of following. It also requires an ability to engage in formal operations, such as assessing probabilities and abstracting regularities from input, the feature which makes successful operation of indirect negative evidence dependent on the learner's age. Furthermore, some learners may prefer to have their hypotheses confirmed rather than disconfirmed (Long 1983) and, as indirect negative evidence is disconfirming in nature, this might affect negatively their 'intake' of this evidence.

Our final point about the contribution of indirect negative evidence to L2 acquisition concerns the question of what aspects of L2 competence, if any, can be acquired through its operation. This type of evidence relies essentially on the mechanism, whereby a learner, who has formulated a pattern of expectations about his target grammar, has this pattern broken when he notices the absence of the relevant pld in the L2 input (Sharwood-Smith 1991). Under current modularity of mind proposals (Fodor 1983), such information would presumably involve the central processor and not the language module. The knowledge available from this source would be merely the knowledge of peripheral phenomena outside UG.

#### 4.3. *Direct negative evidence*

Let us now consider the implications of direct negative evidence for the attainment of L2 grammars and learner variability. Like indirect negative evidence, direct negative evidence is connected with hypothesis testing. But it also differs from it in that it is metalinguistic in nature: the L2 learner receives information about his target grammar, such as an overt correction, confirmation check, clarification, etc., which directly disconfirms his hypothesis.

The metalinguistic nature of direct negative evidence may have significant implications for its power to build L2 competence (Schwartz and Gubala-Ryzak 1992). In the context of current proposals for modularity of mind, only direct positive evidence is of the 'right type' to access the language module and to be used in a computational analysis which ultimately feeds into the central processor. Direct negative evidence, on the other hand, is prevented by its form from accessing the language module and ends up instead stored as propositional knowledge in the central processor (Schwartz 1987).

Assuming the applicability of the modularity model to L2 acquisition (a controversial issue in itself), this would have important consequences for the operation of direct negative evidence in L2 acquisition. It would suggest that this type of evidence cannot effect any changes in the system of linguistic knowledge, i.e. it cannot build L2 competence. It could, however, lead to a different type of knowledge (Learned Linguistic Knowledge), which may manifest itself as piecemeal acquisition or a short-term learning of surface patterns (Schwartz and Gubala-Ryzak 1992).

There are other factors which may affect the contribution of direct negative evidence to the mastery of L2 grammars. For a start, in contrast to the other three types of linguistic evidence, direct negative evidence is not uniformly available to L2 learners. Its availability is heavily dependent on the learning context: learners in the classroom situation get more negative feedback than those in a naturalistic setting. Moreover, direct negative evidence is often provided in an irregular, un-systematic and arbitrary manner (Long 1983). Some learners fail to get it (Faerch 1985). In other cases, feedback may be provided ambiguously in that it is directed in equal measure to both grammatical and ungrammatical utterances (Klein 1986).

Secondly, some types of negative feedback may fail to indicate to the L2 learner that they operate as a correction, to specify unambiguously the actual grammatical deviance or to provide well-formed alternatives (direct positive evidence) that would indicate to the learner the correct form of the target grammar (Klein 1986).

Different types of direct negative evidence may be differently comprehensible to the L2 learner and some may be more informative than other (Birdsong 1989). For example, explanatory evidence (Cook 1991), an explanation of a rule or a phememon, may constitute a highly unsatisfactory form of negative feedback, as it often does not go beyond the most rudimentary elements, since nobody has really enough specialized knowledge about structures to provide explanation and instruction (Chomsky 1981).

Direct negative evidence is also inherently connected with hypothesis testing, a feature that may lead to considerable differences among the L2 learners in their mastery of L2 grammars. The usefulness of evidence which involves hypothesis testing may be strongly constrained by learners' cognitive abilities. Depending on their age, intelligence, training and general cognitive make-up, they may differ in their ability to perceive and manipulate information and to incorporate negative feedback into the learning mechanism. Some individuals, but not others, may have an extensive information processing repertoire with learned systems for cognitive control and general problem solving strategies. They may also differ in the degree of monitoring, inferencing, and risk-taking (Birdsong 1989). Furthermore, there is some indication that L2 learners show different 'cognitive flexibility', i.e. they may differ in their readiness to abandon their hypotheses in the face of negative evidence: while some subjects incorporate negative feedback and switch to a new hypothesis, others persist in a response pattern, even if feedback tells them that their hypothesis is wrong (Schachter 1991).

Furthermore, different L2 learners may show preference for confirmation or disconfirmation of their hypotheses (Van Buren and Sharwood-Smith 1985). Long (1983), for example, suggests that L2 learners prefer confirmation to disconfirmation. Rubin and Thompson (1982) report that some learners do not abandon their hypotheses when these are disconfirmed. Such cognitive profiles may result in different sensitivity to negative evidence and subsequent variation in the mastery of the target grammar: learners who 'operate' by disconfirmation might be more sensitive than those who 'operate' by confirmation; they may even be searching for direct negative (or indirect negative) evidence.



Sensitivity to the logical nature of evidence makes the operation of direct negative evidence not only learner but also context dependent. Thus, active participation in hypothesis disconfirmation, such as the Garden Path Technique (Tomasello and Herron 1989) might lead to more successful hypothesis revision than explanatory evidence which, although disconfirming, is more neutral in its psychological impact on the learner.

An added but related problem concerns the L2 learners' readiness to accept corrections. For a correction to be successful it must bear a relation to the learner's perception of data; if it does not, the learner may ignore it (White 1989b). Since the native speaker or a teacher is unlikely to know whether the learner is in a fit state to understand him or not, i.e. is unable to choose an appropriate time to make a correction, this means that correction is essentially an unreliable source of direct negative evidence. Generally, the presence of direct negative evidence in the input does not necessarily ensure that, under given conditions, the learner will be directing his response to a perceived ungrammaticality and understands the response as a speech act intended to convey information about ungrammaticality.

#### 4.4. *Indirect positive evidence*

Indirect positive evidence may be seen as a solution to learnability problems posed by the nature of the negative types of evidence. By expanding the definition of what counts as positive evidence in the L2 input relevant to the learner's representation of L2 grammar, it allows for a wider range of pld to act as its (indirect) disconfirmation. It provides, therefore, an alternative to the learner's need to notice the absence of the pld, to rely on metalinguistic information and to engage in hypothesis testing, in order to arrive at the correct representation of the target grammar.

However, indirect positive evidence is not without its problems: it relies crucially on the L2 learner's sensitivity to the abstract properties of grammar, such as cluster effects of parameter settings or typological principles, and it is heavily theory dependent.

The feature of indirect positive evidence which assigns a powerful role to the learner's knowledge of the abstract properties of grammar warrants consideration, since it has serious implications for the whole proposal. Let us, therefore, remind ourselves of how this type of evidence is supposed to operate. As mentioned in section 2, its operation hinges crucially on the assumption that pld related to the grammatical phenomenon in question through the abstract properties of grammar can, indirectly, disconfirm the L2 learner's representation of L2 grammar (Zobl 1988; Haegeman 1992). To reiterate an earlier example: the presence of expletives in English (20), being one of the cluster effects of the [-] setting of the pro-drop parameter, can serve indirectly as evidence for the obligatory presence of the lexical subject in (21), another cluster effect of the same parameter setting.

(20) It is raining

(21) I have bought some ice cream

The learner's recognition of cluster effects (or typological principles) raises two issues which are fundamental to the proposal for indirect positive evidence: it presupposes their psychological validity and calls for an account of how this information can be utilized to effect grammar revision. The second point, in turn, leads to challenging problems for current proposals about the modularity of mind.

Psychological reality of cluster effects is a pre-requisite for the operation of indirect positive evidence.<sup>5</sup> At the moment, however, the issue is far from clear. Not only there are theoretical controversies about what linguistic phenomena cluster around some parameters, but there is little empirical evidence to support their psychological reality.<sup>6</sup> For example, although there is some indication that, in the case of the pro-drop parameter, cluster learning may be occurring (Hyams 1986; Hilles 1986), there are also empirical studies which have failed to find any clear evidence to prove that exposure to one cluster effect of a parameter can motivate learning or unlearning of all the related cluster effects of that particular parameter (White 1985; Liceras 1988).

The proposal that indirect positive evidence operates on the basis of the L2 learner's knowledge of the cluster effects also has implications for the modularity of mind, as it calls forth a number of questions about the location of such knowledge and consequently about the relationship between the language module and the central processor.<sup>7</sup>

The knowledge of cluster effects would (presumably) be stored in the central processor. The traditional model assumes that there is a one-way connection between the language module and the central processor. In such a case, failure of indirect positive evidence to effect parameter re-setting or evidence of piecemeal internalization of the target grammar properties would be consistent with the assumption that information contained in the central processor cannot feed into the language module. On the other hand, if it were shown that indirect positive evidence can lead ultimately to parameter re-setting, this would suggest a significant contribution of the central processor to L2 competence and force us to consider the possibility of some connection between the central processor and the language module. In other words, it would force us to reconsider the current (L1-motivated) proposal for the modularity of mind and question its applicability to L2 acquisition.

Another feature of indirect positive evidence is its dependence on theoretical accounts of the abstract properties of grammar. Revisions of these accounts can lead to changing and very abstract proposals for what linguistic information will constitute indirect positive evidence for a particular phenomenon. For example, the possibility of material intervening between a verb and its complement, as in

<sup>5</sup> The learner's reliance on typological principles raises the same issues as the cluster effects of parameter. However, for the sake of concise exposition we limit ourselves to the discussion of the latter.

<sup>6</sup> A good example of controversy surrounding parameter clusters is the controversy about the effects of the pro-drop parameter (Chomsky 1981; Hyams 1986). Under Hyams' account Subject-verb inversion and 'that-trace' effect violation are not included as the cluster effects of the [+] of the pro-drop parameter. On the other hand, the structure of auxiliary is .

<sup>7</sup> We are grateful to Paul Van Buren for suggesting this point to us.

(22), which in the past has been attributed to the operation of the adjacency parameter (Stowell 1981), is now seen as the effect of the verb movement parameter (Pollock 1989) or, possibly, the pro-drop parameter (Rizzi 1986). Such a change in parameter accounts entails a change in what facts are perceived as part of its cluster effects and, consequently, as possible indirect positive evidence relevant to the learner's hypothesis. Thus, while under the verb movement account we would view the negatives or questions in (23) as indirect positive evidence for the adverb placement in English for a French learner, under the pro-drop account, the data like (24), showing the absence of object pro-drop, may have to be considered (Haegeman 1992).

- (22) John often watches television  
 (23) a. John does not often eat bread  
       b. Does John often eat bread?  
 (24) a. John considers it likely that Bill will win  
       b. This analysis leads one to conclude the following

Furthermore, as revised accounts of parameters aim at a greater and greater generality, cluster effects of proposed parameters become wider and more abstractly connected. This means that pld which is viewed as potential indirect positive evidence may be very abstractly connected to the phenomenon in question, as illustrated by the suggestion above that the pld related to the object pro-drop parameter (24), might help a French learner to acquire adverbial placement in English.

The fact that indirect positive evidence is theory-dependent has practical consequences, for example, for classroom teaching. The pedagogical advantage of indirect positive evidence is that well-chosen facts from one part of grammar could crucially engage learning or revision in other, related areas, without the need to invoke negative evidence of the direct or indirect kind (White 1989b; Haegeman 1992). Admittedly, what constitutes indirect positive evidence is ultimately an empirical matter. However, in the classroom situation, where decisions might have to be made about the selection and teaching of specific facts in the light of their indirect 'triggering' value, theoretical accounts may often have to be relied upon. It appears that what linguistic theory suggests as tokens of indirect positive evidence for a particular phenomenon may be particularly susceptible to the risk of changing, expanding ad infinitum and falling out with the accounts that generate them.

Generally, the operation of indirect positive evidence is still fairly virgin territory, both theoretically and empirically. We have little empirical evidence about its contribution to L2 acquisition (Zobl 1988; Haegeman 1992). However, the proposal is a challenging one, as it not only suggests a new type of linguistic evidence for L2 acquisition, but also asks us to consider critically the applicability of traditional L1- motivated proposals, such as the modularity of mind, to the process.

## 5. Conclusion

The aim of this paper has been to comment on some theoretical and acquisitional issues raised by four types of linguistic evidence proposed for L2 acquisition. The nature of linguistic evidence available to L2 learners is highly relevant to SLA research, as it might be one of the features that differentiates L2 from L1 acquisition and accounts for the differences between the outcomes of the two processes. It may provide not only some explanation of the L2 learners' failure to master their target grammars but also an interesting and fruitful way of looking at the issue of learner differences in their relative mastery of L2 grammars.

The rationale for the different types of evidence in L2 acquisition derives from GB theory and the theoretical proposals constructed to deal with learnability issues of L1 acquisition. These have also provided the framework for some fruitful SLA research. However, it is important to be aware of the danger of simple transfer of concepts from one domain of research to another (Van Buren and Sharwood-Smith 1985). The merit of current research into the nature of linguistic evidence is that it highlights the importance of this issue and, through this, also contributes to the elaboration of L2 acquisition theory.

The four types of linguistic evidence proposed for L2 acquisition and, in particular, indirect positive evidence, raise a number of challenging theoretical and acquisitional issues, some of which we have tried to point out in this paper. In addition, discussions of evidence suggest two further interesting research problems: the L2 learners' treatment of evidence and the potential contribution of evidence considerations to Contrastive Analysis.

Discussions of evidence often tend to treat L2 learners as a homogeneous group: there is little reported research that examines individual L2 learners' responses to the evidence available; there is even no sufficiently developed methodological framework that could be applied to such research (but see Sharwood-Smith 1988). At the same time, features of L2 acquisition, such as learners' multi-competence (Cook 1991) and cognitive development, the forms of evidence available to them and some reported cases where evidence in the input does not appear to produce the expected results (Van Buren and Sharwood-Smith 1985; White 1989a) seem to suggest that individual learners' treatment of evidence could be an interesting and fruitful research programme.

Secondly, considerations of the nature of linguistic evidence in L2 acquisition might have implications for Contrastive Analysis in that the ease or difficulty of mastering particular aspects of L2 grammar might be not so much the function of similarity or difference between the learners' respective grammars, but the function of the type of evidence available to them.

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