

Age and that-trace effects

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ABSTRACT

This article presents qualitative evidence of the difference, with respect to the *that-trace* effect, between some advanced adult learners of English as a second language who have been immersed in the L2 since childhood and others who have not. As this effect is a subtle manifestation of a Universal Grammar (UG) principle which is not taught or studied, knowledge of it can only come through direct access to UG or negative evidence. Our data support the possibility of a sensitive period for its acquisition situated between childhood and adolescence, since only some subjects who were immersed in bilingual schools in that period know about the ungrammaticality of sentences which show this effect and reflect this knowledge in their production. On the other hand, those advanced students who have been exposed to the L2 for many years but not during this period do not detect it. These results do not necessarily imply a total lack of access to UG but may point to a decreasing access partially determined by the L1 in the case of those syntactic elements which are linked to functional categories.

1. INTRODUCTION

The existence of the so-called *that-trace* effect (Chomsky and Lasnik 1977) or the ungrammaticality in English of embedded clauses whose subject has been extracted while keeping the complementizer *that*, such as in *Who did they say (*that) has arrived?*, has given rise to different explanatory proposals in grammatical theory. It has also attracted the interest of some researchers who have investigated the L2 acquisition of the pro-drop parameter (PDP), as

this effect has been considered as one of the derived properties of the positive value [+PD] of this parameter.

This study presents L2 analysis and production data containing this effect, without linking it to the PDP, as their connection is not clear in second language acquisition (L2A) (cf. White 1985, Liceras 1989, 1996). Clearly, the study of such an isolated and specific phenomenon as this makes little sense from the point of view of its teaching applications but it can contribute to the debate about the differences between first language acquisition (L1A) and adult L2A. More specifically, it can shed light upon the type of access to UG (the *that-trace* effect represents a very subtle construction whose knowledge must come from either tuning in natively to the L2 input or from negative evidence) and on the influence of a possible sensitive period in syntax acquisition.

In what follows several theoretical proposals are summarized that have been put forward to explain the *that-trace* effect. Then some L2A studies which have dealt with it are reviewed and some new data are presented, followed by the corresponding discussion. From this, a hypothesis is advanced about the grammatical articulation of the apparent L1 transfer when adult L2 subjects analyze and produce sentences exemplifying it. Finally, some conclusions are drawn pointing to a qualitative difference in terms of grammatical representation between advanced L2 immersed-from-childhood students and non-immersed ones which might be indirect evidence in favor of a sensitive period between childhood and adolescence for the acquisition of syntax.

2. THE *THAT-TRACE* EFFECT AND GRAMMATICAL THEORY

2.1. Asymmetry between subject and adjunct extraction

The Empty Category Principle (ECP, Chomsky 1981) states that all traces (*t*) originating in movement must be properly governed, either because they are *ts* of lexically governed elements or because they are antecedent-governed from an A' (non-argument) position. In English, embedded clause adjuncts leave *ts* governed by an intermediate antecedent *t* and the presence of the complementizer (Comp) does not block government, as can be seen in the following example:

- (1) Why_{*i*} did you say [_{*i*}' that you want to go to the theater *t*_{*i*}'?]

In the case of the extraction of the subject, where *t* cannot be lexically governed by V but by its antecedent *t*_{*i*}' in spec CP of the embedded clause, Comp blocks government, making the sentence ungrammatical, as in (2a), while its absence makes it grammatically viable, as in (2b):

- (2) a. *Who_i do you think [_{CP} t_i' that [_{IP} t_i is sick]]
 b. Who_i do you think [_{CP} t_i' [IP ti is sick]]

Lasnik and Saito (L&S) (1984) propose the following conditions related to this question: (1) the complementizer phrase (CP) gets the index of its head C but if the latter disappears at some point of the derivation, another element may take its place and assign its index to the maximal projection; (2) the ECP applies in s-structure to arguments but in Lexical Form (LF) —or interface between syntax and semantics— to adjuncts; (3) there are deletion processes which apply to *ts* created during the derivation, the original one and to the semantically empty *that*.

As in the examples above the verb subcategorizes an embedded complement clause, there will be a *t_i'* in spec CP and Comp *that* in head position, which will give its index to the projection. A subject *t* is not lexically governed because its governor, I (or AGREE S, as it is called now), neither L-marks it nor governs it (VP does). If *t_i* is not lexically governed it should have a local antecedent in an A' position, which is not the case, as *t_i'* would be in spec CP where the presence of *that* (2a) in C would prevent CP from getting *t_i'* index. However, government is possible when *that* is absent, as in (2b).

In Romance languages, the subject seems to be immune to the *that-trace* effect and can be extracted from an interrogative island, such as in ¿*Quién cree que está enfermo?*, the Spanish gloss of (2a). Since Rizzi (1982), this has been attributed to the rich agreement these languages have, which is capable of legitimizing an empty category *pro* in subject position. Such a category can be co-indexed with a postverbal lexical subject, probably adjoined to VP, as these kinds of subjects obey the condition that the extraction domain has to be properly governed (Huang 1982). This postverbal, lexically governed subject would be the one extracted in such examples and its government corresponds to I, which in such languages can assign Case to it.

With respect to the asymmetry distinguishing (1) and (2a), L&S explain it by using their conditions (2) and (3) mentioned above. At the level where the semantic interpretation takes place, LF, those elements without semantic content are erased. The idea is that those non-argumental positions are potentially invisible to ECP effects in S-structure (what they call Y feature assignment) as they need not even exist at that level since the Projection Principle does not require this. The complementizers *that* or Spanish *que*, which can be deleted in the syntax, are obligatorily erased at LF, while *ts* of *Wh* phrases have to be present. In these circumstances, the adjunct *t* could promote to CP's head position at that level. If adjunct traces validation occurs after that of arguments, at LF, *t* could be antecedent-governed from CP even though it was not possible at S-structure. For similar reasons, argument intermediate traces in spec CP are erased at LF (as they are necessary only

because of the ECP and if they remained they would violate it, as that position cannot be governed from outside).

Chomsky (1986) proposes that C' is a barrier to government when the head C is occupied by *that*, which is not a lexical category. Rizzi (1990) takes this, introduces the concept of Relativized Minimality, according to which a head such as C should not hinder antecedent-government from an A' position and, consequently, rejects the explanation about the ungrammaticality of sentences such as (2a) being due to t_i' not antecedent-governing t_i . He proposes that the ECP can only be satisfied when there is both head and antecedent-government. In (2a) t_i is antecedent governed but is not legitimized because the complementizer is not a lexical element and, consequently, does not count as head governor.

2.2. The *that-trace* effect in Lasnik & Saito (1992)

L&S (1992) take up again the blocking effect of *that* to antecedent government and propose that only heads can be governing antecedents. For this reason CP gets the index of the *Wh*-phrase in spec CP (i in example (3a)) through spec-head agreement and C, being a head, can thus antecedent-govern the subject's trace:

(3a) Who_i do you think [_{CP} t_i' [_C C [_{IP} t_i left]]].

In the same example with *that*,

(3b) *Who_i do you think [_{CP} t_i' [_C that [_{IP} t_i left]]],

its presence blocks spec-head agreement and the sentence violates the ECP as t_i' (which is not that of a X^0 but of a X'') cannot antecedent-govern the subject's trace and C (which does not agree with its spec) does not have the same index as t_i .

With respect to why spec-head agreement does not obtain when *that* is present, L&S (1992) state that t_i' and *that* do not share the same functional features. They propose that both *that* and the intermediate traces have the feature [-WH] and that verbs such as *think* select a CP without the [\pm WH] feature, so C in one of these verbs' CP complement can either have the feature [-WH] or none. They also point out that while *that* is [-WH] because it is a propositional non-interrogative marker, the ts are not marked for the feature [\pm WH], as they can have either a [+WH] or a [-WH] antecedent.

Thus, supposing C is coindexed with its specifier if both agree in the [\pm WH] feature, in (3a) both t_i' and the empty C lack the feature [\pm WH] and so

C gets the index i of t_i and can antecedent-govern it. On the other hand, in (3b) C in the embedded clause cannot get the i index because t_i lacks the [\pm WH] feature, and the CP that dominates *that* is [-WH] and, thus, C cannot antecedent-govern t_i and the latter violates the ECP.

3. THE *THAT-TRACE* EFFECT IN AL2

The *that-trace* effect has been indirectly the object of some studies which tried to examine if and how L2 learners had access to UG, since the knowledge of its (un)grammaticality was supposed to be one of the properties that accrues once the PDP has been set rightly for the L2 studied. Furthermore, the knowledge of the ungrammaticality of sentences like (2a), that is, of the complementizer distribution, can only have as its source UG, as the L2 input can lead the L2 learner to draw false generalizations (data such as the optionality of *that* in sentences like *I believe (that) Pat is very clever* or *The cat (that) you saw yesterday was mine*) or to not deduce such subtle phenomena as this.

Some authors (like White 1985) have analyzed English (a [-PD] language) L2 data from Spanish (a [+PD] language) speakers and others viceversa (like Liceras 1989). Although these authors conclude that adult learners seem to have access to UG and reset the value for the parameter, as their subjects have reset the property of (non)obligatoriness of explicit subjects, either directly or through the L1, they have not been able to set the *that-trace* effect property right in either case. That is, advanced Spanish learners of English accept this effect in the L2 and English speaking learners do not in Spanish L2 (with learners in both cases who consider it optional).

Tsimpli and Roussou (1991) obtained the same results with advanced Greek learners of English as a second language (EL2). Thus, all their learners think that this structure, linked to nuclear grammatical aspects, are correct in the L2. According to these two researchers, who follow Borer (1983), Chomsky (1988) and Ouhalla (1991), parameters are associated with functional categories, which form a distinct modular component within UG, its lexicon, and parametric variation is determined by different functional feature values. This module would be subject to development or maturation; that is, the notion of a possible critical (Lenneberg 1967) or just sensitive period in language acquisition would be linked to the development processes of the Functional Module. Such a module would not be accessible to the adult learner and thus language acquisition after this period would not have available the same mechanisms as before it, as resetting parameters may then be impossible. This does not mean that adult language acquisition is not defined within UG, because its Principles would still be available, and other options, which may be neither those of the L1 nor the L2 could be taken (cf. Finer and Broselow 1986).

If the Functional Module is not accessible to the adult learner, L1 parametric values will be transferred to the L2 at the beginning of the learning process. The L2 production of the most advanced learners, which seems consistent with the properties supposedly associated with the L2 parametric option, is the result of restructuring the L1 parametric option and creating a non-equivalent representation of the L2 even though the surface structures look the same.

4. THE DATA

4.1. Subjects, tasks and results

This study presents data belonging to two different groups of students. In addition, my own personal experience can be contrasted with that of other adult advanced Spanish learners of EL2 who have expressed surprise at learning that sentences such as (3b) are ungrammatical. The data are presented in chronological fashion.

On the one hand, in a grammaticality judgement (GJ) task, the three following items (which were not consecutive items and were mixed with others related to different grammatical questions) were presented to twenty-one adult Spanish speaking students of EL2:

- (4a) *Who did you say that came? (presented without asterisk)
- (4b) Who do you think was killed yesterday?
- (4c) What did you hear will happen tomorrow?

Thirteen of these students formed part of a group taking a summer English course in the USA and could be considered intermediate learners. The other seventeen were educated adults, eight of whom had been in the USA for at least two years and the rest were all graduate students who had majored in English in Spanish universities and could be considered an advanced or superior proficiency level. The latter did not belong to any group but were tested individually for the same GJ task. Only two advanced subjects rejected (4a), crossing out *that*, and ticked the other two. Another advanced one did the same with (4a) but then inserted *that* in the other two. From the remaining learners, the intermediate ones accepted (4a) and inserted *that* in (4b) and (4c); most of the other advanced learners accepted all three items. Among these, there were the subject of the experiment described in Escutia (1993) and two college teachers who, at the time of the test, had been, respectively, ten and thirty-five years in the United States where they had arrived as postgraduate students. All of the English majors also accepted the sentence **The guy you told me that came was his brother*, presented only to them. These results are shown in Table 1.

TABLE 1
Advanced College Students & Adults

GJ Task: items 4a-4c	
13 intermediate 9 English majors.	accepted 4a inserted <i>that</i> in 4b, c
6 non-immersed advanced (> 2 ys in US)	”
2 immersed advanced (> 2 ys in US)	crossed <i>that</i> 4a accepted 4b, c

The other group is made up of nineteen advanced students of EL2, eleven girls and eight boys, in their last year of high school in Spain (denominated C.O.U.), who have all passed the Cambridge First Certificate and ten of them also have the Cambridge University certificate of Proficiency in English. They all handle the L2 perfectly, especially in terms of oral comprehension and production and have spent long periods of time, ranging between several summers and three years in a row, in English speaking countries. Nine of them have studied in bilingual schools since the beginning of primary education, one lived in the USA for seven years, where he went to school until he was eleven while living with his Spanish family, and the other nine had an obligatory English as a Foreign Language class during most of Primary and Secondary school and have attended private courses and English academies both in Spain and abroad.

These subjects did the following tasks: on the one hand, they analyzed the following sentences (which were mixed and interspersed with others as part of a larger GJ task):

- 5a. *Who did you say that came last night? (presented without asterisk)
- 5b. *What film did you say that was on tv last night?
- 5c. She's the one I hope did it

Furthermore, in another production task done a week before, they were asked to provide the corresponding questions to the following answers with respect to what has been underlined:

- 6a. I said that Peter came last night
- 6b. I said that Peter did it
- 6c. He told me that Peter bought a book
- 6d. He told me that he will come in two weeks
- 6e. I said that "the Bodyguard" was on tv last night

In this task, 6a and 6e deal with the subject extraction of an embedded clause and can elicit the production of questions with the effect under study. The corresponding questions would be: *Who did you say (*that) came last night?* and *Which film did you say (*that) was on tv last night?*, respectively.

All the students correctly formulated the questions corresponding to 6b, 6c and 6d. Only three, belonging to the group who had always gone to bilingual schools, responded natively to the GJ task, crossing out *that* in 5a and 5b and accepting 5c. They also wrote the correct questions corresponding to 6a and 6e. Another six of this same group included *that* in their questions and accepted the three GJs, four of whom inserted *who* after *hope* in 5c. The rest, among whom was the student who lived in the USA, included the complementizer in their questions, accepted 5a and 5b and either inserted *that* in 5c or transformed it into *I hope she's the one who/that did it*. The results are summarized in Table 2.

TABLE 2
Native-like responses C.O.U. students

GJ task (5a-5c) ?-task (6a-6d)	5a	5b	5c	6a	6b	6c	6d	6e
9 immersed (from bil. schools)	3	9	9	3	9	9	9	3
11 non-immersed	0	0	0	5	11	11	11	5

4.2. Data discussion

It seems clear that both analysis and production data of this effect show L1 transfer. In Spanish there is no such restriction (or filter, as Chomsky and Lasnik put it originally, an explanation which might seem still more consistent with the linguistic theory for some authors: cf. Culicover 1993). Tsimpli and Roussou attribute this transfer to the abstract properties of the Greek complementizer, where this effect is also grammatical. Following Du Plessis et al. (1987), they resort to the Proper Government Parameter (PGP), according to which if Comp is a proper governor, the spec IP of an embedded clause can be phonetically empty. Thus, following Rizzi (1990), they propose that Comp is a proper governor in Greek while in English it is not and, consequently, the fact that Greek EL2 learners accept *that*-trace effect constructions would be due to transfer, as the English value for the PGP is not set.

To support this thesis, the authors also evoke White's (1985) results, whose French speaking subjects also accepted sentences with such an effect (as 4a), which in French are also ungrammatical with *que* but not with *qui*:

**Que crois-tu que va venir?*/*Que crois-tu qui va venir*. According to Rizzi (1990), the rule *que/qui* is an example of explicit agreement features in Comp, which make it a proper governor. Agreement in Comp is legitimized through the presence of a trace-variable in spec CP, which is coindexed with C through spec-head agreement. This strategy makes it possible to extract the subject of an embedded clause without giving rise to an ECP violation because the original trace is properly governed. For this reason, White's French students would have transferred their L1's PGP value.

The same explanation might suit the case of the L2 learners studied here. Our students would also transfer, at least at the beginning of the AL2 or after a period situated between their childhood and adolescence, the PGP value of the Spanish complementizer *que*, which would have neither the [-WH] feature, as English *that* or French *que*, nor the [+WH] one, as French *qui*, but would rather be [\pm WH], a combination of French *que/qui*, taking one value or the other *ad casum*: in the case of the acceptance or production of English sentences with the effect, they would be transferring their [+WH] feature.

5. CONCLUSIONS

The data from this study may support the hypothesis of a sensitive period for syntax acquisition possibly related to functional categories with respect to the *that*-trace effect. If the difference in our data between the bilingual school learners and the other advanced learners were due to a possible sensitive period, this would be situated between childhood and adolescence. The lack of knowledge of the latter students could be due to L1 transfer of parametric aspects linked to functional categories.

Only some of the learners who seem to have acquired the L2 while immersed in it during the period referred to are sensitive to this syntactic phenomenon. That is, in terms of the present hypothesis, they are the only ones who seem to have set the L2 value of the PGP or functional feature [-WH] of the complementizer *that*.

Sufficient data have been presented here to show that the *that*-trace effect cannot be detected by advanced adult or adolescent learners of EL2 who have not been really immersed in the language since childhood and that there is a qualitative difference in this respect with those who have been. I will not try here to explain why some of the latter have not detected it either, but what seems clear is that the few students who have done so (or show some sensitivity to it) are of the immersed-from-childhood kind.

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REFERENCES

- Borer, H. (1984). *Parametric Syntax: Case studies in Semitic and Romance Languages*. Dordrecht: Foris Publications.
- Chomsky, N. y Lasnik, H. (1977). Filters and Control. *Linguistic Inquiry* 8: 425-504.
- Chomsky, N. (1988). *Language and Problems of Knowledge*. Cambridge, Mass: MIT Press.
- Chomsky, N. (1986). *Barriers*. Cambridge, Mass: MIT Press.
- Du Plessis, J.; Solin, D.; Travis, L. y White, L. (1987). UG or not UG, that is the question: A reply to Clashes and Muysken: *Second Language Research* 3: 56-75.
- Culicover, P.W. (1993). Evidence against ECP accounts of the that-t effect. *Linguistic Inquiry* 23: 557-561.
- Escutia, M. (1993). Homogeneous vs heterogeneous competence in the L2 acquisition of non-null subjects: a case study. *Actas de las Jornadas Internacionales de Lingüística Aplicada* 2: 509-519. Granada.
- Finer, D. y Broselow, E. (1985). Second Language Acquisition of reflexive binding. *North East Linguistics Society*, 16.
- Huang, C.T. (1982). *Logical relations in Chinese and the theory of grammar*. Unpublished PhD dissertation. MIT.
- Lasnik, H. and Saito, M. (1984). On the nature of proper government. *Linguistic Inquiry* 15: 235-290.
- Lasnik, H. and Saito, M. (1992). *Move α : Conditions on its Application and Output*. Cambridge, Mass: MIT Press.
- Lenneberg, E. (1967). *Biological Foundations of Language*. New York: John Wiley.
- Liceras, J.M. (1989). On some properties of the "pro-drop" parameter: looking for missing subjects in non-native Spanish. In Gass, S. and Schachter, J. (eds.): *Linguistic Perspectives on Second Language Acquisition*: 109-133. Cambridge: Cambridge University Press.
- Liceras, J.M. (1996). *La Adquisición de las Lenguas Segundas y la Gramática Universal*. Madrid: Síntesis.
- Ouhalla, J. (1991). *Functional Categories and Parametric Variation*. London: Routledge.
- Rizzi, L. (1982). *Issues on Italian syntax*. Dordrecht: Foris.
- Rizzi, L. (1986). Null objects in Italian and the theory of pro. *Linguistic Inquiry* 17: 501-557.
- Rizzi, L. (1990). *Relativized Minimality*. Cambridge, Mass: MIT Press.
- Tsimpli, I.M. and Roussou, A. (1991). Parameter-resetting in L2? and *UCL Working Papers in Linguistics* 3: 149-169. London.
- White, L. (1985). The 'pro-drop' parameter in adult second language acquisition. *Language Learning* 35: 47-62.