The Age Factor in L2 Acquisition: An empirical investigation into the choice of +/– human relative pronouns by Spanish learners of English and the resetting of parameters[*]

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Abstract

A positive approach to Second Language (L2) acquisition is to follow Chomsky's (1981) Principles and Parameters theory. Following the latest approach of the Minimalist Program (Chomsky 1995), the question of whether language acquisition involves the acquisition of morphological features that define a particular language is discussed. We would also like to examine age-related effects (Birdsong 2000) and L2 development in the acquisition of one particular linguistic phenomenon, relative clauses. We will discuss the results of an experiment based on a multiple-choice-question questionnaire. In order to look for evidence of age factors, we tested two groups of adult learners at different stages of their L2 acquisition. Group A were at the intermediate stage represented by university students learning English as a second language at a Catalan university (Universitat Autònoma de Barcelona). Group B were at the advanced level, represented by students enrolled in a private business school in Barcelona (ESERP).

Key words: L2 acquisition, parameters, parameter resetting, age factor, L2 learners, multiple-choice questionnaire, linguistic markedness, relative clauses, developmental stages, adult learners, intermediate stage, end stage.

Resum. *El factor edat en l'adquisició d'una segona llengua de les oracions de relatiu: Estudi empíric de l'adquisició del pronom relatiu amb tret [+/- humà] per a aprenents castellano-parlants de l'anglès*

Una de les formes més prometedores de fer recerca en el camp de l'adquisició de segones llengües és per mitjà del seguiment de la teoria dels principis i paràmetres de Chomsky (1981). Molt recent-

ment el programa minimista (Chomsky, 1995) ens permet investigar millor seguint la hipòtesi de l'adquisició de trets morfològics. En aquest article, també estem interessats en trobar efectes d'edat (Birdsong 2000). Concretament, estudiarem la questió de si es pot parlar de desenvolupament en l'adquisició d'un determinat fenomen lingüístic: les oracions de relatiu. Discutim els resultats d'un experiment basat en un qüestionari de respostes múltiples. Examinem dos grups d'adults diferents en dos moments d'aprenentatge: el Grup A amb un nivell mitjà de coneixement de l'anglès (representat per un grup d'estudiants d'Empresarials de la Escola Universitària de la Universitat Autònoma de Barcelona), i el Grup B (representat per un grup de estudiants de l'escola superior ESERP de Barcelona) amb un nivell avançat.

Paraules clau: Adquisició de segones llengües, paràmetres, ajustament de paràmetres, aprenents adults de segones llengües, qüestionari de respostes múltiples, marcatge lingüístic, oracions de relatiu, estadis de desenvolupament.

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1. Introduction

For many years, L2 researchers believed that L2 learners would never acquire a nativelike interlanguage (Liceras 1986, Bley-Vroman, 1989). They showed that most L2 learners used transfer options from their L1 even in their most advanced stages. More specifically, Johnson & Newport (1989) pointed out that after a certain age, acquisition of a second language would become impossible. But little by little new experimental findings in the literature have indicated that one may still speak of development in L2 acquisition (Birdsong 2000).

Little is known about the neurocognitive process of L2 acquisition. Perhaps it is similar to the one involved with first or native language acquisition. Or is there a really different language organ involved? The acquisitional data we are interested in discussing here are subject to a contrastive analysis, which facilitates the comparison between the intermediate and the final stage of L2 acquisition.

In fact we now know something about the good results of an approach based on a contrastive analysis. Recently, Bialystok & Miller (1999) used Johnson & Newport's (1989) experiment and included a contrastive analysis method which turned out to be crucial for showing development in L2 acquisition. The contrastive analysis implied to have subjects tested with respect to linguistic phenomena which are realised differently in the subjects' initial language (L1) and target language (L2). They, in particular, looked for L1 influence in performance data for individual structures. Before dealing with our own experiment, a word must be said about the feature-setting theory we will be assuming.

In the Principles and Parameters theory (Chomsky, 1981) and more recently in the Minimalist Program of Chomsky (1995), differences among languages are assumed to be determined by a set of parameters, each defined according to some morphological features, whereas abstract features are common for all languages. In this minimalist framework, morphological features are responsible for language variation. As an initial hypothesis, linguistic experience will help in the setting (L1 acquisition) or re-setting (L2 acquisition) of a relevant parameter defined in terms of morphological features. Other implications follow from this hypothesis. Since language-specific (structural) differences are, then, reducible to features in the options that Universal Grammar (UG) makes available, the learner of his/her first language, or the learner of a second language (by assumption) does not have to search through a wide range of possibilities to arrive at the correct grammar for the language he/she is learning. In fact, many studies have shown that the parameter-setting model can account for the absence of innumerable logically possible errors which learners of a first and second language never make (Flynn 1987, Felix 1988, White 1989, Krosse 1993, and others).

In effect, one way of dealing with an explanation of Second Language (L2) acquisition is to follow the Principles and Parameters theory of Chomsky (1981). This is based on the view that Universal grammar (UG) is an abstract theory of the initial state of the language faculty prior to any experience; it is not a specific theory of developmental sequence. The principles of UG are stable and exceptionless. They constitute the language faculty itself. The parameters of UG isolate properties of structural variation and represent innate constraints on possible variation across languages. They have to be set by experience. Our UG framework of linguistic features makes the learning task feasible, and it also explains how a native speaker arrives at grammatical knowledge that could not have been derived from linguistic experience through simple inductive generalisations or logical inferences about how the language system works.

To illustrate the above, take the case of Japanese wh-questions that are different from wh-questions in English in that a wh-phrase in Japanese does not occur in the initial position, whereas the wh-phrase in English must appear in initial position. For instance, *who* in '*who are you?*' is in the initial position, but in its Japanese counterpart '*you are who?*' (using English words), *who* is not moved to the initial position. On our assumption that language variation is based on a morphological [+/-Q] feature distinction, Japanese corresponds to the [-Q] feature —entailing no overt movement to the initial position—, whereas English corresponds to the [+Q] feature, entailing movement of the wh-phrase to the initial position.

Our L2 acquisition hypothesis is then that the learning burden entails the resetting of a [-Q] feature to a [+Q] feature. That is, a native speaker of Japanese must know that when speaking Japanese, his first language, he/she has a [-Q] feature which makes the wh-phrase stay *in situ* in wh-questions, and when learning English as a second language, he/she has to acquire a [+Q] feature which now makes the wh-phrase move to the front producing English wh-questions.

We want to test this L2 acquisition hypothesis on the basis of phenomena related to a [+/- human] feature. The acquisition data to discuss involve acquisition of

English relative clauses that imply a [-human] feature by Spanish and Catalan adult speakers whose parameter corresponds to a [+human] feature. In order to show development in L2 acquisition, we should obtain data supporting resetting of a [-human] feature to a [+human] feature.

In section 2.1, we offer an analysis of relative clauses that follows the chomskyan tradition. In section 2.2, we argue in favour of a [+/- human] parameter. We will claim that unlike English, Spanish and Catalan are constrained by a [+human] feature present in some linguistic structures, as opposed to English. Section 3 is fully devoted to our experiment. In the section devoted to the discussion of the results we will address questions such as whether the parameter already set for the L1 plays a role in the acquisition of the L2. In other words, whether we have evidence for transfer in either experimental group. In case of transfer, we will also be discussing all relevant data showing development. In case of development, we will be dealing with the age-factor issue. That is, if linguistic variation in the terms defined as above plays a role in real-time L2 acquisition. Real time L2 acquisition implies the study of language production in the interlanguage at various points in development. In order to address the latter question, we included in our experiment subjects from two different groups: one intermediate group and another advanced or proficiency group.

2. A theory of relative clauses

2.1 Relatives clauses and movement to COMP

In the chomskyan tradition, the left periphery of a linguistic structure usually holds initial elements such as: preverbal subjects, fronted wh-elements, and topicalised elements. All these positions correspond to fronted elements that have left a trace behind in their original position in the open clause (Chomsky 1973, 1977, 1982, 1995). Languages vary with respect to whether they allow one or more fronted elements. In cases of relative clauses, we assume a common left periphery where TOP holds the relative head and COMP the relative pronoun marked with the feature [+Q] as in Chomsky 1995.

To be more specific, restrictive relatives constitute structures underlying a rule of predication by which the relative head in a topic position [TOP] within the matrix clause is related to the open clause through a relative operator [Q]. To illustrate, the intermediate NPs *the man* in (1a) and *the car* in (1c) constitute two examples of two relative heads, whereas the relative pronoun *who* in (1b) or *which* in (1d) constitute the wh-operators that leave a trace in their canonical position and are moved into a COMP position in the matrix clause:

(1) a.   The man who loves his mother is John
     a.'   [*TOP* The man [*COMP* [who$_{[+Q]}$]$_i$ [IP t_i loves his mother]]] is John

     b.   The car which runs fast sells easily
     b.'   [*TOP* The car [*COMP* [which$_{[+Q]}$]$_i$ [IP t_i drives fast]]] sells easily

As already argued in the introduction, structures related to a [+Q] feature imply wh-movement. This wh-movement also holds for relatives. In particular, the movement of the wh-relative operator to the COMP position is part of a general rule of Move-to-COMP, which is considered to be a universal principle which defines the possibility of movement related to a [+Q] feature. This is a parametric question, since there are languages which do not have syntactic movement of wh-phrases (Japanese) because they belong to a different [-Q] parameter. Turning to our English examples in (1), Move-to-COMP is responsible for the syntactic movement of the English relative pronouns *who* and *which*. They are both analysed as overt relative operators.

In addition, we have to assume agreement between a fronted element in COMP and a fronted element in TOP, as argued in Rizzi (1992). Notice that in languages like English a [+human] topicalised element must agree with a [+human] relative pronoun. That is, while *who* (marked with a [+human] feature) must always occur with a [+human] antecedent, *which* (unmarked for the [+human] feature) must go with a [-human] antecedent, regardless of whether they are subject (2) or object relatives (3):

(2) a.   The man who$_i$ t$_i$ loves his mother is John
     a'. *The man which$_i$ t$_i$ loves his mother is John

     b.   The car which$_i$ t$_i$ runs fast sells easily
     b.' *The car who$_i$ t$_i$ runs fast sells easily

(3) a.   I saw the man who$_i$ you invited t$_i$
     a'. *I saw the man which$_i$ you invited t$_i$

     b.   I saw the car which$_i$ you bought t$_i$
     b.' *I saw the car who$_i$ you bought t$_i$

2.2. The [+/- human] feature parameter

In this section we show that the particular feature [+/-human] is interestingly constrained in languages like Spanish or Catalan where, unlike English, there is an important difference between subject relatives and object relatives concerning such a [+human] feature.

To illustrate this, unlike English (recall examples in 2 and 3 above), a relative pronoun specified with a [+human] feature cannot be fronted unless it is fronted out of an object position:[1]

(4) a.   Vi   el   hombre *quien/que hablaba cinco lenguas.
                                                          [Spanish]
          (I)-see- PAST the man   who/which spoke   five   languages
          'I saw the man who spoke five languages.'

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1.   See Hirschbühler & Rivero (1981) for an extensive account of Catalan restrictive relative clauses.

b. Vi   el edificio que construyó Gaudí.
    (I)-see-PAST the building that build-PAST Gaudí
    'I saw the building that Gaudí built.'

(5) a Vaig veure   l' home *qui/que   parlava   cinc lengües.
                                                                      [Catalan]
        (I)-PAST see the man who/which speak-PAST five languages
        'I saw the man who spoke five languages.'

     b Vaig veure   l' edifici   *qui/que va fer   Gaudí.
        (I)-PAST see the building that   build-PAST Gaudí
        'I saw the building that Gaudí built.'

In Spanish and Catalan, in sharp contrast with English, syntax seems to restrict the use of a human relative operator like *quien* ('who') to prepositional objects that undergo movement-to-Comp with relatives (Schroten 1984), as illustrated with the examples in (6) containing a dative preposition *a* (`to') and with the example in (7) containing preposition *con* ('with'):

(6) a. El hombre a quien visité   era americano.
         the man   to who (you)-visit-PAST was American
         'The man who you visited was American.'

     b. La mujer   a quien diste   el dinero era extranjera.
         the woman to who (you)-give-PAST the money was a foreigner
         'The woman to whom you gave the money was a foreigner.'

(7)   El estudiante con quien trabajas   es muy joven.
         the student   with who you work is very young
         'The student with whom you work is very young.'

Similar examples with the Catalan counterpart of the human relative pronoun *qui* (`who') also illustrate the same restriction to occur after a preposition:

(8) a. L' home *(a) qui vaig trobar   era   americà.
         the man   to   who (I)-PAST find was American
         'The man who you found was American.'

     b. La dona   *(a) qui vas donar   els diners era una
         the woman to   who (you)-PAST give the money was a
         estrangera.
         foreigner
         'The woman to whom you gave the money was a foreigner.'

(9) L' estudiant amb qui treballes és molt jove.
     the student   with who you work is very young
     'The student with whom you work is very young.'

Finally, we cannot confuse the type of relative clauses under discussion with a second type of discourse phenomenon in which the relative pronoun *quien* ('who') may refer to a discourse topic (see also Chomsky (1977), and Reinhart (1983) for English and Escobar (1995) for Spanish). Some examples of this discourse relation follow:

(10) Felipe González, quien no   quiso   contestar las preguntas,
     Felipe González, who   not want-PAST answer   the questions,
     terminó el debate.
     closed   the debate
     'Felipe González, who did not want to answer the questions,
     closed the debate.'

The structure corresponding to the example in (10) is one of an appositive relative clause. In these cases, there is no apparent fronting of the relative head, since it may be omitted, as illustrated by the use of brackets.

So far, we have described the contrast between English and Spanish or Catalan with respect to restrictive relatives. We want to put forward a parametric account to deal with it. Following Torrego (1998), we may speak of a [+human] feature denoting a certain object dependency in languages like Spanish or Catalan, but not in English. This object dependency is also illustrated in cases of clitic doubling,[2] where the fronted relative pronoun marked with the [+human] feature must also be introduced by a preposition, in contrast with English. (11) and (12) exemplify the difference between English and Spanish with respect to subject restrictive relative clauses: unlike English, Spanish does not let a [+human] subject pronoun be linked to an antecedent, supporting the fact that a [+human] feature must be related to a an object dependency in this language.

(11) a.   The woman who you gave the book to is American.

     b.   The student who you worked with is very young.

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2. In both Spanish and Catalan, clitic doubling is a phenomenon related to a [+human] feature. Some examples follow:

    (i) a. *(Lo) vi   a   él.
             CL   (I)-see-PAST to him
             'I saw him.'
         b. *(El)   vaig veure   a   ell.
             CL   (I)-see-PAST to him
             'I saw him.'

    Crucially, a clitic may also double a relative pronoun which follows a dative preposition:

    (ii) El chico, a quien (le)   diste   el regalo, era mi hermano.
         the boy   to whom CLITIC (you)-give-PAST the present was my brother
         'The boy, to whom you gave the present, was my brother.'

(12) a.   *La mujer quien diste el libro a es americana.
         the woman who (you)-give-PAST the book to is American

    b.   *El estudiante quien trabajaste con es muy joven.
         the student who (you)-work-PAST with is very young

(13) a.   *La dona qui tu vas donar el llibre a és americana.
         the woman who (you) PAST give the book to is American

    b.   *L' estudiant qui tu treballes amb és molt jove.
         the student who (you) work with is very young

Our parameter account based on a [+/- human] feature distinction predicts that English speaking adults learning Spanish or Catalan as a second language will have difficulty with both human subject relatives and human object relatives.

3. Considerations for Second Language Acquisition theories

Traditionally, L2 research has made an attempt at looking for evidence of transfer of L1 options into L2 in order to explain how the L2 learners' interlanguage grammar is highly determined by their L1. On the other hand, if there is no transfer, but full access to universal syntax, we should not find any transfer data in subjects' interlanguage. The L2 acquisition process would simply imply resetting of parameters.

Many L2 researchers have been pessimistic when discussing the outcome results of L2 acquisition. Cook (1991) argues that *a priori* an L2 learner is the least expected to become a native speaker. For Bley-Vroman (1990), for instance, one has to expect «ineluctable failure», where failure is defined in terms of non-nativelike linguistic competence. Johnson and Newport (1989) offers a maturational effect account of constraints on L2 attainment in case of teenagers. The statistical evidence for such a claim is that, after the age of 17, the distribution of performance is essentially random. According to this, the L2 end state is apparently determined not by a general age effect, but by one that operates within a defined developmental span, i.e., neurocognitive factors are at work during development, and cease when maturation takes place.

Recently, Birdsong (2000) has challenged such a pessimistic conclusion. The logic of his argument is if L2 acquisition is subject to biological constraints, the L1 should not interfere. This researcher also points out that the L2 acquisition methodology should also change. In particular, one should not consider intermediate stages as relevant stages for L2 acquisition research. Intermediate stages are too complex to show anything.

On the other hand, for Birdsong (2000), end stages are crucially relevant for developmental data and provide evidence that age of exposure may play a role in L2 acquisition. That is, instead of looking at age as evidence that L2 acquisition is impossible in adults, one should then look at time of exposure to language. Birdsong introduces the term *age factor* to avoid the term *maturation* which should

be relegated to studies of L1 acquisition, where maturation is seen more in terms of physical growth than in terms of logical development. In L2 acquisition, if age factor is relevant, it should not be surprising to find that exposure to language may also affect L2 development. Notice that if one takes the age factor seriously, as Birdsong does, there should be a consistent decline in performance over age for those exposed to the language before puberty, but no systematic relationship to age of exposure, and a levelling off of ultimate performance, among those exposed to the language after puberty.[3]

The main contribution of this study to L2 acquisition is thus the verification of this hypothesis. In short, once we have distinguished between two L2 learner groups, we aim at exploring the interlanguage of advanced learners and see whether we find evidence for development. According to our parametric account to L2 acquisition, we expect to find re-setting of [+/- human] parameter. In particular, we expect to find no errors in our advanced learners, as opposed to those in the intermediate stage, when judging human subject relatives and human object relatives.

4. Research Questions

Our first research question is to see whether there is transfer of the [+/-human] feature in the terms mentioned above. Secondly, we are also interested in testing development according to age of exposure to the target language. In order to do so, we have to look at data of L2 learners at two different stages of acquisition. If the transfer hypothesis is correct we predict a preference for a [+human] relative pronoun in the production of prepositional relatives at both intermediate and advanced levels. Likewise, absence of such preference would show lack of transfer. On the assumption that there is accessibility to UG, the input data of an advanced L2 learner's linguistic environment must suffice to set the values of the parameters of the target language.

As to errors, we already observed that those found with the intermediate stage should not be very telling, since following Birdsong's (2000) claim, we should exclusively consider advanced learners' interlanguage. Here too, there are some additional problematic variables related to lack of motivation, tiredness, etc. which we should also control. As to the way in which we may obtain the relevant interlanguage, we should have our subjects take a placement test together with the experimental data.

According to our parametric account to L2 acquisition, we expect to find parameter resetting, and no transfer errors. Hence, the most relevant question is whether L2 learners are able to reset parameters whose L1 values differ from those appropriate for the L2, that is, whether L2 learners are able to 'choose' new features for certain parameters during the acquisition process, or whether L2 learners are only able to transfer their features exemplified in their L1.

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3. In fact, Birdsong & Molis (forthcoming) show development in adult L2 acquisition, on the basis of lack of transfer data in proficiency levels.

5. The Experimental Study

5.1. Introduction

The aim of the experimental study is to find out if it can be concluded from the overall results, in particular from lack of errors, that L2 learners acquire a different parameter. If UG is accessible, we expect to find correct judgements, particularly in the interlanguage of most advanced learners, already reaching the end stage.

The next sections will be concerned with the method (5.2) and the analysis of the results of the test run by group A (5.3) and group B (5.4).

5.2. Method

We provided our Spanish speaking adults learning English as a second language with a multiple-choice-question test that included a range of control items, experimental items, and a series of fillers as placement test fillers. So, the rationale of the questionnaire was not only to test our subjects on their knowledge of English relative pronouns, but also test them on their level of English language, by which we could also measure language development.

Most approaches to second language acquisition acknowledge the fact that the L2 learner starts from the grammatical options allowed in their own language. In the case we are interested here, if a language exhibits a particular way of marking of a [+/-human] feature it is predicted that it will turn out transparent when the context in the target language triggers it. To illustrate, this paper studies the role of the human feature in the acquisition of English relative clauses by Spanish and Catalan speaking adults. The study will highlight the two main different ways each language has to mark a [+human] configuration. The first difference relates to the type of relative pronoun. In English, the [+human] feature determines the use of a relative pronoun, i.e. *who* versus *which*. This is however irrelevant in most cases in Spanish or Catalan, where for independent reasons the [+human] relative pronoun is reduced to appear in non-restrictive relatives or after a preposition. A second difference between English, on the one hand, and Spanish or Catalan, on the other hand, has to do with resumptives. It has long been observed that in the Romance languages resumptives are possible with relatives. Yet, there is not any specific proposal dealing with the type of resumptive or with the frequency the resumptive has in the relative clause beyond the general observation that resumptives are all over the place in very colloquial registers.

On our first intuition is that resumptive pronouns in languages like Spanish or Catalan specially surface when the relative head is marked as [+human]; our experimental results will definitely clarify whether there is indeed a preference for a resumptive strategy in cases of a [+human] antecedent.

5.2.1. Subjects
The subjects were distributed in two groups according to their exposure to target language: intermediate and advanced or proficiency. These two levels could be regarded as stages reflecting a simulated longitudinal experiment. The intermediate group

consisted of 29 second year university students (group A) that had been studying English as a second language for less than three university years, and the proficiency group consisted of 36 university students (group B) who had studied English as a second language for more than 10 years, starting in primary and secondary school.

(14) Group A: Number of subjects: 29   Placement Level: Intermediate

(15) Group B: Number of subjects: 36   Placement Level: Advanced

Both groups took the experiment as an ordinary placement test. In fact, the questionnaire had the form of an ordinary proficiency placement test (see appendix). The selection of subjects in the intermediate group was based on some control items also included in the test. The selection of the proficiency group was based on an independent proficiency certificate of English language. So, they were not chosen at random; in fact, they were chosen on the grounds of their near adult-like performance.

5.2.2. The task
We provided our two groups of Spanish speaking adults learning English as a second language with a multiple-choice-question test that included a range of control items, experimental items, and a series of placement test items that served as fillers.

Like most multiple-choice-question tasks, the task in this study requires learners to attend to new structures, different from those of their own language, and judge them. In so doing, the learner shows what he/she really knows about that particular L2 language, at one particular learning stage. The task was not really of an experimental nature, since it was part of an ordinary placement test that students freely take to get credit for their proficiency level (see appendix). It took approximately 45 minutes. The responses were recorded on an answer sheet. In the instructions, our subjects were encouraged to answer all the items and were told that errors would not count as negative.

5.2.3. Materials
The test, in the form of a multiple-choice questionnaire, consisted of a total of 70 items divided into 43 placement items, 6 control items, and 21 experimental items**.**

Control Items. The aim of including control items was to test our students with respect to the feature [+/-human] in contexts other than relatives. Namely, we included contexts of intrasentential coreference between a referential expression and a personal pronoun. Some examples follow:

(16) *Eliciting coreference*

a.   My neighbour always comes late. He works in the evening.

b.   I saw the film. I found it very interesting.

Experimental Items A total of 7 experimental variables were included, ranging from the use of a [+human] relative pronoun to a [–human] relative pronoun in the syntactic positions of subject, object and thematic PP. Each experimental item was tested three times to ensure consistency in subjects' answers. An example of each follows:

(17) *Subject Relatives*

    a.   The policemen who caught the thief were on TV last night. [+human]

    b.   Cars which run faster are more expensive. [–human]

    c.   Dolls which can walk are easy to sell. [+animate/–human][4]

(18) *Object Relatives*

    a.   I'm looking for a good doctor who I can trust. [+human]

    b.   The spider which you killed was dangerous. [–human]

    c.   Where are the beers which Peter bought? [–animate/–human][5]

(19) *Prepositional Object Relatives*

    a.   I know the woman who you are talking to. [+human]

    b.   The patients who the nurse was looking after. [+human]

5.3. Analysis of Results: Group A

5.3.1. Correct Response and Predicted Errors
Below, a summary of the results of our experimental conditions follow. We first concentrate on the correct responses considering the type of the relative pronoun elicited in the responses. Then we focus on the type of errors committed, like the use of a resumptive pronoun, or the use of a wrong resumptive pronoun with prepositional relatives.

To start with, the total percentage of correct response per relative pronoun is given in table 1 in (20) below.

(20) **Table 1.** Percentage of correct response.

Subject			Object			PP
+human	–human	+animate	+human	–human	+animate	+human
89%	86%	86%	72%	89%	72%	51%

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4.   Torrego (1998) also speaks of a [+animate] feature when dealing with clitic doubling in Romance. That is, she observes that animate object may also be doubled by a clitic. Given this, we also wanted to test our subjects with respect to the [+/-animate] feature, because it could be the case that they would reinterpret it as a [+human] feature.

5.   See previous footnote.

Given the results above, there was a slightly better result with subject relatives than with object relatives. After running a series of non-parametric sign tests, it was found, however, that the difference was not significant for any group:[6]

(21) *Non parametric sign tests: subject versus object*

    a. [+human] subject versus object, p = 0.0625 (non significant, p>0.05)

    b. [-human] subject versus object, p = 1.000 (non significant, p>0.05)

    c. [+animate] subject versus object, p =0.1250 (non significant, p>0.05)

On the other hand, students made many errors with the prepositional relatives, and the statistical difference between the [–human] object relatives and the prepositional relatives turned out to be significant:

(22) *Non parametric Sign tests: [-human] relatives versus Prepositional Object*

    [–human] object versus the PObj condition, p = 0.0010 (significant)

Interestingly, the statistical difference between the Prepositional Object condition and the [+human] relative pronoun condition or the [+animate] relative pronoun condition did not turn out to be significant by sign test (p = 0.0703).

Next, we ran a series of parametric contrasts with respect to the [+human] feature condition. That is, we wanted to know whether our subjects were more accurate with the subject or object condition depending on whether the relative head was specified by the [+human] feature. The difference turned out to be non significant in any of the two cases:

(23) *Sign Tests*

    a. [+human] subject versus [–human] subject p =1.0000 (non significant)

    b. [+human] object versus [–human] object p = 0.1250 (non significant)

Previously we observed that a transfer theory of L2 acquisition would predict that Spanish adults learning English as a second language would do better with [+human] subject or object relatives than with [-human] relatives. Our results show that this is not the case. We could not find a significant difference in the use of the move-into-Comp strategy.

As for the type of errors found, we obtained a large number of resumptive pronouns in both subject and object position when dealing with [+human] relatives. We already showed that the use of clitic doubling is to be related to the [+human] parameter, as also argued in Torrego (1998). Assuming this, the lack of significance in the p values (p = 0.0703) when contrasting results of [+human] relatives

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6. Non-parametric sign tests are usually run to compare results of different groups or different items. The difference turns out to be statistically significant when p = or smaller than 0.05.

versus prepositional object condition may indicate transfer of the [+human] parameter somehow. The total percentage of use of resumptives per condition is given in table 2 below:[7]

(24) **Table 2.** Percentage of resumptives per condition.

Subject			Object			Prep Object
+human	–human	+animate	+human	–human	+animate	+human
6%	6%	0%	10%	3%	13%	27%

Given the results above, our subjects resorted to resumptives with relatives containing [+human] or [+animate] relative heads. In addition, they also tended to use resumptives with the Prepositional Object condition. In order to see whether this difference was statistically significant we ran a series of sign tests, and we did in fact not find any significant difference by sign test:

(25) *Resumptives with [+human] or [+animate] Object versus Prep Obj relatives*

   a. Human Object vs. Prep Obj relative, p= .0625 (non significant)

   b. Animate Object vs. Prep Obj relative, p= .2188 (non significant)

This result indicates transfer on the previous observation that in Catalan and Spanish resumptive clitics are possible with both [+animate] or [+human] relatives that crucially employ clitic doubling. Following Torrego (1998), we want to argue that the use of this doubling clitic is specially productive when the relative head functions as a [+human/+animate] indirect object.

5.3.2. Discussion
Here, we will try to discuss some of our previous research questions, on the basis of our results in the first group.

5.3.3. The feature [+/- human] across languages
Previously we have argued that the [+/-human] feature distinction is parametric. That is, we saw that in languages like English, subject relatives may employ either *who* or *which* on the basis of that distinction. In Spanish, on the other hand, the distinction is exclusively marked within prepositional objects. The fact that our

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7. In colloquial Spanish or Catalan a resumptive pronoun in the form of a clitic may fill what would otherwisebe the gap in the open clause (and possibly in English). On the other hand, studies of L1 acquisition of relatives have shown that the use of a resumptive pronoun is more often found in child language than in adult language. The study of the resumptive pronoun in L2 acquisition is interesting for the comparison with L1 acquisition. The question is whether there is any resumptive pronoun strategy similar to that found with the L1 acquisition of relative clauses in Spanish. This question is however beyond this study.

subjects were quite accurate when distinguishing between the relative pronouns *who* and *which* denotes that they know such a distinction in English.

5.3.4. The use of [+human] relative pronouns
We observed that the use of a [+human] relative subject pronoun like *qui* or *quien* ('who') is reduced to non-restrictive relatives, and is impossible with subject restrictive relatives in Catalan or Spanish. Our subjects did not however have any problem in accepting a subject relative pronoun like 'who' when questioned about subject restrictive relatives in English. As to object relatives, our subjects were also rather accurate when judging relative clauses using a relative pronoun unspecified for the [+human] feature.

5.3.5. Implications for SLA Theories
The fact that our Catalan speaking subjects in our first group tended to use a resumptive pronoun strategy just in cases where this is a permitted option in their own language clearly shows transfer. That is, it is not the case that our subjects started from scratch when judging English relatives. Rather, they started from their own [+human] relative pronoun parameter, discriminating between subject, object and prepositional relative clauses.

As to development, table 3 below shows that the use of the resumptive pronoun strategy, typically of a clitic doubling language like Spanish, decreases according to their level of English. The more they know English, the less they employ the resumptive pronoun strategy.

5.4. Analysis of Results: Group B

5.4.1. Correct Response and Development
To start with, the total percentage of correct responses for our second experimental group per relative pronoun is given in table 3 in (26) below.

(26) **Table 3.** Percentage of correct response.

Subject			Object			PP
+human	–human	+animate	+human	–human	+animate	+human
86%	86%	72%	87%	90%	75%	73%

Given the results above, there was a slight better result with subject relatives than with object relatives. Yet, the difference does not seem to be significant.

What is interesting is that, on average, students showed development in each experimental condition. Graphs below show a parallelism between a correct response in the placement test and in the experimental condition. Graphs in (27) below depict the developmental lines of the placement test results and the relative pronoun *who* experimental condition, and graphs in (28) and (29) depict the developmental lines of the correct response of the placement test results and the relative pronoun *which*:

(27) Correct response of [+human] relative pronoun *who*

    a. Graph 1: subject relative pronoun
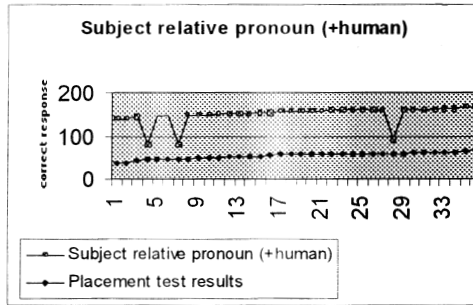
    b. Graph 2: object relative pronoun
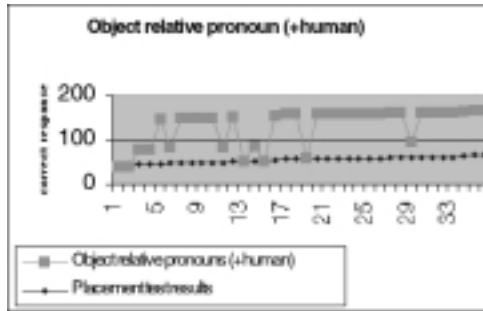
    c. Graph 3: Prepositional Object Condition
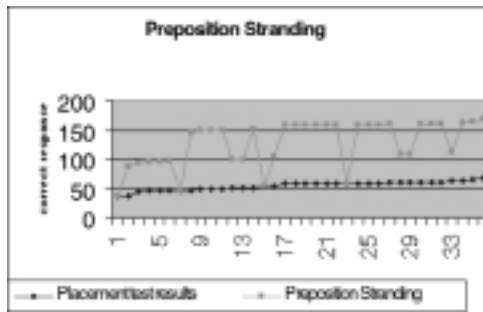
(28)   Correct response of [-human] relative pronoun *which*

    a.   Graph 4: subject relative pronoun
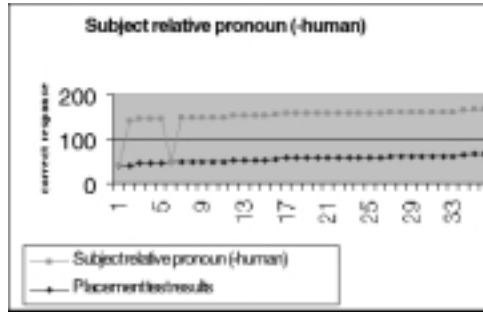
    b.   Graph 5: object relative pronoun
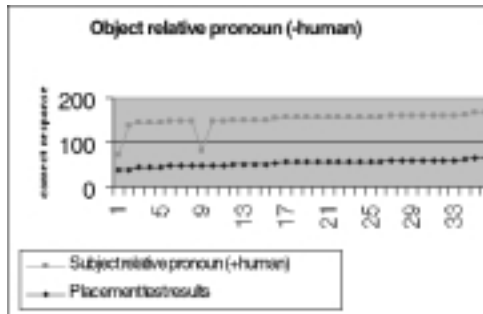
(29)   Correct response of [-/+animate] relative pronoun *which*

    a.   Graph 6: subject relative pronoun
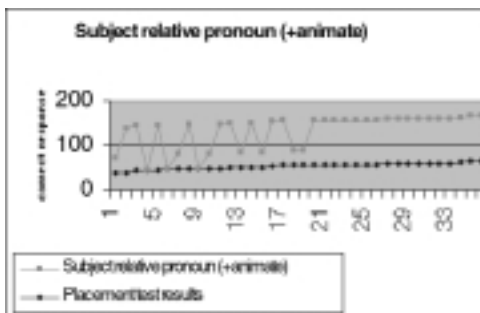
b. Graph 7: object relative pronoun
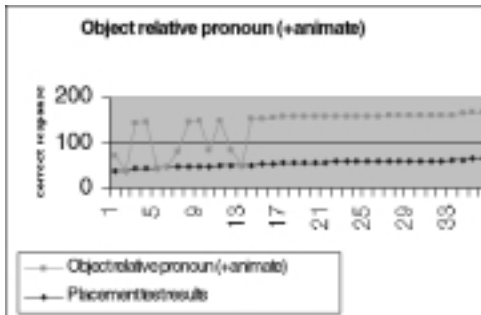
In all graphs above, we may observe development of the correct response of the experimental condition on a par with the level of placement test results. Note that the line representing the experimental condition (the darker line) goes up in parallel to the line representing the placement test results (the lighter line) in each graph. The fact that we can speak of development at this proficiency level crucially indicates age factor effects.

We then may support the claim that we may speak of an end-stage in adult L2 acquisition.

6. Conclusion

In this paper we have discussed the development of relative clauses in L2 acquisition. We ran a series of experiments on the acquisition of relative clauses marked with the feature [+/-human]. We first isolated L1 versus L2 structural properties which, under a parametric approach were predicted to be mastered differently. In this parametric framework, we proposed that L2 acquisition process implies the resetting of this parameter. While our experimental study provides important evidence of an adult learner successfully acquiring marked phenomena in the target language, the results highlight other implications such as the age factor as proposed by Birdsong (2000).

The results of our experiment were based on a multiple-choice task given to two different groups. Although we did not find evidence of L2 development in the intermediate group, the advanced group did show a nativelike interlanguage. The age factor implies that we should always look at the end-stage interlanguage, otherwise a number of errors impossible to isolate will always be found. On the other hand, most literature on L2 acquisition make use of those errors in the interlanguage of intermediate subjects to support a transfer theory that predicts poor L2 acquisition. In our view, transfer errors should also be taken as an indication of intermediate levels, but not as evidence that L2 acquisition is impossible. We observed that the subjects who had been exposed to the target language for a longer period had gained more native-like knowledge than those in the other group.

Appendix: The Real Questionnaire[*]

Advertencias: La duración de la prueba es de una hora. *Muy importante:* Debe escoger una opción de las cuatro que se incluyen. No se apresure a contestar. Planifique una respuesta coherente. Las respuestas incorrectas no restan puntuación.

1. My father ………………… a doctor.
   a) his   b) he's   c) is   d) it's

2. What ………………… you do?
   a) are   b) have   c) do   d) does

3. His parents ……………… in Catalonia.
   a) doesn't live   b) don't live   c) don't lives   d) not live

4. John's mother ……………… a new washing machine.
   a) has got   b) have got   c) is got   d) does have

5. .... historical novels?
   a) You like   b) Like you   c) Are you like   d) Do you like

6. …………………… a quarter to eight.
   a) It   b) Is   c) It's   d) They are

7. How old are you?
   a) I'm 25   b) I have 25 years old
   c) I am 25 years   d) I've got 25

8. I'm sorry. There isn't ………………… wine in the bottle.
   a) some   b) a lot   c) any   d) many

9. «Susan and Ann are sisters.» «What's …………………… surname?»
   a) her   b) your   c) our   d) their

10. There are …………………… cars in Barcelona.
    a) a lot b)   too much   c) too many   d) enough

* Legend
Identification of items:
Placement test items: From 1 through 17, 19, 21, 23, 25, 27, 31, 33, 35, 37, 39, 41, 43, 45, 47, 49, 51, 53, 55, 57, 59, 61, 63, 65, 67, 69, 70
Control Items: 20, 26, 29, 32, 38, 48
Experimental Items: 18, 22, 24, 28, 30, 34, 36, 40, 42, 44, 46, 50, 52, 54, 56, 58, 60, 62, 64,66, 68.

11. In 1988 I ………………… to the U.S.A.
    a) was b) went c) have been d) have gone

12. We used to ………………… television regularly.
    a) watch b) see c) look d) look at

13. «How long ……………your car?» «Since 1987»
    a) do you have b) did you have c) have you had d) you have

14. John's wife ……………………… to have a baby next month.
    a) could b) will c)'s going d) should

15. I've been working here ………………………… four years.
    a) for b) since c) ago d) during

16. My neighbour always comes late. .... works in the evenings.
    a) They b) It c) He d)She

17. If you …………………… careful with electricity you might get a shock.
    a) don't be b) wouldn't be c) haven't d) aren't

18. Brad Pitt , ... is one of may favourite film star, got married last September.
    a) which he b) who c) who he d) which

19. I ………………… a shower when the telephone ………………
    a) had / rang   b) was having / rang
    c) had / was ringing   d) was having / was ringing

20. Your friend came to my party, but I hadn't invited …………………….
    a) her. b) them. c) it. d)him.

21. Thank you for the invitation. What time would you like …………………
    a) that we come?   b) we come?
    c) us to come?   d) do we come?

22. The policemen ……………… caught the thief were on TV last night
    a) who they b) who c) which they d) which

23. There was a terrible accident here ……………… Friday evening.
    a) the post b) the last c) post d) last

24. Barbara Streisand, …………… never sings in front of a large audience, is afraid of crowds
    a) which   b) which she   c) who   d) who she

25. I'm not as tall ……………… my brother.
    a) like   b) than   c) as   d) how

26. Peter is a good teacher. I can always talk to ....,
    a) her.   b) it.   c) him.   d) them.

27. Their son ………………… to ride a horse since he was five.
    a) could   b) has been able c) can   d) was able

28 I'm looking for a good doctor …………… I can trust ……….
    a) who / him.   b) who / f.   c) which / f.   d) which / him.

29. He's looking at her. She's looking at him. They're looking at ………………
    a) themselves.   b) himself.   c) each other. d) another.

30. The girl …………… Jonathan is going to marry .... is American.
    a) which / her   b) which / f   c) who / her   d) who / f

31. I've no idea where ………………
    a) it is.   b) it's.   c) is it.   d) 's.

32. The computer broke down. .... was very old
    a) He   b) She   c) It   d) They

33. Have you ever ………………… a solo in public?
    a) sing   b) sung   c) song   d) sang

34. The people .... I met .... didn't speak Spanish.
    a) which / them   b) who / them   c) which / f   d) who / f

35. Her father works ……………… Coca Cola.
    a) for   b) by   c) in   d) on

36. I know the woman .... you are talking to ....
    a) which / her.   b) who / f.   c) who / her.   c) which / f.

37. If I ……………………… you, I wouldn't go out with him.
    a) am   b) be   c) were   d) are

38. I saw the film. I found .... very interesting.
    a) him   b) her   c) them   d) it

39. He kept his job …………………… the manager had threatened to sack him.
    a) although   b) despite   c) unless   d) however

40. The man ………… she fell in love with ……… left her after few weeks.
    a) who / him b)   who / f   c) which / f   d) which / him

41. Could you …………………… me some money until tomorrow?
    a) borrow   b) let   c) present   d) lend

42. The patients ……… the nurse was looking after ……… died last night.
    a) which / them   b) who / them   c) which / f   d) which / them

43. «We're not hungry.» ………………………….
    a) Neither are we   b) So are we
    c) So have we   d) Neither have we

44. They bought a house …………… was built last century.
    a) who it   b) which   c) who   d) which it

45. Are you sure she's …………………… the truth?
    a) saying   b) speaking   c) talking   d) telling

46. Cars ……… run faster are more expensive.
    a) which   b) which they   c) who they   d) who

47. If he .... been drunk, he probably wouldn't have crashed into that tree.
    a) wouldn't have   b) wouldn't   c) hadn't have   d) hadn't

48. I visited the castle, but I wouldn't like to live in ………………….
    a) them.   b) her.   c) it.   d) him.

49. The ………………… of living just keeps on going up.
    a) price   b) value   c) cost   d) expense

50. Behind my house there is a park ……… is always full of dogs.
    a) who it   b) which it   c) who   d) which

51. Come and stay for as long as you like, just remember to ……… sleeping bags
    and warm clothes.
    a) bring   b) carry   c) take   d) fetch

52. Where are the beers ………… Peter bought ……………?
    a) which / f   b) who / f   c) who / them   d) which / them

53. By next Wednesday ……………… completed the first stage of this project.
    a) it will be   b) it will have been
    c) we can have   d) we will have

54. They stole the bicycle ………… my parents bought ……… last week.
    a) who / it   b) who / f   c) which / f   d) which / it

55 Come in our car. There's enough ……………… for you.
    a) room.   b) place   c) seat   d) situation

56. My daddy is smoking the cigar …………I brought ………… from Cuba.
    a) which / it   b) who / it   c) which / f   d) who / f

57. My parents wanted ………………… be a doctor.
    a) that I   b) that I would   c) me to   d) me would

58. The dog …………… always barks at night is your neighbour's
    a) which   b) which it   c) who it   d) who

59. He heard ……………………
    a) a dog to bark.   b) barking a dog.
    c) to bark a dog.   d) a dog barking.

60. Dolls ……………… can walk are easy to sell.
    a) which they   b) which   c) who they   d) who

61. We may go sailing tomorrow. It depends …………………… the weather.
    a) of   b) if   c) on   d) from

62. Bill Gates has just designed a robot ……………… can speak Chinese.
    a) who it   b) who   c) which it   d) which

63. I explained ……………………
    a) to my wife the problem.   b) my wife the problem.
    c) my wife about the problem.   d) the problem to my wife.

64. Dolphins …………… Greenpeace is protecting …… live in deep waters.
    a) which / f   b)who / f   c) who / them   d) which / them

65. My parents got up very early this morning …………… to pack for the journey.
    a) so that   b) in order   c) because   d) for

66. The teletubby ………… his mother bought …………… was red.
    a) which / it   b) which / f   c) who / f   d) who / it

67. The coach broke ………… , leaving us stranded halfway up the mountain.
    a) down   b) off   c) under   d) up

68. The spider ………… you killed ………… was dangerous.
    a) who / it   b) which / it   c) which / f   d) who / f

69. It was a difficult journey. The weather was ……………… awful.
    a) completely   b) totally   c) absolutely   d) terribly

70. At first I was unable to use my new computer. I just couldn't make …………
    of the instructions.
    a) logic   b) out   c) clear   d) sense

FIN DE LA PRUEBA

References

Bialystok, E.; Hakuta, K. (1999). «Confounded age: Linguistic and cognitive factors
    in age differences for Second Language Acquisition». In: Birdsong, D. (ed.), *The
    Critical Period Hypothesis and Second Language Acquisition.* Mahwah, NJ:
    Erlbaum.
Birdsong, D. (2000). *The Age Factor in L2 Acquisition.* University of Texas (paper
    delivered at the summer course «El factor Edad en la Adquisición de lenguas extran-
    jeras, Facultad de Filología y Geografía e Historia», Universidad del País Vasco.)
Birdsong, D.; Molis, M. (forthcoming). «On the evidence for maturational constraints
    in second language acquisition». *Journal of Memory and Language.*
Bley-Vroman, R. (1989). «What is the logical problem of foreign language learning?»
    In: Gass, S.; Schachter, J. (eds.*), Linguistic perspectives on Second Language
    Acquisition*. Cambridge: Cambridge University Press.

Chomsky, N. (1973). «Conditions on Transformations». In: Anderson, S.; Kiparsky, P. (eds.), *Festcschrift for Morris Halle*. New York: Holt, Rinehart & Winston.

— (1977). «On wh-movement». In Culicover, P.; Wasow, T.; Akmajian, A. (eds.), *Formal Syntax*. New York: Academic Press.

— (1981). *Lectures on Government and Binding*. Dordrecht: Foris.

— (1982*). Some Concepts and Consequences of the Theory of Government and Binding*. Cambridge (Massachusetts): MIT Press.

— (1995*). The Minimalist Program*. Cambridge (Massachusetts): MIT Press.

Cook, V. (1991). «The Poverty-of-the-Stimulus Argument and Multicompetence». *Second Language Research 7.*

Felix, S. (1988). «UG-Generated Knowledge in Adult Second Language Acquisition». In: Flynn, S.; O'Neil, W. (eds.), 89-103.

Flynn, S. (1987). *A Parameter-Setting Model of L2 Acquisition: Experimental Studies in Anaphora*. Dordrecht: Reidel.

Flynn, S.; O'Neil, W. (1988). *Linguistic Theory in Second Language Acquisition*, Dordrecht: Kluwer.

Escobar Álvarez, M.A. (1995). Lefthand satellites in Spanish. Utrecht: OTS Dissertation Series. Ph. Dissertation.

Liceras, J. (1986). *Linguistic Theory and Second Language Acquisition*. Tübingen: Gunter.

Hirschbühler, P.; Rivero, M. (1981). «Catalan restrictive relatives: core and periphery». *Language LVII*: 591-625.

Johnson, J.S.; Newport, E.L. (1989). «Critical period effects in second language learning: The influence of maturational state on the acquisition of English as a second language». *Cognitive Psychology* 21: 60-99.

Krosse, M. (1992). *On the Accessibility of UG in L2 Acquisition*. Utrecht University. Ph. D. dissertation.

Reinhart, T. (1983). *Anaphora and Semantic Interpretation*. London: Croom Helm.

Schroten, J. (1984) «On Approaches to the Distribution of Spanish Relative Pronouns». *Working Papers in Linguistics* 1: 295-327.

Torrego, E. (1998). *Object Dependencies*. Cambridge (Massachusetts): MIT Press.

White, L. (1989). *Universal Grammar and Second Language Acquisition*. Amsterdam: John Benjamins.