THE COMPOUNDING PARAMETER IN SECOND LANGUAGE ACQUISITION

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This article presents an experimental study investigating the compounding parameter in the L2 Spanish interlanguage of English and French NSs in light of the Subset Principle and its predictions for the process of L2 development. The compounding parameter (Snyder, 1995, 2001) argues that languages permit complex predicate constructions like verb particles, resultatives, and double objects if and only if they can productively form N-N compounds. English exhibits the plus value of the parameter, allowing N-N compounds and the related constructions, whereas in Spanish and French these compounds and constructions are ungrammatical. Because English also allows periphrastic constructions of the same meaning, which are the only option in French and Spanish, English represents the superset parameter value to the Spanish and French subset value. At issue is whether L2 learners are able to acquire the subset value of the compounding parameter based on the naturalistic input they receive. In this case, the learning task involves realizing that some L1 constructions are unavailable in the L2. Results indicate that the learners initially transfer the L1 (superset) value and do not start with the subset value of the parameter. Findings also inform the debate on whether negative evidence can engage UG-related acquisition. Ten of the 26 advanced subjects were able to successfully reset the whole parameter based on negative data for only two of the four constructions in the cluster. This fact suggests that it is not impossible for negative evidence to be utilized in grammar reorganization.

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Within the generative approach to language acquisition (Borer & Wexler, 1987; Hyams, 1986; Pinker, 1984), it is generally accepted that there are three components, each necessary for attaining a steady-state grammatical system: Universal Grammar (UG), meaningful input, and learning principles. The latter are needed to ensure that native language acquisition can proceed and be successful, based entirely on positive evidence—the primary linguistic data to which the learner is exposed. The unavailability of negative evidence (i.e., explicit information as to what is ungrammatical in a language) in child language (L1) development has been well documented (Braine, 1971; Brown & Hanlon, 1970). Researchers have argued that negative evidence can and should be eliminated from the process of language acquisition (Crain & Thornton, 1998; Pinker, 1984, 1989; White, 1989b). Universal Grammar provides a blueprint of possible parameter settings in language, and learning principles ensure that learners are maximally conservative in the sense of Baker (1979); that is, they do not hypothesize parameter settings that they could not retract based on positive evidence alone. Examples of such learning principles are the Uniqueness Principle (Berwick, 1985; Pinker, 1984; Wexler, 1981), which states that any semantic unit will have only one morphosyntactic realization, and the Subset Principle (Berwick; Wexler & Manzini, 1987; Manzini & Wexler, 1987), which hypothesizes that learners will start with the maximally restrictive subset grammar.

Let me first illustrate how the Subset Principle (SP) works in L1 acquisition in terms of properties of the sets of sentences associated with a parameter. The principle is only applicable when two parameter values generate two grammatical systems in a subset-superset relationship. That is, one value generates a set A of possible sentences, whereas the other generates these same sentences in set A and others for a superset B. For example, the *pro*-drop parameter—presumably part of UG—supplies the child with two possible values: Sentences can surface only if they have an overt subject (the value generating the proper subset A), or they can optionally surface without an overt subject (the value generating superset B).[1] A child acquiring this parameter should initially hypothesize that she is learning a subset grammar because she can safely retract this hypothesis should it happen to be the wrong hypothesis based on evidence of subjectless sentences in the input. If she had wrongly started with the superset grammar, however, and hypothesized that both types of sentences were part of her grammar, although the input contained only sentences with subjects, it would be impossible to learn that subjectless sentences are ungrammatical (provided that absence of evidence is not considered evidence of absence). Thus, the SP would ensure that "the learner selects the grammar that generates the smallest possible language that is compatible with the data" (Manzini & Wexler, 1987, p. 425).

Research investigating the role of UG in L2 acquisition has looked at whether the SP is available to L2 learners (Finer, 1991; Finer & Broselow, 1986; Hirakawa, 1990; Thomas, 1991; White, 1989a; Zobl, 1988). White (1989b) summarized the findings of this research and concluded that

the Subset Principle does not operate effectively in second language acqui-
sition, that the learners do not start out with the most restricted parame-
ter setting compatible with the L2 data but adopt settings with overgeneral
consequences, in some cases based on the L1. (p. 164)

More recent work has questioned whether the conditions for engaging the
SP have been met in the various studies that deny SP availability in L2 acquisi-
tion. For example, Berent (1994) argued that there are design and methodolog-
ical problems with some of the previously mentioned studies, so that the L2
data offered as evidence for the unavailability of the SP do not accurately rep-
resent the knowledge under investigation. Going even further, Hermon (1992)
and MacLaughlin (1995) argued that the SP is untestable because there are no
parameters in current theory that present a subset-superset problem. Mac-
Laughlin discussed the Case Adjacency parameter, the *pro*-drop parameter,
the Bounding Node parameter, and the Governing Category parameter, con-
cluding in each case that either the parameters are empirically inadequate or
that the phenomena themselves do not involve subset-superset relations.[2]

However, the SP is not without its supporters. Berent (1994) and Berent,
Samar, Gass, and Plough (1994) argued that the principle is indeed operative
in adult L2 acquisition. Berent tested its operation on the basis of the Relative
Clause parameter, a reworking of Keenan and Comrie's (1977) Noun Phrase
Accessibility Hierarchy in parametric terms. Ayoun (1996) investigated the L2
acquisition of the Oblique Case parameter (Kayne, 1984), subsuming preposi-
tion stranding, Exceptional Case Marking (ECM), the double-object dative al-
ternation, and dative passives. She found that English learners of French had
successfully acquired two of the properties (preposition stranding and ECM)
but not the other two (dative alternation and dative passives) and concluded
that the SP is at least partially operative in their interlanguage grammars (p.
204).[3]

To summarize, there are currently three different positions regarding the
operation of the SP:

1. The SP is not operative in adult L2 acquisition (Finer, 1991; Finer & Broselow, 1986;
   Hirakawa, 1990; Thomas, 1991; White, 1989a; Zobl, 1988).
2. The SP is untestable because no existing parameter values truly exhibit the subset-
   superset relationship (Hermon, 1992; MacLaughlin, 1995).
3. The SP is operative in adult L2 acquisition (Berent, 1994; Berent et al., 1994).

Clearly, the SP debate is far from over. The radically different views existing
in the literature suggest that the evidence is conflicting and inconclusive at
best. The question of whether the SP is operative in L2 acquisition is still
awaiting a conclusive answer, and further research involving different parame-
ters is indeed warranted.

One more reason to return to the SP is the fact that, combined with L1
transfer, it yields interesting and testable predictions concerning the long-
standing debate on the usefulness of negative evidence in the process of L2

acquisition (Krashen, 1981, 1982, 1985; Long, 1983, 1988, 1991; Pienemann, 1985, 1988; Schwartz, 1986, 1988, 1993; Schwartz & Gubala-Ryzak, 1992; Sharwood Smith, 1993; Spada & Lightbown, 1993; Trahey & White, 1993; VanPatten & Cadierno, 1993; White 1989a, 1989b, 1990, 1991a, 1991b, 1992; White, Spada, Lightbown, & Ranta, 1991). The existing views can broadly be divided into two positions. One position suggests that form-focused instruction and corrective feedback (i.e., negative and explicit positive evidence) lead only to temporary and superficial changes in the learners' performance. This is so because underlying, systematic changes in interlanguage competence can only be achieved on the basis of positive linguistic data (Krashen). Schwartz (1986, 1993), following Fodor's (1983) theory of mind, proposed to explain this claim by evoking the mechanism of information encapsulation between the different modules of human cognition. In the language module, information that is not part of the module is unavailable for its computational operation. In other words, form-focused language instruction and corrective feedback lie outside of the language module and cannot be utilized by the language learner in building her linguistic competence. Schwartz (1993) contrasted underlying linguistic competence (giving rise to linguistic performance) with learned linguistic knowledge, capable of outputting learned linguistic behavior, and argued that negative evidence and explicit positive evidence can only affect the latter type of knowledge but never linguistic competence. I call this position the No Negative Evidence position.

On the other hand, the multitude of positions representing the other side in this debate are unified very loosely around the claim that the conscious, metalinguistic type of knowledge provided by negative data may in fact play a role in the building of linguistic competence (Long, 1983, 1988, 1991; Pienemann, 1985, 1988; Pienemann & Johnston, 1987; Rutherford & Sharwood Smith, 1985; Sharwood Smith, 1981, 1991, 1993; White, 1987, 1990, 1992). The very different views of these researchers share a basic premise that can tentatively be termed the Negative Evidence position.

To my knowledge, White's adverb studies and their follow-ups (Trahey, 1996; Trahey & White, 1993; White, 1991a, 1991b), investigating the acquisition of the verb movement parameter in the interlanguage grammar of adolescent Francophone learners of English, are the only studies that have experimentally tested the No Negative Evidence position in the operation of a UG parameter.[4] Their results indicated that both explicit negative evidence and exposure to a flood of primary linguistic data, although effecting some changes in the participants' linguistic behavior, did not cause them to learn how to use adverbs in a targetlike manner in English. Although the correct English adverb placement (subject-adverb-verb-object) was acquired, the ungrammatical, French-like adverb placement (subject-verb-adverb-object) was not preempted (Trahey & White). White (1992) conceded that the negative evidence supplied to the learners probably did not engage UG at all and concluded that "this remains an empirical (not just a conceptual) issue" (p. 136). The present study is an attempt to revive and continue this debate with new

data from another parameter that arguably does not allow UG to interact successfully with primary linguistic data.
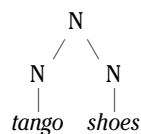
The No Negative Evidence position would predict that, in the case of the L1 exhibiting a superset value and the L2 a subset value of some parameter, learners who transfer the superset value would not be able to retract their incorrect analysis of the data because neither positive nor negative linguistic data would be available to them. Thus, their interlanguage grammar would fossilize at the nontargetlike, L1 value (Schwartz, 1993; Schwartz & Gubala-Ryzak, 1992). Any evidence of grammar restructuring in the form of parameter resetting would mitigate against this position. It is precisely this prediction, together with the SP, that the present article attempts to test experimentally.

The study was designed to test the preemption of a certain cluster of constructions (N-N compounds, double objects, verb particles, and resultatives), unified by an underlying parameter value, on the basis of positive evidence only. However, in the course of the experiment it was discovered that some negative evidence was indeed available to the learners in the form of explanation and drills on two of the four constructions under investigation. This fact appears to play a decisive role in the participants' accuracy on the constructions by breaking the cluster into two: those constructions that received explicit, form-based instruction in the classroom (N-N compounds and double objects) and those that did not (verb particles and resultatives). To anticipate the coming discussion, learners were significantly more accurate on the constructions for which they received explicit negative evidence than on the constructions that were not taught. This finding would support the No Negative Evidence position, as most learners fail to reset the parameter value on the basis of negative evidence for part of the cluster, and they seem to demonstrate learned linguistic behavior only. However, a number of learners were able to reset the parameter or demonstrated knowledge of the whole cluster on the basis of negative evidence for only two of the constructions. This suggests that the No Negative Evidence position is too strong and in need of reconsideration. In the following sections, I discuss the parameter under investigation and the L1 and the L2 acquisition of the purported cluster.

COMPOUNDS IN ENGLISH AND SPANISH AND THE COMPOUNDING PARAMETER

The structure of an English compound like *tango shoes* is widely accepted to be of the type shown in (1) (Andersen, 1992, p. 297; Chomsky & Halle, 1968, p. 16; Lieber, 1992, p. 54).[5]

(1)

$$
\begin{array}{ccc}
 & \text{N} & \\
 & \diagup \ \diagdown & \\
\text{N} & & \text{N} \\
| & & | \\
\textit{tango} & & \textit{shoes}
\end{array}
$$

Andersen and Lieber agreed that the English compound is formed in the syntax by the modifying noun left-adjoining to the head noun. Left-adjunction is an operation typically used in the syntax for the organization of phrases. Importantly, the whole adjunction structure is still of the category N, and the compound enters syntactic composition just as any other mono- or polymorphemic lexical item. Note that I am not referring to so-called chunk N-N compounds like *shoelace* that are arguably learnable as chunks by L2 learners, but only to entirely productive N-N compounds (see also Liceras & Díaz, 2000; Liceras & Valenzuela, 1998). The process of N-N compounding in English is described as productive in that speakers of the language commonly make up compounds on the go, which are always understandable. For example, the novel compound *salamander jar* is not an entry in any existing dictionary but, if produced, will be understood as a jar that has some association with salamanders (either a jar in the form of a salamander or a jar in which salamanders are kept, etc.).

Piera (1995, p. 305) discussed two main differences between English and Spanish compounds: (a) English compounds are right-headed (e.g., *police dog*), whereas (the few existing) Spanish compounds are left-headed (cf. *perro policía*); and (b) English compounding is recursive (e.g., *DEA police dog*), whereas Spanish is not (cf. **perro policía Departamento de Narcóticos*). The productive Spanish equivalent to (1), shown in (2), has phrasal structure with an obligatory preposition, often *de*.

(2)
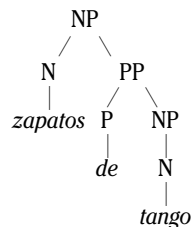
Support for this phrasal structure comes from the following fact (P. Kempchinsky, personal communication, 28 October 2000): The head noun of any NP containing a PP, which is arguably syntactic in nature, can be deleted under identity; see the example in (3). The same is true of the productive novel compounds; see the example of noun drop in (4).

(3) *No conozco a   la profesora de química,   pero sí   a   la _____ de lingüística.*
    NEG I-know   OBJ the professor of chemistry, but   yes OBJ the Ø   of linguistics
    "I don't know the professor of chemistry, but I know the one of linguistics."

(4) *No tengo los zapatos de tango, pero sí   los _____ de ballet.*
    NEG I-have the shoes   of tango, but yes the Ø   of ballet
    "I don't have the tango shoes, but I have the ballet ones."

It is important to notice that, unlike in Spanish, both N-N compounds (e.g., *tango shoes*) and their phrasal equivalents (e.g., *shoes for tango*) are grammatical in English.

Theoretical syntactic research has argued that complex predicate constructions of the type exemplified in (5)–(7) usually form a cluster in the sense that languages either have all three or none of them (Hale & Keyser, 1993; Kayne, 1984; Larson, 1988, 1990).[6]

(5) *Valeria thought through the problem.*   (verb particle)

(6) *Rosina nailed the windows shut.*   (resultative)

(7) *Amanda promised Billy a new car.*   (double object)

Snyder (1995) took up the presence or absence of productive N-N compounding and related it to comparative syntactic analysis and language acquisition data. He argued that languages permit the complex predicate constructions if and only if they can productively form N-N compounds of the English type as in (1).

In each of the complex predicate constructions in (5)–(7), there are two syntactic predicates (e.g., *nailed* and *shut* in [6]) that jointly characterize a single argument, the Theme (*the windows* in this example). For these predicates to be able to function jointly in the syntax, their heads must form a single word (X^0 category) at the point of semantic interpretation. In other words, to be interpreted as jointly modifying the Theme, the verb and the resultative predicate need to be combined into a single unit. The compounding parameter, then, allows languages with the plus value, such as English, to freely mark open class, nonaffixal items as [+affixal], but not languages with the minus value, such as Romance and Slavic languages (Snyder, 1995, p. 27). Essentially, the same process that allows [$_N$ *tango*] to freely attach to [$_N$ *shoes*] also allows the particle [*through*] to attach to [$_V$ *think*] at another level of interpretation.[7] Thus, both the N-N compounds and the complex predicate constructions are a consequence of English roots being ready to enter syntactic combinations.

Two types of evidence support Snyder's claim: a crosslinguistic, typological generalization and data from L1 acquisition. Snyder (1995, p. 31) illustrated the crosslinguistic claim with Table 1, which shows that languages such as English and Dutch exhibit both productive N-N compounding and the resultative construction (as representative of the whole cluster of complex predicate constructions). On the other hand, languages such as French and Spanish lack productive N-N compounding and the resultative construction.

The second type of evidence for the compounding parameter comes from L1 acquisition. Snyder (1995) and Snyder and Stromswold (1997) argued that the various complex predicate constructions and N-N compounding appear at the same time in the grammar of children acquiring English as their L1. The authors studied the spontaneous production data of 12 English-speaking children from the CHILDES database (see MacWhinney, 1996). Snyder (2001) reported on a subset of the children whose speech was studied in Snyder and Stromswold. He found that the ages of acquisition for novel N-N compounds such as (1) were exceptionally well correlated with the ages of acquisition for V-NP-particle constructions such as (5), $r = .98$, $t(8) = 12.9$, $p < .0001$.[8,9]

Table 1. Resultatives and N-N compounding across languages

Language	Resultatives	N-N compounding
English	Yes	Yes
Dutch	Yes	Yes
German	Yes	Yes
Hungarian	Yes	Yes
Khmer	Yes	Yes
French	No	No
Spanish	No	No
Russian	No	No
Serbo-Croatian	No	No
Japanese	No	No
ASL	No	No
Mandarin	No	No
Modern Hebrew	No	No
Palestinian Arabic	No	No

As predicted by the crosslinguistic generalization in Table 1, all of the complex predicate constructions are ungrammatical in Spanish (see the [b] examples in [8–10]), but the same meanings are given with periphrastic PPs and a V-NP-PP construction in the case of the double-object equivalent (see the [a] examples in [8–10]). Note also that all of the English glosses in (8a), (9a), and (10a) are entirely grammatical.

(8) a. *Los nativos esperaron hasta el   final de la   crisis.*   (periphrastic PP)
         the natives waited   until the end of the crisis
         "The natives waited until the end of the crisis."
     b. **Los nativos esperaron la   crisis [para] afuera.*   (verb particle)
         the natives waited   the crisis   out
         "The natives waited out the crisis."

(9) a. *Ben lavó   las ventanas hasta que quedaron limpias.*   (periphrastic PP)
         Ben wiped the windows until   they-were clean
         "Ben wiped the windows until they were clean."
     b. **Ben lavó   las ventanas limpias.*   (resultative)
         Ben wiped the windows clean
         "Ben wiped the windows clean."

(10) a. *Simon dio   una motocicleta roja a Eugenia.*   (V-NP-PP)
         Simon gave a   scooter   red to Eugenia
         "Simon gave a red scooter to Jenny."
     b. **Simon dio   Eugenia una motocicleta roja.*   (double object)
         Simon gave Eugenia a   scooter   red
         "Simon gave Jenny a red scooter."

In the notation used by Wexler and Manzini (1987, p. 44), let i and j be values of the compounding parameter p. The SP is formalized as follows: $L(p(i)) \leq$
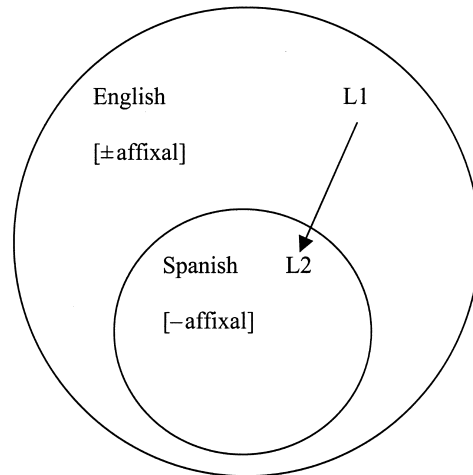
Figure 1. Subset-superset relationship of Spanish and English values for the compounding parameter.

L($p(j)$). In other words, the language that exhibits parameter value i (the unmarked value) should be capable of generating a set of sentences L(i), whereas the language exhibiting parameter value j (the marked value) should be able to generate the whole of L(i) and more, for a strict superset L(j). Thus, sentences that are in the intersection of L(j) − L(i) will not be part of the L(i) grammar. Following Liceras and Díaz (2000) and Snyder (2001), I propose that the compounding parameter in English and Spanish satisfies the requirements of the SP. English can generate N-N compounds and complex predicate constructions as well as phrasal compounds and the periphrastic versions of the complex predicate constructions. English grammar utilizes both the [+affixal] and the [−affixal] options of the compounding parameter, whereas Spanish allows only the [−affixal] value. Thus, Spanish exhibits the unmarked value, whereas English exhibits the marked value of the parameter, as exemplified in Figure 1.[10]

To summarize the main point of this section, N-N compounds have been proposed to cluster with complex predicate constructions in the grammatical system. The whole cluster is available in English but unavailable in Spanish. This state of affairs makes English the superset language and Spanish the subset language as far as the compounding parameter is concerned.

SECOND LANGUAGE ACQUISITION OF THE CLUSTER

Liceras and colleagues have recently turned to investigating the L2 acquisition of Spanish N-N compounds and the related cluster of complex predicate con-

structions (Liceras & Díaz, 2000; Liceras & Valenzuela, 1998). Liceras and Díaz concentrated on the acquisition of the very limited, unproductive N-N compounds in Spanish (e.g., *perro policía* "police dog," *mujer pulpo* "octopus woman") as well as on the delearning (or learning the ungrammaticality) of the English-type ones. Sixty-eight students of Spanish participated in the experiment, whose L1s were French, English, German, Russian, Polish, Danish, Swedish, Chinese, Japanese, and Korean. Participants had to complete two naming tasks with pictures in which they were expected to produce Spanish compounds using different compounding strategies. The main research question of the study was whether acquisition of compounds would be more susceptible to processing triggers or to representational triggers. Essentially, two properties distinguishing English from Spanish N-N compounds were investigated. The first property is the reversed order of nouns in compounds, given that in English the head of the compound is on the right whereas in Spanish it is on the left. This is what Liceras and Díaz designated as the processing trigger. The second property stems from the morphological properties of the nouns themselves: Spanish nouns, unlike English nouns, have word markers, such as *-o* in (11a), which are considered to be the representational (morphological) triggers (Harris, 1991a, 1991b; Piera, 1995).

(11)   a. $_N$[*perr*] *-o*
         b. $_N$[*dog*]   (Liceras & Díaz [9], p. 198)

   Given that the existing Spanish N-N compounds are unproductive and rare, as Liceras and Díaz (2000) claimed, their acquisition by English native speakers (NSs) must be based on extremely limited positive evidence. Thus, it is not very surprising that even the advanced learners produced them only in about 60% of obligatory contexts (see their table 1, p. 203). More important for the purposes of this study is the fact that English beginners produced non-Spanish compounds 46% of the time, intermediate learners reduced this incorrect production to 25%, and advanced learners were only incorrect in 9% of the produced compounds. This developmental sequence suggests that the lack of English-type N-N compounds is indeed learnable in Spanish interlanguage. Liceras and Díaz did not discuss whether their participants had access to negative evidence, a potential factor in successfully noticing the ungrammaticality of English-type N-N compounds. The triggering effect of word markers showed up only at later stages of acquisition, whereas less proficient learners engaged in an ungrammatical N-*de*-N strategy, with the head appearing on the right, for example, $_N$[$_N$ *araña* $_{PP}$ [*de hombre*]] "spider of man," and on the left, for example, $_N$[$_N$ *hombre* $_{PP}$ [*de araña*]] "man of spider." The authors interpreted this production as an indication that learners were struggling with head directionality and concluded that the processing trigger (the word order) seems to be more salient and more effective than the representational trigger (the word marker) in the acquisition of Spanish compounds.
   Liceras and Valenzuela (1998) also investigated the compounding parame-

ter, this time in the interlanguage of 12 English and 10 French learners of Spanish. Participants had to translate sentences into Spanish and judge the acceptability of grammatical and ungrammatical sentences containing compounds and resultatives. I will summarize here the results of their grammaticality judgment (GJ) task because it indicated the participants' acceptance of resultatives and compounds that were ungrammatical in Spanish but grammatical in English. All English-speaking learners, including beginning, advanced, and near-native learners, seemed to have fossilized at below a 40% correct rejection rate for resultatives (their figure 10, p. 11). On ungrammatical English-type compounds, beginners performed with about 70% accuracy, whereas advanced and near-native learners reached above 90% accuracy (their figure 3, p. 7). Thus, the accuracy of all English learners at every level of proficiency on resultatives seemed to differ markedly from their accuracy on compounds. In anticipation of what is to follow, the findings of the present study confirm the findings of Liceras and Valenzuela with a remarkable degree of similarity. More generally speaking, their study also found support for (a) L1 transfer in comparing the performance of the English and French learners, (b) significantly more accurate performance on grammatical constructions than on ungrammatical ones, and (c) an uneven pattern of acquisition in the purported cluster of compounds and resultatives. The present experiment builds on these studies and extends the cluster under investigation to two more complex predicate constructions (i.e., double objects and verb particles). It also brings forward the theoretically intriguing issue of the role of negative evidence in SLA.

RESEARCH QUESTIONS

The learning task is as follows: The learner has to notice that Spanish does not allow free lexical items to be marked as [+affixal] (i.e., free lexical items do not combine into X^0 heads in the syntax but rather form XP-type phrases) and consequently has to deduce the unavailability of the complex predicate constructions because they are crucially dependent on this property. The experiment attempts to investigate how successful French and English learners of Spanish are in this learning task.

The first research question juxtaposes L1 transfer (Schwartz & Sprouse, 1994, 1996; White, 1985, 1989b; see Gass, 1996, for an overview) and the SP, the latter of which predicts that learners will be maximally conservative regardless of their L1 and will start out with the subset parameter value. In this case, specifically, English and French learners will initially demonstrate the Spanish parameter value by correctly rejecting N-N compounds and complex predicates. L1 transfer, on the other hand, predicts that English NSs acquiring Spanish will initially exhibit the English value of the parameter and fail to reject N-N compounds and complex predicates. At the same time, French NSs of comparable proficiency in Spanish will demonstrate greater accuracy in rejecting N-N compounds and complex predicates.

Table 2. Participant information

Group	Mean age at testing	Mean age of exposure	Mean years studied
Control	35.4	—	—
English	26.5	12.7	4.5
French	25.9	11.5	2.4

The second research question concerns the learnability issue raised by the subset-superset relationship between the two parameter values under investigation. As is well established, the process of L1 acquisition proceeds largely without recourse to negative evidence (Baker, 1979; Hornstein & Lightfoot, 1981; Pinker, 1989). If the process of L2 acquisition is essentially similar to that of child L1 development, then restructuring the interlanguage grammar in the case of an L1-L2 parameter value mismatch should be attained solely on the basis of primary linguistic input. In fact, as Schwartz and Gubala-Ryzak (1992) and Schwartz (1993) argued, negative evidence does not engage UG in L2 acquisition. However, in the case of the L1 superset–L2 subset learning direction, primary linguistic data will be insufficient for grammar restructuring. The constructions, whose ungrammaticality learners have to deduce, will not occur in the naturalistic input. Presumably, a learner can never be certain whether a construction does not appear in her input simply by chance or because it is in fact ungrammatical. In other words, a learner should not deduce ungrammaticality based on unavailability of a construction in some input. The prediction, then, is that successful resetting is impossible, and the interlanguage grammar of every learner will fossilize at the nontargetlike value.

Assuming that the constructions are related in L1 grammars, the third research question addresses the issue of whether N-N compounds, double objects, verb particles, and resultative constructions are underlyingly related in the linguistic competence of L2 learners. They would be predicted, therefore, to be either available or unavailable in the language of individual learners but, essentially, to pattern as a cluster.

THE EXPERIMENT

Participants

Eighty-six English-speaking and 25 French-speaking learners of Spanish took part in the experiment as well as a control group of 15 NSs of Spanish. The NSs were tested in Mar del Plata, Argentina, and Iowa City, IA, and the nonnative speakers were recruited among Canadian university students (the French group) and at the University of Iowa (the English group). The participants' background information is summarized in Table 2.

Tasks and Materials

A cloze test and a multiple-choice vocabulary test, adapted from DELE (*Diploma de Español como Lengua Extranjera*, Embassy of Spain, Washington DC), served as an independent measure of proficiency. The cloze test contained 20 blanks, and the vocabulary test contained 30 sentences. There were also two experimental tasks: a forced choice task and a GJ task. Participants were invited to ask the researcher about the meaning of unfamiliar lexical items at any time.

Knowledge of N-N compounds was assessed with the forced choice task, in which participants had to choose which complex nominal (of three choices given) better matched an object or a person described in the preceding context, as in (12).

(12) *Susana va a tomar clases de tango. Necesita comprarse unos zapatos especiales. Son unos*:
"Susan is going to take tango lessons. She needs to buy herself some special shoes. They are called:"
  ☐ *tango zapatos*
  ☐ *zapatos tango*
  ☐ *zapatos de tango*

The first choice was *tango zapatos* "tango shoes," which corresponds exactly to the word order of the English compound and is ungrammatical in Spanish. The second choice, also ungrammatical in Spanish, offered the correct word order for Spanish but omitted the crucial preposition *de*. Given the two differences between English and Spanish compounds—noun order and internal preposition—this choice was included to check whether learners had acquired correctly the noun headedness but perhaps had not acquired the obligatoriness of the preposition. The third choice was the correct Spanish compound. Ten context–multiple-choice combinations were tested; the order of the three choices was randomized.

The second experimental task was a GJ task in which the participants judged the acceptability of 56 sentences: seven grammatical and seven ungrammatical sentences in each of four conditions (verb particles, resultatives, double objects, and N-N compounds). Ungrammatical sentences involved a literal translation from English (see [8b], [9b], and [10b] in the preceding section). No fillers were included in this task because the four conditions were considered sufficiently different for the participants not to be able to develop an answering strategy. Two different versions of the test were administered, with the order of sentences of the first version reversed in the second. Lists of all test sentences are included in the appendixes.

Results

Proficiency Test. The proficiency test scores were used to divide the subjects into groups and also to compare the French and English Low groups.

Table 3. Results of proficiency test

| Measure | n | English | | | French |
		Advanced (26)	Intermediate (27)	Low (33)	Low (25)
Mean		38.9	24.4	16.7	15.4
SD		5.4	2.5	3.07	4.2
Range		32–49	21–30	7–20	6–20

Note. The maximum score was 50.

Table 4. Accuracy scores and standard deviations across participant groups

Group	Accuracy (%)	SD
Spanish control	100	0
English advanced	95	9
English intermediate	78.5	21
English low	60	26
French low	87	22

Table 3 summarizes the results. A one-factor ANOVA on the scores of the English-speaking learners indicates that the means of the three proficiency groups are significantly different, $F(85, 2) = 251$, $p < .0001$. In order for the French and English beginning learners to be meaningfully compared, the two groups have to be at a comparable level of proficiency in Spanish. To find out whether the French and English NSs learning Spanish were at a similar level of development, a one-factor ANOVA on the proficiency scores of the French and English low-level groups was performed. It showed that the groups' proficiency was not significantly different, $F(57, 1) = 1.3$, $p = .45$. Thus, any differences in their performance on the experimental conditions can safely be attributed to their different interlanguage competence.

Forced Choice Task. Next, I turn to the results of the first main task in the experiment: the forced choice task. Table 4 summarizes the accuracy of the subjects. Two comparisons are worth mentioning here. First, the French low-level group is significantly better at choosing the correct compound in Spanish than the English low-level group, $F(57, 1) = 7.65$, $p < .001$, although they are at a comparable proficiency level. This finding is relevant to the study's first research question. Second, accuracy means on the forced choice task and on the GJ task on compounds (to be subsequently discussed) are not significantly different by a one-factor ANOVA, $F(65, 1) = 0.67$, $p = .41$, which suggests a lack of task effect.

The three choices in the task, however, provide a more precise picture of

Table 5. Percentage of error types across participant groups

Group	*N$_1$-N$_2$* *tango zapatos*	*N$_2$-N$_1$* *zapatos tango*
Spanish control	0	0
English advanced	0	5
English intermediate	5.6	15.9
English low	17	23
French low	3	10

the learners' interlanguage competence than the overall accuracy percentages. The percentage of errors can be divided into two because the stimuli contained two wrong choices. Let us designate the English compound order as N$_1$-N$_2$ (e.g., *tango shoes*) and the Spanish choices as follows: *N$_1$-N$_2$ (e.g., *tango zapatos*), *N$_2$-N$_1$ (e.g., *zapatos tango*), and N$_2$-*de*-N$_1$ (e.g., *zapatos de tango*). The first Spanish choice reflects the English order, whereas the second choice reflects the correct Spanish N order but is missing the preposition *de*. Table 5 shows this breakdown.

This distribution of error types suggests that the English speakers' acquisition of Spanish compounds possibly goes through two different stages. At the beginning, the correct order of nouns (noun headedness) is acquired but not the obligatory presence of the preposition *de*. After learners notice that their L1 N order is reversed, they acquire the preposition for the phrasal structure of Spanish compounds. The proposed acquisition sequence is implied by the fact that the advanced learners only made mistakes of the second type (omitting the preposition) and that the intermediate learners omitted the preposition three times more than producing the wrong N order.[11] These tentative findings are compatible with the results of Liceras and Díaz (2000), who found that in acquiring the grammaticality of a limited number of Spanish N-N compounds English learners were influenced by what these authors called a processing trigger (noun order) rather than by a representational trigger (edge-of-word marking morphology).

Grammaticality Judgment Task. The mean accuracy scores on the GJ task will be discussed for the two low-level groups of English and French NSs first. The comparison of primary interest here is how the two groups differed in their judgments of the ungrammatical constructions. It was hypothesized that if the L1 value of the parameter transfers, then French learners would be more accurate in their judgments than English learners at the same low proficiency level. The SP predicts equal behavior. Results for the ungrammatical conditions are discussed first.

Figure 2 presents the mean accuracy of French and English low-proficiency learners in rejecting the ungrammatical constructions in Spanish complex predicate constructions and N-N compounds. Recall that all these construc-
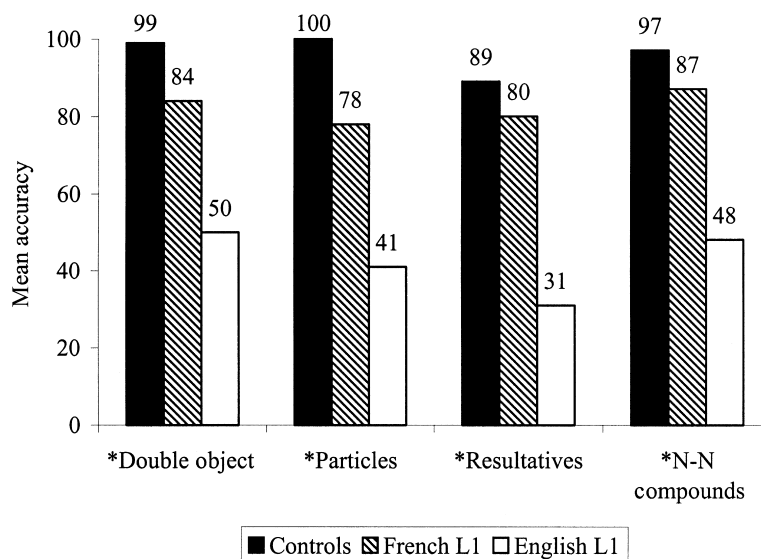
Figure 2. Rejection of the ungrammatical constructions by French and English low-level learners (percentages).

tions are grammatical in English but ungrammatical in French. The figure shows that the control group correctly rejects ungrammatical double objects 99% of the time, the French learners do so 84% of the time, and the English learners reject double objects only half the time. As Figure 2 illustrates, the French speakers are much more accurate in rejecting the test items than the English speakers for all conditions. As expected, all comparisons between the French and English low-proficiency groups are significant: $F(57, 1) = 64.4$, $p < .0001$ for the double object condition; $F(57, 1) = 123$, $p < .0001$ for the particle condition; $F(57, 1) = 251$, $p < .0001$ for the resultative condition; and $F(57, 1) = 147$, $p < .0001$ for the N-N compounds.

With regard to judgments of grammatical constructions, Figure 3 compares the English and French learners' performance in accepting the periphrastic constructions and compounds. Recall that these constructions are acceptable both in English and in French. One-factor ANOVAs reveal that the mean accuracy rates of the French and English groups are not significantly different for the periphrastic complex predicates: $F(57, 1) = 2.04$, $p = .1$ for the V-NP-PP condition; $F(57, 1) = 3.02$, $p = .07$ for the periphrastic particle condition; and $F(57, 1) = 2.76$, $p = .08$ for the periphrastic resultative condition. The English low-level learners are significantly less accurate on the periphrastic compounds, $F(57, 1) = 3.77$, $p = .05$. In general, it is clear that even though the lowest proficiency English learners are not very good at rejecting ungrammatical sentences (see Figure 2), they are better at accepting the equivalent grammatical sentences (see Figure 3).
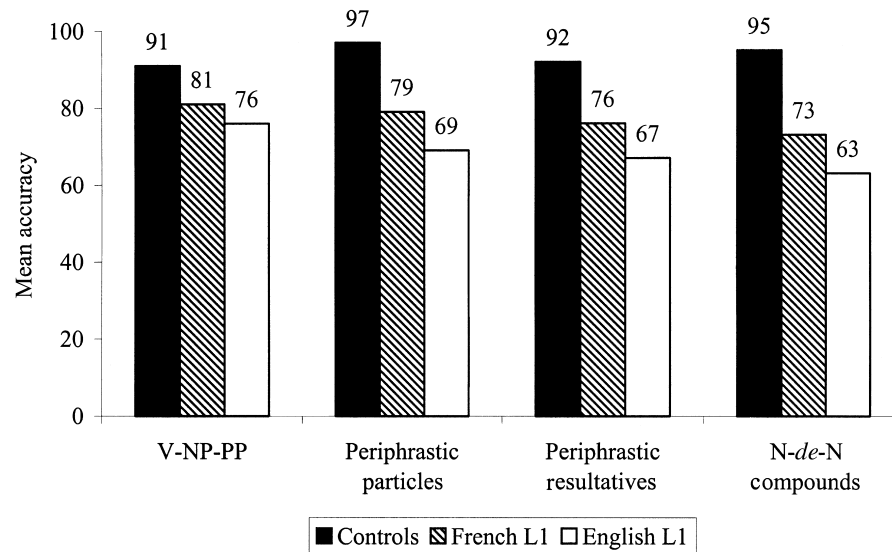
Figure 3. Acceptance of the grammatical constructions by French and English low-level learners (percentages).

My main interest in this study is two-fold: the comparison between English and French learners of Spanish at comparably low levels of proficiency, and the performance of English NSs at different proficiency levels in Spanish. In this latter comparison, I attempt to gauge the development of parametric knowledge. It was hypothesized that English NSs would not be able to retract their initial hypothesis that N-N compounds and complex predicates exist in Spanish because no negative evidence will be available to them to indicate that these constructions are ungrammatical, and the positive evidence available to them is by definition insufficient. Again, the accuracy in rejection of the ungrammatical constructions will be discussed first.

Figure 4 is interpreted as follows: The fourth column in the Resultatives group indicates that the low-proficiency group correctly rejects ungrammatical Spanish resultatives 31% of the time. In other words, this group incorrectly accepts resultatives 69% of the time. Advanced learners are accurate between 56% (*resultatives) and 87% (*N-N compounds) of the time. It is immediately obvious that the respective accuracy is quite different for the three proficiency groups. Statistical analyses (one-factor ANOVA with group as the between factor) confirm the observation: $F(85, 2) = 10.9$, $p < .0001$ for the double object condition; $F(85, 2) = 7.57$, $p < .0001$ for the particle condition; $F(85, 2) = 5.86$, $p < .0001$ for the resultative condition; and $F(85, 2) = 12.3$, $p < .0001$ for the N-N compound condition. These results are relevant to the second research question in showing that (some) restructuring of the grammar has indeed occurred, even though positive evidence is not available for that
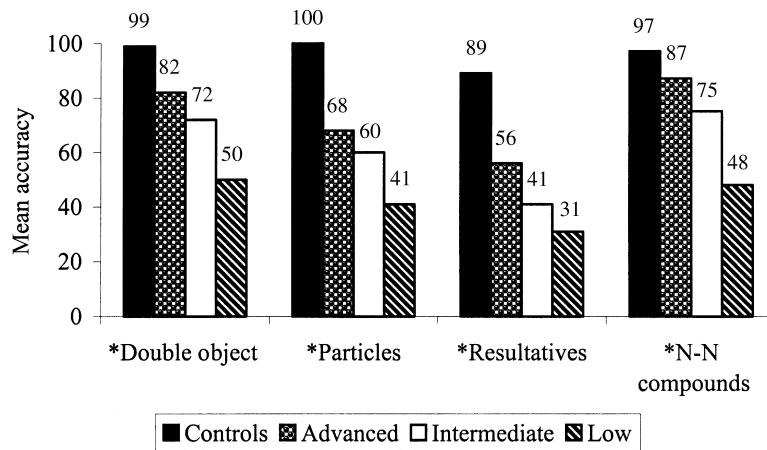
Figure 4. Rejection of the ungrammatical constructions by English-speaking learners (percentages).

Table 6. Pearson r values for individual subjects' accuracy on N-N compounds and complex predicates

	DO	N-N	Resultatives	Particles
DO	1			
N-N	.55	1		
Resultatives	.38	.51	1	
Particles	.45	.46	.33	1

*$p < .05$.

restructuring. Rejecting resultatives seems to have been the most problematic for the English-speaking learners: Even the advanced group reached only 56% accuracy. Next in difficulty seems to be the particle construction, which the advanced group rejected accurately only 68% of the time.

Individual Results. To establish a possible association between knowledge of compounding and knowledge of complex predicates and test the prediction of clustering, it is important to consider individual results, given that it is only within the interlanguage grammar of individual learners that this association is meaningful. Individual results are also relevant to the learnability issue. Table 6 presents accuracy correlations, all of them significant at $p < .05$. Correlations between N-N compounds and complex predicates are strong (with Pearson r values around .5), whereas correlations among the complex predicates themselves are moderate, $r = .33$ to $r = .45$. These correlations offer a

Table 7. Number and percentage of subjects who realized the ungrammaticality of N-N compounds and complex predicates

Group	n	DO %	Particles %	Resultatives %	N-N compounds %
Advanced	26	20	17	10	23
		77%	65%	39%	88%
Intermediate	27	18	9	2	21
		67%	33%	7%	78%
Low	33	7	7	0	8
		21%	21%	0%	24%

first indication that the constructions under investigation may be related in the interlanguage grammar. Of course, significant correlation does not imply causation, and so it will be wise to approach these results with caution.

To calculate a second measure, accuracy scores were converted to categorical measures. Learners were assigned one point if they had acquired compounding, one point for complex predicates, or zero for neither case. The arbitrary but frequently used cutoff point for acquisition was 70% accuracy (five out of seven, actually 71%). Table 7 compares the number and percentage of subjects who successfully acquired the unacceptability of these constructions.

As with the group results, the question is whether it is possible for English NSs to delearn the ungrammatical Spanish constructions, thereby resetting their value of the compounding parameter in the absence of negative evidence (see the second research question on learnability). The individual results in Table 7 attest to a strong developmental curve in the case of double objects and N-N compounds, although less strong for particles: Starting from around 20% among low-level learners, the success rate increases progressively in the intermediate and advanced groups. The number of subjects who have acquired resultatives also increases, but only from zero to 10, or 39%. The categorical individual results largely support the picture presented by the group results. Both the group and individual results attest to a split of the cluster in interlanguage grammar, with resultatives being delearned much less than N-N compounds, double objects, and even particles. This finding is relevant to the third research question on clustering.

Finally, to establish whether there is a significant connection between knowledge of each complex predicate construction and knowledge of compounding, it is pertinent to utilize contingency tables as a statistical test. The contingency table test examines independence between two categorical measures. The null hypothesis is that these two interlanguage properties (i.e., knowledge of double objects and knowledge of N-N compounds) are independent.

Table 8. Contingency of acquisition between N-N compounds and complex predicates (ungrammatical in Spanish)

Complex predicate	Yes N-N compounds	No N-N compounds
Double object*		
Yes	36	9
No	16	25
Particles**		
Yes	25	8
No	27	26
Resultatives***		
Yes	10	2
No	42	32

*$p < .001$, $\chi^2 = 15.95$
**$p < .025$, $\chi^2 = 5.24$
***$p < .1$, $\chi^2 = 3.29$ (3.84 necessary for significance)

Table 8 presents three contingency tables on the categorical scores (yes or no) of the English-speaking subjects' knowledge that complex predicates and N-N compounds are ungrammatical in Spanish. The bottom part of Table 8, for example, indicates the following: 10 individual subjects have acquired the fact that both resultatives and N-N compounds are ungrammatical in Spanish; 32 subjects have not acquired the ungrammaticality of either construction; 2 subjects have demonstrated knowledge that resultatives are ungrammatical but no knowledge that N-N compounds are ungrammatical; and 42 subjects have acquired the ungrammaticality of N-N compounds but not of resultatives. The chi-square statistic is 3.29, and the probability that these two constructions are independent in the learners' grammar is not statistically significant ($p < .1$). In other words, the probability of obtaining the observed accuracy in a random sample of 86 subjects is .1. The null hypothesis is thus retained, and it is concluded that the two constructions are independent. Table 8 shows that the same conclusion is not warranted for double objects and N-N compounds, $p < .001$, and for particles and N-N compounds, $p < .025$. The acquisition of these pairs of constructions is not independent of each other. In short, knowledge that double objects and verb particles do not exist in Spanish is contingent on knowledge of N-N compounds, whereas knowledge of the ungrammaticality of resultatives is independent of knowledge of N-N compounds.

To summarize the results, low-proficiency, English-speaking learners of Spanish are significantly less accurate than French-speaking learners at the same proficiency level in recognizing the ungrammaticality of complex predicates and N-N compounds. At higher proficiency levels, however, the English participants' performance indicates that delearning these constructions is possible, quite successfully for N-N compounds and double objects, less so

for particles, and much less so for resultatives. I turn now to a discussion of what these results imply for the research questions of this study.

DISCUSSION AND CONCLUSIONS

First, the present study attempted to evaluate two conflicting sets of predictions: those of the SP versus those of L1 transfer. The SP suggests that learners will start out with a maximally restricted grammar because going from the superset to the subset value of a parameter (or "shrinking the grammar") would otherwise be impossible without negative evidence. This would entail that French and English low-proficiency learners will reject ungrammatical complex predicates and N-N compounds from the start. In doing this, they will turn out to be conservative learners. L1 transfer, on the other hand, predicts that the French learners will be much more accurate than the English learners in their rejection of the ungrammatical constructions, simply because in French the constructions are unavailable whereas in English they are fine. The results of the present study point unquestionably in the direction of L1 transfer. French learners are significantly more accurate than English learners in rejecting N-N compounds and complex predicates. Thus, I agree with White (1989b) and many others that the SP does not seem to be operative in L2 acquisition.

The subset-superset relation of the parameter values interacts with L1 transfer to highlight another learnability issue: positive and negative evidence in L2 acquisition. Let us assume, as this experimental evidence suggests, that English learners transfer the grammaticality of both the periphrastic constructions and the complex predicates into their initial Spanish interlanguage grammars. How are they going to retract this overgenerating hypothesis of the L2 grammar? Primary linguistic data in the form of naturalistic discourse will give them positive evidence of the periphrastic constructions; they may never hear complex predicates and N-N compounds, but this fact need not imply that the latter constructions are ungrammatical but rather they may simply be missing from the input. To securely rule out complex predicates and N-N compounds from the interlanguage grammar, negative evidence is necessary. However, negative evidence has been argued not to engage UG-related acquisition (Schwartz, 1986, 1988, 1993). Following a theory of mind discussed in Fodor (1983), Schwartz argued that there exists no mechanism to translate the knowledge about ungrammaticality into knowledge that feeds the language faculty and results in grammar restructuring. If we assume this to be the case, then English learners of Spanish are predicted to be unable to discover the ungrammaticality of N-N compounds and complex predicates. This prediction, however, is not uniformly supported by the results of this study: 88% of individual advanced learners successfully reject N-N compounds in Spanish; 77% correctly reject double objects; 65% know that verb particles are ungrammatical; and only 39% consider resultative secondary predicates to be unavailable

in Spanish. Group results show the same general tendency. We can safely assume that the majority of advanced learners have fossilized at a nontargetlike state as far as knowledge of resultatives is concerned.[12] However, there is clearly not much evidence of fossilization in the case of N-N compounds and double objects. On the contrary, successful restructuring of the grammar has occurred in the case of these constructions. How is this possible?

One possibility to consider is the potential availability of negative evidence.[13] The majority of learners participating in the experiment are instructed learners. It could be the case that some have received explicit instruction about the ungrammaticality of some of the constructions but not of others. An informal interview was conducted with several teaching assistants and the Spanish-language coordinator at the university where the English-speaking subjects were studying at the time of testing. The interview revealed that, whereas the lack of N-N compounds and double objects in Spanish is subject to explicit instruction and correction in the language classroom, the lack of verb particle constructions and resultatives is not. This fact can contribute to an explanation of the English subjects' significantly higher accuracy on compounds and double objects.

It will be impossible to resort to frequency in the input to explain the differential accuracy on N-N compounds and double objects versus particles and resultatives. None of these would occur in the naturalistic input to the learners, given that they are ungrammatical in Spanish. It is quite impossible, then, to give a principled reason why one part of the cluster would fossilize and another would not. In fact, the availability of explicit positive and negative evidence in the classroom appears to be the only plausible explanation of the experimental results.

However, a related explanation has to be considered. Perhaps what these learners are demonstrating for two out of the four constructions is learned linguistic behavior based on learned linguistic knowledge. As Schwartz (1993) has argued, this explicit knowledge cannot engage UG parameters and restructure a learner's interlanguage grammar. She proposed an ideal way to test for learned linguistic knowledge, combining the idea of clustering of properties in a UG parameter with the idea that only negative data should be sufficient for grammar reorganization:

> Abstractly, the situation would look like this: In the L1, constructions X and Y are both possible and—crucially—both follow from the same specific property of the grammar, [+P]; in the T(arget) L(anguage), however, [+P] does not obtain and, hence, both X and Y are ungrammatical. The experiment would then focus on providing L2ers with N(egative) D(ata) on one construction (X) and then test whether knowledge about the impossibility of the other (Y) automatically follows. (p. 154)

The present experiment, although far from the ideal experiment delineated by Schwartz, nevertheless has some design characteristics that allow us to test her prediction. Providing negative input to the learner groups for some of

the cluster constructions and not for others was not part of the original research design. However, in the course of the investigation it was discovered that Schwartz's condition of supplying negative data for part of a cluster may actually have been met. At the university where the English-speaking participants were tested, classroom instruction includes explicit discussion of the impossibility of double objects and N-N compounds in Spanish. It was previously argued that this fact seems to explain the participants' better performance on those constructions. They are simply generalizing the selective instruction provided in class into learned linguistic knowledge for part of the cluster. The next step, then, is to consider whether the negative evidence has led to resetting of the whole parameter and has affected all four of the cluster constructions. The relevant data here are from Table 8, and the question asked is the following: Based on negative data, how many individual learners, who had learned that N-N compounds are ungrammatical (Schwartz's construction X), acquired the impossibility of particles or resultatives (Schwartz's construction Y)?

As Table 8 showed, in the case of particles, 27 participants were not able to restructure the grammar, whereas 25 were successful in restructuring. In the case of resultatives, 42 learners failed to acquire the ungrammaticality of the construction, but 10 learners did. These 10 are also among the 25 who have acquired knowledge of particles.[14] Thus, these 10 learners, or 39% of the advanced group, demonstrate knowledge of the whole cluster. This number is too high to be ignored if we assume a standard 5% margin of error. Hence, it must be concluded that it is not impossible for individual learners to reset a UG parameter based on negative data on part of a cluster, although most of the learners did not do so. Schwartz's (1993) prediction that negative evidence is not in a position to affect L2 grammars is proven to be too strong indeed, although the prediction is correct for the majority of individual learners. Given that the original claim is about the impossibility of grammar reorganization, every individual learner who has managed to overcome "the information encapsulation of the language module" (Schwartz, p. 157) constitutes a counterexample to that claim.[15] These findings are consistent with the conclusions of Trahey and White (1993), Trahey (1996), and White (1992) that negative evidence may in some restricted cases be necessary for preempting an L1 parameter value. Assuming the underlying relationship between the cluster constructions, the findings also suggest that UG is fully accessible to some individuals in adulthood. If UG is in some sense operative in L2 acquisition, these results are also consistent with the hypothesis that a fundamental difference exists between L1 development and L2 acquisition (Bley-Vroman, 1989) in the utilization of negative evidence (see also Schwartz, p. 155 and fn. 9). Although negative data can supplement positive linguistic data in L2 acquisition, this is argued to be impossible in L1 acquisition. The question remains as to precisely what (cognitive neurolinguistic) mechanisms allow adult L2 learners to successfully use negative data for grammar restructuring.

An alternative explanation based on positive input may be considered as

well. What if positive input of some indirect sort has allowed the learners to reset the parameter? Let us consider, in principle, what Spanish structures can be relevant to the cluster of constructions purportedly unified by the compounding parameter. These are mainly nominal constructions: The Spanish equivalents of English N-N compounds are consistently of the form determiner phrase (DP) with a prepositional phrase complement. Furthermore, Spanish DPs with adjectival complements are consistently head initial, which could lead to rejection of all head-final constructions in the L2 if learners generalize head directionality. There is the additional fact that dative case marking is salient in Spanish, with the three genders morphologically distinguished in the dative clitic paradigm.[16] This alternative explanation of the results relies on an argument of the following type: Salient positive indication of the subset parameter value can preempt the superset value. However, this argument contradicts the learnability logic in the case of subset-superset parameter value relations. Positive evidence may potentially be helpful in parameter resetting if it is available for part of a cluster and, for some reason, unavailable for the rest of the cluster. Crucially, though, positive evidence has to exemplify one and the same parameter value. Recall that the English participants had to delearn the [+affixal], marked value of the parameter and retain the [−affixal], unmarked value. However, no matter how salient the positive evidence for the [−affixal] value is, it does not constitute evidence for the [+affixal] value. Given that there is no positive evidence for the [+affixal] value, there is nothing in the linguistic input to alert the learners as to the lack of complex predicates and N-N compounds except possibly explicit instruction. Thus, utilization of negative evidence appears to be the only logical explanation for part of the learners' successful grammar restructuring.[17]

I turn now to the study's third research question. Based on syntactic analysis and the L1 acquisition of the constructions, it was predicted that N-N compounds and the three complex predicate constructions would pattern as a cluster. That is, they would either all be part of the learners' interlanguage grammar (which would be incorrect), or they would all be missing (which would be targetlike). Although the correlations in learners' accuracy on the four constructions are significant, the prediction of clustering does not seem to be strongly supported by the group and individual results. The purported cluster seems to be breaking into two parts, with double objects and N-N compounds easier to delearn, resultatives very difficult to delearn, and verb particles somewhere in between. In fact, only 10 learners achieved acquisition of the whole cluster (representing 39% of advanced learners and 12% of all participants). Therefore, I conclude that the constructions did not cluster in the majority of the learners' grammars. However, this situation is not entirely surprising, given that the development of the cluster has not depended on positive, naturalistic input alone. As previously mentioned, the two constructions that learners appear to have delearned successfully received explicit discussion and negative evidence in the classroom. The research question of constructions clustering in the grammar should ideally be decided if acquisition

can in principle be accomplished on the basis of positive evidence (i.e., learners notice a salient trigger in the primary linguistic data). In this case, we would expect learners to notice the fact that Spanish does not allow open-class lexical items to function as affixal, and to delearn N-N compounds and complex predicate constructions. Because the conditions for testing acquisition of a cluster have not been properly met in this study, the negative conclusion remains only tentative.[18]

In summary, this experimental study investigated the compounding parameter in the interlanguage of English and French learners of Spanish. It was argued that the constructions exemplifying this parameter fall into a superset-subset relationship in the L1 and L2 of the learners. The SP, however, was not confirmed to be the learning principle guiding the L2 acquisition process. Rather, learners initially transferred the L1 parameter value into their L2. The most important finding concerns the utility of negative evidence in the L2 acquisition process. Group and individual results suggest that explicit classroom discussion of N-N compound and double-object unavailability in Spanish can be translated into higher accuracy in rejecting these constructions on a GJ task and accepting the correct periphrastic compounds on a forced choice task. Additionally, 10 of the 26 advanced learners were able to successfully reset the whole parameter based on negative data for two of the four cluster constructions. In light of these findings, then, the claim that negative evidence is not in a position to trigger UG-type knowledge seems to be too strong and in need of qualification. Further research should concentrate on the exact mechanisms that make such limited restructuring possible. It remains to be investigated whether negative evidence effects are only temporary or long lasting as well as what individual faculties allow some learners to be more successful than others in grammar restructuring.

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NOTES

1. However, see MacLaughlin (1995) for arguments that the *pro*-drop parameter does not really present a subset problem.

2. Note that, as White (1996, p. 100, fn. 9) pointed out, these authors do not refute the SP on principled grounds, and it is in fact possible that such parameters will be discovered in the future that will warrant the SP's operation.

3. Ayoun (1996) speculated that her learners may be overgeneralizing (or assuming the superset value) due to L1 influence or lack of sufficient exposure to the L2, in the case of dative alternation and mostly dative passives, or presence of negative evidence, in the case of the successfully acquired preposition stranding and ECM. However, she did not pursue the issue of negative evidence further.

4. The verb-movement parameter resulting in different verb-adverb word orders is not relevant to the SP because no subset-superset relations obtain between the values. I cite this work as the only experimental body of work relevant to the negative evidence issue.
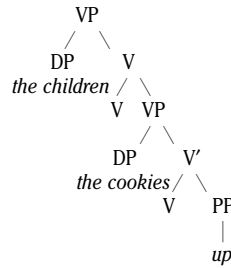
5. I am abstracting away from the fact that the plural inflection has to come outside the derivation in the structure. The correct structure is something like: $[_N[_N[_N \textit{tango}] [_N \textit{shoe}]] \textit{-s}]$.

6. Kayne (1984) noticed that double-object constructions and verb particles as in (i) pattern together in the sense that languages either have both of them or have neither.

(i)   a. *John gave Mary a book.* ~ *John gave a book to Mary.*
     b. *The children ate the cookies up.* ~ *The children ate up the cookies.*

Larson (1990), building on ideas from Larson (1988), suggested that verb particle constructions like *look up, throw out*, and *smash in* should be treated on a par with other resultative secondary predicates, essentially applying the same analysis as the one for the double-object construction; see the structure in (ii).
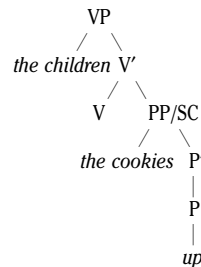
(ii)

```
                        VP
                       /  \
                     DP    V
                the children / \
                           V   VP
                              /  \
                            DP    V′
                       the cookies / \
                                  V   PP
                                      |
                                      up
```

The verb and particle can be viewed as constituting a basic V′, harboring the object DP in its specifier. The analysis has to account for the two possible positions of the particle in English: the outer particle construction (e.g., *ate the cookies up*) and the inner particle construction (e.g., *ate up the cookies*). The structure in (ii) allows for this optionality of particle positions. When the verb moves to the head of the VP shell, the outer particle position is straightforwardly achieved. The alternative inner particle position can then be obtained from (ii) by optionally reanalyzing V′ as V^0 and raising this complex V^0 to the higher V position. A similar approach, unifying particles, resultatives, and double objects as complex predicates, has been pursued by Hale and Keyser (1993), Marantz (1993), Pesetsky (1995), and Snyder (1995), among others.

An alternative approach is the small clause (SC) approach, initiated by Kayne (1984) for particles and extended to all resultatives by Hoekstra (1988; see also Carrier & Randall, 1992; Den Dikken, 1995; and Sybesma, 1992). The analysis is along the lines of (iii).

(iii)

```
                        VP
                       /  \
            the children   V′
                          /  \
                         V   PP/SC
                            /  \
                   the cookies   P′
                                 |
                                 P
                                 |
                                 up
```

The well-known empirical argument supporting this type of analysis, due to Kayne (1984), is that subextraction from the object DP in particle constructions like (iv-a), resultatives like (iv-b), and double objects like (iv-c) is ungrammatical just as subextraction from SC subjects is ungrammatical in (iv-d). Resultatives, particles, and double objects also pattern with SCs with respect to the impossibility of nominalization, as in (v).

(iv) a. *What did they look [[*the information about* t] *up*]?
     b. *What did they paint [[*the door of* t] *black*]?
     c. *Who did they give [[*the brother of* t] *an idea*]?
     d. *Who do they consider [[*the brother of* t] *a fool*]?

 (v) a. *our looking of [[*the information*] *up*]
     b. *our painting of [[*the door*] *black*]
     c. *our giving of [[*John's brother*] *an idea*]
     d. *our consideration of [[*John's brother*] *a fool*]

I will not go into the arguments for one approach against the other. For the purposes of this study it is crucial to notice that both lines of research unify the same three constructions in a cluster on the basis of a common analysis.

7. The same parameter has been recently restated in Minimalist terms (Chomsky, 2000; Roeper, Snyder, & Hiramatsu, 2002). Chomsky distinguished two subtypes of Merge, a generalized transformation combining two autonomous subtrees as daughters of a single node (definition from Chomsky, 1995). Set-merger is the basis for the head-complement relationship, or substitution, where the lexical items A and B form a set {A, B}. Pair-merger is the basis for movement of a phrase into a specifier position, or adjunction. The lexical items A and B are organized as an ordered pair <A, B>.

Roeper et al. (2002) restated the root compounding parameter in terms of whether a language permits the set-merger of heads. Their assumption is that pair-merger of heads is available universally and is driven by feature checking. It provides the basis for normal head-to-head movement. The authors proposed that heads combined by set-merger are interpreted semantically as a complex word, related as modifier and head, or head-complement.

8. Snyder and Stromswold's (1997) cluster of constructions acquired at the same time by the children also included *put*-locatives, as in *John put the book on the table*, causative and perceptual constructions, as in *Mary made* (or *saw*) *John leave*, and *to*-datives, as in *John sent the book to Mary*. However, the acquisition of these constructions was not investigated in the present experiment because they are grammatical in Spanish and in English. Thus, if knowledge of these constructions was detected, it would be impossible to tease apart the possible sources (UG or the L1) of that knowledge. On the other hand, resultatives such as *Mary wiped the table clean* were not part of the L1 acquisition cluster. Their addition to the cluster is for syntax-theoretical reasons (see Kayne, 1984; Larson, 1990; among others).

9. I agree with many critics of the parameter that its typological and L1 acquisition support is much stronger than its syntactic or semantic explanation. This latter issue is still awaiting further research (Snyder, 2001, p. 336). However, even if this parameter is not strictly speaking part of UG but belongs to the area of general cognition or central processing (in the sense of Fodor, 1983), the fact remains that there is a cluster of constructions that have been related typologically in L1 acquisition. This experimental study investigates whether the cluster obtains in the case of L2 acquisition. Thus, its results will still be relevant to the learnability issue of positive and negative evidence.

10. An anonymous *SSLA* reviewer suggests that there may be another typological basis for the presence or absence of the cluster of constructions in English and Spanish that has nothing to do with the compounding parameter. In other words, the Independence Principle (Wexler & Manzini, 1987, p. 46) may not be met in this case. Although this may certainly be true, I am not aware of any other analysis in the generative and other syntactic literature that links the proposed cluster with another parameter. Until such a concrete proposal comes forward, I will continue to assume (together with Liceras and Snyder) that N-N compounds and complex predicates are generated by the marked value of the compounding parameter.

11. An anonymous *SSLA* reviewer suggests that the learners may have another representation in their interlanguage grammar: They may be treating the second noun *tango* in **zapatos tango* as an adjective because *-o* is an adjective as well as a noun ending in Spanish. In other words, they may take N-N to be the fully grammatical N-A. This hypothesis assumes that the learners who entertain this misrepresentation do not know the lexical meaning of *tango* and all the other nine nouns in this task. As mentioned in the text, participants were invited to ask about word meanings at any time during the tests. Although I submit that the possibility cannot be excluded, I do not believe that many learners have the N-A option as a consistent analysis of N-N compounds in L2 Spanish.

12. Another possibility is to assume that the development of this knowledge is extremely slow.

13. In this discussion, I bracket together negative evidence (i.e., information about ungrammaticality) with explicit positive evidence (i.e., overt discussion of linguistic structures as in a language classroom). Both of these types of evidence are crucially different from primary linguistic data (see White, 1989b).

14. This fact is interesting in itself. Twenty-five advanced learners have acquired verb particles (i.e., part of the cluster), and only 10 of them have acquired verb particles as well as resultatives (i.e., the whole cluster). This pattern suggests that cluster acquisition can proceed in (developmental) stages, at least in L2 acquisition. In this respect, my findings are far from unique. Previous work on the *pro*-drop parameter (e.g., Liceras, 1989; White, 1985) has also established a hierarchy of difficulty as well as a one-way implication for the various properties comprised by the parameter.

15. Of course, the logical possibility remains that these 10 learners, in addition to being exposed to negative evidence on N-N compounds and double objects, have also been exposed to negative evidence on verb particles and resultatives. However, this possibility is considered highly unlikely in the concrete learning situation of the participants—undergraduate courses in Spanish.

16. I am grateful to an *SSLA* reviewer for pointing these out.

17. Furthermore, no study in L2 acquisition has shown so far that a flood of positive evidence,

even if exemplifying the same parameter value, can lead to preemption of ungrammatical constructions (see Trahey, 1996; Trahey & White, 1993; White, 1991a, 1991b).

18. However, see Slabakova (2001) for different findings of a similar parameter.

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APPENDIX A

SENTENCES USED IN THE GRAMMATICALITY JUDGMENT TASK

In each group of three sentences below, the ungrammatical Spanish sentence is a literal translation of the English sentence.

Verb-Particle Construction

1. *Los nativos esperaron hasta el final de la crisis.*
   *Los nativos esperaron la crisis para afuera.
   "The native men and women waited out the crisis."

2. *El gerente cerró definitivamente la planta de producción.*
   *El gerente cerró la planta de producción para abajo.
   "The management closed the truck plant down."

3. *Mi amiga Juana pensó el problema cuidadosamente.*
   *Mi amiga Juana pensó a través el problema.
   "My friend Janet thought through the problem."

4. *Marta secó sus medias y blusa blanca completamente.*
   *Marta secó sus medias y blusa blanca para afuera.
   "Martha dried her socks and white blouse out."

5. *Los excursionistas consumieron por completo sus alimentos el primer día.*
   *Los excursionistas consumieron para arriba sus alimentos el primer día.
   "The hikers used up their supplies on the first day."

6. *Diana se tomó todo el jugo de la jarra roja.*
   *Diana tomó para abajo el jugo de la jarra roja.
   "Diana drank down the juice from the red jug."

7. *Carlitos completó la versión final del informe escrito.*
   *Carlitos escribió para arriba la versión final del informe.
   "Charlie wrote up the final version of the report."

Resultatives

1. *El sol fuerte cocinó los campos secándolos por completo.*
   *El sol fuerte cocinó los campos completamente secos.
   "The strong sun baked the fields completely dry."

2. *Pablo fregó todos los pisos del apartamento hasta dejarlos limpios.*
   *Pablo fregó todos los pisos del apartamento limpios.
   "Paul scrubbed all the apartment floors clean."

3. *Esteban cerró con clavos todas las ventanas de arriba.*
   *Esteban clavó todas las ventanas de arriba cerradas.
   "Steven nailed all the top floor windows shut."

4. *Nuestros invitados tomaron té hasta dejar la tetera seca.*
   *Nuestros invitados tomaron la tetera seca.
   "Our guests drank the teapot dry."

5. *Rebeca peinó el cabello de Juancito hasta dejarlo bastante liso.*
   *Rebeca peinó el cabello de Juancito bastante liso.
   "Rebecca combed little Johnny's hair quite smooth."

6. *Mi padre abrió la jugosa sandía cortándola con un cuchillo.*
   *Mi padre cortó la jugosa sandía abierta.
   "My father cut the big juicy watermelon open."

7. *Cecilia aplastó los tulipanes con el agua.*
   *Cecilia regó los tulipanes planos.
   "Cecilia watered the tulips flat."

Double Objects

1. *El arquitecto famoso construyó una casa hermosa para mis padres.*
   *El arquitecto famoso construyó mis padres una casa hermosa.
   "The famous architect built my parents a beautiful house."

2. *Susana mandó un regalo de cumpleaños a su madre en Florida.*
   *Susana mandó su madre en Florida un regalo de cumpleaños.
   "Sue sent her mother in Florida a birthday present."

3. *Sam hizo unas preguntas realmente difíciles a Ana.*
   *Sam hizo Ana unas preguntas realmente difíciles.
   "Sam asked Ana some really tough questions."

4. *Unos peatones mostraron la oficina de correo a María.*
   *Unos peatones mostraron María la oficina de correos.
   "Passers-by showed Mary the post office."

5. *Isabel contó un cuento de terror a su hermano Roberto.*
   *Isabel contó su hermano Roberto un cuento de terror.
   "Isabel told her brother Bob a rather scary story."

6. *Cleo tiró otro Kleenex a su hermana en lágrimas.*
   *Cleo tiró su hermana en lágimas otro Kleenex.
   "Chloe threw her weeping sister another Kleenex."

7. *Betty prometió todo el dinero del mundo a Guillermo.*
   *Betty prometió Guillermo todo el dinero del mundo.
   "Betty promised Bill all the money in the world."

N-N Compounds

1. *Todos los niños disfrutaron del drama de televisión.*
   *Todos los niños disfrutaron del televisión drama.
   "All the children enjoyed the television play."

2. *Tus calcetines están en el lavabo del baño.*
   *Tus calcetines están en el baño lavabo.
   "Your socks are in the bathroom sink."

3. *Pedro ganó el concurso de pintura el viernes.*
   *Pedro ganó el pintura concurso el viernes.
   "Pedro won the painting contest on Friday."

4. *A mi hermana le gusta leer revistas de viaje.*
   *A mi hermana le gusta leer viaje revistas.
   "My sister enjoys reading travel magazines."

5. *Jenny se fue a comprar un vestido de verano.*
   *Jenny se fue a comprar un verano vestido.
   "Jenny went out to buy a summer dress."

6. *Nuestra puerta del garaje no sirve.*
   *Nuestra garaje puerta no sirve.
   "Our garage door is broken."

7. *Me gusta mi huevo para el desayuno con salsa.*
   *Me gusta mi desayuno huevo con salsa.
   "I like my breakfast egg with sauce."

APPENDIX B

STORIES AND COMPOUNDS USED IN THE FORCED CHOICE TASK

1. *Mi tío Antonio trabaja en una fábrica. En la fábrica se hacen muñecas. Mi tío Antonio es un*
   fabricante muñecas.
   fabricante de muñecas.
   muñeca fabricante.

2. *Anoche tuve un sueño muy extraño. Yo estaba dentro de este laberinto con paredes espejadas y no podía salir. Soñé con un*
   laberinto de espejos.
   espejo laberinto.
   laberinto espejo.

3. *Mi trabajo consiste en ir a restaurantes nuevos, probar los platos principales, y luego escribir mi opinión del restaurante. Mi crítica se publica en el periódico local. Yo soy un*
   restaurante crítico.
   crítico restaurante.
   crítico de restaurantes.

4. *Mi primo Roberto siempre va a la cancha de fútbol los domingos. No sabe jugar muy bien, pero le encanta dirigir el partido. Mi primo es*
   referí de fútbol.
   fútbol referí.
   referí fútbol.

5. *Cuando era niño, mi padre siempre doblaba papel y hacía barcos. Yo jugaba con estos:*
   papel barcos.
   barcos de papel.
   barcos papel.

6. *El profesor Suárez enseña literatura. Su especialidad es la poesía española del siglo de Oro. Ahora estamos leyendo un*
   Renacimiento poema.
   poema Renacimiento.
   poema del Renacimiento.

7. *Fui al museo de civilización asiática. En el área de arte chino vi una canoa de más de 1,000 años hecha de bambú. Lo que más me impresionó de la exhibición fue la*
   canoa de bambú.
   bambú canoa.
   canoa bambú.

8. *Susana va a tomar clases de tango. Necesita comprarse unos zapatos especiales. Son unos*
   zapatos de tango.
   tango zapatos.
   zapatos tango.

9. *Mi hermanito tiene muchos juguetes: trenes, camiones, aviones, barcos, y pelotas. Su juguete preferido es un auto que anda muy rápido y juega carreras con otros autos. A mi hermanito le encanta su*
   auto de carrera.
   carrera auto.
   auto carrera.

10. *A mi madre le gusta mucho cocinar y es muy organizada. En su cocina tiene un estante especial para poner todas las especias que utiliza. Es su*
    estante especias.
    especias estante.
    estante de especias.