

Adult Accessibility to L2 Representational Features: Evidence from the Spanish DP

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1. Introduction

For over a decade the Minimalist Program (MP, Chomsky 1995, 2000, 2005) has revolutionized both our understanding of the architecture of linguistic systems as well as how these systems come to be acquired. According to current MP assumptions, parameter values obtain as a consequence of cross-linguistic differences in formal feature and functional category composition. Universal Grammar (UG) purportedly provides a superset of formal features and functional categories to all human beings. The learning task of a child, therefore, involves choosing which functional categories and formal features apply to his native language in light of the primary linguistic data at his disposal during the course of grammatical development. Within such a conceptualization of the mental constitution of linguistic knowledge, the instantiation (or lack thereof) of particular features is seen on the surface as cross-linguistic typological differences, otherwise known as parametric differences. For example, languages that lack an uninterpretable *+wh* feature will not have *+wh* movement, resulting in so-called *wh-in situ* languages such as Chinese (and, as a result, principles such as Subjacency will not pertain to these languages) while languages such as English whose input provides evidence of a *+wh* feature has, as a syntactic consequence, obligatory *+wh* movement and must respect Subjacency conditions (see Hawkins and Hattori 2006). The learning task of the adult L2 learner is not, *a priori*, unlike that of the L1 child. That is to say, in order for an adult learner to converge on the target representation of any given L2, he must have access to the features of UG that remained unspecified during the course of L1 acquisition. However, there are many more variables involved in adult language learning, not the least of which is the fact that the initial state of acquisition is different than that of the child. It is reasonable to suppose that L1 transfer occurs (consult Epstein, Flynn and Martohardjono 1996, 1998 for an alternative view), and therefore, adult language acquisition does not begin with the *tabula rasa* with which L1 acquisition commences.

Couched within MP notions, contemporary theorizing within generative second language acquisition (L2A) has been able to offer more fine-grained proposals over the last decade that are in a better position to adequately describe and explain the process and outcomes of adult language acquisition. One of several central questions in the current research program of generative L2A involves the continued role of UG after the so-called critical period and how answering this query can shed some light on the asymmetrical patterns of pre- and post-critical period language acquisition. Some have argued that UG, in the sense that UG contains a superset of all possible formal grammatical features, is no longer available in the same way to adult language learners. Proponents of the Representational Deficit Hypothesis (RDH) claim that [some] features not instantiated in the L1 are no longer available to adult learners and thus L2 variability is represented within the narrow syntax (Beck 1998; Hawkins and Chan 1997; Franceschina 2001; Hawkins and Franceschina 2004; Hawkins and Hattori 2006; Tsimpli and Mastropavlou 2008; Tsimpli and Dimitrakopoulou 2007).¹ If true, this

¹ We note that there are differences between the theories we lump together here under the label RDH, inclusive of the predictions in L2 behavior they make. For example, Beck's (1998) model, which claims that functional features remain inert in L2 grammars even when the L1 and L2 have the same value predicts L2 variability in all

means that L2 acquisition is destined to have representational deficits within the narrow syntax whenever the target grammar requires the acquisition of new formal features, at least uninterpretable ones. Accordingly, L2 variability is explained by claiming that an insurmountable deficit in syntactic representation results in surface inconsistency. Since L2 learners can arrive at what appears on the surface to be the same underlying representation via domain-general learning mechanisms, the fact that L2 learners are able to seemingly do some things in their interlanguage that they should not be able to do is not necessarily problematic for RDH approaches. For example, it is uncontroversial to claim that Chinese learners of L2 English do form *wh*-questions with apparent movement; the claim, however, is that the underlying syntax of Chinese L2 English *wh*-questions is necessarily different from that of L1 English. What should, however, be impossible for Chinese learners to demonstrate target knowledge of (with negligible variation that is) are the conditions on movement related to Subjacency restrictions. Interpretations of the available data on this are conflicting (see White 1989 for early debates and Hawkins and Hattori 2006 versus Lardiere 2006 for more current data and analysis).

Full Access approaches (FA), which also embrace contemporary MP assumptions, contrast sharply with RDH approaches in that they claim that adult learners have unabridged access to UG's full inventory, interpretable and uninterpretable features alike (e.g. White 2003; Schwartz and Sprouse 1996, 2000; Duffield and White 1999). Since they claim that new features can be acquired, parameter resetting within the narrow syntax should be relatively unproblematic (although not inevitably so, cf. Schwartz and Sprouse 1996). Support for this hypothesis comes from the so-called logical problem of adult language learning whereby L2 acquirers have been shown to acquire *poverty-of-the-stimulus* properties associated with the acquisition of new morphosyntactic features, which according to Schwartz and Sprouse (2000) constitute unassailable evidence for adult UG accessibility (see Slabakova 2006 for a review of much of this literature). Since RDH approaches predict that the acquisition of L2 properties associated with a poverty of the stimulus that cannot be account for via L1 transfer should never occur, this evidence simultaneously constitutes counterevidence to RDH predictions. FAs do not ignore L2 variability and optionality, but claim they do not ensue as a result of inevitable deficits within the L2 narrow syntax. FAs claim that variability and optionality occur as a result of any number of L1 transfer, general processing deficits and/or interface related problems for adult L2A, related to, for example, the syntax-morphology interface (Hazdenar and Schwartz 1997; Prévost and White 2000; Lardiere 1998, 2006); the syntax-prosodic/phonology interface (Goad and White 2006); the syntax-pragmatics interface (Sorace 2000, 2004, 2005; Sorace and Filiaci 2006; Valenzuela 2006).

Focusing on the narrow syntax of the Spanish DP, the present study tests the predictions of the RDH approaches versus those of the FA approaches by examining the acquisition of gender and number features of nouns, adjectives and determiners by L1 English learners of adult L2 Spanish. Since these features determine DP internal word order (the adjective with respect to the noun), determiner-noun-adjective overt morphological accord and are both interpretable (on the head noun) and uninterpretable (on adjectives and determiners), the FDH predicts insurmountable variability for grammatical gender as well as variability in adjective noun word order (see Section 2 for syntactic details). Testing an intermediate and advanced group of adult English learners of L2 Spanish, we demonstrate across two linguistic tasks that L2 learners can and do acquire new features as evidenced by their knowledge of grammatical gender and the semantic construals of adjective placement in L2 Spanish. Although space limitations do not afford us the opportunity to discuss all the implications of this,² task 2 demonstrates that L2 learners at the advanced level do acquire semantic nuances related to

domains regardless of L1/L2 pairings while Hawkins and Chan (1997), for example, would only predict inevitable variability due to representational differences where the L1 and L2 have different feature compositions. Finally, Hawkins and Hattori (2006) and Tsimpli and Dimitrakopoulou (2007) predict representational differences only when the L2 requires the acquisition of new uninterpretable features. Despite these important differences, we are able to lump these theories together under one general approach in light of what we investigate, namely, gender and number features (and ensuing word order) since these features are both interpretable and uninterpretable in Spanish depending on what they are associated with.

² We do not intend to ignore other contemporary debates such as the notion of interface vulnerability as being the central cause of L2 variability (e.g. Belletti, Bennati and Sorace 2007; Sorace 2000, 2005; Sorace and Filiaci

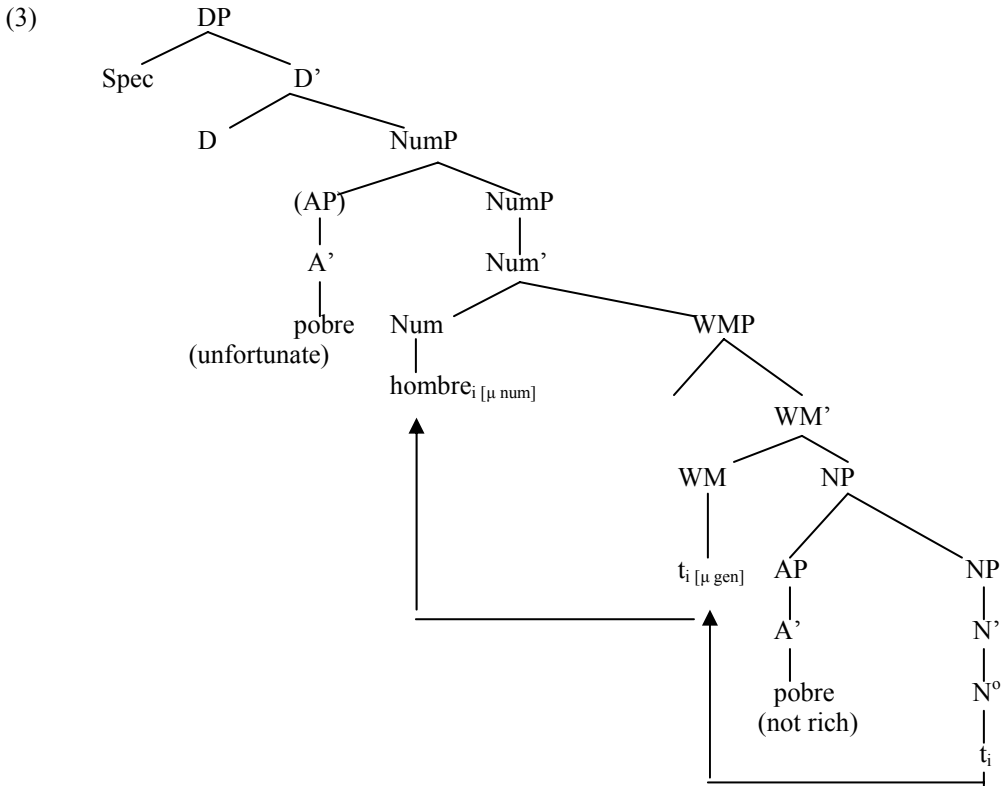
unlike Spanish adjectives which usually appear postnominally, appear almost exclusively in the prenominal position, a point to which we return in greater detail below.

Within the generative tradition, Abney (1987) put forward the DP Hypothesis, which essentially established a parallelism between the syntactic structure of noun phrases and the one of the sentence. The so-called DP Hypothesis asserts that determiners are the head of a functional projection, the Determiner Phrase (DP), which selects Noun Phrases (NP) as complements. The function of the DP is to attach reference to the complement noun phrase. However, a more fine-grained analysis (e.g. Bernstein 1993; Picallo 1991; Carstens 1991; Ritter 1993; Valois 1991; Cinque 1994) of the DP structure proposes additional functional categories between the DP and NP. Simplifying a bit for the purposes of the present study, we follow Bernstein's (1993) analysis according to which the functional categories NumP and WMP (Word Marker Phrase) are located between DP and NP ([DP D [NumP Num [WMP WM [NP N]]]]) where formal gender ([*masc/fem*]) and number ([*±plural*]) features are checked, valued and deleted. Features in the DP-internal functional categories are responsible for the differences or similarities in nominal word order amongst languages. In Romance languages nominal movement (noun raising) is obligatory whereas in Germanic languages, such as English, the noun remains in situ since there is no feature that attracts the noun to raise.³

If an adjective is present in a specifier position of the NP, noun movement to the head of NumP results in the head noun moving past the adjective, yielding the canonical [N Adj] word order of Spanish (Carstens 1991; Zagona 2002). In Germanic languages, on the other hand feature checking is satisfied without movement yielding the opposite word order [Adj N] at spell out. Within this structural configuration, number features within the nominal domain are valued and deleted, and the same applies to gender agreement (Picallo 1991; Bernstein 1993) as shown in the structure in (3).⁴

³ For our purposes herein, what exactly attracts the noun to raise in Spanish is inconsequential as it is observable that it does in Romance language, but does not in English. Older accounts capture this difference by claiming number features are strong in Spanish, but weak in English. Such a notion is not compatible with current assumptions, and so it is argued that number features are checked via AGREE in English without raising while such feature checking happens via overt movement in Spanish, presumably due to an additional feature (of the EPP-type) that attracts the noun to raise.

⁴ However, Masullo and Depiante (2003) claim that gender is an inherent feature on nouns and only number gets checked in a higher functional category and consequently WMP does not exist (or in Picallo's (1991) terms Gen(der)P).



Given the L2 acquisition theories under investigation in the present article (see Section 1), it is crucial to understand how grammatical gender and number are accounted for within a current minimalist account. Spanish has interpretable gender and number features on nouns whereas these features are uninterpretable on determiners and adjectives. In Spanish, the uninterpretable features enter into an agreement relationship with the interpretable features of the head noun whereby they are valued and deleted during the course of the derivation, that is, upon obligatory nominal movement to Word Marker Phrase (WMP) and NumP respectively. Since there is no noun raising in English, which thus accounts for its stringent determiner-adjective-noun word order, English learners of L2 Spanish must acquire whatever features result in noun raising. Although English has number features these features do not result in movement. Additionally, English entirely lacks grammatical gender features and the functional category where they are checked. Therefore, English L2 learners must acquire a new functional category, namely WMP where gender features are checked, as well as the independent features associated with WMP and NumP that require raising in order to converge on the target syntax of the Spanish DP.

However, this linguistic analysis of the syntactic properties of adjectives is not sufficient in describing the word-order possibilities in Spanish (and other Romance languages; see Zagona 2002). This is the task that we undertake in the next section. Specifically, placement of adjectives in the Spanish DP shows at least a three way distinction that correlates with the semantic properties of the adjectives.

2.2 Three types of Spanish adjectives

On the basis of the analysis presented in the previous section, we can immediately see two very distinctive groups of languages: a group of languages whose adjectives are prenominal and another group whose adjectives are (mainly) postnominal. Furthermore, in Spanish, unlike English which has but one possibility, the position in which an adjective can appear depends on both the nature of the adjective's semantic interpretation in a given NP as well as the adjective itself (namely, the

subcategory of adjective). Adopting Zagona's analysis (2002), there is a first group of adjectives that are strictly pronominal such as *mero* 'mere' and *futuro* 'future' (namely, temporal modifiers) compare (4a) and (4b):

- (4) a. Un mero soldado
 'A mere soldier'
 b. *Un soldado mero'
 'A mere soldier'

The second type of adjectives, so-called ethnic and relational adjectives (namely, *mathematical*, *theatrical* and so on) which convey relations of various types, such as origin and material composition always follow the noun in a postnominal position compare (5a) and (5b).

- (5) a. Una camisa mexicana
 'A Mexican shirt'
 b. *Una mexicana camisa
 'A Mexican shirt'

A third class of adjectives, the so-called qualitative adjectives, such as *viejo* 'old,' *pobre* 'poor' and so on can be either pronominal or postnominal. In pronominal position they are appositive (non-restrictive), but in postnominal position they are restrictive (Jackendoff 1977; Luján 1980; Alexiadou 2001; Zagona 2002). This type of adjective displays additional semantic construals depending on whether they appear to the left or right of the noun: such as focus, emphasis, subjectivity, and sometimes causing a change in meaning when they merge in different positions within the DP structure (compare (6a) and (6b)):

- (6) a. Un hombre pobre
 'A poor (not rich) man' (restrictive interpretation)
 b. Un pobre hombre
 'A poor (unfortunate) man (appositive interpretation)

In order to explain the different collocation possibilities of Spanish adjectives, we follow Bernstein's (1993) analysis that claims that restrictive/intersective adjectives are essentially pronominal in Spanish, but that their postnominal position is derived from noun movement over the adjective as shown in (7):

2.3 Summary and the task of the L2 learner

From a learnability point of view, taking into account the pure syntax (i.e. structural representation of the DP and abstract feature(s) in NumP and WMP, see 2.1), L2 learners of Spanish must learn that adjectives in Spanish are mostly postnominal, that nouns have grammatical gender and number features and that there are number and gender agreement between nouns, determiners and adjectives (which requires the acquisition of new uninterpretable features). On the other hand, L2 learners need to acquire the semantic features of DPs in Spanish which deal with adjective placement. We have shown that the distinctive semantic interpretations of the adjectives in Spanish are captured by different syntactic word orders. We have outlined a syntactic and semantic analysis for different adjective classes in Spanish. The placement of adjectives within the NP mirrors both their sub-categorization and their semantic interpretations within the NP. In particular, what L2 learners of Spanish need to acquire is (a) the fact that Spanish has grammatical gender (which does not exist in English), (b) that Spanish also has grammatical number (which exists in English) and (c) the order of the noun and modifier(s), which syntactically varies in Spanish compared to English. Table 1 highlights the aspects of the nominal system that will need to be learned by English learners of L2 Spanish.

Table 1: Spanish and English nominals

	Spanish	English
Overt gender on the noun (interpretable gender features)	+	-
Overt number on the noun (interpretable gender features)	+	+
Overt gender concord (uninterpretable gender features)	+	-
Overt/covert number concord (uninterpretable number features)	+	+
Prenominal adjectives (via no movement in English; after two types of movement in Spanish)	+	+
Postnominal adjectives (instantiation of WMP and obligatory noun raising in Spanish only)	+	-

Recall that some of these features are underdetermined in the input and not syntactically represented in the learners' native language (English). In general terms, English learners of L2 Spanish receive instruction that adjectives in Spanish are generally postnominal (e.g. adjectives expressing origin, material composition such as *estudiante francés* 'French student' or *mesa italiana* 'Italian table'), but there are a few exceptions with some adjectives appearing prenominally (such as *mero soldado* 'mere soldier') and still other adjectives whose meaning change or depend on their position (e.g. largely qualitative adjectives such as *viejo* 'old,' *pobre* 'poor/impooverished' and so on). So, explicit instruction received in the classroom does not always fully capture this variability in adjective placement. Crucially, what English learners are not instructed on are the mutually exclusive appositive/restrictive semantic interpretations that are strictly enforced by (fall out from) their syntactic position. In other words, what English learners will have to 'unlearn' is the fact that prenominal adjectives in Spanish are not ambiguous in meaning as they are in English precisely because adjectives can only be overtly and not underlyingly linked to their syntactic position. And so, if these L2 learners show knowledge of the semantic properties of qualitative adjective to a native-like degree depending

are conditioned by their semantic interpretations. Following Demonte (2001, 2008), the semantic interpretations illustrated in examples (4)-(6) above are associated to three syntactic structures: adjectives with a restrictive interpretation (that is, they refer to the whole set of properties on noun) occupy a postnominal position, adjectives with a non-restrictive interpretation (that is, they refer to a subset of a class of objects denoted by the noun) tend to appear prenominally and F in focus position. We point this out to be thorough, but such details remain outside the scope of the present research and do not come to bear on what we investigate herein.

on their syntactic position this could be used as robust evidence to suggest that they have converged on the target representation for the Spanish DP.

3. Previous Studies⁷

There have been several studies on adult L2 acquisition of new functional features related to the DP. Of particular interest are those studies that adopt the RDH, claiming that persisting variability in morphological marking is evidence of “L2 learner’s use of different sets of representational primitives to ‘break down’ the L2 input” (Franceschina 2005: 4), namely, accessibility to linguistic features instantiated within their L1 only (e.g. Hawkins 1998, 2001; Franceschina 2001, 2005; Hawkins and Franceschina 2004). Franceschina (2001, 2005) reports data from a case study on Martin, an English learner of L2 Spanish who has supposedly reached a steady state grammar for L2 Spanish. She reported that he was nearly natively accurate with gender assignment on nouns (where these features are interpretable; see Hawkins and Hattori 2006 for implications); however, he demonstrated considerable variability with gender assignment on determiners and adjectives, favoring a masculine default. She also reported that Martin was accurate to a native level with number assignment across nouns, determiners and adjectives. Since English has grammatical number, but not grammatical gender she interprets this difference in morphological performance as evidence of the fact that new L2 features cannot be acquired. In doing so, Franceschina (2005) joins others (e.g. Hawkins 1998, 2001; Franceschina and Hawkins (2004)) in arguing that the mental representation of grammatical gender for L1 English adult learners of Spanish is necessarily different than native Spanish speakers. That is, such evidence is interpreted by them as *prima facie* support for the notion that L1/L2 disparities result from differences in accessibility to representation resources after the Critical Period.

Other research such as Bruhn de Garavito and White (2002), Fernández (1999), White, Valenzuela, Koslowska-McGregor and Leung (2004) and Cabrelli, Iverson, Judy and Rothman (2008) question the tenability of the claims made by RDH approaches using evidence within this domain. Fernández (1999) demonstrates that L2 learners have less difficulty with gender assignment with determiners than they do with adjectives. Bruhn de Garavito and White (2002) tested the acquisition of grammatical gender in French L2 learners of Spanish in order to test between Beck’s (1998) hypothesis of featureless values, irrespective of the L1, and Full Access. According to Beck’s proposal, both English and French learners should demonstrate variability with gender assignment in L2 Spanish despite the fact that the French learners’ L1 has grammatical gender features. Since these features are argued to remain inert indefinitely, variability/optionality is not predicted to be ever completely reached, even at the steady state, for either set of L2 Spanish learners. Bruhn de Garavito and White (2002) showed that intermediate French learners had difficulty in assigning gender, especially to adjectives (less so with determiners), similar to Fernández’s data for English L2 Spanish. However, they demonstrated that this difficulty virtually disappears by the advanced stages. These results suggest that Beck’s proposal and Hawkins and colleagues’ proposals are untenable since, according to Beck, variability should remain and, according to Hawkins and colleagues, the French learners should not have these problems, in that they should clearly not pattern like English learners of L2 Spanish. As a result, Bruhn de Garavito and White (2002) conclude that the problem is a morphological one, thus explaining why similar patterns between English and French learners of L2 Spanish obtain.

Further corroborating the claims of Bruhn de Garavito and White (2002), work by White et al. (2004) and Cabrelli et al. (2008) have demonstrated that grammatical gender is acquired in L2 acquisition (and is a facilitative factor at the initial state of L3 see Cabrelli et al. (2008)). Both studies show that N-drop is uncomplicatedly acquired by English speakers of non-native Spanish. Even under

⁷ Although it is our intention to review and include some of the most current and relevant studies on the acquisition of DP properties in this section, we are aware of other types of work done on the topic using different methodological techniques such as Event Related Potential (ERP) (e.g. Frenck-Mestre, McLaughlin, Osterhout and Foucart (in press) and references therein), but due to space limitations we will not review that type of research here.

the most updated RDH proposals, which claim a post-critical period failure of uninterpretable features only (e.g. Hawkins 2005; Hawkins and Hattori 2006), this type of nominal ellipsis should not be acquired by English learners of Spanish since it is contingent on gender features from adjectives and determiners, which are uninterpretable.

There are few generative studies on the L2 acquisition of adjective placement and adjectival semantics. Anderson (2001, 2007a, 2008), however, has demonstrated that L1 English adult learners of L2 French do come to acquire proper canonical word order (determiner-noun-adjective) as well as the semantic difference between the canonical word order and prenominal adjective placement in French. However, Anderson (2007b) also demonstrates that an incongruity between pedagogical rules with classroom input and texts written for and by native French speakers can result in particular non-target-like performance even with highly proficient L1 English-speaking learners in acceptability judgements of contextualized French sentences, a point upon which we return as we analyse the present data for L2 Spanish.

4. The Study

4.1 Participants

The data come from a corpus of participants from three distinct groups. The control group consisted of 12 native speakers (NS) of Spanish. Their ages ranged from 25-54 and they were from various Spanish-speaking countries. The advanced speaker group (AS) consisted of 12 participants that had studied Spanish at the university level for a minimum of 5 years (8 years minimum of formal instruction ranging from high school to university level) and had also studied abroad in a Spanish-speaking country. Their ages ranged from 21-31. Finally, the intermediate speaker group (IS) consisted of 29 undergraduate students that had completed the General Education program requirements (which consist of a series of four university-level classes) at University of Iowa (or its equivalent). The age range for this group was 19-23.

4.2 Methodology

Besides a linguistic background questionnaire, all participants completed two linguistic tasks: a Grammaticality Judgment/Correction Task (GJCT) and a Context-based Collocation Task (CBCT). The GJCT tested for knowledge of gender agreement between determiners and nouns and nouns and adjectives. The purpose of the CBCT was to test for semantic knowledge of felicitous prenominal and postnominal adjectives. It should be mentioned that vocabulary was controlled for and there was no time limit. Participants were also instructed to ask the investigator if the directions or vocabulary were unclear. This was done in an attempt to reduce error based on misunderstanding. Given space limitations, we only provide examples of and report data on the relevant empirical sentence types, which is to say, not the fillers.

4.2.1 Grammaticality Judgment/Correction (GJCT)

The GJCT consisted of a total of 80 tokens. Tokens containing ungrammatical determiner-noun gender agreement (n=5) and ungrammatical determiner-noun number agreement (n=5) were counterbalanced by tokens containing grammatical determiner-noun gender and number agreement (n=5 each). Tokens containing ungrammatical noun-adjective gender agreement (n=5) and ungrammatical noun-adjective number agreement (n=5) were counterbalanced by grammatical noun-adjective gender and number agreement (n=5 each). It is important to note that the number of feminine vs. masculine and singular vs. plural tokens were controlled for across all token types. Ungrammatical prenominal (n=5) and postnominal adjective tokens (n=5) were counterbalanced by grammatical prenominal and postnominal adjective tokens (n=5 each). Finally, fillers (n=20) were included to disguise the purpose of the task. Participants were instructed to read each sentence and correct it if they judged it to be ungrammatical. Examples (8a) and (8b) show grammatical noun-adjective agreement

and grammatical determiner-noun agreement, respectively. Examples (8c) and (8d) show ungrammatical noun-adjective gender agreement and ungrammatical determiner-noun gender agreement, respectively. The anticipated correction for (8c) is ‘*famosos*’ to agree with the masculine, plural noun while for (8d) the anticipated correction is ‘*la ropa*.’ Example (8e) shows ungrammatical noun-adjective number agreement. The anticipated correction is ‘*su vida académica*.’ Example (8f) shows ungrammatical determiner-noun number agreement where the anticipated correction is ‘*la pulsera*.’

(8) Knowledge of gender and number agreement

- a. *Ellas prefieren comida fresca.* (grammatical Noun-Adj gender/number)
They prefer food FEM.SING. fresh FEM.SING.
‘They prefer fresh food.’
- b. *El chico siempre lee aquí.* (grammatical Det-Noun gender/number agreement)
The MASC.SING. boy MASC.SING. always reads here
‘The boy always reads here.’
- c. **Mis tíos de Los Ángeles son famosos.* (ungrammatical Noun-Adj gender agreement – long distance)
My uncles MASC.PLRL. from L.A. are famous FEM.PLRL.
‘My uncles from L.A. are famous.’
- d. **Iván necesita lavar el ropa.* (ungrammatical Det-Noun gender agreement)
Iván needs to wash the MASC.SING. clothes FEM.SING.
‘Iván needs to wash the clothes.’
- e. **Su vida académicas es muy difícil.* (ungrammatical Noun-Adj number agreement)
His life FEM.SING. academic FEM.PLRL. is very difficult
‘His academic life is very difficult.’
- f. **Felipe me compró las pulsera.* (ungrammatical Det-Noun number agreement)
Felipe me bought the FEM.PLRL. bracelet FEM.SING.
‘Felipe bought me the bracelet.’

As stated above, this task also tested for knowledge of syntactic positions of Spanish adjectives. Examples (9a) and (9b) are examples of grammatical prenominal and postnominal adjectives, respectively. Example (9c) is an example of an ungrammatical prenominal adjective. The noun and the adjective should be inverted. Example (9d) is an example of an ungrammatical postnominal adjective. The noun and the adjective should be inverted. The adjectives used in this portion of the GJCT were of the type that are strictly prenominal or strictly postnominal, corresponding to the types of adjectives exemplified in (4) and (5) of section 2.2.

(9) Knowledge of syntactic positions of adjectives

- a. *La policía está investigando el supuesto asesinato.* (grammatical prenominal adjective)
‘The police are investigating the alleged assassination.’
- b. *Quiero comprar los pantalones azules.* (grammatical postnominal adjective)
‘I want to buy the blue pants.’
- c. **Ellos compraron una japonesa mesa.* (ungrammatical postnominal adjective in prenominal position)
‘They bought a Japanese table.’
- d. **Juan es el agresor presunto del crimen.* (ungrammatical prenominal adjective in postnominal position)
‘Juan is the alleged aggressor of the crime.’

4.2.2 Context-based Collocation Task (CBCT)

The Context-based Collocation Task was designed to test for semantic knowledge of prenominal and postnominal adjectives by means of a pseudo-production task (n=10).⁸ Participants were instructed to read a short contextualized situation and write the adjective found in bold at the end of the sentence in the correct position based on the context. All adjectives used in this task could be either prenominal or postnominal. The collocation, then, depended directly and entirely on the context. There were five prenominal tokens and five postnominal tokens. The context in example (10) calls for a prenominal adjective whereas that of example (11) calls for a postnominal adjective.

(10) Prenominal Adjective

a. *En general, la dinastía Ming era una de las más fuertes y exitosas en la historia del mundo. Los*

_____ *Ming* _____ *conquistaron muchas tierras. (aventurero)*

‘In general, the Ming dynasty was one of the strongest and most successful dynasties in the history of the world. The adventurous Ming conquered many lands.’

(11) Postnominal Adjective

a. *Hay muchos padres en la audiencia del partido. Hay niños que juegan muy bien, pero los que juegan mal son una vergüenza a sus padres. Los _____ padres _____ aplauden y gritan por sus hijos. (orgullosa)*

‘There are many parents in the audience at the game. There are children that play very well, but those that play badly are an embarrassment to their parents. The proud parents applaud and yell for their children.’

5. Results

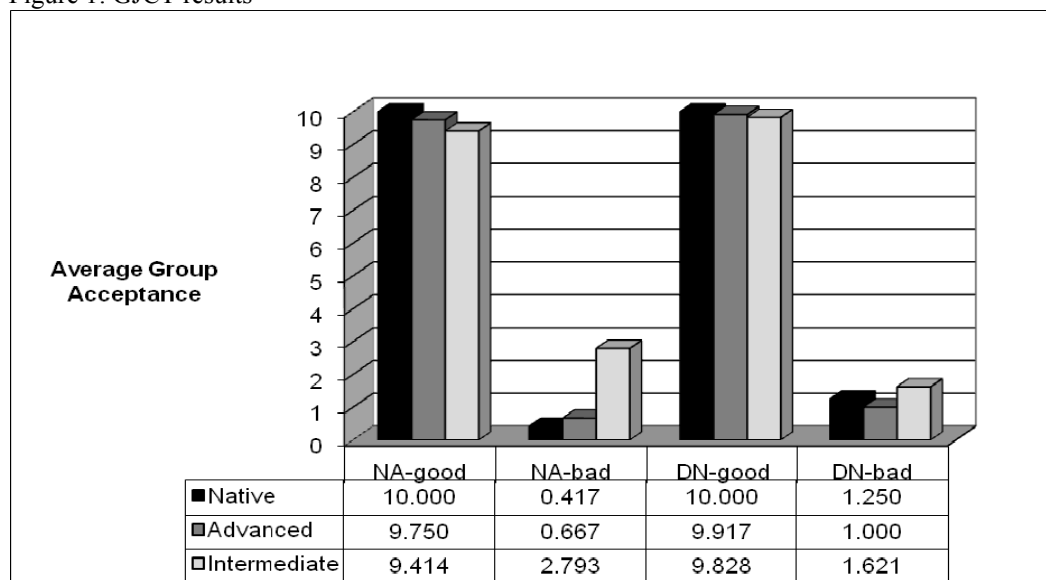
This section presents the empirical results of the study. It is divided into two sections, one corresponding to each of the two tasks. The statistical analysis was conducted in the following manner. A one-way ANOVA was computed when comparing all three groups to each other. A two-sample t-test was conducted when making an intergroup comparison (for example when comparing the NS group to the AS group). The alpha was set at .05 for all tests conducted. Additionally, it is important to note that post hoc tests were only done when the ANOVA indicated that it was necessary, so as to avoid a type I error (this methodology is known as Fisher’s LSD).

5.1 Quantitative Analysis: GJCT

The first part of the GJCT tested for the acquisition of L2 gender features, which are uninterpretable on determiners and adjectives and interpretable on nouns. Figure 1 below shows the average number of tokens accepted (n=10) by each of the three groups for the following types of sentences: (a) grammatical noun-adjective agreement, (b) ungrammatical noun-adjective agreement, (c) grammatical determiner-noun agreement and (d) ungrammatical determiner-noun agreement. See Section 4.2.1 for examples of each token.

⁸ Participants were also required to complete a third task (a Semantic Interpretation task) that is not reported here due to space limitations. Included in this task was a mixture of prenominal, postnominal and predicate adjectives.

Figure 1: GJCT results



Note: NA-good = grammatical noun-adjective agreement; NA-bad = ungrammatical noun-adjective agreement; DN-good = grammatical determiner-noun agreement; DN-bad = ungrammatical determiner-noun agreement

As is observable, the AS group performed quite similarly to the NS group with all four token types. The same holds for the IS group performance with respect to the grammatical tokens; however, the IS group accepted more ungrammatical noun-adjective tokens and more ungrammatical determiner-noun tokens than the NS group. In fact, the IS group accepted more tokens, whether grammatical or ungrammatical, than the AS group and the NS group did on average. In order to determine if these differences were significant, further statistical analyses were conducted. First, a one-way ANOVA that compared all three groups to each other was computed. In the case of noun-adjective agreement, a statistically significant difference was found. Therefore, a two-sample t-test was conducted to determine where the differences were. As can be seen from Table 2, upon comparing the AS group to the NS group, it was found that the AS group did not differ statistically from the NS group for either of the two token types in question. However, the IS group results were statistically significantly different in regards to the grammatical and ungrammatical noun-adjective tokens. The IS group also differed significantly from the AS group in regards to the ungrammatical noun-adjective tokens. These differences are highlighted.

Table 2: GJCT (intergroup comparison)

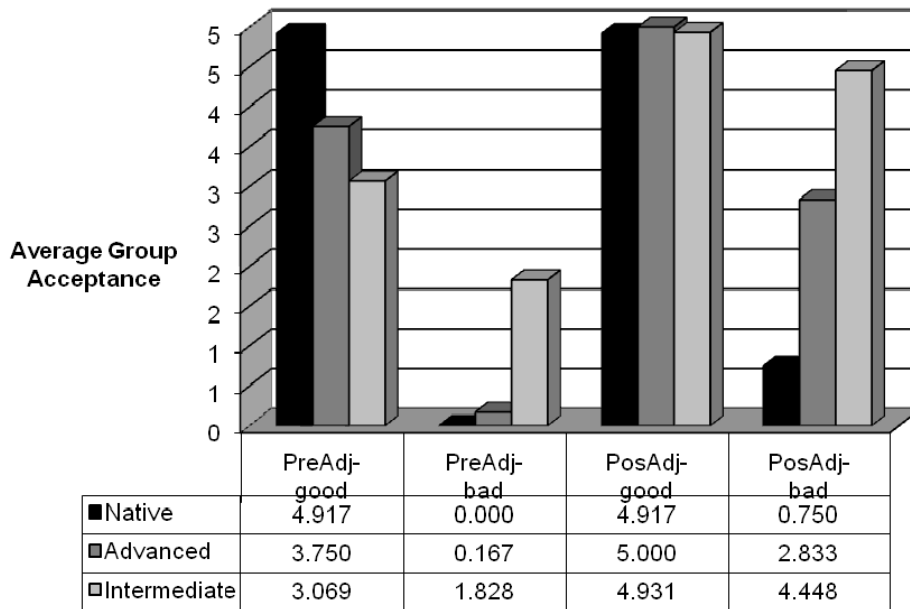
	NA-good			NA-bad			DN-good			DN-bad		
	<i>t</i>	<i>p</i>	<i>df</i>	<i>t</i>	<i>p</i>	<i>df</i>	<i>t</i>	<i>p</i>	<i>df</i>	<i>t</i>	<i>p</i>	<i>df</i>
ANOVA	4.11	0.022	2	8.98	<0.00	2	0.73	0.485	2	0.78	0.463	2
NS v. AS	1.91	0.082	0.45	0.68	0.501	21	*	*	*	*	*	*
NS v. IS	4.05	<0.001	0.78	4.66	<0.00	37	*	*	*	*	*	*
AS v. IS	1.72	0.094	34	3.96	<0.00	38	*	*	*	*	*	*

Note: NA-good = grammatical noun-adjective agreement; NA-bad = ungrammatical noun-adjective agreement; DN-good = grammatical determiner-noun agreement; DN-bad = ungrammatical determiner-noun agreement

The second part of the GJCT tested for knowledge of syntactic positions of Spanish adjectives. Recall that while there is only one position for adjectives in English (prenominal), adjectives in Spanish can be either prenominal or postnominal depending on their type and their meaning within a given context (see Section 2.2). Figure 2 below shows the average number of tokens accepted ($n=5$) by the three groups for the following sentence types: (a) grammatical prenominal adjectives, (b)

ungrammatical prenominal adjectives, (c) grammatical postnominal adjectives and (d) ungrammatical postnominal adjectives. Examples of each token can be found in Section 4.2.1.

Figure 2: GJCT results



Note: PreAdj-good = grammatical prenominal adjective; PreAdj-bad = ungrammatical prenominal adjective; PosAdj-good = grammatical postnominal adjective; PosAdj-bad = ungrammatical postnominal adjective

From Figure 2, we observe that the NS group distinguished between the grammatical and ungrammatical tokens. This can be seen by their high group average of acceptance for the grammatical tokens and their low group average of acceptance for the ungrammatical tokens. The AS distinguished between the two to a slightly lesser extent and the IS group made virtually no distinction between grammatical and ungrammatical prenominal and postnominal adjectives. To determine if the apparent differences were in fact significant, the same battery of statistical analyses discussed above were conducted. The one-way ANOVA showed that there were in fact statistically significant differences among the three groups. Thus, a two-sample t-test was conducted to determine where the differences were. The results of this test showed that the AS group performance differed from that of the NS group for two token types: grammatical prenominal adjectives and ungrammatical postnominal adjectives. These results are not entirely surprising since all of the participants in the advanced speaker group were instructed learners. One possible explanation for this result is the fact that instructed L2 learners are traditionally taught that these two structures (grammatical prenominal and ungrammatical postnominal adjectives) are ungrammatical (that is, that some adjectives can only appear prenominally, whereas others can only appear postnominally). In these cases, pedagogical teachings may have interfered with the participants' assessment of the tokens. In contrast to the AS group, statistically significant differences were found between the NS group and the IS group in all three categories in question. This information is summarized below in Table 3 with the significant differences highlighted.

Table 3: GJCT (intergroup comparison)

	PreAdj-good			PreAdj-bad			PosAdj-good			PosAdj-bad		
	<i>t</i>	<i>p</i>	<i>df</i>	<i>t</i>	<i>p</i>	<i>df</i>	<i>t</i>	<i>p</i>	<i>df</i>	<i>t</i>	<i>p</i>	<i>df</i>
ANOVA	7.67	0.001	2	13.9	<0.001	2	0.46	0.63	2	41.75	<0.001	2
NS v.	2.78	0.018	11	1.48	0.166	0.38	*	*	*	3.79	0.002	14
NS v. IS	5.98	<0.001	32	6.22	<0.001	1.58	*	*	*	12.63	<0.001	28
AS v. IS	1.34	0.192	23	5.28	<0.001	34	*	*	*	2.98	0.010	14

Note: PreAdj-good = grammatical prenominal adjective; PreAdj-bad = ungrammatical prenominal adjective; PosAdj-good = grammatical postnominal adjective; PosAdj-bad = ungrammatical postnominal adjective

While some of the AS and IS group averages were similar to those of the NS group, it was crucial to determine if the L2 learner groups differentiated between grammatical and ungrammatical tokens. This was done by comparing the average number of tokens accepted for each of two corresponding structures for all three groups. For example, the average number of grammatical noun-adjective tokens accepted by the AS group was compared to the average number of ungrammatical noun-adjective tokens accepted by the AS group to determine if the AS group differentiated between grammatical and ungrammatical gender on adjectives. A paired t-test was used to determine this. As can be seen from Table 4, all three groups differentiated between the grammatical and ungrammatical structures in task 1.

Table 4: GJCT (intragroup comparison)

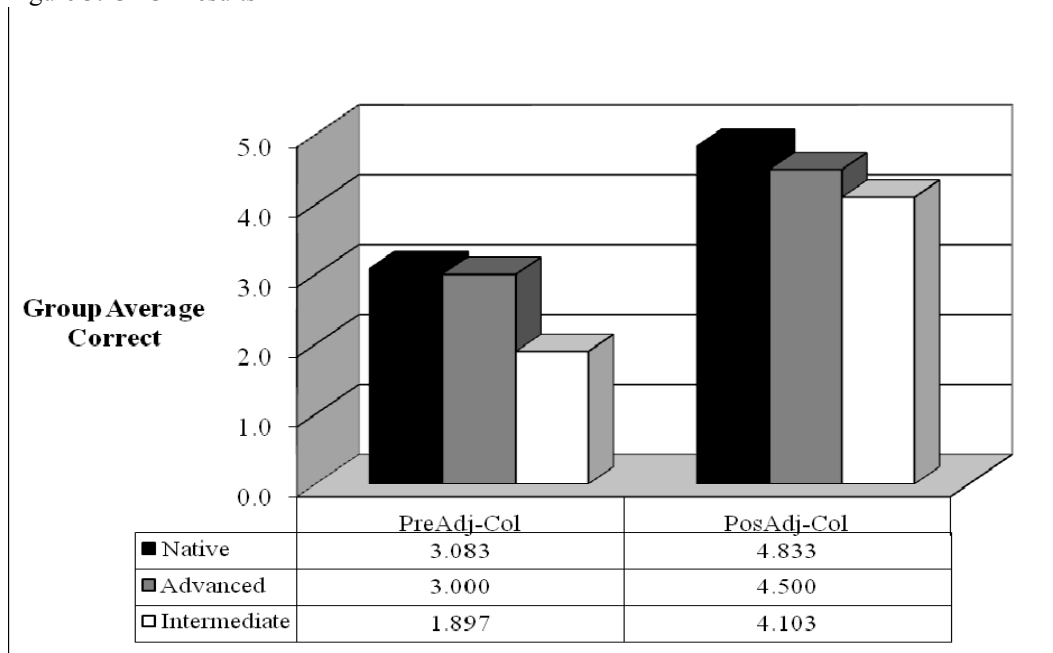
	NA-good v. NA-bad		DN-good v. DN-bad		PreAdj-good v. PreAdj-bad		PosAdj-good v. PosAdj-bad	
	<i>t</i>	<i>p</i>	<i>t</i>	<i>p</i>	<i>t</i>	<i>p</i>	<i>t</i>	<i>p</i>
NS	41.87	<0.001	26.63	<0.001	59.00	<0.001	15.40	<0.001
AS	22.82	<0.001	38.95	<0.001	8.25	<0.001	4.29	0.001
IS	14.19	<0.001	20.30	<0.001	3.55	0.001	2.39	0.024

Note: NA-good = grammatical noun-adjective agreement; NA-bad = ungrammatical noun-adjective agreement; DN-good = grammatical determiner-noun agreement; DN-bad = ungrammatical determiner-noun agreement; PreAdj-good = grammatical prenominal adjective; PreAdj-bad = ungrammatical prenominal adjective; PosAdj-good = grammatical postnominal adjective; PosAdj-bad = ungrammatical postnominal adjective

5.2 Quantitative Analysis: CBCT

The second task tested for knowledge of the syntactic-semantic collocation of prenominal and postnominal adjectives by means of a production task. Figure 3 below shows the average number of correct collocations (n=5) by each of the three groups for two types of sentences: (a) sentences that require a prenominal adjective and (b) sentences that require a postnominal adjective. Section 4.2.2 provides examples of each sentence type.

Figure 3: CBCT results



Note: PreAdj-Col = grammatical prenominal adjective; PosAdj-Col = grammatical postnominal adjective

As can be seen from Figure 3, the AS group average number of correct collocations is very similar to that of the NS group for both prenominal and postnominal adjectives. However, the IS group average number of correct collocations was similar to the NS group for postnominal adjectives only. The IS group average number of correct collocations is below that of the NS group for prenominal adjectives. In order to determine if either the AS group or the IS group performed in a native-like manner, two additional statistical analyses were conducted. A one-way ANOVA was computed to compare all three groups to each other. The results of this test showed that there was a statistically significant difference among the groups in regards to the prenominal adjective tokens only. Therefore, a two-sample t-test was conducted to determine among which groups these differences were. The two-sample t-test revealed that the IS group differed statistically from the NS and AS groups. No statistically significant differences were found between the performance of the NS group and the AS group. This is summarized below in Table 5.⁹

⁹Assuming pedagogical influence to be the cause of the lower performance on prenominal adjectives demonstrated by the L2 groups, one must still explain why the NS group also demonstrated more variation with prenominal adjectives than with postnominal adjectives. One possibility is that a couple tokens were ambiguous even for NS. Nevertheless, the AS group comparatively performed in a native-like manner in regards to the prenominal tokens at both the group and individual level.

Table 5: CBCT (intergroup comparison)

	PreAdj-Col			PosAdj-Col		
	<i>t</i>	<i>p</i>	<i>df</i>	<i>t</i>	<i>p</i>	<i>df</i>
ANOVA	8.36	0.001	2	1.91	0.159	2
NS v. AS	0.19	0.850	16	*	*	*
NS v. IS	4.48	<0.001	29	*	*	*
AS v. IS	2.57	0.021	15	*	*	*

Note: PreAdj-Col = grammatical pronominal adjective; PosAdj-Col = grammatical postnominal adjective

A paired t-test revealed that there was a statistically significant difference in the number of correct collocations for each of the three groups. This result was expected and is due to the significantly higher number of correct postnominal collocations as compared to the number of correct pronominal collocations. Table 6 summarizes this information.

Table 6: CBCT (intragroup comparison)

	PreAdj-Col v. PosAdj-Col	
	<i>t</i>	<i>p</i>
NS	8.04	<0.001
AS	4.78	0.001
IS	8.07	<0.001

Note: PreAdj-Col = grammatical pronominal adjective; PosAdj-Col = grammatical postnominal adjective

6. Discussion

In this section, we bring together the important findings of both tasks in an effort to see how these data come to bear on the theoretical significance of the overall study. Crucially, the GJCT tested for the acquisition of uninterpretable gender features (via their morphological reflexes) on determiners and adjectives as well as knowledge of the various syntactic positions of Spanish adjectives delimited strictly by their subcategorization. The intergroup comparisons conducted revealed that there were significant difference between the NS and IS group performance for grammatical and ungrammatical noun-adjective agreement as well as grammatical and ungrammatical pronominal adjectives and ungrammatical postnominal adjectives. Therefore, the IS group performed in a native-like manner only with respect to grammatical and ungrammatical determiner-noun agreement and postnominal adjectives. From these results alone, it is difficult to determine whether the IS group, at this point in interlanguage development, has in fact fixed the narrow syntactic properties of the Spanish DP and thus acquired new L2 features (and instantiated a new functional category, WMP).¹⁰ These findings correlate to previous research of others, suggesting that adjectival agreement is more problematic than determiner gender agreement (Fernández 1999; Bruhn de Garavito and White 2002) and that this is also true when the L1 has similar gender features. With others, we take the position that it is a morphological and not a narrow syntax problem, since, conversely, one would also expect equal variability with determiner-noun agreement, yet this is not observed, and optionality in this respect should extend to the advanced group as well. However, when one examines the results of the AS group, this predication is not supported. No significant differences were found between the AS group

¹⁰As stated above, the results from the two tasks reported on in this article are part of a larger study that includes other linguistic tasks which test for semantic interpretations assumed to fall out from the acquisition of target syntax. The results of these tasks allow us to determine with more accuracy whether or not both the AS and the IS groups have in fact acquired the uninterpretable features found on determiners and adjectives in Spanish.

and the NS group when considering the gender agreement between nouns and adjectives or determiners and nouns, suggesting that although there were significant differences found among these two groups (with respect to grammatical prenominal adjectives, ungrammatical postnominal and the differences between grammatical and ungrammatical prenominal and postnominal adjectives contextualized judgements), we join Anderson (2007b) in claiming that this is likely to result from pedagogical explanations received in the classroom. The generalization that prenominal adjectives are always ungrammatical and that postnominal adjectives are always grammatical is explicitly taught to instructed learners. Therefore, it is possible that explicit instruction interfered with the AS group's ability to accurately judge these tokens, especially in light of the results from the second task. This might also explain, in part, the IS weaker performance (coupling this with some type of morphological mapping problem; see Lardiere 2006 and works cited within) since the data reveal that they clearly demonstrate a trend towards native-like performance. That is, as opposed to focusing on how different they are from the controls, one could highlight the fact that they show a tendency towards convergence, which suggests they have acquired or are in the process of acquiring new Spanish DP-properties. Furthermore, because the main variables between the IS group and the AS group are the amount and type of exposure to Spanish (i.e. classroom vs. a combination of classroom and naturalistic), the fact that the AS group pattern, for the most part, like the native controls indicates that with continued exposure to the target language the IS group participants will also come to fully acquire new DP-features and overcome morphological competence deficits.

Results from the second task, the Context-based Collocation Task, tested for knowledge of adjectival placement based on a specific context. The relevant intergroup comparison conducted revealed that no statistically significant differences were found between the three groups when comparing the number of correct collocations of postnominal adjectives, suggesting that the syntax of adjectival placement in L2 Spanish is target-like even at the intermediate level. Nevertheless, a statistically significant difference was found between the IS group's number of correct prenominal collocations and that of the NS group. When this result is considered in isolation, we are faced with a similar difficulty that was encountered in task 1. However, based on a coupling of all the data for this group, it is reasonable to argue that they have acquired the target narrow syntactic properties of the Spanish DP but that the syntax-semantics interface properties which regulate semantic interpretations are delayed. Putting aside possible implications this could have for recent theorizing regarding interface vulnerabilities (see e.g. Sorace 2000, 2005; White to appear), it is not entirely unexpected that these L2 learners demonstrate greater difficulty with prenominal adjectival semantic construals even when the target syntax is acquired since in addition to acquiring the DP features that result in noun raising they need to realize that Spanish adjectives that are in a prenominal position cannot be underlying associated with a lower syntactic position as they can in English.¹¹ Since no significant differences were found among the AS group and the NS with respect to both prenominal and postnominal collocation, it is clear that this difficulty is overcome through later stages of L2 interlanguage development. Crucially, the holistic picture that emerges from combining all the data favor the position that new uninterpretable features not instantiated in the L1 can be and are acquired in adult SLA. In an effort to address the better performance on task 2 as opposed to task 1, specifically with respect to adjectives, we join Anderson (2007b) in suggesting that effects of different types of input inclusive of explicit pedagogical rules could be the source of [some] task modality differences in terms of adjectival placement and judgments. However, such problems seemingly lessen (and in some instances disappear) with a methodology that requires contextualized production as opposed to judgments. This can be explained by considering the differences in processing type required by the linguistic tasks. Taken together, the results show that pedagogical effects are a realistic consideration, but they do not affect competence and overall performance. Thus, these results nicely support Rothman's (2008) suggestion of the possibility that instructed L2 learners have two competing systems that are especially active at the level of grammaticality judgment: a grammatical competence (their

¹¹ Space limitations and the scope of this article do not permit us to explore the implications of this. Future research from reporting data of additional tests within the same population will provide a more grounded and fine-grained analysis that focuses on the implications for interface vulnerability hypotheses. See footnote 2.

actual grammar for the target L2) and a pedagogical competence (a system of conscious, explicit rules). The fact that the AS group demonstrates clear knowledge of the syntactic-semantic positions of adjectives provides evidence that supports FAs and evidence against the RDH.

Overall, our results support our general claim that L2 development is guided by Universal Grammar, that UG's features are entirely accessible to adult L2 learners and true acquisition takes place after the purported offset of the critical period, as opposed to adults defaulting to linear learning alone. However, while we have provided explanations that can account for divergent performances it is important to note that the burden of proof given the hypotheses under investigation (RDH vs. FA approaches) the crucial question is whether or not L2 learners can acquire the relevant features, not whether they perform in a native like way. Since both L2 groups demonstrate relevant contrasts in both tasks, our data suggest that they are, in fact, able to acquire new features, as well as interpretive contrasts depending on word order. Notwithstanding, the fact that the AS participant group performs like the NS participant group on task 2 provides especially strong evidence against RDHs, since the semantic interpretations of prenominal adjectives in Spanish would be predicted to demonstrate interpretive optionality if indeed noun raising was never acquired and L2ers make use of other conventions to derive the typical noun adjective word order as RDH approaches assume.

7. Conclusions

This study examined the acquisition of properties related to the internal structure of the Spanish DP of intermediate and advanced English native learners of Spanish. Testing the predictions of Full Access approaches vs. Representational Deficits Hypothesis approaches, we demonstrated that the present data can only support Full Access approaches. Reporting on data from two linguistic tasks testing for the acquisition of new DP-features, we demonstrated that intermediate English learners of Spanish demonstrate evidence that they have acquired new grammatical features and that where they differ from NS controls patterns like French L2 learners of Spanish differences from NS controls at the same level (see Bruhn de Garavito and White 2002). Results from the second task confirm that intermediate learners have acquired the syntax of adjectival placement, but have yet to fully acquire the syntax-semantic interpretative differences, that is, unlearning the interpretive ambiguity of prenominal adjectives. The advanced learners, however, performed more or less (see Sections 5 and 6) like the NS control on both tasks, suggesting that new grammatical features, as evidenced by their semantic reflexes, can be fully acquired after the so-called critical period. This means that the hypothesis that the Critical Period amounts to differences in L1/L2 accessibility to representational features (i.e. UG-features) is not a tenable one. It is prudent to state, however, that such claims in no way diminish or seek to invalidate the observation that L1/L2 acquisitions are qualitatively and quantitatively different. It simply suggests that accessibility to features is not the source of such differences.

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