Encoding discourse-based meaning: Prosody vs. syntax. Implications for second language acquisition

Maria Luisa Zubizarreta *, Emily Nava

Department of Linguistics, Grace Ford Salvatori 301, University Park, University of Southern California, Los Angeles, CA 90089-1693, United States

A R T I C L E   I N F O

A B S T R A C T

This paper examines the complex interplay between phrasal prosody, syntax, and meaning in English and Spanish, and explores its implication for second language acquisition (SLA). We present L2 data from *L1 Spanish/L2 English* learners which indicate that moving from *syntax to prosody* to encode the thetic/categorical distinction is far more challenging than moving from *syntax to prosody* to align the focused constituent with Nuclear Stress. On the other hand, L2 data from *L1 English/L2 Spanish* learners indicate that moving from *prosody to syntax* to encode the thetic/categorical distinction is far less challenging than moving from *prosody to syntax* to align the focused constituent with Nuclear Stress. We offer a grammatical account of this seemingly contradictory situation, in support of the view that second language learners acquire a grammatical system rather than isolated patterns.

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1. Introduction

The past decade has seen an increasing volume of work on the intonational and rhythmic properties of second language (L2) speech (e.g. O'Neil, 1998; Carter, 2005; Kim and Flynn, 2006; Mennen, 1999; White and Mattys, 2007; Trouvain and Gut, 2007; Lleó et al., 2007; Gut, 2003, 2009).[1] Most of those works have investigated the acquisition of L2 rhythmic properties that stem from the syllabic properties of the language. There is yet little work on the L2 acquisition of rhythmic properties at the phrasal level (Archibald, 1997; Nava and Zubizarreta, 2009, 2010).[1] The present study aims to contribute to our understanding of this particular, under-studied area of L2 prosody.

We address the question of the relative challenge that a particular prosodic pattern poses for L2 acquisition depending on context. More precisely, we investigate the relative success in the placement of English phrasal stress (also known as Nuclear Stress or NS) by native Spanish speakers in one syntactic structure, namely SV intransitives, but uttered in different informational contexts. The English-Spanish contact case is of particular interest because English (or more generally Germanic) allows for sentence internal NS in cases where Spanish (or more generally Romance) only allows for sentence final NS (e.g. Ladd, 1980, 1996; Zubizarreta, 1998). We refer to this property of English as NS flexibility, as opposed to Romance NS rigidity.

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* Corresponding author. Tel.: +1 213 740 2986; fax: +1 213 740 9309.
  E-mail address: zubizarr@usc.edu (M.L. Zubizarreta).
  [1] Archibald (1997)'s seminal research in this area offers a descriptive analysis of English NS by two adult L2 learners, one of which is a Hungarian and the other a Polish L1 speaker. The study is based on production data taken from an experiment originally designed to address the question of word stress acquisition. Archibald found evidence of L1 phrasal stress transfer in the speech of both L2 learners.

English exploits its NS flexibility for various purposes: (1) to align the focused (i.e. non-presupposed or asserted) part of the sentence with NS (e.g. Jackendoff, 1972; Reinhart, 2006) and (2) to mark the distinction in wide focus contexts between *categorical statements* (which articulate the clause in terms of a topic and the comment predicated of the topic) and *thetic statements* (which are eventive, topicless clauses), by placing NS on the subject in the latter case and on the verb in the former case (Sasse, 1987). Thus, in the case of SV structures, English uses the same prosodic pattern in terms of NS placement to mark theticity in wide focus contexts and to mark focus on the subject in narrow focus contexts. More specifically, in both cases, it places NS on the subject. On the other hand, Spanish, which has a rigid NS position at the right-edge of the sentence, exploits its flexible word order for both purposes (Sasse, 1987; Suñer, 1982; Contreras, 1976; Zubizarreta, 1998). Thus, in both of the above-mentioned informational contexts, Spanish uses VS order, with NS in final position.

The following interesting question then arises: are L2ers more successful in moving from a prosody-based grammar to a syntax-based grammar (L1English → L2Spanish) or are they more successful in moving from a syntax-based grammar to a prosody-based grammar (L1Spanish → L2English) to mark theticity and align the focus with NS. At the moment, we have no comprehensive bi-directional study that makes use of the same type of experimental protocol with both types of populations. Nonetheless, a preliminary discussion is possible based on our own findings on L1Spanish/L2English in combination with the currently available literature on L1English/L2Spanish (Hertel, 2003; Lozano, 2006).

The results of this comparison indicate that moving from syntax-to-prosody to encode the thetic/categorical distinction is far more challenging than moving from syntax-to-prosody to align the focused constituent with NS. On the other hand, moving from prosody-to-syntax to encode the thetic/categorical distinction is far less challenging than moving from prosody-to-syntax to align the focused constituent with NS. We offer a grammatical explanation to account for this seemingly contradictory state of affairs. More specifically, we argue that, to account for both the L1Spanish/L2 English data and the L1English/L2Spanish data, we need to take in consideration the grammatical algorithms that generate the prosodic patterns in different informational contexts. Comparing the surface (dis)similarity of the prosodic contours of the L1 and the L2 in isolation is insufficient to give a full account of the L2 data examined here. Our work thus stands in contrast to that of Mennen (1999), who appeals to the notion of (dis)similarity of the prosodic contours of the L1 and the L2 to account for the relative accuracy of L1Dutch learners of L2 Greek in their production of the prosodic contours of Yes/No questions in Greek.

The paper is organized as follows. In section 2, we summarize our view on the form and function of the NSR. In section 3, we present our study on L1Spanish/L2 English speakers, and the results that speak to the issues that constitute the focus of this paper. In section 4, we compare the results of our study with the Hertel/Lozano results regarding the acquisition by native English speakers of the Spanish way of marking theticity and aligning focus with NS. In section 5, we compare the results from L2 English with the results from L2 Spanish and offer a unified grammatical account. In section 6, we conclude and briefly outline directions for future research.

2. The form and function of the Nuclear Stress Rule

Languages may define prominence *culminatively* (via phrasal stress), *demarcatively* (via prosodic junctures), or both culminatively and demarcatively. Germanic languages, as well as Spanish, are known to be culminative languages, where the word that bears Nuclear Stress is identified as rhythmically strongest and is aligned with the Nuclear Pitch Accent (NPA), i.e. the last pitch accent in the intonational domain. To understand how Nuclear Stress is realized in the languages under discussion, it is important to separate the form of the algorithm that generates NS from the function of NS. In this section, we summarize the relevant core data and the analysis offered in Nava and Zubizarreta (2010).

In section 2.1, we discuss the use of NS as a marker of the *thetic/categorical* distinction. This distinction is shown to be sensitive to type of verb classes: the so-called *unaccusative* intransitives (which express change of state or location) favor the thetic interpretation, while the so-called *unergative* intransitives (which are agentive in nature) may oscillate between a thetic and a categorical interpretation, depending on pragmatic factors such as "noteworthiness". In section 2.2, we turn to the algorithm that generates NS in the languages under discussion. We show how the proposed analysis captures the variability of Germanic NS vs. the rigidity of Romance NS by appealing to the notion of metrical (in)visibility of functional categories.[2] We argue that English exploits its variable NS patterns to encode the thetic/categorical distinction. In section 2.3, we discuss the second function of NS in Germanic, namely its role in encoding the focus/presupposition divide. We show that English makes pervasive use of *A(naphoric)-deaccenting* in wide focus contexts, which in turn triggers *NS-Shift* when the word that bears NS is contained within the deaccented constituent. We argue that English makes use of those same mechanisms (*A-deaccenting & NS-Shift*) to prosodically identify the focused constituent of the clause.

2.1. Nuclear Stress as a marker of theticity

While the use of NS to identify the scope of the focus across typologically different languages is well-known (e.g. Ladd, 1980, 1996), it is less recognized that NS in Germanic also plays an important role in encoding the thetic/categorical divide.

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[2] For an interesting alternative view of NS, couched within prosodic phonology, see Truckenbrodt (2006). We contend that the analysis presented here and fully defended in the above-mentioned references better accounts for the variability of the Germanic NS as well as the parametric differences between Germanic and Romance; see Nava and Zubizarreta (2010).

This distinction was first introduced by the 19th century philosophers Brentano and Marty and revived by Kuroda (1972). The latter author showed that in Japanese, the subject of a thetic statement is Case-marked differently from the subject of a categorical statement. More than a decade later, Sasse (1987) observed that English and other Germanic languages use NS to encode that same distinction. This is revealed by the prosodic pattern distribution in SV intransitives. The SV structures with NS on the subject are thetic (eventive) statements, while SV structures with NS on the verb are categorical (or topic-comment) statements.

More precisely, categorical statements are those that consist of two acts: an act of naming the subject and an act that consists of attributing a property to that subject, namely, the property denoted by the VP. Grammatically, the attribution of a property to the subject corresponds to the subject-predicate relation, a relation that is grounded in the discourse-based notion of "aboutnesss" (Reinhart, 1981). Thus, categorical statements are topic/comment sentences, where the subject is the "topic" and the VP provides the "comment". On the other hand, thetic statements simply introduce an event or situation; they are eventive statements. Sasse op.cit. considers a thetic clause to be semantically comparable to its nominalization counterpart (putting aside tense considerations) in that both lack a subject-predicate relation; e.g. *a friend arrived* and *a dog is barking* (with NS on the subject) are comparable to *the arrival of a friend* and *the barking of a dog*, respectively.

While the thetic/categorical distinction does not give rise to a truth-conditional difference, it does seem to be the case that SV unaccusative structures (which denote change of state or location) tend to be construed as thetic (or eventive) statements due to their lexical semantics. On the other hand, SV unergative structures tend to have a variable behavior, either as categorical or thetic, depending in part on pragmatic properties like degree of predictability and noteworthiness of the predicate in relation to the subject. This is supported by the data from the study presented here.

In a production experiment (to be reported in detail in section 3.1), we found that native speakers systematically placed NS on the subject in SV structures with unaccusative verbs, a sample of which is provided in (1), where underlines indicate the position of NS. (The percentages indicate the amount of tokens produced with the NS pattern as indicated.)

(1)   a.   Why are you so happy? My <u>friend</u> arrived.   (100%)
       b.   Why are the kids looking outside? A <u>rabbit</u> appeared.   (100%)
       c.   What was that crashing sound? A <u>window</u> broke.   (100%)

On the other hand, in the case of SV structures with unergative verbs, a substantial amount of variability was found across tokens and across native speaker participants; i.e. NS patterns fluctuated between NS on the subject and NS on the verb. A sample of unergatives with NS on the verb is provided in (2); the remaining percentages correspond to cases of NS on the subject.

(2)   a.   Why didn't they finish the play?   An actress was <u>crying</u>.   (79%)
       b.   How did the party end?   A guest <u>sang</u>.   (57%)

Pragmatic factors such as predictability and noteworthiness can influence NS placement. Thus compare the examples in (3), which the majority of participants produced with NS on the subject, with the examples in (4), which the majority of participants produced with NS on the verb. While "a dog barking" and "a dolphin swimming" are pragmatically predictable and uneventful events, "a dog singing" and "a dolphin talking" are pragmatically unexpected and noteworthy events.[3]

(3)   a.   Why are those children screaming? Because a <u>dog</u> is barking.   (71%)
       b.   Why is everybody at the aquarium? Because a <u>dolphin</u> is swimming   (87%)

(4)   a.   Why does everybody look so surprised? Because a dog is <u>singing</u>.   (81%)
       b.   Why does everybody look so surprised? Because a dolphin was <u>talking</u>.   (89%)

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[3] Note that noteworthiness can also influence the position of NS in the case of certain unaccusatives. Thus, we found that with the following two token items, NS tended to be located on the verb:

(i)   Why is the show over? Guess what? The magician <u>disappeared</u>!   (60%)
(ii)   What happened at the game? You won't believe it! The major <u>fell</u>!   (75%).

Still, it is remarkable that the light verbs of appearance, which are cross-linguistically the unaccusative verbs par excellence, do not seem to be influenced by considerations of noteworthiness, as shown by the fact that all renditions of the token items below had NS on the subject:

(iii)   What happened? You won't believe it! The <u>aliens</u> arrived!   (100%)
(iv)   How was the parade? Not good. The <u>police</u> came!   (100%).

We summarize the relation between type of statement, verb class, and prosodic pattern in Table 1.[4]

Table 1
NS pattern, statement and verb types.

Prosodic pattern	Thetic (or eventive) statement	Categorical (or topic/comment) statement
SV	Unaccusative	N/A
	Unergative	
S**V**	Unergative	Unergative

English (or Germanic, more generally) can use NS to encode the categorical/thetic divide because its Nuclear Stress algorithm (or NSR) allows for non-sentence final NS. On the other hand, in Romance, NS in wide-focus contexts is always sentence final.[5] Therefore, Romance uses syntax to encode this distinction. A rigid word order language, like French, uses the existential "il y a" construction, among other constructions, to encode theticity; see (5). On the other hand, languages with flexible word order, like Spanish and Italian, use the VS structure; see (6).

(5) a. Il y a un ami qui est <u>arrivé</u>. Cf. (1a)
     b. Il y a une fenêtre qui s'est <u>cassée.</u> Cf. (1c)
     c. Il y a un chien qui <u>aboie</u>. Cf. (3c)

(6) a. Llegó un <u>amigo</u>. Cf. (1a)
     b. Se rompió una <u>ventana</u>. Cf. (1c)
     c. Está ladrando un <u>perro</u>. Cf. (3c)

Although we recognize that languages may vary as to the means they employ to encode the thetic/categorical divide, we do not think that the form should be reduced to the function; the two should be kept distinct. Indeed, English also has syntactic means, like the existential *there*-construction, to encode thetic or eventive statements. Still, it is remarkable that even with the existential construction, where the word order in the two sets of languages is comparable, non-final NS is possible in English but not in Romance; compare English (7) with its Spanish counterpart in (8) and its French counterpart in (5c).

(7) There is a <u>dog</u> barking.

(8) Hay un perro <u>ladrando</u>.

The obvious conclusion is that Germanic, but not Romance, can encode the thetic/categorical distinction via prosody precisely because the Germanic NSR generates flexible NS patterns, namely patterns with sentence internal NS as well as patterns with NS in sentence final position. More specifically, for any intransitive SV sentence, the Germanic NSR generates both a <u>S</u>V and a S<u>V</u> pattern. Which pattern the speaker chooses for any given SV sentence will depend on whether (s)he intends to express a thetic or categorical statement, and this in turn will be conditioned by the semantics of the verb, as well as by pragmatic factors such as predictability and noteworthiness. In contrast to the Germanic NSR, the Romance NSR systematically places NS sentence-finally. We turn next to the discussion of the NS algorithm in these two types of languages.

2.2. A parameterized Nuclear Stress Rule

As prefaced by the above discussion, our view is that a grammatically encapsulated NS algorithm exists, namely a rule that only appeals to grammatical notions in determining the placement of NS. The role of semantics and pragmatics comes in later in that the speaker chooses a particular pattern depending on whether (s)he intends to articulate the sentence as a thetic or as a categorical statement. This decision depends partly on the semantics of the verb and on pragmatic notions such as noteworthiness. The question that arises is why the Germanic NSR, but not the Romance NSR, can generate flexible prosodic patterns. We turn to this question below.

2.2.1. The Nuclear Stress algorithm and the metrical (in)visibility of functional categories

The Nuclear Stress Rule (NSR) applies to a metrically interpreted syntactic structure (in the sense of Liberman, 1975) and generates the unmarked NS patterns. An empirically adequate NSR must account, on the one hand, for the variability

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[4] As mentioned in note 3, while the thetic interpretation overrides the categorical interpretation with the unaccusative verbs that we are considering in this paper (namely, *come, enter, arrive, appear, escape, vanish, broke, close, open, die*), the categorical interpretation is available with unccusatives, like *disappear* and *fall*, in particular if the subject is animate.

[5] More precisely, NS in wide focus contexts in Romance is sentence final within the sentential structure that constitutes an intonational phrase. In the core (simple) cases, there is a correspondence between the syntactic sentential structure and Intonational Phrase. It is well-known that considerations such as length can distort such correspondence (Chomsky and Halle, 1968). It is reasonable to assume that acquisition is based on the core (simple) cases and therefore these are the cases that should be considered in determining the properties of the NS algorithm.

of NS patterns in Germanic (in particular in SV intransitives) and on the other hand, for the lack of variability in Romance. The two-layer NSR in (9), in conjunction with another assumption introduced immediately below, achieves just this. The general-NSR is the "elsewhere" case; it applies when the specific-NSR fails to apply. *S* stands for metrically strong constituent, the sister of which is *W* (Weak) by convention. NS is located on the node that is solely dominated by *S* nodes.[6]

(9)   Given two metrical sister nodes A and B:

   (i)   If A is a head and B is its argument, assign *S* to B. (*specific-NSR*)

   Otherwise,

   (ii)   Assign *S* to the right-most constituent node in the phrase. (*general-NSR*)

   (Zubizarreta, 1998; Zubizarreta and Vergnaud, 2005).

The reason why the NSR generates variable patterns in the case of intransitive SV structures in Germanic is due to the metrical status of its functional nodes. *Functional categories in this language type may be analyzed as metrically invisible* (Zubizarreta, 1998; Zubizarreta and Vergnaud, 2005). To illustrate the implications of this proposal, consider the metrical structure of the intransitive sentence *a dog is barking*. If T(ense) is interpreted as metrically invisible, we obtain the metrical structure in (10a), where N(oun) and V(erb) are metrical sisters. The specific-NSR applies, designating the subject as metrically strong. If T(ense) is interpreted as metrically visible, we obtain the metrical structure in (10b). The presence of the T(ense) node bleeds the application of the specific-NSR, i.e. N(oun) and V(erb) are not metrical sisters in such a structure. Instead, the general-NSR applies to the sister nodes N(oun) and T(ense) and to the sister nodes T(ense) and V(erb), ultimately designating V(erb) as the locus of NS.

(10)   Figs. 1 and 2
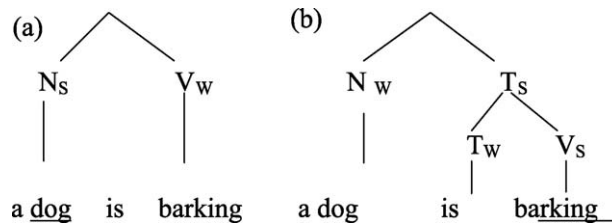
Figs. 1 and 2.

In contrast to Germanic, *functional nodes in Romance are always metrically visible* in the sense that they always count for the computation of Nuclear Stress. Therefore, an intransitive SV in Romance will never be metrically interpreted as (10a); it will always be metrically interpreted as (10b). The specific-NSR will never be activated in Romance and for this reason only the general-NSR can be part of the grammar in this language type.

The question that arises is why functional nodes can be metrically invisible with respect to the computation of NS in Germanic, but not in Romance? A plausible conjecture is that *the prosodic nature of function words is at the heart of the Romance/Germanic parameterization with respect to the NSR* (Nava and Zubizarreta, 2010). This in turn might be related to the reduced duration of vowels in function words in Germanic, in particular in Tense-bearing function words. In English, function words, and in particular auxiliaries and copulas, are unstressed and reduced (Inkelas and Zec, 1993).[7] Interestingly, in German there is little reduction in content words (only in final syllable position), while there is vast reduction in function words (Gut, 2003). On the Romance side, Spanish is known to lack the reduced/non-reduced distinction in its vowel system, both in content words and in its functional vocabulary.[8] As for Catalan, which does have this distinction in its vowel system, reduced vowels are found mostly in content words and in some monosyllabic functions words, such as the prepositions *a, de, en* and the determiners *el, la, els, les*, but crucially tense-bearing function words such as auxiliaries and copula never reduce, even when they are monosyllabic (Solà et al., 2002). For example, *ser* 'be' in the present tense/indicative mood consists entirely of monosyllabic, stressed morphemes (*sóc, ets, és, som, sou, són*), and so is *haver* 'have' in the present tense/ indicative mood (*he, has, ha, hem, heu, han*). Hence, the conjecture that the rhythmic nature of function words, and in

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[6] A is a metrical head iff it is non-branching. B is an argument of A iff B is contained within the l(exico)-syntactic structure of A, where l-structure is to be understood in the sense of Hale and Keyser (2002) (see Nava and Zubizarreta, 2010 for details).

[7] Auxiliaries, which is the functional category of immediate relevance for our present purposes, have been identified as acquiring stress in three environments: in sentence final position, stressed by a postlexical rule (see Inkelas and Zec, 1993), in emphatic contexts, stressed via the Emphatic Stress Rule (see Zubizarreta, 1998), and when the NS-bearing constituent to its right is informationally given and deaccented, triggering a shift of the NS onto the Auxiliary (on the NS-Shift rule; see section 2.3).

[8] Hualde (2006, 2009), who discusses the stress/unstress variability of Spanish function words, argues that these are lexically stressed and get destressed when they get cliticized with phrasal material to the right (which is usually the case in ordinary speech). They retain their independent prosodic status and their stress in citation and emphatic contexts.

particular of tense-bearing function words, might underlie the nature of phrasal level rhythm in the languages under discussion is a plausible one. We return to this conjecture in section 6.

2.2.2. The relevance of the argument-modifier distinction in the Germanic NSR

Another aspect of the Germanic NSR that merits mentioning is its sensitivity to the argument vs. modifier distinction, which the NSR as formulated in (9) readily captures. It has often been noticed in the literature that Germanic NS gives primacy to arguments (e.g. Schmerling, 1976; Gussenhoven, 1984; Selkirk, 1984). This can best be seen in verb final structures, such as the minimal contrast provided by the German examples in (11) (from Krifka, 1984). The PP and the Verb are metrical sisters in both examples, yet the argument PP in (11a) attracts NS, while the adjunct PP in (11b) does not and NS goes on the verb instead.

(11)   a.   Hans hat an seinem <u>Papier</u> gearbeitet.
              Hans has on his   paper   worked
              'Hans has worked on his paper.'
        b.   Hans hat in seinem Büro <u>gearbeitet</u>.
              Hans has in his   office worked
              'Hans has worked in his office.'

In English, it is hard to see the relevance of the argument vs. modifier distinction in determining the placement of NS because, at the phrasal level, English is head initial. Thus, in the English counterpart to the above examples, NS falls on the object of the Preposition whether the P is a complement (with NS assigned by the specific-NSR) or a modifier (with NS assigned by the general-NSR). Nonetheless, the relevance of the argument/adjunct distinction can be appreciated in English unaccusative structures. More precisely, while NS may fall on the subject in an SV structure (as discussed earlier), this is not possible when an adverb intervenes between the subject and the verb. This finding is attributed initially to Gussenhoven (1984), based on an experimental investigation, and our results confirm his finding. Thus, compare the SV structures in (1) (with NS on the subject) with the SAdvV structures in (12) from our Q&A study, which were overwhelmingly produced with NS on the verb. (The remaining 7% were renditions with emphatic stress on the adverb.)[9]

(12)   a.   Why are you waiting at the door?   The guests will soon <u>arrive</u>.   (93%)
        b.   Are the kids eating already?   Yes, the pizza quickly <u>arrived</u>.   (93%)

The NSR in (9) readily accounts for the above NS pattern. Consider the metrical structure of (12b), given below. Whether or not T(ense) is metrically visible (as indicated by the parenthesis), the presence of the Adverb bleeds the application of the specific-NSR. The general-NSR applies instead, ultimately locating the NS on V.
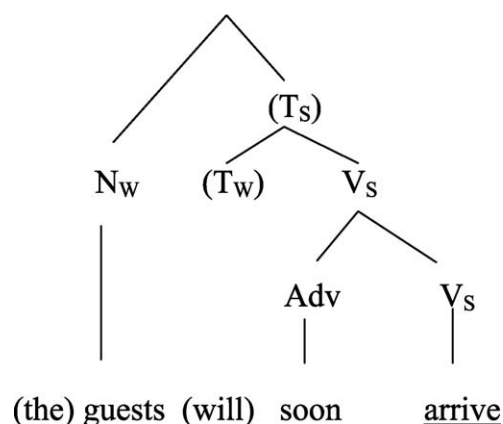
(13)   Fig. 3

Fig. 3.

The primacy of arguments can also be observed in English compositional compounds, which, unlike phrases, have a head-final structure. If the first element of the compound is unambiguously interpreted as an argument of the head of the

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[9] A reviewer finds the answer part in (12b) unnatural. While this might be a stilted way of answering the question, we do not think it affects the validity of the results, which coincide with Gussenhoven (1984) experimental findings.

compound, then main stress falls on the first element of the compound, as illustrated in (14) (taken from our study). Other relevant examples are <u>church</u>-goer, <u>pasta</u>-eater, <u>star</u>-gazing, <u>city</u>-dweller, <u>bribe</u>-taking (official).

(14)   a.   Does Jill like to visit parks? Oh, yes. She is a <u>bird</u>-watcher.   (100%)

          b.   What will Tim do in Africa? He will go <u>lion</u>-hunting.   (100%)

On the other hand, if the first element of the compound is a modifier of the head of the compound, main stress tends to go on the latter (Selkirk, 1984), although the data is not as crisp as in the case of phrasal stress, due to effects of frequency and analogy (Giegerich, 2004). Still, while compounds such as *night-<u>hunting</u>, day-<u>sleeping</u>, Harvard-<u>trained</u> (lawyer), city-<u>raised</u> (cats)* can be pronounced with NS on the second N, such stress pattern is not available in the case of compounds where the first N is the argument of the second N, as in the examples cited above (unless emphasis or contrast is intended). The argument/modifier distinction also accounts for the difference in interpretation between <u>tree</u>-eater 'someone who eats trees' and *tree-<u>eater</u>* 'someone who eats on a tree' and between <u>toy</u>-factory 'factory that makes toys' and *toy-<u>factory</u>* 'a toy that is a factory' (Giegerich, 2004; Selkirk, 1984). If main stress is on the first N, it can be interpreted as an argument, but if main stress is on the second N, the first N is unambiguously interpreted as a modifier.[10] These observations suggest that the same algorithm that determines sentence-level NS also determines NS in the case of productive (non-lexicalized) compounds (as argued by Cinque, 1993), abstracting away from the effects of analogies and lexicalization.[11],[12]

2.2.3. Summary

To summarize, the Germanic NS is a two-tiered algorithm, which generates sentence internal NS in certain structures and sentence final NS in other structures. In the case of SV intransitives, it may generate NS on the subject or NS on the verb. This variable NS is exploited to distinguish thetic or eventive statements from categorical statements, in which the subject is the topic and the VP constitutes the comment. The former carries NS on the subject, while the latter carries NS on the Verb. Because unaccusative verbs tend to be eventive by virtue of their lexical semantics, they tend to give rise to SV structures with NS on the subject. By contrast, unergative verbs are much more variable: they can be interpreted as thetic or categorical and this depends on factors such as predictability and noteworthiness of the predicate-subject relation.

In contrast to the Germanic NSR, the Romance NSR is a one-tiered algorithm, which privileges final NS across structures. Given the rigidity of the position of NS in Spanish, it follows that it cannot encode the thetic/categorical distinction in terms of prosody. Instead, this language exploits its flexible word order to distinguish thetic from categorical statements. More precisely, Spanish uses SV order to encode categorical statements and VS order to encode thetic statements. We return to Spanish in section 4.

2.3. NS as a marker of focus

In this section, we discuss the second function of NS, which is to identify the focused constituent of the sentence. As is well-known, in many languages, including English and Spanish, *the focused constituent must contain the word that bears NS* (e.g. Jackendoff, 1972; Zubizarreta, 1998; Reinhart, 2006, among many others).[13] Thus, the transitive sentence in (15b) with NS on the object is compatible with an interpretation where the entire sentence is under assertion, as indicated by the fact that it is a natural response to the context question in (15a). (Underlines indicate the position of NS and italics indicate deaccented material.) The presupposition associated with (15a) is "event x happened" and the assertion is "that event x = a boy broke his leg". On the other hand, the same sentence with NS on the subject is only compatible with a narrow focus interpretation, as indicated by the fact that (16b) is an adequate response to the question in (16a). The presupposition associated with (16b) is "some individual x broke his leg" and the assertion is "that individual x = a boy".

(15)   a.   What happened?

          b.   A boy broke his <u>leg</u>. (wide focus)

(16)   a.   Who broke his leg?

          b.   A <u>boy</u> *broke his leg*. (narrow focus)

Our view (following a tradition established by Chomsky and Halle (1968)'s seminal work on the NSR) is that the NSR generates the NS patterns for wide focus contexts (as described in section 2.2). In the case of transitive sentences, because the object is both an argument and a metrical sister of the verb, the NSR assigns NS on the object unequivocally. The question

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[10] Plag et al., 2008 argue (based on data from a corpus study) that the type of semantic relation is a better predictor of stress than the argument-modifier distinction. It is to be noted though that the argument-modifier distinction is to a large extent based on type of semantic relation.

[11] The correlation of position of stress in compounds and the argument/modifier distinction may be blurred by analogies and lexicalization, which are in turn influenced by frequency and spelling considerations (Giegerich, 2004; Plag et al., 2008).

[12] A reviewer finds that *chair-eater* cannot possibly have the meaning 'eat on a chair'. It is likely that frequency of semantic-relation type between the head and its sister has a biasing effect (maybe more so for some speakers than others), over-riding stress considerations. On the role of frequency, see Plag et al. (2008).

[13] For experimental evidence on the relevance of NPA in determining the scope of the focus, see Ayers (1996) and Welby (2003).

then arises as to how the grammar aligns NS with a narrow focused constituent that fails to receive NS via the NSR, as in (16b). English and Spanish resort to different mechanisms (Zubizarreta, 1998; Sosa, 1999; Hualde, 2006).

It is generally assumed that in languages like English (Pierrehumbert, 1980) and Spanish (Sosa, 1999), the grammar aligns the syllable that receives main lexical stress with a pitch accent. In a language like English, discourse considerations can trigger pitch accent deletion (or significant pitch reduction) at the grammar-discourse interface. In particular, it is well-established that there is a strong tendency in English to deaccent previously mentioned information, due to a rule known as *A (naphoric)-deaccenting* (e.g. Ladd, 1980, 1996; Gussenhoven, 1984; Selkirk, 1984; Nava and Zubizarreta, 2010). This includes cases where the previously mentioned information is contained within the focused or asserted part of the sentence, as in the examples below. (The reported percentages were obtained with a Q&A protocol described in section 3.1).

(17)   Why are you buying that old stamp?
       Because I <u>collect</u> stamps.   (75%)

(18)   Why are these notebooks missing their covers?
       Because I'm drawing <u>pictures</u> on the covers.   (88%)

In the above examples, the NSR generates NS on the object in the SVO structure and on the PP in the SVOPP structure. *A-Deaccenting* applies, deleting (or reducing) the pitch on previously mentioned material, namely the object in (17) and the PP in (18). In the languages under discussion, a word can bear main sentence prominence iff it is associated with a (full) pitch accent.[14] Therefore, deaccenting of a constituent that contains the word with NS triggers NS-Shift onto the metrical sister of the deaccented constituent (Ladd, 1996). In the SVO structure in (17), NS is shifted from its original position on the object onto its metrical sister, namely the verb. In the SVOPP structure in (18), NS is shifted from its original position on the prepositional object onto the verbal object.

Consider next cases of narrow focus, as in (16b) and (19).

(19)   a.   Who bought that old stamp?   <u>Mary</u> bought that old stamp.
       b.   What are you drawing on the cover?   I am drawing <u>pictures</u> on the cover.

Such NS patterns are also generated via *A-Deaccenting & NS-Shift* (Reinhart, 2006). In (16b) and (19a), the VP is deaccented and therefore, the NS originally located on the object is shifted onto the subject. In (19b), the PP is deaccented and therefore, the NS originally located on the object of the preposition is shifted onto the direct object. As mentioned earlier, this shifting occurs because the word that bears NS must be pitch-accented. *NS-Shift* is therefore a consequence of *A-deaccenting*. Note that, as we have seen in section 2.2, in the case of an intransitive SV, English also has the possibility of directly generating NS on the subject via the NSR.

Turning now to Spanish, it is to be noted that Standard Spanish does not deaccent previously mentioned material contained within the focused (or asserted) part of the sentence (e.g. Ladd, 1996; Cruttenden, 1997; Zubizarreta, 1998). Thus, in the literal Spanish translation of (17) and (18), NS falls on the object and the PP respectively.[15] Alternatively, Spanish speakers would resort to dislocated structures that involve clitics or dislocation to avoid placing the NS on constituents that contain previously mentioned information.

As for cases of narrow focus, Standard Spanish typically uses word order to align the focused constituent with NS (e.g. Contreras, 1976; Zubizarreta, 1998). Thus, in the case of an intransitive SV sentence, Spanish can use its VS structure to align S with sentence final NS, as in (20)–(22). In the case of a transitive sentence, it can scramble the constituent containing the verb and the object immediately to the left of the subject, as in (22) (if the answer consists of a full sentence)[16]:

(20)   a.   Quién llegó? Llegó mi <u>amigo</u>.
       b.   Who arrived? 'My <u>friend</u> arrived'

(21)   a.   Quién está llorando? Está llorando una <u>actriz</u>.
       b.   Who is crying? An <u>actress</u> is crying.

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[14] More generally, a non-pitch-accented word is never more prominent than a pitch-accented one in the languages under discussion.
[15] We hasten to add that some Romance languages (such as French and Brazilian Portugese) do allow *A-deaccenting* (of previously mentioned material) & NS-Shift (see Zubizarreta, 1998 and references therein). We have also found Spanish speakers in contact with English that deaccent & NS-shift previously mentioned or presupposed information.
[16] Native speakers of Standard Spanish tend to perceive non-sentence final NS in Spanish as implying contrast or emphasis. Thus, it is not that the main stress on a preverbal subject as an answer to (22) is impossible, but rather that it gives rise to a contrastive implicature.

(i)   MARIA compro un viejo sello (y no otra persona).
      'MARIA bought an old stamp (and not someone else)'

Contrastive or emphatic stress (indicated in capitals) is not generated by *A-deaccenting & NS Shift*, but by an independent rule that can also apply below the word level, in Spanish as well as in English; eg. *I said UNwind not REwind, PRElatal, not POSTnatal.*

(22)   Q: Quién compró un sello viejo?   A: Compró un sello viejo <u>María</u>
              Who bought an old stamp?   Bought an old   stamp Maria
                                                    '<u>Maria</u> bought an old stamp.'

To summarize, Standard Spanish does not make use of *A-deaccenting*. Spanish speakers choose to exploit other grammatical resources that the language provides to align NS with focus, as well as to avoid aligning NS with given information, namely word order, cliticization, and dislocation. Yet, there is no grammatical reason why *A-deaccenting* cannot be incorporated into the Spanish grammar; it would not be at odds with any other prosodic property of the language.[17]

3. Research questions for L2 Acquisition. The case of L1 Spanish/L2 English

Given the differences in both form and function between English and Spanish NS described in section 2, the following questions arises with respect to the acquisition of Germanic NS by L1 Spanish/L2English learners:

(23)   a.   Are L1Spanish/L2 English learners able to acquire the Germanic NS?
        b.   Are L1Spanish/L2English learners able to acquire NS as a marker of theticity?
        c.   Are L1 Spanish/L2 English learners able to align NS with the focused constituent?

Recall that in English, SV unaccusative structures, tend to strongly prefer the Germanic NS pattern (main stress on the subject), because they tend to be interpreted as thetic statements due to their inherent lexical semantics. Compounds of the OV type also unambiguously give rise to the Germanic NS pattern (main stress on the object). Therefore, these two types of structures are relevant in investigating the question in (23a). Unlike unaccusatives, SV unergatives give variable results. If interpreted as a categorical statement, NS is on the Verb, and if it is interpreted as thetic, NS is on the subject. We can therefore investigate the question in (23b) by investigating to what extent L2 learners of English make a distinction between SV unaccusatives and SV unergatives structures in terms of NS placement. We can investigate (23c) by examining to what extent learners produce NS on the subject in SV structures (whether unaccusative or unergative) when the subject is the focus of the sentence.

Finally, we can ask the following question:

(24)   Is it more or less challenging for native Spanish speakers to acquire English NS as a marker of theticity or as a marker of focus?

This section is organized as follows. In section 3.1, we describe the experiment from which we take the data to address the above questions. In section 3.2, we present the results and in section 3.3 we discuss the relevance of such results and interpret them in light of the grammatical analysis given in section 2.

3.1. Material and methods

The data that we will draw on to address the question raised above was obtained from our own production experiment, which consisted of short, scripted Question & Answer (Q&A) dialogues. The experimental items were designed to elicit NS placement in a wide-variety of syntactic and informational structures, only a subset of which are discussed here. Two lists of test items were constructed using a within-subjects design, so that no participant read any given test item more than once. There were a total of 90 test items. Each of the two Q&A sets consisted of 45 test items and 45 fillers. The fillers were designed to vary the structure and the force of the sentences, including exclamatives, questions, as well as statements. The scripted dialogue was presented on 4×6 cards. The participants were instructed to read their part as if they were engaged in a natural conversation. The dialogue was recorded for latter analysis, using the Pitch Works software program. The participants were also asked to read a passage known as *The North Wind and the Sun*, the purpose of which was to analyze speech rhythm. This data will not be discussed in this paper, except briefly in the final section.

The relevant items for our present purposes consist of 24 SV structures in wide focus contexts: 12 unaccusatives (6 in each set) and 12 unergatives (6 in each set). The unaccusative verbs used are: *come* (twice), *enter, arrive* (twice), *appear, escape, vanish, broke, close, open, die.* The unergative verbs used are: *bark, roar, swim* (twice), *talk, dance, sing* (twice), *smile, run, cry, sneeze.* Also relevant are 4 OV compounds in object position in an SVO structure (2 in each set) and 4 SV structures with narrow focus on the subject.[18]

The coding was done by two independent coders, an undergraduate research assistant and the second author, who is trained in the ToBI (<u>To</u>nes and <u>B</u>reak <u>I</u>ndices) transcription system. There was 94% agreement between the two coders; the remaining cases were decided in consultation with a third ToBI-expert transcriber.

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[17] Note that in cases of contrast or emphasis, which involves accent of correction, the post-emphatic material does deaccent in Spanish (see note 16). This follows from the fact that the NPA is, by definition. the last pich accented element in the intonational domain, so what follows the NPA must undergo pitch reduction, in Spanish as in English.

[18] The list of Q&A can be obtained upon request from the first Author.

A Cloze test (borrowed from Oshita, 1997) was also administered to have an independent measure of grammatical proficiency. The test consisted of three passages with every fifth word left blank, a total of 75 blanks with a score range from 0 to 75.

The participants consisted of 34 English Native controls (ENCs), undergraduate and graduate students at the University of Southern California. The age-range at testing was 19–30 (average 24). The L2 participants consisted of 47 L1Spanish/L2 English speakers from Spain, Mexico, Argentina, and Paraguay; they were either undergraduate or graduate students at the time of testing or professionals with a college education. The age-range at testing was 19–55 (average 34) and the age-range of first exposure was 3–50 (average 14). All the L2ers were tested in Los Angeles, except 9 Paraguayans who were tested in their native country. The latter group attended an American bilingual school in Paraguay from a very young age (from pre-school or kindergarten) until 12th grade. The English part of the program was taught by native speakers of American English and there were also a significant, although fluctuating, number of native American English speakers in the peer group. One of the L2 participants was discarded from analysis because it was later revealed that she had been raised in a bilingual household in Mexico.

3.2. Cloze test results

The Cloze test scores for the ENC group ranged between 70 and 75 (average 73). The L2ers were broken down into two groups: a high proficiency group (27 participants) with a test score range of 66–73 (average 70) and an intermediate proficiency group (19 participants) with a test score range of 58–65 (average 60). A one-tailed, two-sample unequal variance t-test revealed a significant difference between the L2 high and L2 intermediate proficiency groups ($p < .001$). The age-range of exposure for the High proficiency group was 3–27 (average 12) and the age-range of exposure for the intermediate group was 4–50 (average 21).

3.3. Results of Q&A test

We report data on SV unaccusatives, SV unergatives, and OV-compounds in wide focus contexts in section 3.3.1 and on SV unaccusatives and SV unergatives with narrow focus on the subject in section 3.3.2. The data were subjected to a Chi-square analysis.[19] In all cases, NS placement is the dependent variable and the syntactic structures (SV Unacc, SV Unerg, OV-compounds) and information structure (wide and narrow focus) are the independent variables.

3.3.1. Wide focus contexts

We present below the group data obtained, with the L2ers divided into High and Intermediate Proficiency. In Table 2, we give the mean percentage for the SV Unacc and OV-Compounds, which gave rise to a very high percentage of Germanic NS patterns in the ENC. For the SV Unerg, we give both NS patterns (NS on the verb and on the subject), so as to underscore the variable prosodic pattern obtained with this verb class in the ENC group (in contrast with the SV Unacc).[20] We can clearly see an effect of the first language in the NS patterns of the L2ers and more strongly so in the case of the intermediates, as shown by the overwhelming patterns of sentence final NS. Note also that for the High Proficiency L2ers, there is a stronger effect of the L1 in the case of the SV unaccusatives than in the case of the OV compounds.

Table 2
Cloze-based proficiency groups. Percentage of NS patterns.

	Unacc **S**v Mean (sd)	**O**V-compound Mean (sd)	Unergative **S**V Mean (sd)	Unergative S**V** Mean (sd)
ENC	97% (0.1)	96% (0.1)	42% (0.3)	58% (0.3)
L2 High	36% (0.2)	71% (0.4)	39% (0.3)	61% (0.4)
L2 Interm.	4% (0.0)	8% (0.0)	16% (0.0)	84% (0.2)

To begin to address the question in (23a), we did a pair-wise-group comparison of the production of Germanic NS patterns for the <u>SV</u> Unacc and <u>OV</u>-compounds, which elicited close to 100% Germanic NS in the case of the ENC, as well as for <u>SV</u> Unerg. As we have seen earlier, SV Unerg yielded variable NS results with native speakers, but they are nevertheless worthwhile considering for the sake of L2 data comparison. In Table 3, we report the results of a chi-square statistical analysis. We note that all comparisons are statistically significant (at $<.05$ value).

Table 3
Comparison between Cloze-based proficiency groups.

	Unacc. **S**V	**O**V-compound	**S**V unergatives
ENC vs. L2 High	$\chi^2 = 124.84$ ($p < .001$)	$\chi^2 = 15.84$ ($p < .001$)	$\chi^2 = 4.72$ ($p = .030$)
ENC vs. L2 Interm.	$\chi^2 = 214.77$ ($p < .001$)	$\chi^2 = 78.93$ ($p < .001$)	$\chi^2 = 38.87$ ($p < .001$)
L2 High vs. L2 Interm.	$\chi^2 = 32.22$ ($p < .001$)	$\chi^2 = 33.63$ ($p < .001$)	$\chi^2 = 18.20$ ($p < .001$)

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[19] The reason why chi-square statistics was chosen is because the data is categorical (rather than continuous) in nature.
[20] Percentages are rounded off to the nearest whole number and the standard deviations to the nearest tenth.

We turn next to individual data. We tabulated the NS patterns for <u>SV</u> unaccusatives and <u>OV</u>-compounds for each L2er. Recall that we elicited 6 SV unaccusatives and 2 OV-compounds for each participant; hence, 8 potential Germanic NS patterns for each participant. We regrouped the L2ers on the basis of whether they produced a Germanic NS pattern above chance level, which means concretely at least 5 out of 8 Germanic NS patterns in the relevant test items. Such individual analysis of the L2 population revealed that there were only 9 L2ers that produced the Germanic NS pattern above chance-level; we refer to them as the +NS group. All the L2ers in this group were High Proficiency as determined by the Cloze test, with an age-range of first exposure between 3 and 15, five of which had attended a bilingual school starting at 3–6 years of age. The rest of the 37 L2ers either did not produce any Germanic NS patterns or did so at chance level or below. We refer to them as the −NS group. We recalculated the mean percentage for each L2 subgroup (+NS and −NS) with respect to the two Germanic NS patterns, namely the <u>SV</u> Unacc and the <u>OV</u> compounds. The results are given in Table 4. We repeat the results for the ENCs for ease of comparison.

Table 4
Prosodic proficiency groups. Percentages of NS patterns.

	Unacc <u>S</u>V Mean (sd)	<u>O</u>V-compound Mean (sd)
ENC	97% (0.1)	96% (0.1)
+NS L2	65% (0.3)	94% (0.2)
−NS L2	13% (0.1)	33% (0.4)

We report in Table 5 the statistical results obtained from comparing the 3 groups (ENC, +NS L2, and −NS L2) among each other. The comparisons are statistically significant in all cases except in one: the difference between the ENC and the +NS L2 group is not statistically significant with respect to the <u>OV</u>-compound (at <.05 value).

Table 5
Comparison between Prosodic proficiency groups.

	Unacc <u>S</u>V	<u>O</u>V-compound
ENC vs +NS L2	$\chi^2 = 36.99$ ($p < .001$)	$\chi^2 = .197$ ($p = .657$)
ENC vs −NS L2	$\chi^2 = 242.52$ ($p < .001$)	$\chi^2 = 60.71$ ($p < .001$)
+NS L2 vs. −NS L2	$\chi^2 = 55.05$ ($p < .001$)	$\chi^2 = 23.93$ ($p < .001$)

To address the question in (23b), we investigated whether +NS learners make a distinction between SV Unacc and SV Unerg structures in terms of NS placement. More precisely, we investigated how the +NS group fares when the <u>S</u>V pattern is compared with respect to the S<u>V</u> pattern in the case of unaccusatives and in the case of unergatives. If these L2ers are sensitive to NS as a marker of theticity, we should find a significant difference between the production of the two patterns with unaccusatives but not with unergatives. We give the relevant percentage data in Table 6, both for the ENC and the +NS L2ers. The results of a chi-square statistical analysis are given in Table 7. These show that the +NS L2 group produced significantly more <u>S</u>V than S<u>V</u> patterns for unaccusatives but not for unergatives.[21]

Table 6
ENC and +NS L2ers. Percentage of NS patterns.

	Unerg <u>S</u>V	Unerg S<u>V</u>	Unacc. <u>S</u>V	Unacc. S<u>V</u>
ENC	42%	58%	97%	3%
+ NS L2	58%	42%	65%	35%

Table 7
Comparison of NS patterns in Unerg and Unccac SVs.

	ENC	+NS L2er
Unergative: <u>S</u>V vs. S<u>V</u>	$\chi^2 = 1.088$ ($p = .297$)	$\chi^2 = 1.74$ ($p = .186$)
Unaccusative: <u>S</u>V vs. S<u>V</u>	$\chi^2 = 107.28$ ($p < .001$)	$\chi^2 = 36.99$ ($p < .001$)

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[21] In the case of unergatives, it would have been interesting to explore further the distinction between NS placement in highly predictable/unnoteworthy cases (*a dog is barking, a dolphin is swimming*) vs. NS placement in unpredictable/noteworthy cases (*a dog is singing, a dolphin is talking*). Our ENCs produced 78% of NS on the subject in the former cases and only 25% in the latter cases. Given that we have only 9 Lers in the +NS category and given that the token items were distributed across two Q&A sets and that the 9 Lers were unevenly distributed across the two sets, we have very little data for these categories for the +NS Lers and therefore no meaningful comparaison can be made. Nevertheless, it is interesting to note that the trend exhibited by this very small set of data (18 renditions of the four token items) is in the same general direction as that of the ENCs: 67% of NS on the subject for the token items with the predictability property and 44% for the token items with the unpredictable/noteworthy property.

3.3.2. Narrow focused contexts

In this section, we examine the data that address the question in (23c), namely SV intransitives with narrow focused subject, so as to have a minimal contrast with the wide focus SV category discussed earlier, and with the L1English/L2Spanish to be discussed later. The mean percentages are based on a total of 4 SV intransitives: 2 unergatives and 2 unaccusatives. Recall that the study had a within-subject design, with Q&A distributed across the two sets so that all participants read a sentence in one context only. Therefore, each of the 4 SV sentences was elicited both in the context of narrow focus on the subject and in a wide focus context, but across different participants. The mean percentages obtained for each group are summarized in Table 8.

Table 8
NS pattern. Narrow focused subject.

	SV (sd)
ENC	98% (0.1)
Advanced L2 English	96% (0.1)
Intermediate L2 English	68% (0.3)

The results of a chi-square statistical analysis are given in Table 9. Note that none of the comparisons are statistically significant, except the comparison between the ENC and the Intermediate L2ers, which is significant at <.05 alpha value.

Table 9
NS on narrow focused subject. Comparison between Cloze-based proficiency groups.

	SV Unacc & Unerg
ENC vs. High L2	$\chi^2 = .065$ ($p = .799$)
ENC vs. Intermediate L2	$\chi^2 = 5.20$ ($p = .023$)
High vs. Intermediate L2	$\chi^2 = 3.29$ ($p = .070$)

3.4. Summary of results and analysis

To summarize briefly, the Cloze-test based proficiency grouping did not reveal information as to whether there were L2 learners who had acquired the Germanic NS pattern in wide focus contexts. On the other hand, an individual analysis showed that 9 out of the 27 High proficiency learners produced above chance level of Germanic NS (the so-called +NS group). Although results show that the +NS group does not produce Germanic NS to the same extent that native speakers do, we may consider this group to have "acquired" the Germanic NSR. Further analysis revealed that the +NS group produced significantly more Germanic NS patterns with SV unaccusatives than with SV unergatives. We take this as indicating that the +NS group has "acquired" NS as a marker of theticity.

As for alignment of focused subject with NS (i.e. SV patterns with narrow focused subject), the results are in stark contrast with the results of SV in wide focus contexts. Compare the results reported in the second and fourth columns in Table 3 with the results reported in Table 9. Statistical results reveal that the High proficiency group is native-like with respect to alignment of focus with NS. It appears then that:

(25)   For L1Spanish/L2 English learners, it is significantly less challenging to acquire the target NS pattern for
         SV structures with focus on the subject, as in (20b) and (21b), than the Germanic NS pattern for SV
         structures in wide focus contexts (i.e. the thetic SV pattern).

Note that in both cases, we are dealing with discourse-based notions. Indeed, the notion of focus is based on the discourse notion of assertion vs. presupposed information and the notion of categorical statement (as opposed to thetic statement) is grounded in the discourse notion of topic vs. comment. Therefore, it is not a question of difficulty with mapping syntax to discourse-based notions in and of itself that seems to be at issue (as suggested in Sorace, 1999, 2000, 2004; Lozano 2003). We offer a grammar-internal explanation for the observation in (25), based on the analysis of phrasal stress outlined earlier.

In section 2, we presented a view that distinguishes NS patterns in wide focus contexts with all new information, which are generated directly via the Germanic NSR, from NS patterns in wide focus contexts, in which the asserted part of the sentence contains given information, as in (17)–(18). Recall that the latter are generated via *A-deaccenting & NS-Shift* (post NSR application). More precisely, parts of the sentence that is anaphoric to previously mentioned information gets deaccented, which in turns triggers NS-Shift onto the metrical sister. Similarly, it was suggested that NS patterns in narrow focused contexts (as in SV structures with a focused subject) are generated via *A-deaccenting & NS-Shift*. The verb having been previously mentioned is deaccented and NS is automatically shifted onto the subject.

In Nava and Zubizarreta (2009, 2010), it was reported, based on data from the same L2 group discussed here, that NS patterns in wide focus contexts, where the focused constituent contains previously mentioned information, as in (17)–(18), is significantly less challenging to acquire than the Germanic NS pattern in wide focus SV structures. The analysis was based on 4 SVO and 4 SVOPP structures with VP focused and the Object or PP as previously mentioned information. Thus, while only

9 High Proficiency speakers produced Germanic S̲V patterns above chance level in wide focus contexts, as mentioned earlier, as many as 16 High Proficiency learners and 3 Intermediates produced patterns involving *A-deaccenting & NS-shift* in wide focus contexts. The finding in (25) is therefore not surprising, since NS alignment with focused subject also involves *A-deaccenting & NS-Shift*. The generalization that seems to emerge is that Germanic NSR is more challenging to acquire than *A-deaccenting* (which in turn triggers *NS-Shift*).

At this point, a caveat is in order. Since the NSR is a categorical rule and the acquisition data under consideration is quantitative in nature, it is useful to think of the acquisition process as grammars in competition (along the lines of Yang, 2002). Thus, an L2er that produces target-like patterns above chance level (although not necessarily to the same extent as natives) can be said to have a dominant L2 algorithm, although the L2 algorithm may continue to be in competition with the L1 algorithm to some extent. We say that such L2ers have "acquired" the target-grammar. As for L2ers that produce target-like patterns at or below chance level, the L1 grammar is as dominant or more dominant than the L2 algorithm. In the case under discussion, the L1 (Romance) NSR and the L2 (Germanic) NSR are in competition. It is assumed that a dominant Germanic NSR is required for Germanic NS patterns to be produced at above-chance level. This was indeed the case with the +NS group, who produced Germanic NS patterns at above chance level, although not to a native-like extent, showing that the L1 algorithm is still active. In that sense, we may say that this group has "acquired" but has not "mastered" the L2 NS algorithm.

To apply the Germanic NSR at the phrasal level, the L2er has to become sensitive to the metrical status of function words, namely that these may be invisible for the computation of phrasal stress. If this line of thought is on the right track, we might expect that L2ers would produce Germanic NS patterns before and/or to a larger extent in OV-compounds than in SV sentences, since compounds lack functional categories. We do not have the data to (fully) corroborate this prediction, but it is worthwhile to point out that while the +NS group was not native-like with respect to the production of NS in SV Unacc, this group was native-like with respect to the production of NS in OV-compounds; see Table 5. In any case, it is clear that acquisition of Germanic NS is challenging for native Spanish speakers. As noted earlier, those that produced Germanic NS patterns above chance level were a relatively small group of L2 learners, most of which had been exposed to English at a young age. The difficulty may be attributed to the fact that the L2 algorithm is in competition with the L1 algorithm, and furthermore to the fact that the full acquisition of Germanic NSR requires acquisition of the L2 metrical status of functional categories. As for *A-deaccenting*, while Standard Spanish does not make use of it, it is not incompatible with the Spanish grammar and it can be easily activated. In fact, we might expect that Spanish in contact with English might actually make use of *A-deaccenting*. Although informal observations of the English speech of Spanish native speakers living in the United States suggests that this might very well be the case, in-depth investigation of this issue is still needed.

4. Marking of theticity and focus-NS alignment in L1English/L2Spanish

While we do not have a comprehensive bi-directional study with the same methodology and experimental protocol, it is worthwhile to compare our findings on L1Spanish/L2 English with the research reported in the literature on L1English/L2 Spanish, namely Hertel (2003) and Lozano (2006).

4.1. Hertel (2003)

Recall that because Spanish has a rigid NS position, it cannot use prosody to mark theticity. Instead, it marks theticity via word order. As we have seen earlier, the thetic/categorical distinction is to some extent sensitive to the lexical semantics of the verb: there is a strong tendency for unaccusative intransitives to encode thetic statements, while unergatives are more variable. The latter may encode categorical or thetic statements, depending on pragmatic factors. If Spanish encodes theticity via order order, we expect subject/verb ordering in Spanish to also be sensitive to verb class. Indeed, this is a well-known property of Spanish, first noticed by Suñer (1982) and confirmed by Hertel (2003)'s study (with a written production task) and Lozano (2006)'s study (with a written preference task). As expected, given that unaccusatives sentences tend to be interpreted as thetic, VS order is more common for unaccusatives than for unergatives, and vice-versa, SV order is more common for unergatives than for unaccusatives.

We currently lack a full-blown study that concomitantly examines all aspects of the phenomena, namely word order, verb class, and the prosody of intransitive SV sentences in the L2 Spanish of English native speakers. Yet, it is worthwhile examining what is currently available. We choose to present the work by Hertel (2003) in some detail because it is a production study like ours (with the limitation that it involved a written, rather than oral, production task), and we will complement Hertel's results with some observations from Nava (2006, 2007)'s pilot study based on an oral narration task.

Hertel's study is based on a contextualized Q&A written production task with learners at four levels of proficiency: 24 beginners (consisting of undergraduates enrolled in a 3rd semester Spanish course), 15 low intermediates (consisting of undergraduates enrolled in 4th and 5th semester Spanish courses), 18 high intermediates (consisting of advanced 4th year Spanish majors and minors), and 24 advanced L2ers (consisting of "experienced" graduate students and instructors). The contexts were presented in English to ensure that beginners understood them.[22] The 18 Spanish native controls, like the L2ers, were living in the US and had an advanced level of English proficiency. The goal of the context story was to manipulate

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[22] This of course presents the problem that English can artificially affect the results.

information structure. Each story consisted of a situation in which one of the two characters lacks knowledge of something that happened during his or her absence. The reader participant, which is one of the characters, must respond in Spanish to a question posed by the other character in Spanish. The example given by Hertel is as follows:

(26)   You and your friend Sergio are at a party. Sergio leaves to use the bathroom. While he is in the bathroom, Sara, the life of every party, arrives. When Sergio returns, he notices that everyone seems much more festive.

Sergio asks you: *¿Qué pasó?*

What do you answer? _____

The protocol included 6 tokens meant to elicit wide focus unaccusative sentences (like the one above) and 6 tokens meant to elicit wide focus unergatives sentences. Also included were 6 tokens meant to elicit narrow focused subject for each verb class, as well as distracters. Responses were categorized into SV, VS, and "other". Only sentences that consisted of a subject and an unergative or unaccusative verb were considered for statistical analysis.

Table 10 summarizes the results for wide focus responses. For sake of simplicity, we present the rounded off mean percentages and standard deviations calculated according to individual data. (See Hertel's Table 3 for precise means, standard deviations, and raw proportions based on group data).[23]

Table 10
Unaccusative and Unergative VS (Hertel, 2003).

	Unacc. VS Mean (sd)	Unerg. VS Mean (sd)
Beginner	0% (0)	0% (0)
Low Interm.	6% (12)	0% (0)
High Interm.	9% (15)	1% (6)
Advanced	55% (37)	33% (31)
Natives	39% (31)	6% (11)

The above results show that the VS order was produced mainly by native and advanced learners; lower proficiency learners produced little or no VS order. While the means indicate that Low Intermediates, the High Intermediates, the Advanced, and the Native speakers produced more VS with unaccusatives than with unergatives, post hoc statistical tests demonstrated that only the advanced learners and natives produced significantly more VS with unaccusatives than with unergatives. The data indicates that advanced learners not only produced VS in wide focus contexts, but that they had acquired word order as a marker of theticity.

We turn next to Hertel's results regarding the production of VS order in cases of narrow focused subjects with unergatives and unaccusatives. These are summarized in Table 11. Again, we report the rounded off mean percentages and standard deviations (see Hertel's Table 4 for exact figures as well as raw scores).

Table 11
VS in contexts with narrow focused subjects (Hertel, 2003).

Group	Unaccusative VS Mean percentage (sd)	Unergative Vs Mean percentage (sd)
Beginner	0% (0)	0% (0)
Low Intermediate	5.00% (14)	0% (0)
High Intermediate	15% (12)	13% (24)
Advanced	54% (44)	36% (37)
Natives	36% (34)	33% (37)

The group means show that the beginner and low intermediates basically transferred the SV order from their native English. High intermediates and advanced learners produced increasingly more VS order with both verb types. Pos-hoc tests revealed that the native speakers were significantly different from beginners and low intermediates, but not from high intermediates and advanced learners, for both unaccusatives and unergatives. On the other hand, the advanced learners were significantly different from all groups except the natives for both types of verbs. The fact that the advanced learners, but not the natives speakers, were significantly different from the high intermediates in the production of VS with narrow focused subjects suggests that the native speakers in this study (which were living in the US and used English on a regular basis) had undergone a process of attrition, as suggested by Hertel (see also Sorace, 1999, 2000, 2004). Had Hertel's L2ers been compared with Spanish monolinguals, it is possible that the results would have been different. The results of Lozano (2006)'s preference-based study suggests that this is indeed a plausible scenario.

Before we turn to Lozano's study, we would like to mention briefly Nava (2006, 2007)'s pilot study, which involved an elicited production task based on an oral picture narration story. The picture story depicted mostly unaccusative type events.

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[23] No results for the SV order are reported. Note that SV is not the complement of VS, since there were "other" responses as well.

The participants included 5 non-high proficiency and 5 high proficiency L1 English/L2 Spanish participants. The low proficiency speakers systematically produced SV order with unaccusatives in wide focus contexts, while the high proficiency speakers produced VS order in the same context at a comparable rate as native speakers. The speech of low proficiency speakers tended to be disfluent (with pauses and stuttering) and therefore a quantifiable amount of the prosody of their utterances was not obtained.[24] The advanced (native-like) speakers all produced target-like NS patterns, i.e. with NS on the rightmost word to the same extent as native speakers. Nava's results suggest that natives speakers of English with an advanced level of Spanish encode theticity uniquely via word order in their L2 Spanish, rather than prosodically.

4.2. Lozano (1996)

We turn next to Lozano (2006)'s study, which was based on a written preference task. The experimental groups in that study were Greek natives (not relevant to our present discussion) and British English natives (*n* = 17), who were studying Spanish at the University of Essex and had a high proficiency level of Spanish, as determined by a standardized placement test. The control group (*n* = 14) were Spanish native speakers mostly from Spain and a few from Latin America, who were postgraduate students in the UK at the time of testing. The experimental protocol consisted of a contextualized acceptability test with paired target sentences. Each stimulus consisted of a context (given in Spanish), which biases for either of the two target replies, each representing a different word order (SV vs. VS). Target sentences were followed by a 5-point Likert scale (with "completely acceptable" to "completely unacceptable" at the two ends of the scale). The test consisted of 24 target stimuli: 6 Unacc and 6 Unerg in wide focused contexts and 6 Unacc and 6 Unerg with a context-question that imposed a focused subject interpretation.

The results for wide focus contexts in Lozano's study indicate that L2ers (like the native controls) preferred, to a significant extent, the VS order in wide focus contexts in the case of unaccusatives, but not in the case of unergatives. These results are in line with those reported by Hertel (summarized above), and they show that proficient L1English/L2 Spanish speakers have a command of the manner in which the thetic/categorical distinction is encoded in Spanish.

Lozano's results furthermore show that high proficiency L2ers were not native-like with regards to the alignment of NS with a narrow focused constituent: both SV and VS were equally preferred in cases of narrow focused subjects.

4.3. Summary

To summarize, the results from studies by Hertel, Lozano, and Nava show that high proficiency L1English/L2Spanish learners have a native-like command of theticity marking via word order. Furthermore, Hertel's and Lozano's studies show that there is "recalcitrant" L1 transfer with regards to the alignment of focus with NS. More specifically, learners do not use word order consistently to align focus with the Romance NS position, which is rightmost in the clause. Instead, learners tend to use the L1 way of aligning a focused subject with NS, namely in situ.

Likewise, Belletti et al. (2007) found that near-native speakers of Italian with English as their L1 (in contrast with the Italian native controls) mostly produced SV orders in an oral task that consisted in providing answers to questions about subjects' action in short video stories. These authors furthermore report that in such cases, main prominence was placed on the preverbal subject. Thus, Hertel's, Lozano's, Nava's, and Belletti et. al.'s results put together converge in showing that near-natives of Spanish and of Italian are non-native like with respect to the use of word order for the purpose of aligning a narrow focused subject with NS.

5. L2English vs. L2 Spanish. Implications and a proposal

The findings for L1English/L2 Spanish (summarized above) are exactly the mirror-image of what we have found for L1Spanish/L2 English. To recapitulate, the acquisition of NS as a marker of theticity by L1 Spanish/L2 English learners is clearly challenging; few attain near-native or native-like proficiency. On the other hand, the results of the studies on L2 Spanish suggest that L1 English/L2 Spanish learners are more successful in attaining native-like proficiency in marking theticity via word order.

We know that L2ers can acquire the word order of the L2 language (such as SVO or SOV) even when markedly different from their L1 (e.g. Neeleman and Weerman, 1997; Schwartz, 1998). English learners of Spanish are no different in this respect. Furthermore, advanced learners in the Hertel–Lozano–Nava studies behaved very much like natives in encoding the thetic/categorical distinction in terms of word order. Note that the thetic/categorical distinction is an interface property, a distinction grounded in the discourse topic-comment relation (partly based on the lexical semantics of the verb and partly on pragmatic notions such as "predictability" and "noteworthiness"). While word order (unlike prosody) is part of L2 instruction, the relation between word order and verb type is not taught (Hertel op.cit., Lozano op.cit, Montrul, 2005). Yet L1 English/L2 Spanish learners do seem to acquire this relation. These considerations suggest that it is not the interface nature of the phenomenon that renders the acquisition of the thetic/categorical distinction difficult for L1 Spanish/L2 English learners (after all the distinction is also available in their native language), but rather the means by which the marking is obtained,

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[24] A few Germanic-type NS pattern in SV unaccusatives sentences were observed in these speakers. It is unclear at this point whether this is due to calquing or to grammatical transfer.

namely it requires the action of the NSR. Marking of theticity via the NSR not only requires moving from the Romance to the Germanic NSR, it also requires acquiring, at the phrasal level, the metrically (in)visible status of functional categories. We submit that therein lays the challenge. We return briefly to this point in section 6.

While Spanish-to-English is harder than English-to-Spanish with respect to theticity marking, the reverse situation is found with respect to alignment of focus with NS. More precisely, it is easier for the L1Spanish/L2English learners to acquire the mechanism by which focus is aligned with NS in the target language, namely *A-deaccenting & NS-Shift*, than it is for the L1English/L2Spanish learners to acquire the target way of aligning focus with NS, namely placing the focused constituent at the rightmost edge of the clause (i.e. the position where the Romance NSR assigns NS). We suggest that both parts of the data have a common explanation: the Spanish grammar is compatible with *A-deaccenting & NS-Shift*. Importing these L2 mechanisms does not require "out-competing" any algorithm of the L1 grammar. For this reason, the Spanish speakers readily incorporate them into their L2 English grammar and the English speakers are recalcitrant in abandoning them in their L2 Spanish.

6. Conclusion and future research venues

In this paper, we presented the results of our own production study on the English of native Spanish speakers regarding the acquisition of English prosody to mark the thetic-categorical distinction, on the one hand, and to align focus with NS, on the other hand. Furthermore, we compared our results with those obtained by Hertel (2003) and Lozano (2006) regarding the acquisition of Spanish word order.

The results obtained in our study show two things: (1) The English use of prosody to mark the thetic/categorical distinction is hard to acquire by Spanish L2 speakers, in particular for those not exposed to English at a relatively young age. (2) The English use of prosody to align NS with narrow focus is readily acquired by Spanish L2 speakers. This suggests that L2 prosody in and of itself is not impossible to acquire. The difficulty in the first case could be due to the fact that it requires replacing the native NSR algorithm by a new algorithm, and furthermore, at the phrasal level, it requires re-analyzing functional categories as metrically invisible. On the other hand, the second case involves the acquisition of the mechanisms of *A-deaccenting & NS-Shift*, which do not compete with any native algorithm. For this reason, the L1Spanish/L2English learners readily acquire the L2 way of aligning focus with NS, while the L1English/L2 Spanish learners are "recalcitrant" to abandon its L1 way of aligning focus with NS.

The explanation of the data that we have put forth above is imminently grammatical in nature and it presupposes that L2 speakers acquire a grammatical system and not parts and parcels of unconnected patterns. Yet, one might challenge such a view and put forth a functional-based account. A functional explanation could be based on the observation that the thetic vs. categorical marking does not affect the truth-condition of the sentence and therefore the failure to mark such a distinction does not lead to communication failure. On the other hand, the alignment of NS with focus does affect what is interpreted as being presupposed and what is being asserted. Therefore, it could be suggested that it is imminently more important to correctly align the focus with NS for communicative purposes than to mark the thetic-categorical distinction. For this reason, it could be argued that the L2ers are sensitive to the way the target language marks narrow focus prosodically but are not necessarily sensitive to the way the target language marks the thetic-categorical divide. While that explanation might work for L1Spanish/L2 English, it is not clear how it can be extended to L1English/L2 Spanish. In the latter case, it is precisely in the acquisition of the target language's way of marking the thetic-categorical divide where the learners are most successful, rather than the target language's way of aligning focus with NS.

Finally, we will like to briefly return to the conjecture we put forth at the end of section 2.2.1, namely that the acquisition of vowel reduction in function words might be (at least partly) responsible for the difference in NS-algorithm between English and Spanish, and for the difficulty that Spanish native speakers have in acquiring or implementing the Germanic NSR at the phrasal level. While we do not have data that fully supports this conjecture, Nava et al. (2009) and Nava (2010) report data on the durational values of function and content words obtained from the speech of the participants in the present study that goes in the expected direction. Durational values were extracted from sound files of a reading passage (*North Wind and the Sun*), using a speech recognition forced-alignment technique.[25] These revealed a significant difference between function (unstressed) words and content (stressed) vowels for the English speech of the ENC group, but not for the Spanish speech of our native Spanish participants. Furthermore, the +NS L2 group, but not the −NS L2 group, showed the same significant patterns as the ENC group. While that finding does not in and of itself show that native-like function word reduction is a necessary condition for the acquisition of the Germanic NSR at the phrasal level, the results conform to expectations. Further research on this conjecture could involve the timing in the acquisition of vowel reduction in function words relative to the acquisition of Germanic NS patterns in compounds (which lack functional categories) and in phrases (which have functional categories). While we expect native-like reduced function words in the speech of L2ers who have above-chance production of Germanic NS patterns at the sentence level, we do not necessarily expect native-like durational values in the function words of those L2ers who have acquired the Germanic NS pattern in compounds only. These predictions remain to be investigated.

Acknowledgements

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