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The contribution of the theory of Universal Grammar to our understanding of the acquisition of French as a second language[1]

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ABSTRACT

Human beings have a genetically-determined capacity to walk, rather than to fly or swim. People can learn to swim, but it is not something that is genetically programmed. Do humans have a genetically-determined capacity to acquire language? Universal Grammar is a theory that assumes that they do. Except in cases of genetic disorder, humans have specialised mental architecture which is uniform across the species in its initial state, and which determines the ways in which samples of language encountered are converted into mental grammars. The specialised architecture is Universal Grammar, and it underlies our capacity to acquire particular languages like English, French, Chinese and so on. Two questions that need to be asked immediately about Universal Grammar if it is to be of any interest in understanding the acquisition of French as a second language are: (i) What evidence is there that Universal Grammar is operating when people who have already acquired a native language learn French as a second language? (ii) What insight does the adoption of a theory of Universal Grammar bring to understanding the processes involved, the course of development over time and the nature of the end state grammars that learners achieve? The article presents empirical evidence from a selection of studies bearing on these questions. It will be argued that the assumption that humans have mental architecture dedicated specifically to language acquisition – Universal Grammar – even in the case of second language acquisition, has allowed considerable progress to be made in understanding second language French.

1 OBSERVATIONS OF THE PERFORMANCE OF L2 SPEAKERS OF FRENCH

It is only quite recently that researchers have begun to undertake systematic observation of the performance of second language (L2) learners of French. Some

[1] I would like to thank Jeffrey Steele and two anonymous *JFLS* referees for comments on an earlier draft of this article, and Hélène Gente for her native-speaker intuitions about examples. The final version is considerably better as the result of their help. Remaining errors and weaknesses are mine alone.

surprising facts emerge from these investigations, and it is a challenge to explain them. This article begins by describing some of the observations. In sections 1.1–1.3 cases are described where L2 speakers know more about the syntactic properties of French than they are given evidence for in the input they get. Their knowledge appears to be underdetermined by experience. Sections 1.4–1.5 describe two properties for which L2 learners have plenty of evidence in the input, but for which they appear to establish knowledge that is different from that of native speakers. These two types of observation form the empirical background to a consideration of how a theory of Universal Grammar might contribute to understanding the facts. This will be the concern of section 2 of the article.

1.1 *Restrictions on the use of the pronoun* ***en***

The clitic pronoun *en* ('clitic' = an unstressed form attached to another host category, for example a verb) usually corresponds to a full prepositional phrase introduced by *de*:

(1) a. Elle parle de son dernier roman
    b. Elle en parle
    c. Elle connaît le frère de mon ami
    d. Elle en connaît le frère

Assume that *en* and [*de* + noun phrase] are related by a syntactic operation which replaces the latter by the former and moves it to the left of the closest verb marked for tense and agreement, *parle* in (1a–b) and *connaît* in (1c–d) (the details of how this operation works are not important for the discussion here). This substitution and movement operation cannot apply, however, in cases like the following:

(2) a. Elle téléphone au frère de mon ami
    b. *Elle en téléphone au frère

Surprisingly, sentences superficially similar to (2) involving *en* are grammatical:

(3) a. Elle parle à mon frère de ses amis
    b. Elle en parle à mon frère

How is (2) different from (1) and (3)? The relevant observation seems to be that a [*de* + noun phrase] construction can be replaced by *en* moving to the left of a tense- and agreement-marked verb except when it is the complement of another prepositional phrase. In (2a) *de mon ami* is the complement of *frère*: [*frère* [*de mon ami*]]. In (3a) *à mon frère* and *de ses amis* are independent complements of the verb *parler* (*parler à mon frère, parler de ses amis*).

The examples (1)–(3) illustrate two things. First, that there is a constraint on the movement of *en* to a preverbal position: it can move except when it is the complement of another prepositional phrase. Second, that it is not clear that a language learner could work out the properties of this constraint just from exposure to samples of French. *En* can freely replace [*de* + noun phrase] constituents, as in (1), and this operation is possible even when another prepositional phrase is present

as in (3). It seems that a speaker of French could only arrive at the right grammar if he/she 'already knows' that prepositional phrases cannot be moved from the complement of other prepositional phrases. In fact the case in (2) appears to be a particular instance of a general constraint on syntactic operations in human language: no syntactic operation can involve two constituents X and Y in the configuration [X . . . Z . . . Y], where Z is a constituent of the same type as Y, and where Z dominates Y (e.g. where Y is in the complement to Z) (Chomsky, 1973). In (2a) the prepositional phrase *de mon ami* corresponds to Y, and the prepositional phrase *au frère* corresponds to Z; *en*-movement cannot apply to Y here because there is an intervening Z of the same type. In section 2 we will discuss what it means for learners to 'already know' properties of grammar like this before they are exposed to particular languages.

Despite the absence of evidence in the input for this constraint on *en*-movement (and one could add to this the fact that this property is probably never taught in French language classrooms), it appears to be one to which L2 learners of French are sensitive. In a study comparing twenty-one near-native speakers of French with twenty native speakers, Coppieters (1987) presented informants with a questionnaire consisting of 107 sentences illustrating different properties of French. He discussed with them 'their interpretations of and intuitions about these sentences' (1987: 549). On the basis of the results from the native speakers, Coppieters calculated a prototypical native response norm based on the majority opinion. He then calculated the degree of divergence of the responses of each group from the norm. Performance on some properties diverged considerably between the native and non-native groups. For example, while native speakers were almost unanimous in determining the contrast in meaning of pairs of sentences involving the passé composé and the imperfect, such as *Il a soupçonné quelque chose, j'en suis sûr* with the meaning 'he suddenly realised something' and *Il soupçonnait quelque chose, j'en suis sûr* with the meaning 'he was already suspicious', the non-native speakers whose first language was not a Romance language had difficulty distinguishing between them. However, on cases involving *en*-movement, the near-natives had clear intuitions, varying from the prototypical norm by 19 per cent, compared with the native group's 5 per cent variance (1987: 554). Although there is more variability in the L2 speakers, their rejection of ungrammatical *en*-movement and acceptance of grammatical *en*-movement is well above chance. Birdsong (1992), in a study of advanced/near-native speakers of French with English as their L1, obtained a similar result. Asking informants to rate sentences for acceptability as French sentences, and then counting the number of items where non-native speakers and native speakers differed significantly in their ratings, Birdsong found that in the case of *en*-movement, the two groups differed on only one out of nine test items, suggesting that the English speakers were sensitive to the constraint on the construction.[2]

[2] A reviewer suggests an alternative account of how a language learner might work out the facts of *en* distribution without the need to invoke pre-existing mental knowledge. The

1.2 *Restrictions on prepositional complements to nominals*

Dekydtspotter, Sprouse and Anderson (1997) (DSA) observe that certain nominals can be followed by two *de*-phrases, where one is the AGENT (although they also observe that these constructions are somewhat awkward stylistically, *par* being the preferred preposition with the AGENT phrase):

(4) a. La peinture de la Gare du Nord de Monet
b. La peinture de la Gare du Nord par Monet

The first *de*-phrase in (4a) marks the object that results from the act of painting (the THEME argument in the event), while the second marks the AGENT. With other nominals, an AGENT *de*-phrase is impossible, and only a *par*-phrase is possible:

(5) a. La destruction de Tokyo *de Godzilla
b. La destruction de Tokyo par Godzilla

The difference between the two types of nominal is related to whether they describe the 'result' of the event (as in (4)), or the process itself, as in (5) (see Grimshaw, 1990: 49–54 for discussion of the distinction between result and process nominals). Process nominals resist the marking of the AGENT by *de*, while result nominals allow it. As in the case of *en*-movement, it is not clear that a language learner could infer this distinction on the basis of input alone. The learner will encounter samples of language where *de* can be used for a range of meanings including introducing AGENTs, and examples where both *de* and *par* are possible. Furthermore, many nominals are ambiguous between a result and a process interpretation, where *de/par* can alternate on the 'result' reading but *de* is excluded on the process reading (examples from DSA):

(6) a. La démonstration de/par ce professeur de ce théorème est intéressante (result)
b. La démonstration *de/par ce professeur de ce théorème est très fréquente (process)

The ambiguity of the evidence makes it unlikely that a learner could work out the distribution of *de* and *par* without 'already knowing' the result-process contrast, and some other requirement that AGENTs should be unambiguously marked with process nominals. The problem is particularly striking for the English-speaking learner of French. In English, the translation equivalents of (6) can involve a *by*-phrase or the 'Saxon' genitive *s*, but neither of these is sensitive to the result/process

learner encounters prototypical cases like (1b) *Elle en parle*, where *en* is the pronominal form of a prepositional phrase complement to a verb. The learner then conservatively assumes that *en*-movement can only apply to prepositional phrases that are the complements to verbs. This would indeed explain the grammaticality of (1b), (3b) on the one hand, and the ungrammaticality of (2b) on the other. It would not, however, explain the grammaticality of (1d) where *de mon ami* is the complement of the noun *frère*, and not a complement of the verb. It would seem that relying on the input alone does not enable a learner to arrive at the correct conclusion.

Table 1. *Acceptance of* de-*THEME* de-*AGENT complements to nominals (in %) (Source: Dekydtspotter, Sprouse and Anderson, 1997)*

	Beginner/intermediate	Advanced	NS control
'yes' to result (grammatical)	69.9%	63.5%	50.4%
'yes' to process (ungrammatical)	51.4%	24.2%	15.7%

contrast: *The demonstration by this professor of that proof is interesting/happens very frequently; This professor's demonstration of that proof is interesting/happens very frequently*. So English speakers not only have to learn that *de . . . de* complements to nouns are possible in French, but also that they are restricted to result nominals.

DSA presented grammatical and ungrammatical sentences involving *de*-AGENT phrases to three groups of French speakers: a group of English-speaking beginner/intermediate proficiency L2 speakers (n = 70), a group of English-speaking advanced proficiency L2 speakers (n = 20) and a group of native speaker controls (n = 48). Subjects were presented with a contextualising story and then they were asked to decide whether sentences like *Jean adore la peinture de la Gare du Nord de Monet* felt possible in the context. The results are presented in Table 1.

Although there are some differences between the natives and non-natives, and the less proficient non-native speakers allow *de*-AGENT complements to follow process nominals in over half of the cases, nevertheless all groups allow *de*-AGENT phrases more with result nominals than process nominals. The difference within each group is statistically significant, suggesting that the L2 speakers, like their native counterparts, are aware of the contrast.[3]

1.3 *Sensitivity to the scope properties of* ***qui de + Adjective*** *constructions*

Phrases like *qui de célèbre? qui de riche?* can move to the front of questions as a unit, or be separated, with *qui* alone moving. (__ indicates the position from which a phrase has moved in the following examples):

(7) a. [Qui de célèbre] as-tu rencontré __ ?
b. [Qui] as-tu rencontré [__ de célèbre]?

Dekydtspotter and Sprouse (2001) have observed that there can be a semantic contrast between the separated and non-separated phrases. This is illustrated in (8) and relates to the time at which 'being famous' is true. In (8a) *qui de célèbre* is ambiguous between asking about someone who is famous now (but wasn't famous in the 1960s), and asking about someone who was famous in the 1960s. In (8b)

[3] The lack of 100 per cent responses to the grammatical cases, even by native speakers, is an effect of the preference for *par* to introduce AGENT complements. What is important here is not the absolute proportions of response, but the relative differences in response to *de . . . de* complements to result nominals and to process nominals.

Table 2. *Acceptance of '(famous) now' and '(famous) then' interpretations for non-separated and separated* qui de Adj *constructions (in %) (Source: Dekydtspotter and Sprouse, 2001)*

	Intermediate		Advanced		Controls	
	now	then	now	then	now	then
[Qui de Adj] (both 'famous now' and 'famous then' interpretations)	41%	91%	47%	80%	13%	89%
[Qui] . . . [de Adj] (only 'famous then' interpretation)	25%	91%	16%	91%	5%	96%

only the second of these readings seems to be possible; that is, it is only a question about someone who was famous in the 1960s:

(8) a. [Qui de célèbre] fumait__ au bistro dans les années soixante?
b. [Qui] fumait [__ de célèbre] au bistrot dans les années soixante?

Dekydtspotter and Sprouse attribute this difference to scope: in (8b) *célèbre* is within the scope of past tense and can only be interpreted as restricting the meaning of *qui* in the past. That is, the sentence has an interpretation something like 'which x (x a person) took part in a past event E (E an event ranging over the set of famous people smoking in bars)'. Here 'famous' is within the scope of the past event. In (8a), where *célèbre* has moved above past tense with *qui*, it can be interpreted as referring to anyone famous, whether now or in the past. That is, it would have an interpretation something like 'which x (x a famous person) took part in a past event E (E an event ranging over people smoking in bars)'. Here 'famous' is outside the scope of the past event.

As in the case of *en*-movement and *de*-AGENT phrases, it is not obvious how a language learner could infer this meaning contrast on the basis of exposure to input alone. *Qui de célèbre* is potentially ambiguous, as (8a) shows and language learners may well encounter samples of language where it has one meaning and samples where it has the other. There is nothing about (8b) to tell a language learner that when *qui* and *de célèbre* are separated the phrase can only refer to descriptions determined by the time of the tense category.

Dekydtspotter and Sprouse tested whether English-speaking L2 learners of French would be sensitive to this scope difference. Their informants were forty-seven intermediate-proficiency and eleven advanced-proficiency speakers and a control group of thirty native speakers (students). The task consisted of a set of short stories followed by a question asked by a fictitious character, Mme Goyette (a teacher) and a response from another character, a pupil. Each story contained references to the time of speaking and to past time. Mme Goyette's questions were either like (8a) (non-separated *qui de Adj*) or like (8b) (separated *qui . . . de Adj*). Informants had to decide whether the pupil's answer was correct or not, where the answer suggested someone who is famous, rich, etc now, or was famous, rich etc in the past. The results are presented in Table 2. All groups accept the

Table 3. *Use of finite and non-finite verb forms by two L2 speakers (based on Prévost and White, 2000)*

	Non-finite V in finite context	Finite V in non-finite context
Zahra	224/755 (23%)	2/156 (1%)
Abdelmalek	243/767 (24%)	17/278 (6%)

'(famous) then' interpretation for both non-separated and separated constructions. The non-native speakers accept a '(famous) now' interpretation with non-separated [*qui de Adj*] more often than with separated [*qui*] . . . [*de Adj*] and this is a statistically significant difference. They therefore appear to be sensitive to the scopal properties which distinguish these constructions, even though it is unlikely they could have inferred this from input. The native speakers appear to prefer the '(famous) then' interpretation with both constructions. The fact that they do not show the 'now' versus 'then' distinction in their judgements does not affect the point: the '(famous) then' interpretation is available with both constructions and the native speakers have shown a preference for this. As Dekydtspotter and Sprouse (2001: 16) observe, the claim that L2 learners cannot reliably use input to infer the distinction is made even more forcibly if native speakers in fact prefer, and therefore presumably use, just one of the interpretations with both separated and non-separated *qui* + *de Adj* constructions. In such a situation, the learners' input clearly underdetermines the knowledge they have.

1.4 *Distribution of finite and non-finite verb forms in low proficiency speakers of French*

In early stages of learning French, L2 speakers appear to allow finite and non-finite verb forms to alternate. Consider this short transcript of an L1 Arabic speaker of L2 French – Zahra – studied as part of the European Science Foundation project on L2 acquisition by adult immigrants (Klein and Perdue, 1992: 244–245). Zahra is describing a segment of the Charlie Chaplin film 'Modern Times':

> après 10 jours charlie i **chercher** li fille
> après i **parler** charlie li fille
> **y en a** la maison l'est petit à la campagne
> après **l'est parti** avec li fille à la maison charlie
> après charlie i **monte** . . . la maison

Prévost and White (2000) have discovered that the distribution of finite and non-finite verb forms in the oral French of Zahra and another Arabic speaker, Abdelmalek, over a three-year period, is not random. They found that while non-finite forms (like *chercher*) occurred both in non-finite and finite contexts (e.g. *il* ***chercher*** *la fille, il veut* ***chercher*** *la fille*), finite verbs almost always appeared in finite contexts, rarely in non-finite contexts (e.g. *il* ***cherche*** *la fille*, but rarely *il veut* ***cherche*** *la fille*). The details are given in Table 3. Observe that it cannot simply be that the L2 learners do not know what the contrast between finite and non-finite verbs is,

Table 4. *Distribution of subject pronouns with non-finite verbs in the oral production of L2 speakers (based on Prévost, 2003)*

	Frank	Mary	Jane	John
Subject clitics	25/38 (66%)	37/70 (53%)	39/94 (41%)	17/34 (50%)
Strong pronouns	0/38 (0%)	1/70 (1%)	0/94 (0%)	0/34 (0%)

otherwise they would use the forms randomly, with finite forms as likely to appear in non-finite contexts as non-finite forms in finite contexts. This is a case where the L2 speakers have constructed a rule for the distribution of finite and non-finite verb forms which is not present in the input they receive (because in native French non-finite forms only occur in non-finite contexts).

1.5 *Distribution of subject pronouns with finite and non-finite verb forms*

Pierce (1992) reports that child first language learners of French use subject clitic pronouns – *je, tu, il* – predominantly with finite verbs (605/632 (96 per cent) of cases in her sample). Strong pronouns like *moi, toi, lui* are used, by contrast, both in non-clitic positions, and with finite verbs, for example: *Moi fais tout seul moi, Moi dessiner la mer.* (In mature native French, strong pronouns cannot appear directly with 1st and 2nd person finite verb forms, although they can occur 'doubling' a subject clitic pronoun: *Moi, je fais ça tout seul, Toi, tu dessines la mer.*) Prévost (2003) reports a quite different pattern with post-childhood L2 learners of French. Table 4 presents the distribution of subject clitics and strong pronouns with non-finite verbs in the oral production of four L2 speakers. The striking finding here is that whereas child L1 learners almost never use clitics with non-finite verbs, but do use strong pronouns with them, post-childhood L2 learners use clitics with non-finite verbs and almost never use strong pronouns.

2 THE CONTRIBUTION OF UNIVERSAL GRAMMAR TO UNDERSTANDING SECOND LANGUAGE FRENCH

2.1 *A model of UG*

The sensitivity of L2 speakers of French to restrictions on *en*-movement, the impossibility of *de*-AGENT phrases with process nominals and the scope-determined interpretation of separated and non-separated *qui* + *de Adj* constructions described in section 1 are all cases where knowledge of the target language appears to be underdetermined by the input. Speakers know more than experience can provide them with. Additionally, it is unlikely that this knowledge came from the L1. The L1 of the informants in the Birdsong (1992), Dekydtspotter, Sprouse and Anderson (1997) and Dekydtspotter and Sprouse (2001) studies was English. English does not have preverbal prepositional phrase clitic pronouns like *en*, does not allow *who* + *of*

Adj phrases (**Who of famous did you meet? *Who did you meet of famous?*) and strongly disfavours *of . . . of* complements to nominals (*??The painting of the Gare du Nord of Monet*), preferring the 'Saxon' genitive (*Monet's painting of the Gare du Nord*) or an AGENT *by*-phrase (*The painting of the Gare du Nord by Monet*).[4] Finally, these properties are probably never taught in French language classrooms. In the case of the distribution of finite and non-finite verb forms and the use of subject pronouns with those forms, low proficiency L2 speakers of French appear to have developed knowledge which is not sanctioned by the input (learners will not hear native speakers saying **Il chercher la fille*), but which is nevertheless systematic and not random. It is determined by learners distinguishing finite from non-finite contexts.

The implication to be drawn from these facts is that L2 speakers must 'already know' about constraints on movement operations, the properties of result and process nominals, the effects of scope on interpretation, and the relevance of the contrast between finite and non-finite clauses. Where could this knowledge come from? An influential and potentially explanatory idea is that this knowledge comes from Universal Grammar: innately-determined mental architecture that is designed specifically for the task of acquiring human language. (See Smith (1999) and Belletti and Rizzi (2002) for recent discussion of the nature of Universal Grammar, and the role played by Chomsky in developing the theory of Universal Grammar.) What language learners know in advance of any contact with particular languages is a set of principles and computations which guide them, unconsciously, in the task of constructing mental grammars for particular languages. And Universal Grammar constrains the development of mental grammars in older L2 learners just as it does in child L1 learners. (See Guasti (2002) for an overview of work on L1 acquisition from a Universal Grammar perspective and White (2003) for the L2 case.) I will briefly describe the main components of a recent version of Universal Grammar,

[4] A reviewer points out that although English does not have a preverbal prepositional clitic equivalent to *en*, it does have operations that are subject to the constraint referred to in section 1.1: 'no syntactic operation can involve two constituents X and Y in the configuration [X . . . Z . . . Y], where Z is a constituent of the same type as Y, and where Z dominates Y'. It is this constraint that, for example, blocks the movement of *have* to a clause-initial position in questions as in (i), because *must* is a category of the same type as *have* ('auxiliary'). Note that in the absence of *must*, *have* can move to the front:

(i) They must have left → *Have they must left?
(ii) They have left → Have they left?

The reviewer asks whether the evidence concerning English speakers' knowledge of the constraints on the distribution of *en* is not therefore ambiguous between being transferred from English or coming from an independent internal knowledge source, such as Universal Grammar, as discussed in the following paragraph in the text. However, since the *en* context appears to have no parallel in English, any claim that transfer from English is involved would require learners to draw parallels between, say, verb movement in questions in English and clitic movement in French. It is not clear whether there is any evidence for such trans-construction transfer or what constraints there might be on it. In the absence of such evidence it is assumed here that knowledge of this constraint comes from Universal Grammar.

and then consider more carefully how assuming such a theory takes us some way towards understanding observations like those made in section 1.

A recent version of Universal Grammar (UG) is presented in the form of the model in Figure 1 (based on recent proposals in Chomsky (2000) and work on distributed morphology discussed in Harley and Noyer (1999) and Embick and Noyer (2001)). Restricting attention to the core elements of this model, UG provides an inventory of linguistic features that are relevant for categorising human language on a number of levels: phonological features for categorising sounds, semantic features for use in constructing the meaning of lexical items and syntactic features. Syntactic features are of two types: those that are directly interpretable, like the person and number features of nouns, the tense features of clauses and the definiteness feature of determiners. Second, there are syntactic features that are typically involved in agreement relations, for example those involved in determining that the form of *avoir* that appears in the present tense with 1st person singular subjects is *ai* and with 1st person plural subjects is *avons*. These features are referred to as 'uninterpretable', and their value is determined by agreement with interpretable features of other categories. So the Tense category (T) that *avoir* associates with has uninterpretable person and number features, and these are valued by the interpretable person and number features of the subject. The presence of uninterpretable features is a particularly striking characteristic of human languages. By hypothesis, the initial state of UG (i.e. what an infant is provided with by genetic endowment) consists of all the features that are required for learning any possible human language. Language acquisition results when experience of samples of language activates or 'selects' features from this inventory. Each particular language, though, only selects a subset of the features made available.

Alongside the features, there are a number of computational devices. The syntactic computations include the operations 'Merge', which builds words and phrases from features, 'Agree' which matches uninterpretable with interpretable features, ensuring that uninterpretable features receive appropriate values, and 'Move', which takes one member of an agreeing pair of independent constituents and merges it with the other, when required. There are morphological computations whose function is to insert the right phonological form into the terminal nodes of expressions created by the syntax so that, for example, *cherche* and not *chercher, cherchons* is inserted into a position which has the features finite, present tense and agrees with a singular subject. There are also semantic computations which determine the interpretation of syntactic expressions (e.g. the scopal interpretations assigned to *qui* + *de Adj* expressions) and phonological computations that determine the sound structure (e.g. syllabification, stress) of words in a given environment. The computations of UG embody principles which constrain their operation. Merge, Agree and Move all operate on the closest pairs of constituents. When two operations could achieve the same result, the most economical (defined largely intuitively in terms of computational complexity) is the one that is chosen (so that Merge is preferred over Agree and Move, and Agree is preferred over Move). When the semantic computations apply, they require all

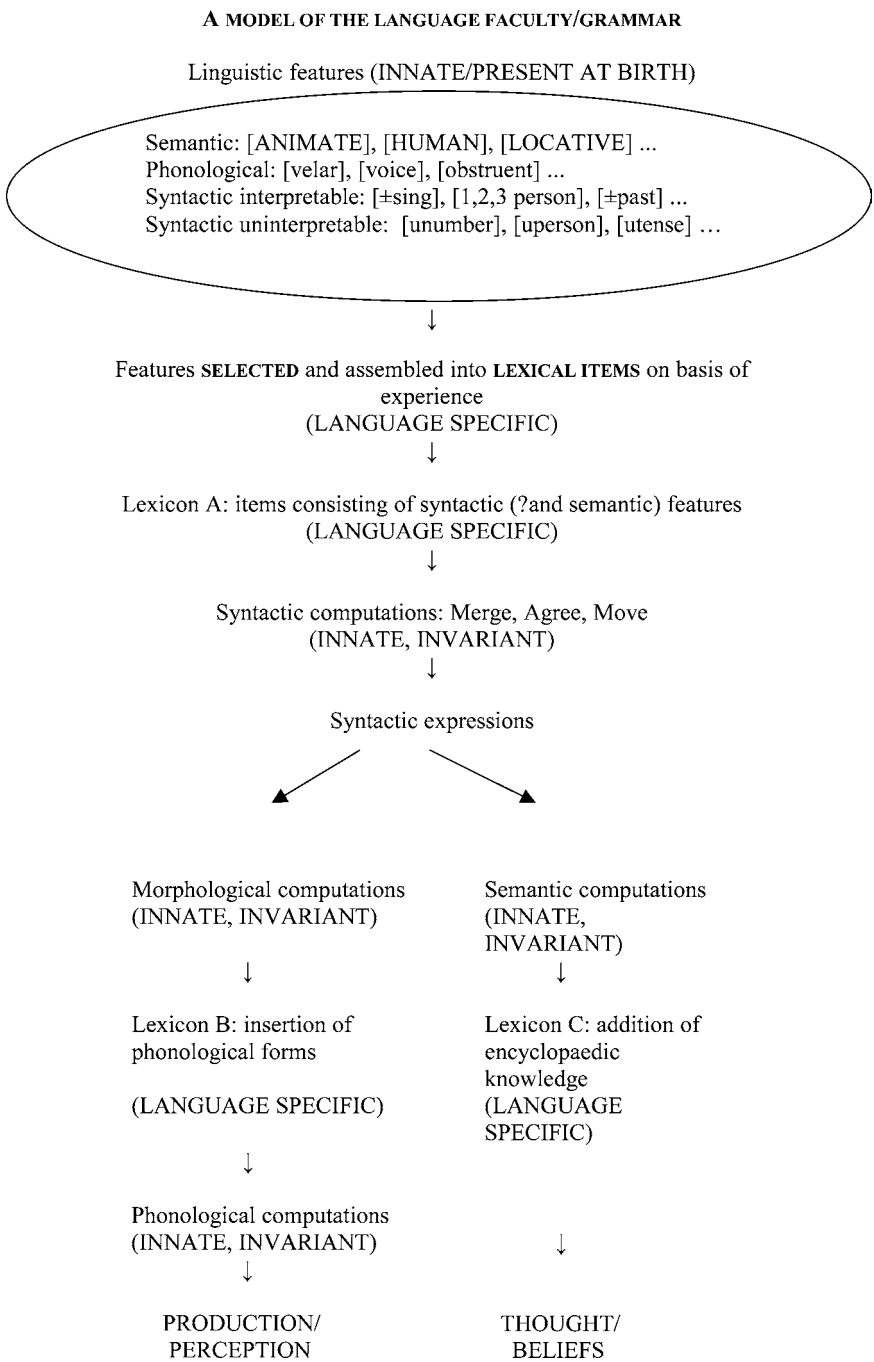

Figure 1.

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uninterpretable features of syntactic expressions to have been valued and eliminated by the syntactic computations. There are many details and questions concerning the computations and the principles that constrain them that go beyond the scope of the present article.

By hypothesis, the computational operations of UG are invariant and unaffected by experience with language. Features, however, although present in the initial state are selected by experience. Together, the invariant computations and the selection of features through contact with input form a grammar for a particular language. Acquisition consists in establishing the feature selection for a given language.

2.2 *Applying UG to L2 French*

Given this model, an immediate prediction can be made about second language acquisition: the computations of UG and the principles they embody would be expected to be available in L2 speakers' mental grammars because such computations and principles are part of genetic endowment and because they are unaffected by experience. This is nevertheless an empirical question (i.e. it needs to be tested against empirical evidence) because there is the alternative possibility that UG is only available for L1 acquisition, and once L1 acquisition has occurred, neither features nor computations are available any longer for further language acquisition (a position argued for by Bley-Vroman (1990) and Meisel (1997), among others).

We have seen three cases from L2 French – *en*-movement, *de . . . de* complements to nominals and *qui* + *de Adj* constructions – where results are consistent with the claim that the principles of UG are operating. An important contribution of UG to our understanding of the second language acquisition of French, then, is to suggest that L2 speakers' knowledge is not just the result of experience; part of it comes from innately-determined mental architecture. This is currently a hypothesis in L2 research and no more than that; it needs further investigation of the consequences of proposed principles of UG in L2 French. Nevertheless, it is a surprising finding, if it is true, that post-childhood L2 speakers who learn French under a variety of circumstances, and in many cases in the language classroom, are constructing mental grammars under the same constraints as child L1 learners. The acquisition of L2 French is truly acquisition and not a case of learning of the kind involved in learning to drive a car or learning to swim.

The distribution of finite and non-finite verb forms and clitic and strong pronoun subjects, described in section 1, are observations of a different kind from those relating to principles of UG. The way finite/non-finite forms and subject pronouns are realised differs from language to language. These look like cases where feature selection is involved, requiring experience with samples of the target language. What might UG say about these?

Recall that Prévost and White's informants Zahra and Abdelmalek are at a stage of development where they produce both finite and non-finite verb forms in finite contexts, but rarely use finite forms in non-finite contexts. This is different from native speaker behaviour. Given that Zahra and Abdelmalek will only encounter

Table 5. *Verb placement with respect to negation (Source: Prévost and White, 2000: 117)*

	Zahra		Abdelmalek	
	V-Neg	Neg-V	V-Neg	Neg-V
Finite	135/142 (95%)	0/5 (0%)	90/96 (94%)	3/47 (6%)
Non-Finite	7/142 (5%)	5/5 (100%)	6/96 (6%)	44/47 (94%)

finite verb forms in finite contexts and non-finite verb forms in non-finite contexts in their contacts with native speakers, the question is why they have developed these particular grammars. The T(ense) category in native French, with which verbs are associated, has the features [+/−finite] which determine contrasts like that between *reste, restons* on the one hand, and *rester, resté, restant* on the other. French T also has uninterpretable person and number features which are valued by the noun phrase in subject position and which determine contrasts like those between *je reste, nous restons* and *vous restez*, and rule out expressions like **je restons, *elle rester*. In terms of the model of grammar outlined in Figure 1, phonological exponents like *reste, restons, rester* etc. are stored in lexicon B with a set of features defining where they can be inserted into a syntactic expression, e.g. *reste* might have the features [V, +finite, −past, 3p, +sing]. The syntactic computations generate expressions where there is a terminal V + T node. If this node has the features [V, +finite, −past, 3p, +sing], the morphological component will identify *reste* as matching the features of the terminal V + T node and insert *reste* into it.

Given these assumptions, Zahra and Abdelmalek might either be having problems assigning appropriate features to the T category in the syntax, or they might be having problems with the matching operation which inserts phonological exponents into expressions derived by the syntax. Prévost and White (2000) offer several arguments that the latter is the case, i.e. that Zahra and Abdelmalek have established syntactic representations for [+/−finite], uninterpretable person [*u*person] and uninterpretable number [*u*number], but are having problems with the operation that matches the features of phonological exponents to the syntactic features. First, if these L2 speakers had not established the [+/−finite] contrast on T in the syntax, we would expect to find both finite and non-finite forms (e.g. *reste/rester*) appearing randomly in finite and non-finite positions. However, as Table 3 shows, only non-finite forms are used both in finite and non-finite positions. Second, the distribution of finite and non-finite forms with negation is also consistent with the observation that Zahra and Abdelmalek have target-like syntactic representations. In native French, finite forms appear to the left of *pas*, and non-finite forms to the right. As Table 5 shows, neither Zahra nor Abdelmalek use finite forms after *pas* to any great extent. Tables 3 and 5 together suggest that Zahra and Abdelmalek have established the feature contrast [+/−finite] on the T category (i.e. have selected this feature from the UG feature inventory

Table 6. *Use of finite verb forms which agree with the subject (based on Prévost and White, 2000: 120)*

	Zahra	Abdelmalek
être, avoir, aller	156/158 (99%)	264/270 (98%)
Other verbs	552/591 (93%)	447/472 (95%)

appropriately for French) even though the distribution of phonological exponents of this distinction is not yet target-like. Have the informants also established the uninterpretable person and number features of T; i.e. subject-verb agreement? To test for this, Prévost and White examined whether the finite verb forms, when used, showed correct agreement with their subjects. Table 6 presents the results. The low incidence of agreement errors suggests that Zahra's and Abdelmalek's grammars have indeed selected uninterpretable person and number features for T. Whenever finite forms are used, they always match the feature value of T. This leads Prévost and White to conclude 'that L2 learners have abstract features for finiteness and agreement in their interlanguage representation [. . .]. They do, however, exhibit problems with the surface morphological realization of particular forms, sometimes resorting to default forms' (2000: 127). If true, this proposal makes a very interesting claim about the acquisition of grammatical knowledge in L2 French: knowledge is more target-like than performance suggests. L2 speakers may have more problems with matching phonological exponents to underlying representations than with the representations themselves. This would explain why subject clitics in post-childhood L2 French can occur with non-finite forms (see Table 4). The clitics are appearing as the subjects of a finite T category; it just happens that default forms like *rester* as well as forms specified for finiteness and agreement like *reste* can appear in finite positions.

A strong form of Prévost and White's claim that 'L2 learners have abstract features for finiteness and agreement in their interlanguage representation' would be that this is true from the earliest stages of development. However, evidence reported by Myles and her colleagues (Myles, Mitchell and Hooper, 1999; Myles, 2004; Myles in press) is potentially problematic for this view. Myles *et al.* examine the oral production of classroom learners of French from the very earliest stages of acquisition. These learners were exposed to a 'strongly oral and strongly teacher centered [input environment] with considerable emphasis on the rehearsal and memorization of conversational exchanges' (1999: 55). They find that the earliest productions of learners were characterised by heavy use of rote-learned 'chunks'. Finite verb forms appeared in these chunks, but it was clear that in many cases they were not analysed by the learners as finite verbs, because they could appear in environments where they were inappropriate, e.g. *Mon petit garçon euh* ***où habites-tu?*** with the intended meaning 'Where does your little boy live?' (Myles *et al.*, 1999: 51). When verbs start to appear in contexts that can be determined as 'productive', the majority are almost always in a non-finite form, e.g. *ma mère arriver au maison, un journaliste parler le grande-mère* (examples from Myles, 2004).

Table 7. *Proportion of finite and non-finite forms of regarder in productive finite contexts (Source: Myles, 2004)*

	Year 8 (n = 6)	Year 9 (n = 16)	Year 11 (n = 20)
+finite form	16/61 (26%)	20/58 (35%)	51/77 (66%)
−finite form	45/61 (74%)	38/58 (65%)	26/77 (34%)

Consider the distribution of finite and non-finite forms of the verb *regarder* across three samples from Year 8 (2nd year of French), Year 9 (3rd year of French) and Year 11 (5th year of French) displayed in Table 7.

These results seem to point to a pattern of development where non-finite verb forms initially predominate in main clauses in productive oral performance, with finite verb forms coming to replace them where T is finite. (The data from Zahra and Abdelmalek may represent a point of development similar to or just beyond that of the Year 11 group in the Myles study.) If L2 learners know from the outset that T is marked for [+/−finite], [*u*person] and [*u*number], it needs to be explained why there is a predominance of non-finite verb forms in main clauses in the earliest stages of productive use, in contrast to a predominance of finite verb forms in main clauses in later acquisition. The reason is that finite verb forms are readily available in the 'chunks' that speakers are memorising; for example, the Year 8 group produced 522 interrogative chunks containing finite verb forms (based on Myles *et al.*, 1999: 69, Table 5). If finite forms are available, why do non-finite forms predominate? One way of dealing with this is to claim that the earliest learners simply do not recognise most of the finite verbs forms that appear in chunks as verbs. The forms they do recognise as verbs happen to be those with a non-finite form and these are the ones that are inserted productively in finite contexts. As proficiency increases, learners come to identify finite verb forms and the proportion of non-finite forms appearing in finite contexts decreases. An alternative is to weaken the claim such that in the earliest stages of development L2 learners have a T(ense) category that is optionally specified for finiteness and agreement. Then non-finite forms might occur in main clauses either because T is not specified for finiteness, or because L2 learners have problems with the morphological realization of finite forms. This might explain why non-finite forms predominate in early development. The latter possibility has been the focus of some debate in recent research on second language acquisition but will not be pursued here (see White 2003, chapter 6, for discussion of the topic).[5]

[5] A reviewer suggests another alternative: perhaps the problem of realising finiteness and agreement with appropriately inflected morphological forms is greater in early L2 development than in later development? The implication of this is, for example, that the Year 8 informants in Myles's study know the finite forms of French verbs, but cannot retrieve them from the lexicon as well as their Year 9 and Year 11 counterparts. This

Table 8. *Non-finite forms in finite positive and negative positions (based on Prévost and White, 2000)*

	Non-finite V in 'finite' context	Non-finite V in 'finite + Neg' context
Zahra	224/755 (23%)	7/142 (5%)
Abdelmalek	243/767 (24%)	6/96 (6%)

Another potentially problematic observation is why, if non-finite phonological exponents in Zahra's and Abdelmalek's grammars are not specified for finiteness and hence can appear in both finite and non-finite positions, there is a difference in the frequency with which they appear in negative and non-negative contexts. Table 8 compares these cases in Zahra and Abdelmalek.

The proposal by Prévost and White that L2 speakers like Zahra and Abdelmalek have difficulty matching phonological exponents to underlying syntactic representations, known as the 'Missing Surface Inflection Hypothesis' (MSIH), together with the potential empirical problems for it just described, are good illustrations of the contribution that the theory of UG can make to understanding the development of L2 speakers' knowledge about language-specific properties of the target language. First, the assumption of a model like that in Figure 1 allows hypotheses to be constructed about the observed behaviour of L2 speakers. This is just what Prévost and White have done: they have accounted for the behaviour of Zahra and Abdelmalek as a specific instantiation of the model. The result is a claim that second language acquisition is essentially like first language acquisition, but with a characterisable difference located in the morphological component. Second, the establishment of an explicit hypothesis means that it can be tested against further data. We have seen that there are data which do not fall entirely within the predictions of the MSIH. A number of possibilities are now open to us: (i) consider whether the apparent counterexamples can be explained as the effect of something outside the operation of UG (for example, frequency of forms in the input); (ii) refine the MSIH in some way to deal with these data; (iii) construct an alternative hypothesis to the MSIH which accounts not only for the data handled by the MSIH but also the problematic data. None of these will be pursued here. The point is, though, that adopting a theory of UG allows considerable progress to be made in understanding the linguistic behaviour of L2 speakers as they develop knowledge of the detail of the specific languages they are acquiring.

2.3 *A UG account of persistent incompleteness in L2 French*

Adopting a model of UG of the kind outlined in Figure 1 also allows a potential account to be given of the observation that there are some properties on which L2

would seem to require a supplementary theory along the lines that the memory traces of finite verb forms are weaker in less proficient learners than more proficient ones. Although an interesting line for possible future enquiry, it will not be pursued here.

Table 9. *Non-target-like gender choices made by L2 speakers*

Group	Definite article	Indefinite article
Europe (n = 10)	16/221 (7%)	29/211 (14%)
Canada (n = 10)	23/212 (11%)	42/155 (27%)

speakers' performance diverges from natives, even after long exposure to the L2, and where there appears to be positive evidence from input for the property in question. In these cases it might be expected that L2 speakers with long exposure to the target language would acquire the properties, particularly if they have access to the resources of UG. One such case was referred to in section 1: Coppieters (1987) found that some of the near-natives in his sample had difficulty distinguishing the meaning contrast when the passé composé and imperfect are used with verbs such as *soupçonner* in certain contexts (and also *savoir*, *manger*, *raconter* and *mourir* in Coppieters' sample). Interestingly, speakers in the cohort whose L1 was a Romance language which makes the same tense/aspect distinction as in French did not have the same difficulty. If the contrast between the passé composé and imperfect results from a selection of features from the UG inventory which is not made in some languages, a possibility is that some of the features not instantiated in an L2 speaker's L1 might be difficult to access in L2 acquisition in later life. I will not discuss the tense/aspect case here, but rather consider the case of gender concord between Determiners (Ds) and nouns (Ns), a pervasive property of French, but absent in English. The property in question is illustrated in cases like (9):

(9) a. la robe/le chapeau
    b. une robe/un chapeau

Nouns partition into those which require the masculine *le/un* form of articles and those which require the feminine *la/une* form. This appears to result from French Ns having a feature [+/−masculine] and French Ds an uninterpretable feature [*u*gender], which must agree with and be valued by the gender feature of N. The consequence is a phonological reflex in the exponents of D.

It is known that advanced proficiency L2 speakers who have learned French beyond childhood show some variability in selecting articles (one type of determiner) to agree appropriately with the N. Hawkins (1998) examined transcripts of approximately three minutes of speech by twenty Anglophones describing a silent animated film in French. Ten of the informants had had an average of ten years of classroom exposure to French and at least six months immersion in a French-speaking country (the European group, age range 21–22). The other ten informants had undertaken all their secondary education in a Canadian French immersion programme (the Canadian group, mean age 18). The proportion of non-target agreement choices between articles and Ns is presented in Table 9. Although the proportions of non-target choices are small when considered globally for the L2 groups, an interesting pattern emerges when the performance of individual speakers is considered. Many of them use one member of the pairs

Table 10. *Overall accuracy of speakers in using their most target-like (TL) article form and their default article form*

	Definite article		Indefinite article	
Group	TL	Default	TL	Default
Europe	88/88	117/133	73/76	109/135
Canada	100/104	89/108	55/59	58/96
Total (n = 20)	188/192 (98%)	206/241 (85%)	128/135 (94%)	167/231 (72%)

le-la or *un-une* in a target-like or near-target-like way, but overuse the other. For example, one speaker might produce the forms *la robe, la cravate, le chapeau, le gant, *le chemise, *le ceinture* where *la* is the target-like form, and *le* overused, while another produces *le chapeau, *la gant, la robe, la cravate* where *le* is the target-like form and *la* is overused (examples invented for the purpose of illustration). Furthermore, there was no necessary connection between the overused member of the definite pair and the overused member of the indefinite pair for any given individual (e.g. the same individual might produce: *la robe, le chapeau, le gant, *le chemise* and *une robe, un chapeau, *une gant, une chemise*). Organising the data by totalling the choices made by speakers under their 'most target-like' article form and under their 'overused' article or 'default' form produces the results in Table 10. Two-tailed matched-sample t-tests show that if the two groups are pooled, there is a significant difference between the 'target-like' and 'default' columns for both articles. This is not the kind of pattern found with native speakers, who rarely make gender concord errors. It is also unexpected if the mechanism for determining concord between Ds and Ns involves agreement between a gender feature of N and the uninterpretable [*u*gender] feature of D, with N valuing this feature. If the L2 speakers had this mechanism as their grammatical representation for gender concord, any errors they made would be expected to be randomly distributed and not involve one target-like member of a pair of forms with the other a default form. Furthermore, it would be expected that L2 speakers would not make different gender choices between the definite and indefinite articles (i.e. they would not simultaneously produce pairs like *le gant/*une gant, *le chemise/une chemise* which a number of them do).

Hawkins and Franceschina (2004) account for this by assuming that uninterpretable features are subject to a critical period. If they are not selected from the UG inventory of features during language acquisition in childhood, they cease to be accessible. Since [*u*gender] is not selected by English, the speakers in the Hawkins study are unable to establish the [*u*gender] feature on D in their grammars for French and have to find an alternative way to represent the gender concord property. Hawkins and Franceschina suggest that they set up context-sensitive rules in the morphological component, so that they have rules something like (10):

(10) a. la ↔ /__ specified N
le ↔ elsewhere
b. le ↔ /__ specified N
la ↔ elsewhere
c. un ↔ /__ specified N
une ↔ elsewhere
d. une ↔ /__ specified N
un ↔ elsewhere

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Here ↔ means 'select', and /__ means 'in the context of'. A speaker who has established a rule like (10a) selects *la* for a specified set of Ns in his or her lexicon, and *le* for any N that is not specified. The set of specified Ns might just be a learned list, or it might also include semi-productive sub-sets based on the phonological shape of the N, so that (10a) might, for example, take the form 'select *la* in the context of Ns ending in an (audible) consonant, or in the context of Ns ending in –*ion*'. Given this idea, individual speakers would establish either *le* or *la* as the form to be selected with specified Ns (depending on their experience with the input), and there is no necessary connection between choice of the definite article selected with specified Ns and choice of the indefinite article selected with specified Ns for any individual speaker.[6] This is consistent with the patterns found. It is also consistent with the finding that high proficiency speakers are very successful in 'appearing as if' they have acquired target-like gender concord. It should be possible for an experienced L2 speaker of French to list large numbers of Ns associatively with the form of the article they go with, particularly if associative learning leads to the setting up of semi-productive sub-sets based on the phonological shape of the N.

One piece of evidence that is consistent with this account comes from a psycholinguistic study conducted by Guillelmon and Grosjean (to appear). They asked two groups of bilingual L1 English-L2 French and two groups of monolingual Francophones to participate in a reaction-time experiment. Guillelmon and Grosjean presented informants with aural stimuli like the following:

(11) a. le joli bateau 'the nice boat' (congruent gender concord)
*la jolie bateau (non-congruent gender concord)
leur joli bateau (neutral gender concord)

and asked them after they had heard each stimulus to repeat the word after *joli* as quickly as possible. Half of the nouns in the stimulus set were masculine and half feminine. Stimuli were grouped so that informants heard either sets of congruent + neutral phrases ('Condition 1') or neutral + non-congruent phrases ('Condition 2'), and the delay between the end of the stimulus and the beginning of the informant's response was measured. There were thirty-two participants in each group and both bilingual groups had had long immersion in French. The participants in one bilingual group – the 'early bilinguals' – had been immersed in

[6] To illustrate: one speaker might encounter *la boucle* 'buckle', *la gifle* 'smack', *la perle* 'pearl' and on that basis establish a rule that *la* is inserted in the context of Ns ending (aurally) with the sound /–l/. This rule would then apply to words like *cercle* 'circle', *cycle* 'cycle' and *triangle* 'triangle' (conflicting with the target gender of these words which is masculine). Another speaker might encounter *le cercle, le cycle, le triangle* and establish a rule that *le* is inserted in the context of Ns ending with /–l/, extending this then to *le boucle, le gifle, le perle* (again conflicting with the target gender of these words). At the same time that the first speaker is encountering *la boucle* etc, he/she might encounter *un cercle, un cycle, un triangle*, and establish a rule: insert *un* in the context of Ns ending in /–l/. In this way, the same individual would have a grammar for French gender which produces *la boucle, la cercle, un boucle, un cercle*; and this grammar for gender could differ from that of another L2 speaker who produces *le boucle, le cercle, une boucle, une cercle*.

Table 11. *Mean reaction times in naming the N following joli under 2 conditions: (1) congruent + neutral; (2) neutral + non-congruent (based on Guillelmon and Grosjean, to appear)*

	Monolingual A	Early Bilingual	Monol.B	Late Biling.
Condition 1				
congruent	479ms	481ms	521ms	620ms
neutral	498ms	525ms	545ms	620ms
Condition 2				
neutral	483ms	519ms	547ms	632ms
conguent	513ms	574ms	594ms	626ms

French during childhood (mean age of first immersion 5,4 years) and were tested at mean age 24,4. The participants in the second bilingual group – the 'late bilinguals' – were first immersed in French in adulthood (mean age of first immersion 24,8 years) and were tested at mean age 48,5. One native speaker control group was chosen to match the early bilingual group in age at time of testing (monolingual group A) and the other to match the late bilingual group in age (monolingual group B). The assumption underlying the reaction-time method was that non-congruent gender concord between article and noun would delay parsing of the input string and hence lead to slower reaction in repeating the word following *joli* than when there was congruent gender concord. Where neutral gender concord was involved it was predicted that reaction times would be somewhere between the other two. The results are presented in Table 11, where reaction times are reported in milliseconds.

Both monolingual groups and the early bilingual group reacted significantly more quickly to congruent gender concord stimuli than to neutral gender concord stimuli and significantly more quickly to neutral gender concord stimuli than to non-congruent gender concord stimuli (measured by chi-square tests). The late bilingual group, however, showed no significant differences in reaction times under either condition. Hawkins and Franceschina interpret this as follows: the reaction time differences found in the native speaker control groups are an effect of checking the agreement relation between the article and the N; where the [*u*gender] feature of the article in the stimulus has been assigned a different value from the value of the gender feature of the N, this is incompatible with speakers' grammars and slows the initial parsing of the stimulus. If correct, this suggests that early bilinguals, immersed in the L2 during childhood and by hypothesis within the critical period for language acquisition, have also established the uninterpretable [*u*gender] feature on D. The late bilinguals, however, are unaffected in their reaction times by the form of the article. This implies that they do not have the same representation for the *le/la* contrast and that the context-sensitive selection of article form in production does not interfere with parsing in comprehension in the same way that agreement between interpretable and uninterpretable features does[7]. (For the

[7] A reviewer points out a possible confound in the design of the Guillelmon and Grosjean study. Older speakers are generally slower in on-line processing tasks than younger speakers,

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alternative view that English speakers can establish a [*u*gender] feature on D, see White, 2003, chapter 4, section 7.2.2).

Whether the claim that L2 speakers are subject to a critical period affecting uninterpretable syntactic features is correct or not, UG has provided a framework within which interesting questions can be asked about persistent divergence between high proficiency L2 speakers and native speakers of French in the marking of gender concord between nouns and articles. And the account makes at least one testable prediction: that speakers of languages with gender concord of the type found in French (like Spanish, Italian), who are post-critical-period L2 learners of French, should behave like the early bilinguals in the Guillelmon and Grosjean test rather than the late bilinguals, because [*u*gender] is a feature selected by the L1 of these speakers.

3 CONCLUSION

Two very interesting scenarios involving second language acquisition have been considered in this article: cases where L2 speakers appear to know linguistic properties for which they have no evidence in the input and cases where there is evidence in the input, but L2 speakers construct unexpected representations for them. They suggest that a genetically-determined capacity to acquire language – Universal Grammar – manifests itself even in second language learners. Adopting the theory of Universal Grammar provides the researcher with tools for developing explanatory hypotheses about these observations. The hypotheses are explicit and lead to testable predictions. In this way considerable insight is gained into what is going on in the mental grammars of L2 speakers learning specific languages like French.

4 SUGGESTIONS FOR FURTHER READING

For a recent introduction to the kinds of assumptions made about Universal Grammar in this article see:

Adger, D. (2003). *Core syntax: a minimalist approach*. Oxford: Oxford University Press.

as is clear from Table 11. Both the older monolingual B group and the late bilinguals are slower than the monolingual A and early bilingual groups. The reviewer suggests that there might be a ceiling effect in a reaction time task like the one described. Where reaction times are very slow, speakers may be parsing congruent and non-congruent gender agreements differently, but it just does not show up in reaction times. While this is a possibility, observe that the monolingual B group's reaction times are slow, but they are still showing a significant difference in reactions to congruent and non-congruent gender. Independent evidence would be needed to claim that a reaction time above 620 ms masks such effects in the late bilingual group. In the absence of such evidence it is not unreasonable to assume that the reaction times found reflect an absence of a [*u*gender] feature in the grammars of the late bilinguals.

The following is an excellent and comprehensive overview of work on second language acquisition from the perspective of Universal Grammar:
White, L. (2003). *Second language acquisition and Universal Grammar*. Cambridge: Cambridge University Press.

A recent text which deals with the acquisition of French from the UG perspective is:
Prévost, P. and Paradis, J. (eds) (2004). *The acquisition of French in different contexts: focus on functional categories*. Amsterdam: John Benjamins.

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