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Learnability in the second language acquisition of semantics: a bidirectional study of a semantic parameter

Roumyana Slabakova *University of Iowa*

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The study investigates the relationship between input, UG (Universal Grammar) parameter values, and the native language in the acquisition of a purely semantic property that is superficially unrelated to its syntactic trigger, The Bare Noun/Proper Name parameter (Longobardi, 1991; 1994; 1996; 2001; 2005). On the one hand, English and Italian bare nouns have identical syntactic form and distribution, but differ in available interpretations. On the other hand, proper names display cross-linguistic constant meaning but variable word order. Variation in this respect can be accounted for by a parameter that is set to one value in English and another one in Italian. A bidirectional study of the two properties was conducted. Individual results calculated with the native speaker accuracy as the cut-off point for successful acquisition indicate that parametric restructuring is attested in both learning directions. In the English → Italian direction, the lack of one native interpretation in the target language (a contracting of the grammar) is achieved in the absence of negative evidence, in a Poverty of the Stimulus situation. In both directions, the semantic property is acquired based on input and/or positive evidence for the syntactic side of the parameter.

I Introduction

A recent conceptual paper, Schwartz and Sprouse (2000; see also Dekydtspotter *et al.*, 1997), argues that the Poverty of the Stimulus (POS) approach is the only indisputable way to prove that UG (Universal Grammar) is actively engaged in second language acquisition (L2A) and that L2A and first language acquisition (L1A) are not fundamentally

different. POS phenomena involve properties of the grammar where neither the L1 nor the L2 can account for the L2 knowledge that learners have acquired. In other words, both the L1 grammar and the L2 input underdetermine the mental representations of the learners. An example of such an approach to L2A is Martohardjono's (1993) study of locality constraints on *wh*-phrase movement in L2 grammars where the target language does not have overt *wh*-movement. Extractions of *wh*-words out of various constituents give rise to both strong and weak violations of locality. There is a contrast of grammaticality for native speakers of English between sentences like (1) compared to those in (2).

- 1) * Which soup did the man leave the table [after the waiter spilled ___]?
(Movement out of an adjunct)
- 2) ? Which patient did Max explain [how the poison killed ___]?
(Movement out of a *wh*-island)

If UG plays no role in L2A, then for Chinese and Indonesian learners of English there should be no contrast in grammaticality between strong and weak violations of locality as in (1) and (2), respectively. If their grammar does not allow overt *wh*-movement, then it should make no difference what kinds of constituents the *wh*-phrases have moved out of. Results indicating that Chinese and Indonesian learners recognize the contrast even in the absence of positive evidence (both types of sentences are ungrammatical, hence do not occur in the input) offer strong support for the UG-is-active-in-L2A hypothesis.

This article continues in this vein of research but introduces an additional dimension: learnability considerations related to directionality of acquisition in subset–superset grammars. The study investigates the interaction of input, UG, and the native language in the acquisition of a purely semantic property that is superficially unrelated to its syntactic trigger, although they are unified underlyingly by the Bare Noun/Proper Name parameter (Longobardi, 1991; 1994; 1996; 2001; 2005). The parameter's semantic side involves English and Italian mass or bare plural nouns (bare nouns, BNs), which have identical syntactic form and distribution but differ in available interpretations. The syntactic property has to do with proper names (PNs), which display cross-linguistic constant meaning but variable word order. Longobardi argues that variation in this respect can be accounted for by a parameter that is set to one value in English and another one in Italian. In this way, the

parameter is responsible for purely syntactic effects (word order) in one area of the grammar and purely semantic effects (presence or absence of an interpretation) in another area of the grammar.

The available interpretations are in a subset–superset relationship, with English as the superset and Italian as the subset language (see Figure 1 in Section IV). First of all, this learnability configuration presents a true POS situation because, in the English → Italian direction, one native interpretation will have to be ‘delearned’ (i.e. its unavailability acquired) without any positive evidence. This is a classical negative constraint (Crain and Thornton, 1998).

Second, in the other acquisition direction, Italian → English, learners have to expand their native grammar with one more interpretation, and positive evidence for it is potentially available. Thus, we are in a position to test whether presence of an interpretation in the primary linguistic input will make much of a difference in the acquisition process.

Third, another interesting aspect of the learnability situation discussed in this article is the type of linguistic evidence available to the learners. The BN/PN parameter allows us to test acquisition of interpretation in the absence of supporting changes in the overt syntax. Other studies investigating POS effects (Dekydspotter *et al.*, 1997; 2001; Dekydspotter, 2001; Dekydspotter and Sprouse, 2001) have looked at phenomena involving word order changes directly. In our case, the primary linguistic data contain evidence of an interpretation, but no salient morphology or word order L1–L2 differences related to bare nouns. The salient evidence is on the other side of the parametric cluster: the PN and adjective word order. Thus, we are in a position to test whether availability of interpretations can be learned on the basis of salient input for a (superficially) different property.

Finally, some predictions for clustering of parametrically related properties – in addition to POS and type of input effects – can be tested. Recent research on parametric clustering of properties has proved inconclusive. Clahsen and Hong (1995) and Neeleman and Weerman (1997) argue that interlanguage grammars are construction specific, that is, each construction associated with a parameter has to be learned separately in pattern matching (Bley-Vroman, 1997). On the other hand, Slabakova (1999; 2001; 2002) finds parametric clustering in L2 grammars. All cited research on parametric clustering looks at parameters in which interpretations are related to functional category

morphology and word order, that is, where L1–L2 differences are overt and visible. The added interest of the BN/PN parameter, then, is that of the two related properties, one is visible and the other is not.

In Section II, we look at the data in Italian and English. Next, a syntactic account of the parametric difference is given. Section IV lays out the learning tasks and research hypotheses, while Section V describes the experimental study and its results. Finally, in Section VI the findings and their implications are discussed.

II The data

1 *Semantic contrasts*

In English, the subject bare plural NP has both a generic (Gen) and an existential meaning (Ex), while in Italian it has only the existential meaning.

- 3) White elephants will undergo the Final Judgment tomorrow at 5. Ex/Gen
 4) Elefanti di colore bianco passerano il Giudizio Universale domani alle 5. Ex/#Gen
 elephants of color white undergo-FUT the Final Judgment tomorrow at 5
 ‘White elephants will undergo the Final Judgment tomorrow at 5.’

A pertinent paraphrase of the Italian sentence in (4) would be: ‘There are **some** white elephants that will appear at the Final Judgment tomorrow at 5.’ The English sentence in (3) has the same reading but also the reading ‘**All** white elephants (as a species) will undergo the Final Judgment tomorrow at 5.’

The second semantic contrast has to do with anaphoric binding:

- 5) Large cats think very highly of themselves. Distr/Kind
 6) Gatti di grossa taglia hanno un’alta opinione di se stessi. Distr/#Kind
 cats of large dimensions have a high opinion of self
 ‘Large cats think very highly of themselves.’

The distributive (Distr) reading of (5) says that each individual large cat has a high opinion of itself only, although they may not think highly of the species in general. The kind (Kind) reading of the same sentence is that every large cat has a high opinion of all large cats as a species, although they may not have a high opinion of individuals within the species, including their personal selves. The distributive reading is available in Italian, but the kind reading is not.

The two purely semantic contrasts are related to the same underlying property, or happen to be two manifestations of that property.

2 Syntactic side of the parameter

The word order contrast parametrically related to the semantic contrasts above is exemplified with proper names modified by adjectives. In English, such names follow the adjective (7), while in Italian the names can precede the adjective as in (8):

- 7) Ancient Rome/*Rome ancient was destroyed by the barbarians.
 8) Roma antica/*Antica Roma fu distrutta dai barbari.
 Rome ancient/ancient Rome was destroyed by barbarians
 ‘Ancient Rome was destroyed by the barbarians.’

As it turns out, these native judgments are not universal, but are probably subject to some dialectal variation (for more discussion, see Section VI).

III The analysis

The parameter unifies the syntactic and semantic behavior of PNs and BNs.¹ Let’s look at some of their properties (following Longobardi, 2001; 2005).

¹Apart from the BN/PN parameter whose acquisition I have chosen to investigate experimentally, a similar range of data is described by another theoretical proposal, The Nominal Mapping Parameter of Chierchia (1998; see also the related proposal by Vergnaud and Zubizarreta, 1992). That parameter sets up a typology of NP denotations using the features [\pm predicate], [\pm argument] where predicates are restrictors of quantifiers and arguments are names of kinds. These features constrain how the syntactic category N is mapped onto its interpretations. A language that chooses [$-\text{pred}$, $+\text{arg}$] features is Chinese, where every lexical noun is a mass noun. Languages that choose [$+\text{pred}$, $+\text{arg}$] are the Germanic languages including English. These allow bare (plural and mass) nominals to be arguments, i.e. to refer to kinds. Finally, Romance languages including Italian choose the [$+\text{pred}$, $-\text{arg}$] value, hence bare nominals are disallowed as arguments (Chierchia, 1998: 400). Chierchia makes the following strong prediction about (first) language acquisition, grounded in the Subset Principle as a learnability guide (Chierchia, 1998: pp. 400–401). So that the child would only use positive evidence for grammar restructuring, she will start with the maximally ‘conservative’ value, which is the Chinese one. The second setting would be the Romance, the Germanic one will be last. The expectation, then, is that Romance-learning children will converge on the adult value faster than Germanic-learning children, who have to sort out more options. Note that Chierchia also invokes the Subset Principle in the operation of the Nominal Mapping Parameter and has English as the superset language of Italian, just as Longobardi’s parameter does. In Vergnaud and Zubizarreta (1992), it is the meaning of definite articles (whether or not a definite article is required for a generic interpretation) that is parameterized. If a language can use definite plurals to refer to kinds, it cannot use bare plurals and mass nouns to do so. I do not attempt to choose between these competing theoretical analyses, in the realization that all parameters describe the same semantic data, namely, the number of interpretations of bare nominals in each language. While Longobardi’s parameter relates these interpretations to the syntactic behavior of proper names, Chierchia’s parameter relates it to intrinsic features that languages choose to encode in their nominals. I chose to investigate Longobardi’s parameter because it makes the most interesting predictions from the point of view of second language acquisition. Chierchia’s Nominal Mapping Parameter is also eminently testable, and I leave this to further research.

- (9) Ho incontrato **Maria/te**
 I met Maria/you.

Proper names as in (9):

- have singular and count reading;
- denote definite (unique in the discourse) and specific entities, i.e. they denote objects (constants);
- have a free distribution;
- widest possible scope (no operator can take them within their scope);
- rigid designators in the sense of Kripke (1980) (they denote the same entity in all conceivable worlds);
- raise N-to-D if the latter does not contain an overt determiner in Italian while they do not raise N-to-D in English (see below).

- 10) a. Bevo sempre **vino**.
 'I always drink wine.'
 b. Ho mangiato **patate**.
 'I ate potatoes.'

Bare plural and mass nouns as in (10), on the other hand:

- have plural or mass reading;
- indefinite interpretation;
- narrowest possible scope;
- non-rigid designation;
- never raise N-to-D.

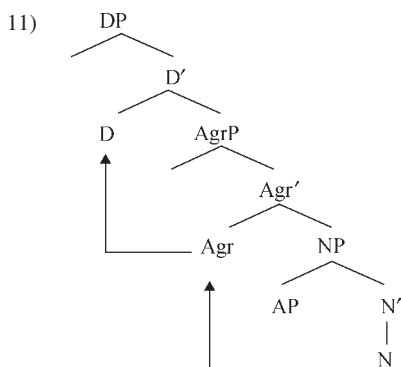
It is not true that Italian BNs cannot have generic interpretation at all. Two strategies are available for a nominal expression to obtain a generic reading in natural language. The expression can either refer to kinds directly, in which case it exhibits referential genericity; or it can be an indefinite, a variable existentially or generically bound by an independently provided operator (called quantificational genericity, since the nominal expression generalizes over objects; Krifka, 1987). Since Italian BNs are indefinites, hence subject only to quantificational genericity, they can be generic in habitual reading sentences, or in the scope of adverbs like *always* or *often*.² English BNs, on the other hand, are

²Some examples from Longobardi, 2001, his (6b–c):

- | | | |
|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| (i) | Elefanti di colore bianco possono creare grande curiosità.
White-colored elephants may raise a lot of curiosity | Gen/?Ex |
| (ii) | Elefanti di colore bianco hanno creato sempre/spesso in passato grande curiosità.
White-colored elephants always/often raised a lot of curiosity in the past | Gen/?Ex |

systematically ambiguous between the quantificational interpretation and the truly referential generic interpretation.

The parameter, then, can be formulated as follows (Longobardi, 1991): In Italian the referential feature of the D position is strong, therefore overt movement from N-to-D is necessary. In English, referential status can be assigned to nominals with no overt determiner. The referential feature in D is weak, hence no pre-spell-out movement to D is necessary. Example (11) offers one possible tree illustrating this movement; the intermediate functional projections are not relevant to our concerns here.



But what is the link to BN interpretation? Italian PNs and BNs can only refer directly (to objects and kinds, respectively) if they have an overtly filled D. For PNs, the referring strategy is satisfied either by a D filled with an article, or by N-to-D movement. For BNs, the strategy can never be satisfied, since they remain low in the structure. That is why they may be quantificationally generic in the scope of Gen type operators but never referentially generic.

In English no overt movement happens in the DP, it need not. The status of D as a variable or as a constant will be encoded only at LF. Hence, English BNs (i.e. bare plural and mass nouns) do not need to rise overtly to D to refer to kinds directly (that is, to be referentially generic).

Thus, languages resort to a unified strategy in assigning object and kind-reference to nominal structures. However, these strategies can be parameterized across languages. Object-referring nouns may occur

without a phonetically filled D iff kind-referring nouns can. Contexts in which English BNs can be generic but Italian BNs cannot include:

- episodic sentences: e.g. *White elephants raised a lot of curiosity in the past.*
- kind-level sentences: e.g. *White elephants have become extinct.*
- stative individual-level sentences: e.g. *States of large size are prosperous.*

IV Predictions for second language acquisition

The referential vs. quantificational genericity of BNs is not overtly taught at the advanced level of college classroom instruction. Rather, it is tacitly assumed that it need not be taught since Italian works like English (see also Chierchia, 1998). Furthermore, the input to learners of Italian is highly misleading, since there are generic Italian BNs, but they are only so in the scope of a generic operator or adverb.

It was impossible to ascertain the linguistic background of all the non-native participants, since they were at the college level, and they had come from various academic backgrounds. However, a survey of 6 Italian instructors at the largest Italian department outside Italy – the Italian Department at the University of Toronto – indicates that the semantic properties of bare nouns are never discussed explicitly in even the most advanced Italian language classes.³ An informal interview with an English instructor at the University of Trieste (where the English learners were studying at the time of testing) revealed similar results: interpretation of bare noun phrases is not taught. The PN's word order is taught, and is abundantly present in the input to ESL and ISL learners.

The Subset Principle (Berwick, 1985; Manzini and Wexler, 1987; Wexler and Manzini, 1987) postulates that (L1 and L2) learners will start

³A written questionnaire was distributed to more than 30 Italian instructors at the University of Toronto Italian Department. They were given examples of the Italian sentences and asked the following two questions: '1. Do you teach explicitly in your Italian classrooms what the interpretation is of Italian bare plural nouns? (I don't mean the lexical meaning of the words, but whether they refer to the species or to some individuals within the species.) 2. Do the textbooks that you use mention the interpretations of bare nouns in Italian?' Six instructors responded to the questionnaire, saying that neither they nor the textbooks ever mention these properties explicitly.

with the maximally restrictive subset grammar. In our second language learning situation and looking only at available interpretations, the Subset Principle predicts that it will be easier for Italian natives to acquire the English interpretations, because they can rely on positive evidence in the input. At the same time, it will be more difficult for the English natives learning Italian to achieve the target L2 grammar, because they will have to acquire the unavailability of one native interpretation without any positive evidence (Figure 1).

For the English learners of Italian, the acquisition process constitutes a contraction of the grammar, since they are learning the unavailability of a target interpretation which is available in their native grammar. Keeping learnability considerations like the Subset Principle in mind, we would predict that English \rightarrow Italian is the difficult direction of semantic acquisition. There is no positive evidence in the input as to the unavailability of the missing interpretation, and negative evidence is not reliably given to learners (see survey of Italian instructors). Our first prediction is, then, that the POS will nevertheless be overcome by parametric restructuring. In other words, knowledge of Proper name–Adjective word order will bring about knowledge that one of the native interpretations is missing.

Second, for the Italian learners of English, the acquisition process involves an extension of the grammar: they are adding one meaning

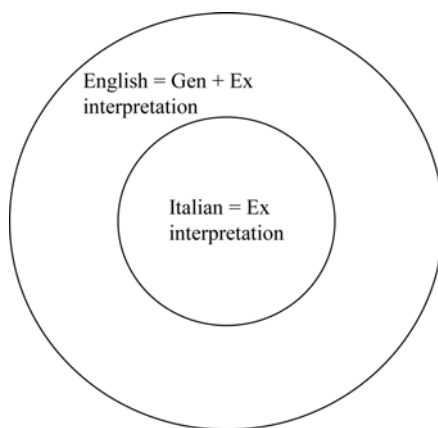


Figure 1 Subset–superset relationship between Italian and English grammars for the semantic side of the BN/PN parameter

that is unavailable from their L1. One would expect that the potential availability of that interpretation in the L2 input would facilitate the acquisition process. Sentences involving generic bare noun interpretations as in (12) are not rare in the input, compared to existential sentences as in (13).

- 12) Brown dogs were the King's favorite animal.
 13) Brown dogs are coming to live in my neighborhood.

Recall that bare nouns can be interpreted generically both in English and Italian. However, there are contexts in which only English nouns can be generic, for example, episodic sentences as in (12) above. In order to expand their grammar to include not only quantificational but also referential genericity, Italians learning English should pay attention to the temporal–aspectual features of the whole sentence. But the English referential genericity contexts are not accompanied by any salient changes in the word order, so ‘noticing’ the need for expansion can be a formidable learning task.

If the generic interpretation is successfully added to the English L2 of Italian natives, it is a moot point whether it is added because of its availability in the input, or due to the syntactic evidence parametrically related to it. Although one should be mindful of the two potential sources of this knowledge, or even of their conspiring to work together, it is not really possible to tease them apart.

Third, the two manifestations of the parameter, the syntactic and the semantic side, are superficially not related. There is no *a priori* reason to suppose that a learner who has acquired one aspect of the parameter would necessarily know the other. They are underlyingly unified, however, by the BN/PN parameter. Therefore, knowledge of interpretations (invisible before spell-out) and knowledge of noun movement (visible) will co-occur in interlanguage grammar. If these two properties cluster, we should see them engaged simultaneously in the interlanguage grammars of individual learners. However, since the syntactic property is much more prominent in the input and explicitly taught in classrooms, while the semantic property is quite obscure and not taught, it is conceivable that the syntactic knowledge will precede the semantic knowledge. What would constitute counterevidence to the two properties clustering, then, is finding participants who are

aware of the semantic property but still do not know the syntactic property.⁴

In sum, we have predicted successful semantic acquisition in both learning directions, and parametric clustering of semantic and syntactic properties. In the English → Italian direction, successful acquisition of the semantic property will have overcome POS. In the Italian → English direction, there are two potential sources of semantic knowledge: invisible semantic input and visible syntactic parametric evidence.

V The study

1 Participants

Seventy-six Italian learners of English and 24 native English controls as well as 51 English-native learners of Italian and 28 native Italian controls participated. Learners of English were tested in Trieste, Italy; learners of Italian were tested in Middlebury, VT and in Iowa City, IA. All were college students, aged between 18 and 27. All Italian native speakers had started learning English after the age of 12, mean age of first acquisition 13.5. All English native speakers had started learning Italian after the age of 12, mean age of first acquisition 14.7. All participants had been exposed to classroom instruction as well as varying amounts of naturalistic interaction with native speakers.

2 Tasks

Participants took a written modification of the Truth Value Judgment Task (TVJT; see below for the modification in Italian) and a Grammaticality Judgment task (GJT). An independent measure of proficiency, a cloze test, was also administered. It consisted of a text relating a story, in which every 7th word was taken out and replaced with a

⁴I am aware that this learnability prediction is stacking the cards in my favor, since the relative difficulty of the semantic and syntactic knowledge does not seem equal. On the other hand, as of this moment, we do not have a reliable measure of which construction is more difficult than another. It might be argued that learning morphology and N-to-D movement is more difficult than learning invisible interpretive differences. The two properties themselves constrain the experimental design. Readers must keep this inherent design limitation in mind when interpreting the results.

blank. There were 40 blank spaces, which the participants had to fill in with one word only.

The TVJT (Crain and McKee, 1985; Crain and Thornton, 1998) consisted of pairs of stories and test sentences. Each test sentence appeared twice, once under a story supporting an existential interpretation of the nominal (*some white elephants*) and a second time under a story supporting a generic interpretation (*all white elephants*). There were eight story-sentence pairs in the Bare Noun Interpretation Condition and the same number in the Anaphoric Binding Condition. Sixteen fillers were also included, eight eliciting a True answer and eight eliciting a False. The stories and the sentences were in the target language. Examples of two story-sentence pairs:

Existential (\exists) story:

In a story that I read, God summons all the animal species to appear in front of him for the Final Judgment. He is going to judge them in groups. Elephants will be divided in two groups: brown elephants and white elephants. Some white ones will see God at 4, other white ones will face him at 5. The brown ones will write a petition.

At 5, the Creator is going to see white-colored elephants. True False

Generic (\forall) story:

In a story that I heard somewhere, some animals ask for God's help. He is to decide who is right. A number of white elephants are arguing with some brown elephants about whose color is better. God is going to see them separately: the white ones at 5 and the brown ones at 6.

At 5, the Creator is going to see white-colored elephants. True False

Distributive reading story:

Cats are strange animals. The large ones think that they are smart and handsome. At the same time, they consider all other large cats to be very ugly. Is this because they feel threatened by the members of their own species? I wonder. . .

Large cats have a very high opinion of themselves. True False

Kind reading story:

I don't like small cats, but I adore large ones. The thing I like most about them is this: they think that every large cat in the world is smart and handsome. They just like each other very much. What a happy group of animals!

Large cats have a very high opinion of themselves. True False

I will explain briefly how the stories were constructed and how they should be read, as well as a design difference between the English L2 test and the Italian L2 test. In general, the stories are fanciful and sometimes employ magic realism to illustrate how whole species, or some members of the species, were affected in a specific event. In the 'Existential story', the story has it that God is going to see *some* white elephants at 5, but

some others He would see at 4, so the story supports an existential interpretation. The English and the equivalent Italian sentence with a bare noun are both expected to be accepted in the context of this story, since they accurately describe it. In the context of the ‘Generic story’, the same English sentence is still expected to be judged as True. The Italian sentence, on the other hand, cannot be considered accurate, since the story specifically points out that *all* the white elephants are going to be seen at 5. Logically speaking, if *all* white elephants are to see God at 5, then it follows that *some* white elephants are going to see Him at 5, i.e. the universal meaning subsumes the existential one. That is why, throughout the Italian L2 test, the participants were not asked to judge the sentences as True or False but as Accurate and Inaccurate descriptions of the story.⁵ Note that this is a design feature imposed by the data. We are relying on adult speakers obeying Grice’s (1989) Maxim of Quantity: 1. Make your contribution as informative as is required for the current purposes of the exchange. 2. Do not make your contribution more informative than is required. Thus, while the Italian sentence is strictly speaking True in the context of the generic story, it is not Accurate (maximally informative). There is abundant experimental evidence that adults, unlike children, overwhelmingly obey the Maxim of Quantity (Noveck and Posada, 2003; Papagfragou and Mussolino, 2003; Feeney *et al.*, 2004).

The GJT included five grammatical and five ungrammatical sentences in the Proper Name Movement Condition as the examples in (7) and (8), and another 10 sentences in the N-over-AP Movement Condition (as in (14)). There were 10 fillers as well, bringing the number of sentences up to 30.

- 14) a. A mia sorella piacciono i mirtilli freschi.
 DAT my sister likes INDEF-ART blueberries fresh
 b. My sister likes fresh blueberries.
 c. * Le verdi mele sono la frutta preferita di papà.
 the apples yellow are the fruit preferred by my father
 d. * Apples yellow are my dad’s favorite fruit.

3 *Group results*

a Cloze test: The cloze test was intended as a language proficiency measure. The scoring procedure used the exact match method: if a blank

⁵I am indebted to G. Longobardi for pointing out this problem and for suggesting the best solution.

Table 1 Range and mean scores on cloze test

Groups	Acquisition of Italian		Acquisition of English	
	Range	Mean	Range	Mean
Controls	20–30	27.10	21–31	25.97
Advanced	20–25	22.47	21–29	24.43
High intermediate	8–19	11.80	11–20	16.20

was filled with the exact word as in the original text, one point was given; if no word was supplied, or even if the supplied word was meaningful but not the one used in the original text, no point was given. The two advanced groups were not significantly different but the two intermediate groups were significantly different from each other ($p < .05$); see Table 1.

b Accuracy on TVJT in the Italian → English direction: General Linear Model (GLM) ANOVA was performed on the results of the TVJT. There was a main effect for reading ($F(3, 91) = 52.05, p < .0001$), and a meaning by group interaction ($F(6, 184) = 4.79, p < .001$).

Looking at the two conditions separately, it seems that the Anaphoric Binding Condition worked a bit better in both directions, allowing for stories that could support more clearly the two readings available. There are no statistical differences between the two learner groups and the controls in accuracy of performance. The distributive reading received a slightly, but not significantly, higher percentage of True answers in all groups.

In the case of the Bare Noun Interpretation Condition, the generic reading received a significantly higher percentage of true answers ($F(1, 93) = 104.1, p < .0001$); see Table 2. Recall that the existential reading is the one available in Italian and in English while the generic reading is the one only available in English. The Italian learners of English have not only acquired it, but they actually prefer it over the interpretation available in their native grammar. There are no significant differences between groups on the generic reading in this condition. On the existential reading, the two learner groups do not differ between themselves, but they differ significantly ($p < .0001$) from the natives.

c Accuracy on TVJT in the English → Italian direction: GLM (repeated measures) ANOVA was performed on the results of the TVJT.

Table 2 Accuracy of interpretation in Truth Value Judgment Task in the acquisition of English (percentages)

Groups	Bare Noun interpretation		Anaphoric binding		Fillers	
	Generic reading	Existential reading	Kind reading	Distributive reading	True	False
English natives (<i>n</i> = 24)	91	75	80	88	95	98
Advanced (<i>n</i> = 40)	87	48*	83	93	99	93
High intermediate (<i>n</i> = 36)	88	55*	83	85	90	98

Note: The percentages marked with an asterisk are not different from chance at $p < .05$.

There was no main effect for condition ($F(1, 75) = 1.11, p = .29$), an effect for group ($F(1, 75) = 6.83, p = .002$), and a significant condition by group interaction ($F(2, 75) = 4.07, p = .047$).

In the Bare Noun Interpretation Condition, there were no statistical differences between the advanced group, the intermediate group and the controls in accuracy of performance ($F(2, 75) = 2.13, p = .13$). Importantly, all the learners and the controls were equally accurate in accepting the available interpretation and in rejecting the unavailable one ($F(1, 75) = 1.63, p = .20$). There was no interaction between accepting/rejecting the test sentence and group ($F(2, 75) = .55, p = .57$). The natives and the advanced group were different from chance in both accepting and rejecting; the intermediate group was different from chance only on the existential reading, the one they accepted, but not different from chance on the one they had to reject.

In the Anaphoric Binding Condition, the two learner groups' accuracy is not different, but they differ significantly from the natives ($F(1, 75) = 7.9, p = .001$). Again, all the groups were equally accurate in accepting the available interpretation and in rejecting the unavailable one ($F(1, 75) = 3.53, p = .064$). There was no interaction between accepting/rejecting the test sentence and group ($F(2, 75) = .78, p = .46$). The intermediate group is different from chance in accepting the available interpretation, but is at chance when rejecting the unavailable one (Table 3).

Table 3 Accuracy of interpretation in Truth Value Judgment Task in the acquisition of Italian (percentages)

Groups	Bare Noun interpretation		Anaphoric binding		Fillers	
	Generic reading	Existential reading	Kind reading	Distributive reading	True	False
Italian natives ($n = 28$)	67	68	72.3	88.4	86	99
Advanced ($n = 24$)	66	76	65.0	67.4	83	85
Intermediate ($n = 27$)	59*	64	62.0*	65.7	79	88

Note: The percentages marked with an asterisk are not different from chance at $p < .05$.

d Accuracy on the GJT in the Italian → English direction: The two learner groups and the controls are at ceiling in their knowledge that N-to-D movement and N-over-AP movement are not permitted in English. There are neither group nor condition effects in the data, as illustrated in Table 4.

Table 4 Accuracy on Grammaticality Judgment Task in the acquisition of English (percentages)

Groups	*N-to-D in proper names		*N-over-AP movement	
	Grammatical	Ungrammatical	Grammatical	Ungrammatical
Controls ($n = 24$)	97	96	100	98
Advanced ($n = 40$)	96	96	99	100
High intermediate ($n = 36$)	96	98	99	99

Table 5 Accuracy on Grammaticality Judgment Task in the acquisition of Italian (percentages)

Groups	N-to-D in proper names		N-over-AP movement	
	Grammatical	Ungrammatical	Grammatical	Ungrammatical
Natives ($n = 28$)	78.6	93	99	95
Advanced ($n = 24$)	75	80	90	70.4
Intermediate ($n = 27$)	80	71	90	66.1

e Accuracy on the GJT in the English → Italian direction: GLM (repeated measures) ANOVA was performed on the results of the GJT. There was a significant effect for condition ($F(1, 75) = 33.4$, $p < .0001$), a significant effect for grammaticality ($F(1, 75) = 21.5$, $p < .0001$) and a significant interaction ($F(2, 75) = 17.26$, $p < .0001$).

On the N-to-D in proper names condition, the native speakers accepted the movement (*Roma antica*) significantly less than they rejected the ungrammatical version (**Antica Roma*); see Table 5. This movement is very likely subject to dialectal differences. In fact, in accepting N-to-D movement, the two learner groups are similar to the natives; however, they are a bit less likely to reject the ungrammatical variant. On N-over-AP movement, where less dialectal differences exist, the natives are at ceiling, the learners (not different from each other) are 90% accurate in accepting the movement, but a bit less likely to reject the lack of movement (which happens to be the English value of the parameter).

4 *Individual results*

When co-acquisition of two underlyingly related properties is concerned, it is imperative to look for contingent knowledge of the two properties in individual grammars, and not in groups. In choosing the cut-off point for successful acquisition, the native speaker accuracy range was taken as the meaningful measure. Results were calculated with a cut-off point of 75% accuracy as successful acquisition on both conditions in the Italian → English TVJT. A cut-off point of 62.5% (5 correct out of 8) was used in the English → Italian direction, given the depressed performance of the native speakers on the TVJT. Accuracy of 80% was used on the GJT in both learning directions.

As Tables 6 and 7 indicate, the big majority of learners have acquired both the syntax and the semantics, and the contingency of acquisition of the two properties in the (more difficult) English → Italian direction is statistically significant in all cases. In the Italian → English direction, only the native speakers demonstrated significant contingency, while the learners were split between those who have acquired both properties and those for whom the semantic trails the syntactic knowledge.

Table 6 Distribution of learners according to acquisition of the syntax and semantics of the BN/PN parameter: Italian → English

	Yes syntax	No syntax
<i>English natives (n = 20):</i>		
Yes semantics	17	0
No semantics	3	0
$X^2 = 9.8; p < .002$		
<i>Advanced learners (n = 40):</i>		
Yes semantics	22	0
No semantics	18	0
$X^2 = .4; p = .527$		
<i>Intermediate learners (n = 36):</i>		
Yes semantics	19	0
No semantics	17	0
$X^2 = .11; p = .74$		

VI Discussion

It can safely be assumed that knowledge of the syntactic aspect of the Bare Noun/Proper Name parameter has been acquired by the biggest majority of learners. In other words, all learners know that in English overt movement of the noun over the adjective is prohibited even though their native Italian requires it. In the other direction, most learners know that in Italian overt movement of the N head is possible even though their native English prohibits it. In the rest of this section, we assume that the syntactic knowledge involved in the parameter is in place, and see how this squares with the semantic side.

Table 7 Distribution of learners according to acquisition of the syntax and semantics of the BN/PN parameter: English → Italian

	Yes syntax	No syntax
<i>Italian natives (n = 28):</i>		
Yes semantics	26	0
No semantics	2	0
$X^2 = 20.6; p < .0001$		
<i>Advanced learners (n = 24):</i>		
Yes semantics	22	2
No semantics	0	0
$X^2 = 16.67; p < .0001$		
<i>Intermediate learners (n = 27):</i>		
Yes semantics	18	0
No semantics	4	5
$X^2 = 10.74; p < .001$		

Notes: Yes = have acquired; No = have not acquired.

Our first prediction for the acquisition of semantics was that despite the POS learning situation, the unavailability of one native interpretation (out of two) will be acquired by the English learners of Italian. Note that there is no semantic evidence in the linguistic input, since this is a negative constraint and information about unavailability of interpretations is not provided to learners (see the survey described in Section IV). If any knowledge of lack of interpretation is acquired, it can solely be due to parametric restructuring: knowledge of one construction in the cluster engages the other.

The advanced English learners of Italian are able to correctly interpret Italian bare nouns. More specifically, they have acquired the fact that in Italian BNs do not refer generically when there is no independent generic operator (adverbs like *always*, imperfect tense inflection, etc.). The intermediate learners as a group have not acquired this yet, but most individuals pass the cut-off point of 62.5% (see Table 6). The biggest majority of individual learners have overcome the POS situation. Still, the somewhat depressed accuracy of Italian native speakers as well as Italian learners on the TVJT, especially in the Bare Noun Interpretation condition, warrants further discussion. We turn to this below.

Although the data on bare nominal interpretation in Italian has been discussed in the literature for many years, there is not much consensus. As Longobardi (2001: 339) notes, three different positions have been put forward:

- Casalegno (1987) considers Italian BNs to have existential interpretations only;
- Longobardi (1994) assumes that they can be generic, but with Individual-level predicates only;
- Chierchia (1998) argues that Italian BNs have both a generic and an existential interpretation, distributed essentially as in English.

Furthermore, as Longobardi (2001) implies and Chierchia (1998) argues explicitly, Italian bare nouns in subject position are ungrammatical, unless they are ‘syntactically heavy’ as in (4) and (6). Example (15) (Chierchia’s 23a,b) illustrates this judgment:⁶

⁶Chierchia’s analysis proposes to account for this contrast by assuming that a null D is projected in Italian, in order for NPs to be interpreted as arguments. This null morpheme must be licensed syntactically by being governed by a lexical head. The verb satisfies this condition, hence BN objects are fine. In subject position, however, the null D is ungoverned, that is why BN subjects are unacceptable.

- 15) a. * Bambini sono venuti da noi
 'Kids came by us.'
 b. Ho preso biscotti con il mio latte.
 'I had cookies with my milk.'

Chierchia (1998: 384) further notices that 'if bare NPs are made heavy, either by being co-ordinated with other NPs or by various kinds of modification, the degree of acceptability in subject position increases considerably.'⁷ For Chierchia as well as for Longobardi, the subject–object asymmetry is gone when heavy DPs are involved.⁸ Thus, it is obvious that BN interpretation in Italian is far from straightforward. First, there is a potential subject–object contrast with 'light' DPs and no contrast with 'heavy' ones; second, a bare NP cannot be interpreted in isolation: one always needs to look at the predicate and ultimately the whole sentence; third, there is considerable variation between speakers and possibly dialects. All these facts amply explain why the Italian native speakers in this study were not overwhelmingly accurate, although their judgments were statistically different from chance in all cases. In this respect, it is instructive to note that the Anaphoric Binding Condition produced better results, since the stories in this condition were somewhat more transparent. However, we must keep in mind that both BN interpretation and anaphoric binding depend on the same underlying property. In light of the fragility of the native judgments and the extremely subtle semantic knowledge that has to be acquired, the accuracy of the advanced learners is even more impressive.

Proponents of the pattern matching in L2A (e.g. Clahsen and Hong, 1995; Bley-Vroman, 1997; Neeleman and Weerman, 1997) could argue that our learners might have arrived at this successful contraction of the grammar through other means. Blocking of one form by another, for example, might be used to work out that the generic interpretation of bare nouns is missing in Italian (under the specific conditions described here). The logic is that English natives will notice that Italian definite plural NPs (*gli elefanti di colore bianco* 'the white elephants') are

⁷Chierchia accounts for this fact by proposing that the null D of the heavy NP is licensed by the functional head of a Focus Phrase via spec agreement (Chierchia 1998: 387).

⁸As far as I know, the judgements proposed in the literature (Casalegno, 1987; Longobardi, 1994; Chierchia, 1998; Longobardi, 2001) have not been tested empirically on Italian native speakers. Taken as a psycholinguistic test of Italian BN interpretation, then, my study confirms both the fragility of the judgments, as well as Longobardi's (2001) identification of the constructions in which Italian BNs cannot have a generic (universal) interpretation, while English ones can.

generically interpreted, and they will infer that bare nouns (*elefanti di colore bianco* ‘white elephants’) need not – therefore are not – so interpreted. Let us look at some more Italian examples (all from Longobardi, 2001; his examples 6a,c, 15a, 34a).

- 16) a. Elefanti di colore bianco hanno creato in passato grande curiosità. *Gen/Ex
 elephants of color white have raised in past big curiosity
 ‘White colored elephants raised a lot of curiosity in the past.’
- b. Elefanti di colore bianco hanno creato sempre/spesso in passato grande curiosità. Gen/?Ex
 elephants of color white have raised always/often in past big curiosity
 ‘White colored elephants always/often raised a lot of curiosity in the past.’
- 17) Degli elefanti di colore bianco hanno creato in passato grande curiosità. *Gen/Ex
part. art. elephants of color white have raised in past big curiosity
 ‘White colored elephants raised a lot of curiosity in the past.’
- 18) Gli elefanti di colore bianco hanno creato in passato grande curiosità. Gen
 the elephants of color white have raised in past big curiosity
 ‘White colored elephants raised a lot of curiosity in the past.’

First, as mentioned in Section II and as examples in (16) illustrate, Italian bare nouns lack a generic interpretation in restricted grammatical contexts only, for example, in episodic sentences. In characterizing sentences, or in sentences with habitual adverbs as in (16b), the generic interpretation is the preferred one. We argued above that this learning situation creates even more difficulties for English learners of Italian than just having to ‘delearn’ one native interpretation. If learners are ‘pattern matching’, they have to notice in what syntactic environment the pattern matches their native interpretations and where it does not. This is highly unlikely, but let us assume for the sake of the argument that learners do somehow match the pattern. There is more to consider.

The distribution pattern of Italian bare nouns is exactly the same as that of nouns preceded by the so called partitive article *degli*, see (17). If the definite article *gli* is used instead of a BN in the cases where the BN generic interpretation is impossible, the generic interpretation becomes available as in (18) (for more examples; see Longobardi, 1991). If the blocking logic leads one to claim that the definite article can pre-empt the generic interpretation of (16a), then the same logic would lead one to argue that the partitive article should pre-empt the existential interpretation of (16a). This, of course, is contradicted by the data. I conclude that blocking effects are not in a position to explain the experimental findings, and that the POS learning situation is overcome solely by parametric restructuring.

Let us return now to our second prediction in this study (see Section IV): expanding the interlanguage grammar in the Italian → English direction will be easier, for either one of two (or both) reasons: the interpretation missing in the native language is available in the L2 input, there is also syntactic evidence parametrically related to it. Results indicate that Italian learners of English at high intermediate and advanced levels of proficiency are able to correctly interpret ambiguous English bare nouns. More than half individual learners have acquired (two related) interpretations one of which is not available in their native grammar: they allow bare nouns to refer to kinds directly, without the intermediacy of external generic operators. Learner and native speaker group accuracy do not differ on the two important readings (the ones that are unavailable in Italian).

However, in order to evaluate this prediction fully, we need to compare accuracy in the two directions. For the reasons I discuss above, Italian natives are less accurate than English natives in the Bare Noun Interpretation Condition, but they demonstrate superior accuracy in the Anaphoric Binding Condition. Therefore, I only compare the Italian and English learners' accuracy on the latter condition.

Table 8 compares the accuracy of both groups on the Anaphoric Binding Condition. On this condition, native speakers are not significantly

Table 8 Comparing accuracy of interpretation in Truth Value Judgment Task (percentages)

Groups and contrasts	Anaphoric binding condition	
	Kind reading	Distributive reading
<i>Native speakers:</i>		
English native speakers	80.0	88.0
Italian native speakers	72.3	88.4
Contrast English–Italian native speakers	$t(51) = 1.34$; $p = .09$	$t(51) = 0.14$; $p = .44$
<i>Advanced learners:</i>		
Advanced learners of English	83.0	93.0
Advanced learners of Italian	65.0	67.4
Contrast English–Italian advanced learners	$t(63) = 3.48$; $p < .0001$	$t(63) = 3.88$; $p < .0001$
<i>High intermediate learners:</i>		
High intermediate learners of English	83.0	85.0
High intermediate learners of Italian	62.0	65.7
Contrast English–Italian high intermediate learners	$t(62) = 2.52$; $p = .007$	$t(62) = 2.91$; $p = .002$

different from each other, by t-test. There are several things to keep in mind while discussing Table 8. First, the kind reading is not available in Italian, so the percentage indicates Italian natives' and learners' accuracy in rejecting this interpretation, while the percentage of English natives' and learners' accuracy represents acceptance. Second, the intermediate group learning Italian is lower in proficiency than the intermediate group learning English, while the two advanced groups are comparable to each other and to native speakers (see Table 1).

Evidence from the syntactic side of the parameter exists in both directions, so one has to factor it out, at this point. Still, learners of Italian are significantly less accurate than learners of English (by about 20 percentage points), but on *both* readings. The significant difference is expected on the Kind reading, where learners of Italian are delearning one interpretation, while learners of English are adding one. However, the same significant difference exists between the groups on the Distributive reading as well, the one that is available in both languages and that learners are supposed to transfer from their L1. The fragility and subtlety of the Italian judgments discussed above may be a confounding factor in this comparison. The accuracy results point to the conclusion that the Italian → English direction of learning is the easier one of the two. However, this difference could be due to the learnability situation as well as the quality of the input, and even to a combination of the two factors.

The third prediction involved clustering of properties, superficially unrelated but underlyingly due to the parameter under investigation. In order to evaluate whether this prediction is supported, one must look into clustering of properties in individual grammars as reflected in Table 6. This prediction appears to be weakly supported. There is evidence for a significant contingency of acquisition in the 'difficult' direction, the English → Italian direction (see Table 7). The biggest majority of learners have acquired both the syntactic and the semantic side of the parameter.⁹ In the Italian → English direction, syntax comes

⁹An anonymous *Second Language Research* reviewer suggests another explanation for property clustering in the Italian → English direction. If something like Chierchia's Nominal Mapping Parameter (NMP) is true, then learners' knowledge of generic bare plurals (*lions*) in English is related to noticing the lack of generic interpretation for definite plurals (*the lions*). This is of course possible, and we should always keep in mind that contingency of acquisition is not evidence for a causal relationship between two properties. I am not at all claiming that my contingency results prove the alternative NMP explanation to be wrong, but only that they are compatible with the BN/PN parameter.

earlier for roughly half of learners (in both proficiency groups), while for the other half the properties are contingent. This fact may be due to the lack of variation in English proper name syntax, and the exceptional clarity and consistency of English nominal syntax. Both findings, however, are compatible with a parametric analysis of these properties.

Let me summarize the main point of this article. The study looked at the L2 acquisition of ‘invisible’ semantic properties parametrically related to visible word order differences between Italian and English. If no UG parameters are available to adult L2 learners, then what I have been calling ‘the semantic property’ and ‘the syntactic property’ are not related in any way. On the semantic side, English has two interpretations of BNs, while Italian has only one. This is a subset–superset learnability situation, and a POS emerges in the English → Italian direction of acquisition. Delearning one interpretation should be impossible. If, on the other hand, UG is engaged in adult L2A, the syntactic and the semantic properties are related, and the syntactic property can be used by learners as a source of target language knowledge. Parametric restructuring was attested in both learning directions. In the English → Italian direction, the semantic property was acquired based on positive evidence for the syntactic side of the parameter, overcoming a POS situation. The learners also appear to be aware of the unified strategy languages use in assigning object and kind-reference to nominal structures. These results are compatible with the parametric analysis proposed by Longobardi. But even if Longobardi’s BN/PN parameter is not the correct explanation, there must be some other overt and parametrically related property of Italian that has triggered our learners’ semantic knowledge. Without UG engagement of parametric knowledge, the Italian L2 acquisition results are impossible to explain. No amount of pattern noticing can bring forward knowledge of a missing interpretation.

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