

What variables condition syntactic transfer? A look at the L3 initial state

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This study investigates transfer at the third-language (L3) initial state, testing between the following possibilities: (1) the first-language (L1) transfer hypothesis (an L1 effect for all adult acquisition), (2) the second-language (L2) transfer hypothesis, where the L2 blocks L1 transfer (often referred to in the recent literature as the ‘L2 status factor’; Williams and Hammarberg, 1998), and (3) the Cumulative Enhancement Model, which proposes selective transfer from all previous linguistic knowledge. We provide data from successful English-speaking learners of L2 Spanish at the initial state of acquiring L3 French and L3 Italian relating to properties of the Null-Subject Parameter (e.g. Chomsky, 1981; Rizzi, 1982). We compare these groups to each other, as well as to groups of English learners of L2 French and L2 Italian at the initial state, and conclude that the data are consistent with the predictions of the ‘L2 status factor’. However, we discuss an alternative possible interpretation based on (psycho)typologically-motivated transfer (borrowing from Kellerman, 1983), providing a methodology for future research in this domain to meaningfully tease apart the ‘L2 status factor’ from this alternative account.

Keywords: L3 French, L3 Italian, L2 Spanish, crosslinguistic influence, null-subject parameter, psycho-typology

I Introduction

As is the case for all instances of language acquisition, the acquisition of a third language (L3) can be studied from a multitude of linguistic

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perspectives (e.g. sociolinguistic, psycholinguistic, processibility theory, usage-based, generative and other cognitive approaches) as its facts can be interpreted within each of these empirical traditions. While it is widely accepted that first-language (L1) and second-language (L2) acquisition are distinct in terms of initial states as well as developmental sequence, because the components available to learners at the onset of acquisition are necessarily different (although, for a different view, see Epstein *et al.*, 1996; Platzack, 1996), there is no agreement about the initial state and subsequent development in L3/ L_n acquisition. In fact, many researchers have explicitly or implicitly taken the position that L3 acquisition is simply another case of adult L2 acquisition. Over the last decade or so, it has been acknowledged that the existence of two already-acquired language systems at the onset of L3 acquisition makes this process unique and worthy of study in its own right, resulting in a sharp increase in interest in the exploration of the nature of L3 systems from formal linguistic perspectives (for a review, see Leung, 2007a).

Within L2 acquisition, with only one system available for transfer, it has been impossible to determine what variables condition/motivate specific transfer since there is, simply put, no choice. Only by studying successive multilingual acquisition can we begin to know whether the native language (L1) system solely serves as the basis of transfer for all subsequent linguistic acquisition, if successful adult learners of non-primary languages privilege the later acquired language(s) as the basis for the next, or if they equally/actively use their entire linguistic repertoire to assist, if not facilitate, multilingual acquisition. One of the notable differences between L2 and L3 acquisition that has come to light is that in L3 acquisition, transfer in at least some domains (e.g. lexicon vs. syntax) occurs from either one of the two other existing systems and that L3 influence can be bidirectional (often affecting the L2) to varying degrees.¹ For example, this has been reliably demonstrated at the lexical level (Dewaele, 1998; Ecke, 2000; Ecke and Hall, 2000; Cenoz *et al.*, 2001; Gibson *et al.*, 2001; De Bot, 2004). However, the few existing formal linguistic studies at the morphosyntactic level offer contrary conclusions. Whereas Flynn *et al.* (2004), Jaensch (2008) and Leung (2005; 2006; 2007a; 2007b) conclude that both L1 and L2

¹ Although some recent work has demonstrated that an L2 in adulthood can result in regressive interference effects on the native L1 system (e.g. Kecskes and Papp, 2000; Cook, 2003), such effects are different from what is observed in L3 studies that analyse effects on the L2 with respect to the domains of grammar affected, as well as the timing and pervasiveness of such influence.

grammatical properties are transferred (and interestingly that L1 and L2 transfer alone cannot explain all observed L3 syntactic behavior), others claim there is a very strong L2 effect (e.g. Bardel and Falk, 2007). Borrowing the term from Hammarberg's (2001) work on the L3 lexicon, Bardel and Falk (2007) call this latter position the 'L2 status factor' by which they suggest the L2 acts as a filter, blocking transfer from the L1 at the syntactic level. Nonetheless, we are far from honing in on one particular determinant for cross-linguistic interference and from understanding how prior linguistic knowledge manifests itself in L3 acquisition. This creates the need for further research in the area. Where pioneering work in the nascent field of generative L3 studies has begun to lay the foundation, here we attempt to solve another piece of the L3 transfer puzzle.

Flynn *et al.* (2004) propose the Cumulative Enhancement Model (CEM) for multilingual transfer, which claims that all previous linguistic knowledge, from the L1 or L2, can potentially modify the course of L3 syntactic development. However, the CEM assumes positive transfer or none at all, in the sense that the cumulative effect of having acquired more than one system either aids multilingual acquisition or remains neutral. This position effectively ignores, and thus sidesteps, the possibility of negative transfer of previous linguistic knowledge. This, however, is a question to be determined empirically, which the present study takes up. In the case L3 learners are shown to not always transfer appropriate values when one of their previous languages provides the correct initial hypothesis (especially in the case it is the L1), is there a systematic reason for why this transfer-type error would occur, perhaps one that questions the tenability of the CEM?

In the current study, we attempt to answer this and related questions, setting forth the possibility of negative syntactic transfer based on the 'L2 status factor' advanced by Bardel and Falk (2007). The focus is null-subject properties in two groups of L3 learners where the L1 and L2 remain constant (L1 English/L2 Spanish/L3 French and L1 English/L2 Spanish/L3 Italian).

Anticipating the data to be presented, both groups of L3 learners seem to initially parse the L3 – French or Italian – using the grammatical structures from their L2, Spanish, as opposed to the L1. This occurred in spite of the fact that for null-subject properties, L1 transfer would have been the more economic/better choice for L3 French. This is supported by the fact that both L3 groups perform similarly to each other

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(and like L2 Spanish) despite French being a non-null-subject language like their L1 English. Moreover, the L3 French group performs very differently from the L2 French group, suggesting Spanish as an L2 is a deterministic factor in the performance at the L3 initial state. However, caution must be exercised in generalizing to the ‘L2 status factor’ from the results we provide. Since Spanish – a language typologically close to both L3s – is the L2, our findings can only definitively provide direct evidence that the L1 is not privileged for multilingual syntactic transfer. Our data are consistent with two possibilities:

- that there is an ‘L2 status factor’;
- that typology or even psycho-typology (in the sense of Kellerman, 1983; 1986) is what actually motivates selective transfer between the two systems at the disposal of a multilingual acquirer.

The article is organized as follows. Section II provides a brief overview of generative L3 studies most relevant to the present empirical research. Section III outlines the hypothesis of the present study, while Section IV details the syntax of pronominal subjects in all four languages under investigation, including the related Overt Pronoun Constraint (OPC), a semantically entailed restriction on bound variable interpretations in null-subject grammars only. The remaining sections detail the design, methodology and results of the empirical investigation.

II Background: L3 acquisition

Although the study of adult additive multilingualism or L3/ L_n acquisition has been the subject of a considerable amount of research from several cognitive/psycholinguistic perspectives for well over two decades (for review, see Cenoz *et al.* 2001; Cenoz, 2003), prior to the turn of the millennium there was a noticeable paucity of generative-based L3/ L_n research (for an earlier example, see Klein, 1995). While this has changed in recent years (e.g. Flynn *et al.*, 2004; Leung 2005; 2006; 2007a; 2007b; Bardel, 2006; Bohnacker, 2006; Bardel and Falk, 2007; Jaensch, 2008; 2009; Cabrelli *et al.*, 2009), such studies comprise an infinitesimal part of all generative studies investigating adult non-primary acquisition. Despite the fact that generative L3 acquisition as a subfield proper is still in its infancy, much of the work that has been done to this point has significant implications for future research,

especially those programs working to ultimately determine the role of previous linguistic knowledge in the acquisition of non-primary languages in adulthood and how this informs acquisition hypotheses and theories of the mental constitution of language and human cognition. We investigate this question – determining the source and role of transfer when there is more than one linguistic system available for transfer – in the present study. In light of this, this section reviews the two generative L3 studies that most significantly bear on the present one.

1 Flynn et al., 2004

As one of the first generative attempts at modeling morphosyntactic multilingual transfer, Flynn *et al.* (2004) argued that there is no necessary L1 transfer effect in L3/ L_n acquisition in adulthood. Looking at production of restrictive relative clauses in L1 Kazakh/L2 Russian/L3 English speakers, they made the prediction that if the L1 does, in fact, have a privileged role in all subsequent language acquisition, and if typological differences are the sole determinant of developmental patterns, then given that Kazakh and Japanese have similar head direction (they are head-final languages), L3 acquisition of English by L1 speakers of Kazakh should resemble L2 acquisition of English by L1 speakers of Japanese. However, they proposed that if a Kazakh learner acquires a grammar with a new CP structure, such as Russian as an L2, then he or she can demonstrate acquisition patterns that are similar to that of an L1 Russian speaker acquiring English as an L2 (i.e. free relatives will not precede a lexically-headed relative clause). In the case this second assumption is born out empirically, they also propose that development of prior CP structures determines subsequent language-specific development, and that once language-specific CP features are integrated with earlier universal knowledge of the CP projection, in the future the learner will be able to use the developmental process they have acquired in order to acquire the CP structure in other languages.

Their results suggest that prior CP development in an L2 can influence development of CP structures in subsequent language acquisition, and that experience in any previous language (the L1 and the L2) can be utilized in the acquisition of any subsequent language. According to the model, language acquisition is cumulative, meaning any prior language can either enhance subsequent language acquisition or remain neutral (i.e. it either helps or does not affect subsequent acquisition at all).

2 *Bardel and Falk, 2007*

Although much previous research has effectively shown lexical transfer from the L2 to L3, it has been claimed that such transfer does not happen with L3 morphosyntax (for argumentation, see for example Håkansson *et al.*, 2002; for discussion of this study in the context of L3 acquisition, see Bardel and Falk, 2007). In an effort to test the status of syntactic transfer at the L3 initial state, Bardel and Falk (2007) examined two different groups: L1 V2/L2 non-V2 and L1 non-V2/L2 V2, learning either Swedish or Dutch as an L3,² focusing on the placement of negation. The design of the study, they claim, enables them to test the following four hypotheses:

- 1) There is no transfer from any previously known language (the non-transfer hypothesis). There would be no difference between the two groups in the placement of negation in L3 Swedish and/or Dutch.
- 2) Properties of the L1 are transferred (the L1 transfer hypothesis). An L1-derived difference between the two groups should be found. The English L2 group, who have Dutch or Swedish as the L1, should outperform the Dutch/German L2 group when it comes to placing negation post-verbally.
- 3) Properties of the L2 are transferred (the L2 transfer hypothesis). The Dutch/German L2 group would initially produce target-like negated structures, whereas the English group would produce pre-verbal negation, especially with non-thematic verbs.
- 4) Transfer occurs according to the CEM of Flynn *et al.* (2004), predicting, in a sense, somewhat similar outcomes to Hypothesis 1; i.e. there should be no difference between the groups. However, the positive influence of all previous languages – L1, L2(s) – should facilitate the learning task for both groups, hence yielding overall target-like structures from the outset.

Results showed the L2 Dutch/German group, who did not have a V2 L1, outperformed the L2 English group, whose L1 is V2, in producing post-verbal negation. Hypothesis 3 was corroborated by the data, although English L2 did not appear to be transferred completely (for discussion,

² There were several language pairing groups in their study. The L2 was either English (a non-V2 language), Dutch or German (both V2 languages). The L3 was either Dutch or Swedish, again both V2 languages. The L1s varied (and, given the scope of the research questions, was less important): Albanian, Dutch, Hungarian, Swedish, English and German.

see Bardel and Falk, 2007). Coupling their findings with previous work that demonstrates L2 → L3 transfer, Bardel and Falk maintain that not only is L2 morphosyntactic transfer possible into the L3, but it is privileged at the L3 initial state, because of the so-called ‘L2 status factor’ – borrowing the label from Williams and Hammarberg (1998) and Hammarberg (2001), who applied it to the L3 lexicon – in the sense that L2 morphosyntax blocks straightforward access to the L1 (for related earlier suggestions, see Meisel, 1983). Bardel and Falk attempted to address the possibility that typology might be at play, but conclude that the ‘L2 status factor’ is the stronger predictor of initial L3 transfer. Crucially, Flynn *et al.*’s (2004) CEM does not seem to be supported by Bardel and Falk’s data.

III Syntax of pronominal subjects

The Null-Subject Parameter (NSP)³ (Chomsky, 1981; Jaeggli, 1982; Rizzi, 1982; and considerable subsequent work) is a well-known and highly-studied parameter of grammar, the binary values of which explain the syntactic licensing of pronominal subjects in the world’s languages. In some languages, all subjects must be overtly expressed, while in others pronominal subjects can either be pronounced or not.⁴ Languages of the latter type are positively valued for the NSP, licensing a syntactic empty category *pro*. Null-subject or pro-drop languages like Spanish and Italian, unlike English and French, therefore have the syntactic possibility of overt and null pronominal subjects.

Spanish and Italian verbal morphology encodes interpretable Ø-features. That is to say, both Spanish (1) and Italian (2) verbal inflectional affixes are thought to share the identical status of English (3) and French (4) pronominal subjects.

1) cant- o	cant- amos	2) cant- o	cant- iamo
cant- as	cant- áis	cant- i	cant- ate
cant- a	cant- an	cant- a	cant- ano

³ We note that there is disagreement as to what properties cluster with the licensing of null subjects; for discussion, see Rothman and Iverson, 2007. Additionally, this section reflects an oversimplification of cross-linguistic theoretical syntactic issues with respect to null arguments for space reasons. Nevertheless, this section reflects what we assume for Spanish-type null-subject languages.

⁴ Of course, this does not mean that subjects are freely null and/or overt in these languages. Their distribution is subject to universal and language specific pragmatic conditions for discourse felicitousness.

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- | | | | |
|------------------|------------------|-----------------------|---------------------------|
| 3) I sing | we sing | 4) je chante | nous chantons |
| you sing | you sing | tu chantes | vous chantez |
| (s)he sings | they sing | il/elle chante | ils/elles chantent |

Alexiadou and Agnostopoulou (1998: 157) maintain that ‘EPP-checking is D-feature-checking in a non-substantive category by a [nominal] lexical category.’ More recently, the Extended Projection Principle (EPP) requirement is taken to involve an uninterpretable feature [–person] on T (Chomsky, 2000; 2001; 2005). In Spanish and Italian the [–person] feature of T is checked via *v* to T movement, via [+person] verbal agreement morphology (Ordóñez and Treviño, 1999; Kato, 2000). That is to say, the [–person] feature of T is checked by head-movement, similar to Alexiadou and Agnostopoulou’s (1998) X⁰-movement criteria, and therefore does not require (XP) merge to Spec, TP. Conversely, in languages such as English, the nominal feature of T must be checked by merging an overt subject DP to the Spec of TP.⁵

In addition to a number of discourse–pragmatic restrictions on overt pronominal subject use in Spanish and Italian, which essentially restrict overt subjects to Focus and switch-reference environments (see Sorace, 2000), the Overt Pronoun Constraint (OPC) (Montalbetti, 1984) represents a syntactically derived restriction on their respective distribution. The OPC is a linguistic universal that in null-subject grammars blocks bound variable (BV) interpretations between variable expression matrix subjects (Quantified DPs and *wh*-elements) and overt-embedded subjects (i.e. no co-reference restriction obtains between normal DPs and overt subjects). Consider the sentences in (5)–(8).

- 5) a. Who_i knows that he_{ij} is smart?
 b. Michael_i knows that he_{ij} is smart.
- 6) a. Qui_i sait qu’il_{ij} est intelligent?
 b. Michele_i sait qu’il_{ij} est intelligent.
- 7) a. ¿ Quién_i sabe que él_{ij} es inteligente?
 b. ¿ Quién_i sabe que Ø_{ij} es inteligente?
 c. Miguel_i sabe que él_{ij} es inteligente.
 d. Miguel_i sabe que Ø_{ij} es perfecto.
- 8) a. Chi_i sa che lui_{ij} è intelligente?
 b. Chi_i sa che Ø_{ij} è intelligente.

⁵ Clearly an overt subject must also be merged to the Spec of T in French, but not necessarily for the same reason as in English (see Platzack, 2003).

- c. Michele_i sa che lui_{i/j} è intelligente.
 d. Michele_i sa che Ø_{i/j} è intelligente.

In pro-drop languages, co-reference interpretations are always available between regular referential expressions with fixed referents (e.g. proper nouns like *Miguel*, *María* and specific DPs like *la mujer*) and embedded subject pronouns, whether overt or null. However, unlike non pro-drop languages such as English and French, if the matrix subject is a quantified DP or *wh*-phrase, co-reference is possible only with null-embedded subjects; that is, the OPC blocks bound variable interpretations if the embedded subject is overt, as seen in (7a) and (8a). This relevant application of the OPC falls out from having acquired the syntax of null subjects and is thus a useful tool to measure syntactic competence since, unlike the distribution of overt and null subjects, for example, it is not dependent on the discourse–pragmatics interface nor is it taught explicitly.

IV Hypothesis

The present study builds on the notion of Bardel and Falk's (2007) 'L2 status factor' for syntactic transfer, testing between (1) the L1 transfer hypothesis, (2) the 'L2 status factor' and (3) the CEM. It compares and contrasts the status of the Null-Subject Parameter (NSP) (and, crucially, related semantically entailed properties; see Section III) at the initial state of L2 French and L2 Italian of English adult learners against knowledge of these same properties at the initial state of L3 French and L3 Italian for successful English native learners of L2 Spanish. Examining properties related to the NSP, we are able to test between these models, as well as explore the role of (psycho)typology a bit further (see Section VI) since although the L2 of the L3 groups is also a Romance language, only Italian is like Spanish and thus unlike English and French, for the properties we test.

Although the CEM predicts that an L1 can be the source of transfer if appropriate to the L3, we contend that one cannot disregard the possibility of negative transfer from the L2 (this seems to be overlooked by the CEM, or predicted not to occur). In the case a given parameter value is transferred incorrectly (i.e. when the value from the other system would have been the better, more accurate choice), it is reasonable to assume that there would be a principled reason for why this would occur. Depending on the observed trend, the L1 transfer hypothesis or the 'L2 status factor' would be able to explain such a scenario in that negative

transfer obtains either due to the fact that the L1 is privileged for all linguistic initial state hypotheses or that the L2 effectively blocks access to the L1. Crucially, they make very different predictions for performance, hence the usefulness of carefully designed experiments that serve to verify only one and effectively falsify the other(s).

Let's take the Null-Subject Parameter (see Section III) and the languages to be tested herein to make this scenario tangible. Spanish, like most Romance languages, is positively valued for the Null-Subject Parameter, while English is negatively valued for this parameter. Although French and Italian are Romance languages and are typologically much closer to Spanish in a holistic sense and thus possibly psycho-typologically⁶ more similar for the Null-Subject Parameter in both cases, only Italian shares the Spanish value of this parameter. In light of this, we are able to differentiate between hypotheses in the following manner. The L1 hypothesis predicts that English speakers of French and Italian as an L2 and L3 should transfer the English value at both initial state scenarios, corresponding to an initial performance advantage for the L2 and L3 French groups only. The 'L2 status factor' predicts uniform, yet different, performances across both sets of learners: the L2 learners have no recourse but to transfer the English value and the L3 learners are predicted to transfer Spanish, providing an initial advantage for L3 Italian learners only. Alternatively, the CEM predicts that only the L2 Italian group will show negative transfer effects since the L3 learners should be able to transfer either the English (for L3 French) or Spanish (for L3 Italian) value – depending on what is most useful – for the Null-Subject Parameter in the particular L3. In line with the 'L2 status factor' we hypothesize that both L3 groups will perform similarly, demonstrating transfer of the [+null-subject] value from Spanish, and that they will thus perform significantly differently from the L2 French and Italian groups, which serve as a type of control. Our methodology is designed to be able to corroborate the 'L2 status factor', but importantly is able to disconfirm it as well.

⁶ A reviewer suggested that psycho-typology might tell the learners that French and English are close (since they share the negative value of the NSP), and it is typology, on the other hand, that might tell the learner that L1 English is not related to L3 French, but to L2 Spanish. We do not agree as for us psycho-typology is assessed not at a parameter-to-parameter level, but based on a holistic impression of the two languages' grammatical proximity. This means that psycho-typology and actually typology most often correlate in general, but crucially not at the level of every parameter value creating the possibility of predictable negative L3 transfer, which we discuss in detail in the conclusion section.

V The study

1 Participants

We report data from five experimental groups.⁷ The L1, English, remains constant across all the groups. The L2, Spanish, also remains constant. The five groups are: L1 English, L2 French, L2 Italian, L3 French and L3 Italian. The L2 and L3 learners were tested at the initial state of acquisition, that is, during the onset of language learning after a minimum of 20 hours and a maximum of 30 hours of formal instruction/exposure in a university setting. To avoid any possible confounds of L2 language proficiency, the L3 learners were selected only if they were advanced learners of L2 Spanish, which was independently assessed with a proficiency exam that included null-subject phenomena (including the OPC). Only those learners who scored 42 out of 50 or higher (considered advanced proficiency) demonstrating clear knowledge of null subjects and related phenomena in L2 Spanish were included. By design, the L2 groups consisted only of true L2 learners, meaning the participants had no other prior adult language learning experience to avoid obvious confounds.

The L2 French and Italian groups consisted of 10 and 11 participants, the L3 French and Italian groups consisted of 9 and 10 participants and the English L1 consisted of 12, respectively. All of the participants were between the ages of 18 and 26 at the time of testing. Although these groups are relatively small – which is an unavoidable confound of the language pairings under investigation and the strict criteria we used for inclusion – they are nonetheless significant. As we will discuss, there are very few significant individual differences between members of these aggregates. That is, the group data to be presented is representative of the group's performance and not skewed by an averaging of individual differences, indicating that despite the unavoidable low numbers meaningful generalizations can be made.

2 Methodology

There are two types of experiments: a grammaticality judgment/correction task (GJCT) and a context/sentences matching OPC task. There are three

⁷ Since this study is interested in transfer primarily, the L1 English group serves as a control to get a level of how English learners perform on the types of tasks in their native language, especially the OPC task for which no other experimental studies exist. We do not provide a control of Spanish since there are several studies using very similar methodologies and testing the same properties that demonstrate exactly how native Spanish speakers perform on these tasks (see Pérez-Leroux and Glass, 1999; Rothman and Iverson, 2007), which we have kept in mind in all the claims we make. Since we were not interested in ultimate attainment comparisons, we did not test French and Italian native controls.

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language versions (English, French and Italian) of each task with two randomized adaptations of each test. The GJCT was similar across all three languages; however, the OPC task was necessarily different across the languages, which is explained in greater detail below. It is important to note that the vocabulary was controlled in the sense that every effort was made to employ target vocabulary that would be known to the participants in light of instruction that had taken place prior to the experiments and/or capitalizing on cognates with English. Also, the experiments employed English for directions and, in the OPC task, contexts/questions to help the participants with possibly unknown lexical items since they are at the initial state. Additionally, participants were encouraged to ask what words meant in case they did not know them.

Experiment 1: A grammaticality judgment/correction task: This first task is a traditional grammaticality judgment/correction task, which is to say, the participants were instructed to indicate ungrammaticality and fix the sentences if they were able to do so. Data are provided for the following types of sentences as in (9)–(12).⁸

- 9) Null expletive subjects
 - a. * Je pense que pleut.
 - b. * I think is raining.
 - c. Io credo che piova.
- 10) Overt expletive subject
 - a. Nous pensons que maintenant **il** fait chaud.
 - b. We think that **it** is hot now.
 - c. * Noi crediamo que adesso **lo** faccia caldo.
- 11) Null referential subject
 - a. * La madame dit que __ sommes très intelligents.
 - b. * The lady says that __ are very intelligent.
 - c. La signora dice che __ siamo molto intelligenti.
- 12) Overt referential subject
 - a. **Je** sais que **je** t'aime.
 - b. **I** know that **I** love you.
 - c. # **Io** so che **io** ti amo. (# = Pragmatically odd use of overt subjects)

⁸ The sentences in the actual test did not appear with bolded target items (or an indication of the null subject as in (11)). There are no glosses since the English sentence is the direct translation of the sentences in Italian and French.

- 13) Filler: Word order violations with negation
- a. * Je vais **ne pas** au musée aujourd'hui.
 - b. * I go **not** to the museum today.
 - c. * Io vado **non** al museo oggi.

There were 10 exemplars for each sentence type except for the fillers, which had 20. Sentence types (9) and (11) are ungrammatical in English and French while only sentence type (10) is ungrammatical in Italian, given its pro-drop status. The fillers were ungrammatical in all three languages and help to avoid a yes effect.

Experiment 2: Co-reference interpretation OPC task: The second task examined L2/L3 knowledge of the Overt Pronoun Constraint (OPC) (Montalbetti, 1984), a [+null-subject] associated restriction on semantic interpretation discussed in Section IV. Insofar as it derives from the positive setting of the NSP, the L2 learners have no recourse to demonstrate relevant knowledge of the OPC at the L2 initial state and are expected to perform like the English control in both French and Italian. The case of L3 French and Italian is different since their L2 Spanish is a null-subject language. Given the three transfer hypotheses under investigation, there are three possibilities for L3 initial state performance. The L1 transfer hypothesis predicts no experimental group to demonstrate sensitivity to OPC restrictions. The 'L2 status factor' predicts that the L2 Spanish value will transfer, corresponding to an accurate transfer for L3 Italian and a negative transfer for L3 French. The CEM anticipates the L3 initial state will be different for the L3 French and Italian groups, whereby either the L1 or L2 value is transferred, depending which corresponds to the actual L3 value.

Independent tests were given to the L3 learners to test their L2 Spanish during a pre-screening conducted a week prior to the empirical testing, verifying knowledge of the OPC application in Spanish. These tests were similar in structure to the Italian test reported here. All tests are based on Kanno (1998) and Rothman and Iverson (2007) tests for the OPC in L2 Japanese and Spanish, respectively. The Italian experiment consisted of four sentence types as in (14)–(17) below. Since English and French do not permit embedded null subjects, these tests consisted only of sentences types (16)–(17). The participants were asked to read the test sentences and then to circle who they believed the subject of the embedded verb was from the three choices provided (the third choice was to circle both (a) and (b) if they felt it could equally be both).

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They were instructed to give their immediate answer since both answers are technically possible, except in the OPC-restricted environment in Italian.⁹ However, notwithstanding a discourse context that favors a discourse referential interpretation, co-reference interpretations are more natural in English and French and the most natural with null-embedded subjects only in Italian. Given the nature of overt subjects in Italian (i.e. being used for emphasis and switch-reference), we added additional context to the Italian sentences with overt-embedded subjects (in bold) to ensure they could felicitously derive a co-reference interpretation unless otherwise grammatically restricted.

- 14) Null-embedded pronoun with quantified/*wh*-matrix subject

¿ Chi non sa che Ø può dormire tardi questi giorni?

Who do you suppose does not know he can sleep later these days?

- a) the same as *Chi*; b) someone else

- 15) Null-embedded pronoun with DP matrix subject

Giovanni ci ha detto che ___ se ne andrebbe e non ritornerebbe mai.

Who do you think left to never return again?

- a) Giovanni; b) someone else who is not Giovanni

- 16) Overt-embedded pronoun with a DP matrix subject

Anne a insisté qu'elle savait exactement ce qu'elle faisait.

Chi l'ha insistito? *Anna* ha insistito che lei sapeva esattamente quello che faceva.

Anne insisted that she knew exactly what she was doing.

Who do you think insisted that she knew exactly what she was doing?

- a) *Anne*; b) someone else

- 17) Overt-embedded pronoun with quantified DP/*wh*-matrix subject

Qui pense qu'il devrait payer les repas de tout le monde à la table?

Giovanni ha molti soldi ma i suoi amici sono poveri ma hanno orgoglio (pride). *Chi* pensa che lui dovrebbe pagare la cena per tutti alla tavola?

Who thinks that he should pay for everyone's meal at the table?

Who do you suppose thinks he should pay for everyone at the table?

- a) the same person as *Qui, Chi, Who*; b) someone else

In sentence types (14) and (15), both co-reference and disjoint referential interpretations are possible in Italian (and like Spanish co-reference interpretations, are preferred), while sentences with embedded null subjects are simply ungrammatical in English and French. In sentence

⁹ Despite the availability of the 'both option', this was almost never chosen, most likely because participants were instructed to indicate their immediate interpretation.

type (16), both interpretations are also available in Italian as well as in English and French; however, in Italian without extra context, the tendency would be to interpret the embedded overt subject as disjoint since the presence of the overt subject pronoun is most naturally interpreted with contrastive focus or emphasis. In sentence type (17), both interpretations are only available in English and French; a bound variable interpretation is excluded via the OPC.

VI Results

In this section, we present the empirical results of the study. The section is divided into two sub-parts, each one corresponding to one of the two experiments. The statistical analysis was conducted in the following manner. We followed Fisher's Least Significant Difference method, in which an initial ANOVA is performed to scan for differences between all groups. In the case that the ANOVA indicated the need for follow-up tests, we then ran two-sample *t*-tests between groups. Such a methodology avoids a type 1 error that can occur when repeated *t*-tests are run unnecessarily. When making intragroup comparisons, a paired *t*-test was used.

1 Experiment 1

Experiment 1, the Grammaticality Judgment/Correction Task (GJCT), tested for knowledge of the (un)grammaticality of null and overt subjects (expletive and referential). We report data from the test sentences with four types of subjects ($n = 10$): (1) null expletive subjects, (2) overt expletive subjects, (3) overt referential subjects and (4) null referential subjects. In the French and English versions, sentence types 1 and 4 should be judged as ungrammatical and corrected. Conversely, in the Italian version only sentence type 2 should be judged ungrammatical and corrected. Given space limitations, we will not report the filler data or correction type.¹⁰ Recall that filler sentences are saliently ungrammatical in all three languages; not surprisingly, no one had difficulty in identifying and correcting them.

¹⁰ Space does not permit an in-depth examination of correction type. However, it is crucial to disclose that when corrections were given they always indicated the learner was correcting the syntax under investigation (or not counted as such). Nevertheless, not all corrections were perfectly correct. For example, some corrections in L2 French/Italian of the null-subject sentences indicated (possible) morphological problems with gender and/or Case although, crucially, to count something was always inserted in the subject position indicating the impossibility of null subjects in their interlanguage.

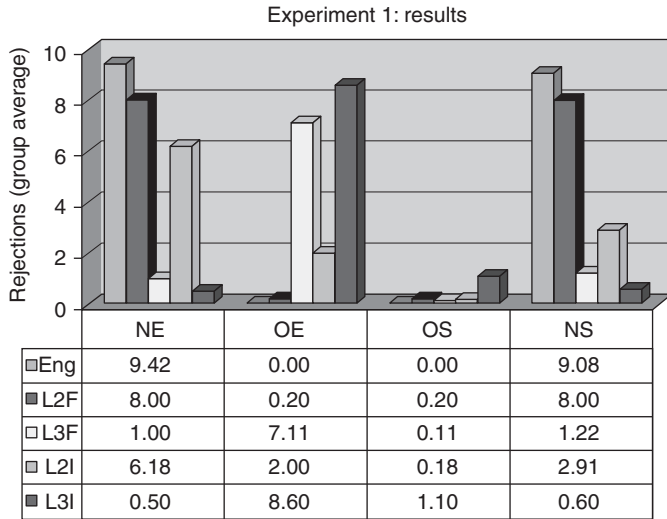


Figure 1 Null and overt referential/expletive subject grammaticality judgement task
Notes: NE=null expletive subject; OE=overt expletive subject; OS=overt referential subject; NS=null referential subject.

Figure 1 shows the average number of rejections/corrections for each type of subject sentence. As can be seen, the English group and L2 French group consistently rejected null expletives and null referential subjects and accepted overt expletives and overt referential subjects. Both L3 groups, however, consistently accepted null expletive subjects, overt referential subjects and null referential subjects and rejected overt expletives. That is to say, there was no difference depending on the L3, the significance of which we discuss in detail later. The L2 Italian group rejected null expletives about 60% of the time and accepted overt expletives, overt referential subjects and null referential subjects.

The first statistical analysis done compared the average number of rejections by each group across a given category. Looking at performance on sentences with null expletives, an ANOVA revealed that there were differences between the groups. The L2 French group's performance was statistically significantly different from that of both the L3 French group and that of the L2 and L3 Italian groups. There was also a statistical difference between the performances of the L2 Italian and L3 Italian groups. Comparing the L3 groups to each other yielded no significant differences. When examining sentences with null expletives and making these same comparisons, only the English and L2 French

groups performed similarly; all other comparisons yielded statistically significant differences. Turning now to the sentences with overt/null referential subjects, the ANOVA revealed that there were significant differences with respect to rejection of overt referential subjects. Follow-up tests showed these differences were found when comparing the L3 Italian group to the English control group, the L2 Italian group or the L3 French group. For sentences with null referential subjects, significant differences were found when comparing any two groups, except for a comparison of the L3 groups to each other (i.e. L3 French to L3 Italian). The statistical results for the single-category intergroup comparisons are summarized in Tables 1a and 1b.

The second set of statistical analyses was intragroup comparisons, used to see if each group made a distinction between counter-balanced categories, distinguishing between null expletives and overt expletives and between overt referential subjects and null referential subjects. As seen in Table 2, the L3 Italian group did not significantly differentiate in rejecting sentences with overt referential subjects and those with null

Table 1a Single-category intergroup comparisons (compared to English control)

	NE			OE			OS			NS		
	<i>t</i>	<i>p</i>	<i>df</i>	<i>t</i>	<i>P</i>	<i>df</i>	<i>t</i>	<i>p</i>	<i>df</i>	<i>t</i>	<i>p</i>	<i>df</i>
ANOVA	216	< 0.001	51	249.87	< 0.001	51	8.58	< 0.001	51	202.43	< 0.001	51
L2F	4.39	< 0.001	17	1.50	0.168	17	1.5	0.168	17	3.14	0.005	19
L3F	24.2	< 0.001	14	18.29	< 0.001	14	1.00	0.347	14	19.82	< 0.001	15
L2I	7.64	< 0.001	14	6.06	< 0.001	14	1.49	0.167	14	14.99	< 0.001	17
L3I	30.2	< 0.001	18	32.25	< 0.001	18	3.97	0.003	18	26.66	< 0.001	19

Notes: NE=null expletive subject; OE=overt expletive subject; OS=overt referential subject; NS=null referential subject.

Table 1b Other single-category intergroup comparisons

	NE			OE			OS			NS		
	<i>t</i>	<i>p</i>	<i>df</i>	<i>t</i>	<i>p</i>	<i>df</i>	<i>t</i>	<i>p</i>	<i>df</i>	<i>t</i>	<i>p</i>	<i>df</i>
L2F vs. L3F	18.1	< 0.001	16	16.8	< 0.001	9	0.51	0.616	16	16.4	< 0.001	15
L2I vs. L3I	13.0	< 0.001	16	15.6	< 0.001	18	3.03	0.010	12	5.66	< 0.001	16
L2F vs. L2I	3.98	0.001	17	5.05	< 0.001	13	0.10	0.921	18	11.9	< 0.001	18
L3F vs. L3I	1.37	0.191	15	3.16	0.007	14	3.31	0.007	11	1.59	0.135	14

Notes: NE=null expletive subject; OE=overt expletive subject; OS=overt referential subject; NS=null referential subject.

Table 2 Intragroup comparisons

	NE vs. OE		OS vs. NS	
	<i>t</i>	<i>p</i>	<i>t</i>	<i>P</i>
English	48.79	< 0.001	39.68	< 0.001
L2F	31.27	< 0.001	31.27	< 0.001
L3F	15.71	< 0.001	2.86	0.021
L2I	7.35	< 0.001	7.11	< 0.001
L3I	29.25	< 0.001	1.86	0.096

referential subjects. All other comparisons were statistically significant, although it should be noted that the difference for the L3 French group was quite low and much less polarized than the differences yielded by the L2 French, L2 Italian and L1 English control groups.

A third statistical analysis was performed to see if the distinctions seen in Table 2 were comparable across groups. That is to say, the data was analysed to see if the difference made by the English control group in rejecting null expletives and overt expletives was statistically distinct from that of the L2 French group, and so on. This was done by analysing the group averages of the numerical difference between the two categories compared (e.g. NE–OE). As seen in Tables 3a and 3b, the distinctions made by each group between null expletives and overt expletives and between null referential subjects and overt referential subjects were statistically significantly different from those of every other group. In other words, it is not the case that any group made entirely similar distinctions between null and overt subjects. One must note, however, that this significance is much less polarized between the two L3 groups although, crucially, it is extremely polarized between the L2 French and L3 French groups.

The patterns found across all of the comparisons in Experiment 1 are revealing and significant. Not surprisingly, the French L2 group performed quite similarly to the L1 English group across all categories. This was to be expected since the L2 French group would have had no exposure to input with null subjects, neither referential nor expletive. Somewhat surprising is the fact that the L2 Italian learners performed like they have some knowledge that Italian licenses null referential subjects, which at first glance could be an indication that they have already reset the NSP. However, at the same time they overwhelmingly accepted ungrammatical overt expletive subjects and rejected the grammatical

Table 3a Intergroup comparisons (compared to English control)

	NE-OE			OS-NS		
	<i>t</i>	<i>p</i>	<i>df</i>	<i>t</i>	<i>p</i>	<i>df</i>
ANOVA	488.97	< 0.001	51	190.23	< 0.001	51
L2F	5.13	< 0.001	17	3.79	0.001	19
L3F	35.77	< 0.001	11	17.67	< 0.001	13
L2I	8.71	< 0.001	12	14.23	< 0.001	16
L3I	51.9	< 0.001	16	27.15	< 0.001	18

Table 3b Other intergroup comparisons

	NE-OE			OS-NS		
	<i>t</i>	<i>p</i>	<i>df</i>	<i>t</i>	<i>p</i>	<i>df</i>
L2F vs. L3F	30.11	< 0.001	13	14.48	< 0.001	13
L2I vs. L3I	19.40	< 0.001	14	6.89	< 0.001	17
L2F vs. L2I	5.82	< 0.001	13	11.09	< 0.001	16
L3F vs. L3I	4.17	0.001	14	3.41	0.004	14

null expletives at a rate of 60%, which is not consistent with a pro-drop grammar like Italian. While this pattern provides contradictory evidence with respect to the status of the NSP in their Italian interlanguage, it seems unlikely that they would have reset the NSP so quickly, but not *a priori* impossible. Nevertheless, one must keep in mind that L2 learners are explicitly taught that referential subjects can be and more often are null in Italian. And so, their performance with null referential subjects, which is a passive acceptance of them, could reflect such explicit knowledge. Their performance on the more challenging OPC task could serve to clear up these issues.

Interestingly, there are few differences across categories between the two L3 groups, and when they arise they are much less polarized than other intergroup comparisons, for example, between L2 French and L3 French. Thus, they both perform in line with a null-subject grammar, despite the fact that French, unlike Italian, is not a pro-drop language. Such performances seem to suggest that the CEM is not the best explanation of these empirical facts, since it predicts that the two L3 groups would perform significantly differently, accessing different sources of transfer (either the L1 English or L2 Spanish, depending on which value is more economical, in the sense of matching the L3 input at their disposal). Furthermore, since the L3 groups perform differently

from the L1 English control and the L2 groups, suggesting the critical variable to explain this difference is the L2 Spanish grammar, the L1 does not appear to be an inevitable source of all subsequent language acquisition transfer. Such data provides robust evidence against the L1 transfer hypothesis. With respect to the ‘L2 status factor’ as an explanation, most revealing is the fact that the L2 French and the L3 French groups performed remarkably differently from one another while the L3 French and L3 Italian groups performed quite similarly to one another. These patterns suggest that the null-subject setting of L2 Spanish is a deterministic variable in the domain of L3 morphosyntax. However, it would be premature to make such strong claims based solely on a GJCT. Experiment 2 serves to strengthen the results from Experiment 1.

2 *Experiment 2*

Experiment 2 was a sentence-context match task testing for the NSP-associated Overt Pronoun Constraint (OPC) restriction on bound variable (BV) interpretations in relevant sentences. The average number of co-reference interpretations for four different sentence types (where applicable; obviously null-embedded subject sentences did not form part of the English and French versions) is seen in Figure 2:

- 1) quantified determiner phrase or *wh*-phrase (QDP) matrix subject with an overt-embedded subject;
- 2) QDP matrix subject with a null-embedded subject;
- 3) determiner phrase (DP) matrix subject with an overt-embedded subject; and
- 4) DP matrix subject with a null-embedded subject.

In Figure 2, it is seen that both L2 groups as well as the L1 English control group consistently yielded co-reference interpretations in contexts with a QDP matrix subject. For L2 Italian, this was true whether or not the embedded subject was overt or null. Conversely, both L3 groups do not yield co-reference interpretations in the same context. That is to say, the L3 Italian learners demonstrated a co-reference interpretation distribution in line with the OPC as did the L3 French learners, avoiding co-reference interpretations in QDP/*wh*-sentences. In contexts with a DP matrix subject with an overt-embedded subject, all five groups consistently yielded co-reference interpretations. Turning to contexts in which the embedded subjects were null, which is only relevant for

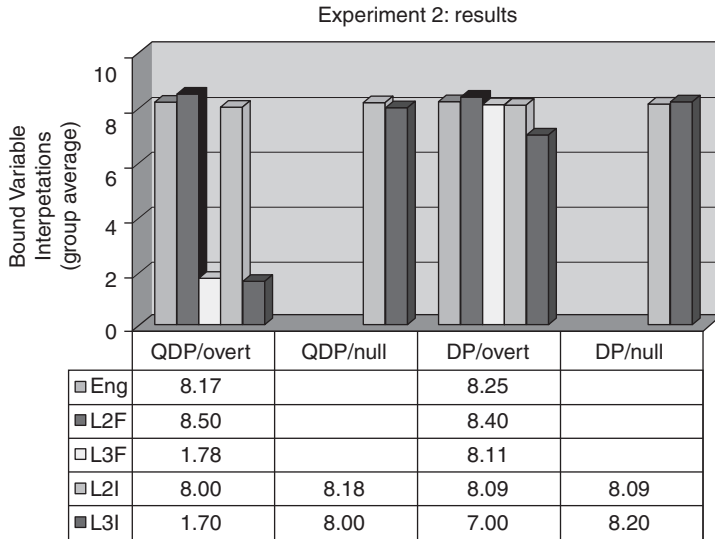


Figure 2 Results OPC context–sentence match experiment

Notes: QDP/overt=Quantified DP or *wh*-matrix subject with an overt-embedded subject; QDP null=Quantified DP or *wh*-matrix subject with a null-embedded subject; DP/overt=DP or *wh*-matrix subject with an overt-embedded subject; QDP/null=Quantified DP or *wh*-matrix subject with an overt-embedded subject.

the L2 and L3 Italian tasks, both the L2 and L3 groups reliably yielded co-reference interpretations with both QDP and DP matrix subjects.

The first comparison that was made analysed the frequency of co-reference interpretations across all groups when the matrix subject was a QDP and the embedded subject was overt. The ANOVA revealed that significant differences existed between the five groups, so follow-up tests were conducted. Statistically significant differences were found when comparing each L3 group to the English control group as well as when comparing both L2 groups to their respective L3 groups.

The second comparison examined the frequency of co-reference interpretations across all groups within the context of a DP matrix subject and an embedded overt subject. Because the ANOVA showed that significant differences existed, follow-up tests were performed. When comparing the L3 Italian group to the English control group, the L2 Italian group or the L3 French group, statistically significant differences were found.

Because English and French are not null-subject languages, the only necessary comparisons in regards to null-embedded subjects were between

the L2 Italian and L3 Italian groups, and no significant differences were found between these two groups. This is true with both QDP and DP matrix subjects. The results from the single-category intergroup comparisons are summarized in Tables 4a and 4b.

The groups were also compared amongst themselves to see if they made distinctions between categories. When comparing co-reference interpretations with the QDP matrix subjects with an overt-embedded subject to those with DP matrix subjects with an overt-embedded subject, only within both L3 groups were there statistically significant differences. That is to say, these groups made a distinction between QDP matrix subjects and DP matrix subjects when the embedded subject was overt. Statistically significant differences were found only with the L3 Italian group when comparing the QDP matrix subject with an overt-embedded subject to the QDP matrix subject with a null-embedded subject, as well as when comparing the DP matrix subject with an overt-embedded subject to the DP matrix subject with a null-embedded subject. This information is shown in Table 5.

To determine if the distinctions made by each group between two categories were similar, an additional statistical analysis was carried out by comparing the numerical difference that one group yielded between

Table 4a Single-category intergroup comparisons (compared to English control)

	QDP/overt			QDP/null			DP/overt			DP/null		
	<i>t</i>	<i>p</i>	<i>df</i>	<i>t</i>	<i>p</i>	<i>df</i>	<i>t</i>	<i>p</i>	<i>df</i>	<i>t</i>	<i>p</i>	<i>df</i>
ANOVA	187	< 0.001	51				4.27	0.005	51			
L2F	0.92	0.367	19				0.4	0.695	16			
L3F	19.5	< 0.001	18				0.34	0.742	13			
L2I	0.43	0.671	19				0.52	0.606	20			
L3I	20.1	< 0.001	19				3.7	0.002	18			

Table 4b Other intergroup comparisons

	QDP/overt			QDP/null			DP/overt			DP/null		
	<i>t</i>	<i>p</i>	<i>df</i>	<i>t</i>	<i>p</i>	<i>df</i>	<i>t</i>	<i>p</i>	<i>df</i>	<i>t</i>	<i>p</i>	<i>df</i>
L2F vs. L3F	19.3	< 0.001	16				0.62	0.54	16			
L2I vs. L3I	17.1	< 0.001	17	0.53	0.6	18	3.27	0.005	17	0.33	0.74	18
L2F vs. L2I	1.24	0.232	18				0.83	0.418	16			
L3F vs. L3I	0.25	0.81	16				2.55	0.022	15			

Table 5 Intragroup comparisons

	Q/O vs. Q/N		Q/O vs. D/O		D/O vs. D/N	
	<i>t</i>	<i>p</i>	<i>t</i>	<i>p</i>	<i>t</i>	<i>p</i>
English			0.23	0.82		
L2F			0.43	0.678		
L3F			13.44	< 0.001		
L2I	0.48	0.64	0.29	0.779	0.00	1.00
L3I	29.52	< 0.001	20.36	< 0.001	3.34	0.009

Notes: Q=QDP; D=DP; O=Overt; N=Null.

each of the sentence sets in Table 2 to the same numerical difference in another group. For example, we compared the numerical difference the English control group yielded between QDP/overt and DP/overt sentences with the numerical difference between the same two sentence types yielded by the L2 French and L2 Italian groups. These comparisons yielded no statistically significant differences between the English group and the L2 groups, which is to say that each group makes similar distinctions between the relevant sentence types. However, when comparing both L3 groups to the English control, there was a statistically significant difference.

Similar comparisons were conducted between the L2 and L3 groups. When testing the distinction learners made between QDP matrix subjects and DP matrix subjects with overt-embedded subjects, there were significant differences only when comparing an L2 group to an L3 group with the same language (e.g. L2 French to L3 French). This is to say that the L2 groups performed similarly to each other and that the L3 groups performed similarly to each other, but that the L3 and L2 groups performed distinctly.

The distinctions made between QDP matrix subjects with either an overt or null-embedded subject, as well as the distinctions made between DP matrix subjects with either an overt or null-embedded subject were compared among the Italian-speaking groups. For both contexts, a statistically significant difference was found between the L2 Italian group and the L3 Italian group; that is to say, the distinction the L2 Italian group made between overt and null-embedded subjects in sentences with QDP matrix subjects was different from that of the L3 Italian group. This is also true of the distinction made between sentences with overt and null-embedded subjects with DP matrix subjects. All of this is summarized in Tables 6a and 6b.

Table 6a Compared to English control: Q/O–D/O

	<i>t</i>	<i>p</i>	<i>df</i>
ANOVA	86.85	< 0.001	51
L2F	0.43	0.673	18
L3F	10.56	< 0.001	16
L2I	0.02	0.987	20
L3I	11.79	< 0.001	19

Notes: Q=QDP; D=DP; O=Overt; N=Null.

Table 6b Other intergroup comparisons

	Q/O–Q/N			Q/O–D/O			D/O–D/N		
	<i>t</i>	<i>p</i>	<i>df</i>	<i>t</i>	<i>p</i>	<i>df</i>	<i>t</i>	<i>p</i>	<i>df</i>
L2F vs. L3F				12.23	< 0.001	11			
L2I vs. L3I	14.12	< 0.001	15	12.75	< 0.001	17	2.95	0.011	13
L2F vs. L2I				0.49	0.632	17			
L3F vs. L3I				1.92	0.079	16			

Notes: Q=QDP; D=DP; O=Overt; N=Null.

The results of Experiment 2 correlate with the data presented for Experiment 1, strengthening the conclusions offered. Summarizing the important patterns observed, it was revealed that both L2 groups performed in accord with a non-pro-drop grammar, which is to say that the OPC did not restrict or even remotely disfavor bound variable interpretations between QDP/*wh*-matrix subjects and embedded overt subjects at the initial state in either L2 French, where it does not apply, or L2 Italian, where it does. This is not an unanticipated finding insofar as English learners of any L2 have only their L1 parameter values to transfer (in this case the negative or non-null-subject value of the NSP). This finding for L2 Italian suggests that despite their good performance on accepting null referential subjects in Experiment 1, they have not reset the NSP insofar as a null-subject grammar in which the OPC does not apply accordingly is simply an unnatural grammar. Since adult learners are instructed explicitly on null subjects, we take the position that the unexpected result in Experiment 1 might have its roots in some type of domain-general learning of a pedagogical rule that is variably applied during the formal task of the Experiment 1 type. Crucially, none of the L2 Italian individuals performed much above chance for Experiment 1,

nor did any demonstrate knowledge of the OPC in Experiment 2. Since only L2 Italian learners receive instruction on the possibility of null subjects and input that demonstrates it, this fact reasonably explains the difference between the L2 groups in Experiment 1 and why they perform so similarly in Experiment 2.

Importantly, we found that both L3 groups performed as if the OPC were restricting co-reference interpretations in relevant sentences. In this respect, the L3 Italian group performed exactly how target-language native speakers would perform and the data was in line with what we know to be true of native Spanish speakers and successful L2 learners of Spanish as well (Montalbetti, 1984; Pérez-Leroux and Glass, 1999; Rothman and Iverson, 2007). This is also true of the L3 French group, unlike the L1 English control and the L2 French group. The variable that differentiates the L2 French from the L3 French group is the same variable of commonality between the L3 French and L3 Italian groups: having or not having previous experience with a null-subject grammar. The evidence provided by the Experiment 2 thus disconfirms the L1 transfer hypothesis and is unexpected by a strict interpretation of the Cumulative Enhancement Model. However, it is supportive of the ‘L2 status factor’.

VII Conclusions

It seems clear that the markedly different patterns between the L2 and L3 groups in both experiments can be explained by the fact that the L3 groups were successful learners of Spanish, while the L2 groups had no other recourse but English for transfer. In fact, since we are looking at initial state knowledge, there is no other logical explanation for the present data. While L1 transfer explains the L2 performances, it is unable to explain the L3 patterns, especially in comparison to the matched L2 group performances. Alternatively, the ‘L2 status factor’ for morphosyntax anticipates and adequately explains the present findings. Nevertheless, throughout we have alluded to another possibility that could explain the present data: one that would be consistent with a modified version of the CEM. We are unable to adopt this position here since our data are insufficient to determine between this possibility and the ‘L2 status factor’, with which, alternatively, our data are fully consistent. With an eye towards future research that can differentiate between the ‘L2 status factor’ and this alternative, we discuss it here as a limitation of the current methodology.

It is possible that psycho-typology (in the sense of Kellerman 1983; 1986) or even actual typology is at play and delimits morphosyntactic transfer in multilingualism. Psycho-typology is defined here as a learner's perception of relative similarity between any two languages, which might or might not coincide with actual typology, the legitimate structural similarity between the two languages. This possibility would mean both the L1 and the L2 are available for transfer, in line with the CEM, but that morphosyntactic properties are transferred correctly and also erroneously (i.e. if a psycho-typologically similar language provides the incorrect L3 value, as is the case between Spanish and French herein) based on actual or perceived typological proximity between the L3 and either the L1 or L2. If this were the case, it is likely this would result in the patterns we found, since Spanish is overall more typologically similar to Italian and French than English. In light of the language pairings we have, however, we cannot differentiate *a posteriori* between the 'L2 status factor' and this psycho-typological version of the CEM.

To meaningfully do so, one would need to test for possible psycho-typology effects in triads like:

- 18) a. L1 English → L2 Spanish → L3 Italian
 b. L1 Spanish → L2 English → L3 Italian
 c. L1 English → L2 Chinese → L3 French
 d. L1 Spanish → L2 German → L3 French

If psycho-typology is really involved in the transfer of null subjects, we would expect transfer from L2 Spanish to L3 Italian in (18a), L1 Spanish to L3 Italian in (18b), L1 English to L3 French in (18c) and L1 Spanish transfer to L3 French in (18d). In case (18c) the learners' treatment of L3 French should be different from the treatment of L3 French in the current study because Chinese is not overall (psycho)-typologically related to French (although it is a null-subject language). L1 transfer should also obtain for (18d) since Spanish is psycho-typologically closer to French than German, even though – as in the relationship between English and French in the present study – German's value for the Null-Subject Parameter corresponds to that of French. If the 'L2 status factor' were the sole determinant of multilingual transfer, then the L2 value would always be transferred, having positive effects at the initial states of (18a) and (18d) and negative effects at (18b) and (18c).

Both L2 status and typological proximity are apparently real possibilities. Moreover, there seems to be no *a priori* reason indicating that

they cannot interact or conceivably come together to support each other (this is particularly a possibility given the present pairings of languages). Although it could prove difficult to find the multilingual language pairings we detail above, it is not impossible, and research with such a design can provide definitive evidence to choose between the ‘L2 status factor’ and typological variables that determine multilingual transfer or, alternatively, demonstrate how both are ultimately at play. At present, based on the data from the current study, we can only definitively conclude that the L1 transfer hypothesis for multilingualism is incorrect and question the tenability of several aspects of the CEM.

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