

El abundante agua fría: Hermaphroditic Spanish Nouns

David Eddington

Brigham Young University

José Ignacio Hualde

University of Illinois at Urbana-Champaign

Dept. of Linguistics and English Language
4064 JFSB
Provo, UT 84602

(801) 422-7452
eddingon@byu.edu

Abstract

According to some Spanish grammarians, including the Royal Spanish Academy, nouns like *agua* ‘water’, *asa* ‘handle’, etc., are feminine and take a phonologically-conditioned allomorph of the definite article (*el*) that is identical to the masculine article. Our data, both from an experiment and from electronic searches, show that there is considerable fluctuation in the gender of prenominal, but not postnominal, modifiers, with nouns in this group even when no phonological conditioning is found. The facts are incompatible with models where nouns bear a specific gender feature of the lexicon, which they assign to all targets of agreement. Instead, these facts of hybrid agreement are best accounted for in an exemplar model. Regardless of the phonological origin of phenomenon, speakers interpret sequences such as *el agua* as showing masculine agreement, which creates an analogical attractor for non-etymological agreement with prenominal modifiers, as in *poco agua*, *el abundante agua*, etc.

1. Introduction. A well-known complication in the gender-agreement system of Spanish is that most feminine singular nouns starting with stressed /a/ take the definite article *el* instead of *la*.

Examples of words in this group are given in (1):

- (1) Some feminine nouns that take the definite article *el* (e.g. *acta, África, agua, águila, ala, alga, alma, alza, ama, ánima, ancla, anda, ansia, ara, arca, área, aria, arpa, arma, asa, ascua, Asia, aspa, asta, aula, aura, ave, aya, haba, hacha, hada, hambre, hampa, haya, hazⁱ*).

Exceptions to this generalization are the names of letters of the alphabet (*la a, la hache*), feminine acronyms beginning with stressed /a/ (*la ASA*) and other proper names (*la Ángela, la Ávila, La Haya*). It should also be noted that the article *el* does not appear before feminine adjectives meeting the phonological condition (*la alta casa* ‘the tall house’, *la árida meseta* ‘the barren plateau’). The article *la* is also used with nouns and adjectives of nationality when referring to females (*la árabe* ‘the Arabic woman’) and in other nominalizations of adjectives with a female referent.

- (2) Exceptions

a. Names of letters: *la a, la hache*

b. Acronyms: *la ASA* (e.g. *la Asociación...*)

c. Proper names (excluding *Asia, África*): *la Ana, la Austria moderna*, ‘modern Austria’, *la Ávila antigua*, ‘ancient Avila’.

d. Feminine adjectives: *la alta torre* ‘the tall tower’

e. Feminine nouns with biologically feminine referents and nominalized adjectives: *la árabe* ‘the Arabic woman’, *la árbitro/a* ‘the female referee’, *la alta* ‘the tall one’, *la árida* ‘the barren one’

As stated in the recent *Diccionario panhispánico de dudas* of the Spanish Academy (Real Academia Española 2005), the nouns in (1) are feminine and trigger agreement with feminine adjectives and other modifiers. Therefore, in the usage described by the Spanish Academy the only peculiarity of these nouns is found in the definite article that they take. In the Academy’s analysis (2005:247), the article *el* that these nouns take is an allomorph of the feminine article, which just happens to be identical to the masculine article. This is, in fact, the historical origin of the phenomenon. In the development of the Spanish articles from the Latin demonstratives, *ILLA* generally evolved into *la* (*ILLA CASA* > (*e*)*la casa* > *la casa*). However, before a vowel it yielded *el* (*ILLA AQUA* > *el(a) agua* > *el agua*). The article *el*, which in medieval times had a wider distribution before vowel-initial feminine nouns, over time became restricted to occurring only before feminine nouns beginning with stressed /a/.

Frequently, the nouns in (1) also take other masculine modifiers. For example, the indefinite article *un* along with *algún* ‘some’ and *ningún* ‘not any’ often occur before nouns of this sort (*un/algún águila* ~ *una/alguna águila* ‘an/some eagle’). We used Google to find cases of interest in Spanish language pages.ⁱⁱ Such searches are problematic in that Google only returns one hit per page, does not take punctuation or typographical errors into account, and only gives estimates when large numbers of hits are found. For this reason, the numbers we report must be considered approximations. Nevertheless, the frequency data resulting from the Google search

indicate that *un*, *algún*, and *ningún* are often more frequent than *una*, *alguna*, and *ninguna* for many of these nouns (see Appendix). In the Academy's view (2005:248, 657) these apparently masculine forms are actually apocopated allomorphs of the feminine forms *una*, *alguna*, *ninguna*, which are coincidentally identical to the corresponding masculine forms. The idea, again, is that there is something phonetically infelicitous about sequences of word-final /a/ followed by stressed word-initial /a/.

However, in the same section, the Academy vehemently rejects and condemns the not uncommon usage of other masculine modifiers before the nouns in (1), most likely because this usage cannot be explained by phonological means. Consider the following incorrect examples:

- (3) Examples of incorrect and correct agreement according to the RAE's *Diccionario panhispánico de dudas*:

Incorrect	Correct	
<i>este agua</i>	<i>esta agua</i>	'this water'
<i>ese hacha</i>	<i>esa hacha</i>	'that axe'
<i>aquel águila</i>	<i>aquella águila</i>	'that eagle'
<i>mucho hambre</i>	<i>mucha hambre</i>	'much hunger'
<i>todo el área</i>	<i>toda el área</i>	'the whole area'
<i>poco agua</i>	<i>poca agua</i>	'little water'
<i>un único área</i>	<i>una única área</i>	'a single area'

The use of such supposedly incorrect masculine agreement with feminine nouns is in fact

not uncommon as has been noted by several authors (e.g. Gómez Torrego 1991, Lázaro Carreter 1997, Martín 1922, Seco 1998). Our Google search also yields evidence that there is considerable variation in these phrases, although the variant recommended by the Academy consistently returned a greater number of hits. A number of examples are listed in (4) and the results of the entire search appear in the Appendix:

(4) Examples from Google search

<i>este agua</i>	82,900	<i>esta agua</i>	210,000
<i>ese hacha</i>	1140	<i>esa hacha</i>	1170
<i>aquel águila</i>	240	<i>aquella águila</i>	421
<i>mucho hambre</i>	13,700	<i>mucha hambre</i>	138,000
<i>todo el área</i>	122,000	<i>toda el área</i>	383,000
<i>poco agua</i>	34,500	<i>poca agua</i>	136,000
<i>un único área</i>	129	<i>una única área</i>	14,100

The usage of expressions such as *este agua* rather than *esta agua* is not limited to uncultured speech. Ortega y Gasset (1983: 428) provides this instance:

(5) ¿Con qué derecho se la toma por aquel asa y no por ésta?ⁱⁱⁱ

It is widespread enough that it is discussed on various Internet forums. For instance, the RAE's *Departamento de Consultas* posted a response to a question on this topic that essentially

repeats the same view expressed in the *Diccionario de dudas*. Words such *agua* are prescribed as always triggering agreement with feminine modifiers. The complications or confusion that arises is explained as due to the apparently masculine allomorph of the feminine articles in this context:

La forma aparentemente masculina del artículo definido femenino EL y del indefinido UN, cuando acompañan a nombres femeninos que comienzan por /a/ tónica, provoca, por contagio, que se cometa a menudo la incorrección de utilizar las formas masculinas de los demostrativos ESTE, ESE, AQUEL delante de este tipo de nombres: este agua, ese hacha, aquel águila. Debe decirse: esta agua, esa hacha, aquella águila. El contagio se extiende, en el habla descuidada, a otro tipo de determinantes, COMO TODO, MUCHO, POCO, OTRO, MISMO, etc. Son incorrectas, pues, frases como Echa todo el agua en el barreño (por Echa toda el agua en el barreño), Tengo mucho hambre (por Tengo mucha hambre), Queda poco agua en el pozo (por Queda poca agua en el pozo), Utilizaron un mismo arma para los dos crímenes (por Utilizaron una misma arma para los dos crímenes), etc. (RAE, Departamento de Consultas, <http://forum.wordreference.com/showthread.php?p=689992#post689992>)

Under standard assumptions, a given noun may have only one gender, which it assigns to all targets of agreement. From this official RAE viewpoint, the existence of examples such *el agua* together with *agua fría* leads one to conclude that *el* is a phonologically-conditioned

allomorph of the feminine article, since its collocation with *fría* unambiguously shows the nouns in (1) such as *agua* to be feminine. As mentioned above, this analysis follows the historical origin of the phenomenon. Essentially the same view (i.e. *el* is an allomorph of the feminine article before nouns like *agua*) is expressed by Harris (1987) in an analysis using abstract underlying representations that are similar to historically earlier forms.

Other authors, however, conclude that in expressions such as *el agua* the form *el* should be taken to be the masculine article in Contemporary Spanish. Masculine *el* is used instead of the expected feminine immediately before nouns starting with stressed /a/ (Plank 1984). A similar analysis is proposed by Zwicky (1985), for whom ‘a rule of referral sets the exponents of the feminine singular article to that of the masculine, in certain specified contexts (p. 435). In our view, the frequent occurrence of INCORRECT masculine gender agreement cited above constitutes rather strong evidence that speakers assign masculine modifiers to *agua*-type nouns, and that *el* is not an allomorph of *la*.

One way to explain these facts is to assume that speakers differ in their gender assignment of the nouns in (1). If this were the case, we would expect to find differences among speakers on the gender that is assigned to these nouns. However, Janda and Varela-García (1991) demonstrate that something beyond mere allomorphic or inter-speaker variation in inherent gender assignment is at work. As they show, there is a tendency for the nouns of this class to be treated as grammatical hermaphrodites, which results in masculine modifiers appearing on their left and feminine modifiers on their right.

The first thing to note is that variation in gender agreement with nouns of this class generally affects determiners and adjectives preceding, but usually not following, the noun. For

example, a search in *Corpus del español*^{iv} (20th century only) returns examples such as *mismo agua* 'same water', *propio agua* 'own water', *mucho agua* 'a lot of water', but no examples where a postposed adjective with *agua* is masculine. Counting both 19th and 20th century examples, there are three tokens of *buen alma* 'good soul' in the corpus versus two of *buena alma*, whereas no tokens are found of *alma bueno* in comparison to 17 for *alma buena*. That is, for some speakers some of these nouns variably condition one type of gender agreement with prenominal modifiers and the other type with postnominal modifiers.^v

From the posted responses by participants on Internet forums, it is clear that many speakers' doubts concern gender agreement of prenominal modifiers rather than postnominal modifiers. However, the participants' justification of either *esta agua* 'this water, (f)' or *este agua* 'this water, (m)' as correct depends on whether their analysis is based on pre- or postnominal targets of agreement. Hence, many forum respondents state that the correct form is *esta agua* pointing out that one says *agua fría* 'cold water' (but not *la agua* which some justify as avoidance of the cacophony that would be created by a sequence /-a á-/).^{vi} On the other hand, some opt for *este agua* based on *el agua*.

Clear evidence that these nouns are sometimes treated as hermaphroditic and may trigger different gender agreement with preposed and postposed modifiers is offered by examples in which a noun of this class is both preceded and followed by an agreeing modifier. Janda and Varela-García (1991) describe a study in which ten educated Spanish speakers who they consulted actually preferred phrases such as *el cristalino agua* 'the crystalline water' and *el buen hada madrina* 'the good fairy godmother' over their prescriptively correct alternatives. Examples that parallel the title of our paper can be found in newspaper articles:

- (6) Hermaphroditic nouns with pre- and postposed modifiers

los desperfectos que el abundante agua caída provocó en las vías

the(m) abundant water fallen(f)

'the damage that the considerable amount of water that had fallen caused on the tracks'

(Siglo XXI, miércoles, 07 de marzo de 2007)

Even in presumably carefully-edited academic writing we find examples such as:

- (7) Hermaphroditic nouns with pre- and postposed modifiers

nuestro habla riojana actual

our(m) speech Riojan(f) present-day

'Our present-day Riojan speech'

(Martínez Sáenz de Jubera and González Perujo 1998:477)

A search for *nuestro habla* in Google returns other similar examples: *nuestro habla hispana*, *nuestro habla andaluza*, *nuestro habla cotidiana*.

We believe that it is not necessary for a speaker to settle on a single gender for each noun, from which the gender of its modifiers would be determined. This contradicts the idea that the inherent gender of a noun is passed to its modifiers. Instead, learning tokens such as *el agua* and *agua fría* results in the internalization of both masculine and feminine analogical attractors for a noun like *agua*. That is, speakers do not necessarily conclude that *el* is an allomorph of the

feminine article, but rather, identify it with the masculine article. These findings suggest that noun-adjective agreement is based on analogy to stored exemplars of past experience.

A number of exemplar models have been proposed (Bybee 2001, 2006, Daelemans et al. 2003, Johnson 1997, Medin and Shaffer 1978, Nosofsky 1988, Pierrehumbert 2001, Skousen 1989, 1992). In an exemplar-based model of language processing and production, the production of novel examples of sentences including nouns and agreeing modifiers does not entail consulting the lexicon in order to determine the lexical gender feature of the noun and then applying a gender-agreement rule; instead, it involves comparison with mentally stored phrasal tokens of the noun and its surrounding modifiers. The idea that stored phrases influence language processing has gained support in recent years (e.g. Bod 1998, Bybee 2006, Bybee and Eddington 2006, Goldberg 2003, Vogel Sosa and MacFarlane 2002).

For a noun like *casa* ‘house’ all preposed and postposed modifiers that have been previously experienced are arguably feminine and this will unambiguously condition feminine agreement in novel productions on either side of the word. For nouns such as *agua*, on the other hand, chances are that the mental lexicon of a given speaker would contain tokens with preposed modifiers that are both masculine (*el agua*) and feminine (*mucha agua*) as well as postposed feminine modifiers. These tokens compete and are weighted along a similarity scale to determine the novel output.^{vii} From the phrase *el agua*, masculine agreement is most strongly conditioned with other determiners (*este agua*) appearing on the left, including when a prenominal adjective unmarked for gender intervenes between article and noun (*el abundante agua*).

We can conclude from the results of our searches in Google and *Corpus del español* that

the power of attraction of *el agua* may be weaker with quantifiers (*mucho agua, poco agua*) and even weaker with regular preposed adjectives where the pull from the gender of the much more frequent postposed adjectives may be stronger. On the other hand, instances such as *agua fría* may exert feminine-agreement analogical attraction most strongly with other postposed adjectives and most weakly with determiners. Singular tokens appear to exert a weaker influence on novel plural tokens than other plural instances of the same noun. For example, in our Google search there is some use of masculine agreement with the plural form of the nouns in (1), but with a much lower frequency than in the singular.^{viii}

2. On the nature of hermaphroditic nouns. Corbett (2006:12) uses the term HYBRID CONTROLLER to refer to nominal expressions that control different feature values on different targets. In our Spanish example in (8), for instance, the noun *señoría* ‘lordship’ behaves as a hybrid controller:

(8) *Su señoría ilustrísima (Ernesto Gómez) estaba cansado.*

‘His most illustrious (f) lordship (Ernesto Gómez) was tired (m).’

In this constructed example the noun *señoría* controls feminine agreement on the adjective *ilustrísima*, but masculine agreement on the predicate *cansado*. What produces hybrid behavior is the fact the referent is male but the noun is grammatically feminine. All the examples of hybrid gender behavior discussed by Corbett (2006) appear to be of this type, where the noun refers to an animate entity and there is a mismatch between meaning and form. A meaning/form mismatch in gender is produced when the grammatical gender of the noun conflicts with the

biological sex of the referent. Under these circumstances we may have hybrid agreement in some languages. The same mismatches with possible hybrid resolution are found in number agreement as well. Corbett mentions the case of nouns such as *committee*, which in British English take plural verb agreement (*the committee are*), but singular agreement with demonstratives (*this committee*).

The case of Spanish nouns such as *agua* is crucially different from other types of hybrid controllers. Hermaphroditic behavior is not caused by a mismatch between meaning and form, since these nouns refer to inanimate objects and their gender is, therefore, purely grammatical. That is, the conflict is internal to the linguistic system. In some respects, noun such as *agua* are more similar to the system of mass/count agreement that is found in the Romance language Asturian and its neighboring linguistic relatives (Neira 1955, 1982, Hualde 1992). We will consider these Asturian facts in some detail, since they provide an interesting parallel, with a difference to be noted below.

In conservative Asturian varieties, such as that spoken in Lena, adjectives may have up to three different nonplural forms: masculine (e.g. *buinu* ‘good’), feminine (*buena*) and neuter (*bueno*). The neuter form of the adjective is used when the controller refers to a mass noun regardless of its gender, but only when it follows the noun (e.g. *xente bueno* ‘good people’ vs. *buena xente*). Articles, on the other hand, only have masculine and feminine forms: *el pelo negro* ‘the black hair, mass’ vs. *el pilu nigrú* ‘the black individual hair’; *el ganao blanco* ‘the white cattle’ vs. *el xetu blencu* ‘the good calf’, *la maera blanco* ‘the white wood’; *la cebolla blanco* ‘the white onion, mass’ vs. *la cebolla blanca* ‘the white onion, individual bulb’. In Lena, grammatical gender (masculine or feminine) determines the agreement features of prenominal

modifiers, whereas with postposed modifiers and pronouns there is agreement in the mass feature, instead, with nouns of this type, regardless of gender.

In some areas like Cabranes, however, the masculine and neuter forms have become identical (Canellada 1944), as there is no opposition between final *-o* and *-u*. The net result is that mass agreement is only observable with feminine nouns. These nouns trigger masculine agreement with following adjectives and feminine agreement with articles and other preceding modifiers: *la cebolla blancu* ‘the white onion, mass’, where *blancu* is also the masculine form of the adjective (cf., e.g., *el gatu blancu* ‘the white cat’). Nouns like *cebolla* in Cabranes behave like our hermaphroditic nouns in that they assign one gender to preceding modifiers and a different gender to following modifiers. We cite these Cabranes Asturian data in order demonstrate that different patterns of gender agreement are found among the Romance languages in which prenominal and postnominal noun modifiers differ in their gender. An important difference, however, is that in the Cabranes system, the agreement pattern is related to a contrast in meaning, since use of masculine adjectives agreeing with feminine nouns marks mass or matter. Hermaphroditism in standard Spanish, on the other hand, is a purely grammatical phenomenon.

To summarize, *agua*-type nouns (those in (1)) are inconsistent in the gender feature that they condition on agreeing modifiers, showing a tendency towards LATERAL HERMAPHRODITISM (Janda and Varela 1991). That is, they tend to condition either feminine or masculine agreement with preceding modifiers, and only feminine agreement with following ones. The cause of this was originally purely phonological: before word initial /a/ the feminine article (as well as *alguna* and *una*) developed an allomorph that was formally identical to their masculine counterparts. Although etymologically this is a case of chance resemblance, we suggest that speakers identify

el in phrases like *el agua* as the masculine article rather than an allomorph of *la*. The result is that, although a Spanish speaker's mental lexicon arguably contains many instances of words such as *agua* followed by feminine modifiers, at the same time, modifiers appearing before words such as *agua* are both feminine and masculine, *el*, *algún*, and *un* being the most frequent preposed masculine modifiers. This is the cause of the sporadic, although not uncommon, pronominal masculine agreement beyond the cases where the use of apparently masculine forms is officially sanctioned by prescriptive grammar.

3.0. Experiment. Although the data provided by our searches of Google are useful, they do have limitations. For this reason we wanted to expand on the work by Janda and Varela-García (1991) by obtaining data in a tightly controlled experimental environment. We are particularly interested in answering a number of questions. First, are more gender agreement errors made on the nouns in (1) than on other nouns? For our purposes errors occur when a modifier's gender does not correspond to that dictated by prescriptive grammar. Second, are more errors made on preposed rather than postposed modifiers? Third, does the frequency of the noun influence the occurrence of errors? Fourth, do any of these three factors interact with each other? In order to answer these questions we carried out the following experiment.

3.1. Subjects. A total of 25 native Spanish speakers participated in the study. Seven were male and 18 female. Fifteen were from Spain, five from Mexico, three from Peru, one from Argentina, and one from Chile. Except for one subject in her 50s, the remaining were in their 20s and 30s. All had had at least some college education.

3.2. Test items. All test items were composed of sequences of three words, such as *el/la abundante agua*, that contain a noun and two modifiers. In each case, one of the modifiers can be inflected for gender (*el/la*) and the other cannot (*abundante*). The test items were arranged into a 3 X 2 X 2 design based on three variables: noun class, placement of inflected modifier, and noun frequency (see Appendix). Three classes of nouns were used: 1) regular nouns whose overt gender markers agree with their inherent gender (e.g. *dinero* ‘money’, *fiesta* ‘party’), 2) transvestite nouns that end in *-a*, but are masculine (*problema* ‘problem’), 3) hermaphroditic nouns as in (1). Half of the test items had inflected modifiers that preceded the noun and in the other half they followed the noun. In like manner, half of the items were among the 5,000 most frequent words in Spanish (Davies 2006), while the other half were considered low frequency because they did not appear in the frequency dictionary. Each of the resulting 12 cells contained five test items with the exception of the cell containing the low frequency transvestite nouns preceded by an inflected modifier; we could only find three low frequency nouns of this type. This explains the total of 58 rather than the expected 60 test items expected in a 3 X 2 X 2 design.

In addition to the test items, 60 distractors were included that had to do with agreement in number rather than gender (e.g. *inmensa blancuras invernal*, ‘immense winter whitenesses,’ *humildes curas católicos* ‘humble Catholic priests’). Half of these were incorrectly inflected as well. Two different versions of the test were created. In the first, half of the test items contained a modifier that was incorrectly inflected according to prescriptive grammar. In the second version, the items that were correctly and incorrectly inflected were reversed from the first

version.

3.3. Procedure. Subjects were randomly assigned one of the two versions of the test prior to the start of the test session. The experiments were carried out using the DMDX presentation software.^{ix} After being seated at the computer the subjects read these instructions which were followed by six practice items:

En este estudio Ud. va a ver una serie de tres palabras como *elegantes iguanas cubanas*. Estas palabras podrían aparecer en una frase bien dicha como, *Las elegantes iguanas cubanas están muy cotizadas en el extranjero*. En este caso Ud. tiene que apretar la tecla marcada BIEN. Sin embargo, si aparecen estas palabras, *elegante iguanas cubano*, Ud. tiene que indicar que están mal apretando la tecla marcada MAL. Ahora, vamos a hacer algunos para practicar. Ponga el dedo izquierdo sobre la tecla marcada MAL, y el dedo derecho sobre la tecla marcada BIEN. Las palabras no quedan en la pantalla mucho tiempo o sea que hay que responder rápido.

The subjects had the opportunity to ask questions after finishing the practice items and before continuing to the experiment. In essence, the experiment involved pressing one key marked *good* if the sequence of words could plausibly appear together in a sentence and another key marked *bad* if they could not.

Each test item appeared on the screen for 1,800ms with an interval of 2,133ms separating each one. Responses made after 3,800ms timed out in preparation for the presentation of the

next item and were not included in the statistical analysis. This comprised only 0.018 of the responses. The idea behind this experimental paradigm was to force the subjects to make judgments quickly in the hopes that they would not have time to second guess themselves or be influenced by prescriptive notions. Although it was possible to measure reaction times, we did not because it was impossible to equate the test items in terms of their lexical and collocational frequency, which are known to exert a strong influence on reaction times. For this reason, the only measurement made was whether the responses agreed with prescriptively correct usage or not. The order in which the items were presented was randomized differently for each test subject and the experimental session lasted about ten minutes.

3.4. Results and discussion. Logistic regression analysis was carried out using Goldvarb (Rand and Sankoff, 1990; Robinson, Lawrence, and Tagliamonte, 2001) in order to determine what factors influenced the subjects to commit errors. Factors were noun type (regular, transvestite, hermaphroditic), placement of inflected modifier (before or after noun), frequency of the noun (high or low), prescriptive grammatical correctness (correct or incorrect), and the interactions between these. Only the interaction factors that included noun type were found to be significant in the analysis. The factor weights for these interactions appear in Table 1. Remember, various factors are at work at the same time. Some may influence errors while others may promote prescriptively correct responses. The factor weights indicate the influence of one factor, in this case a combination of factors, above and beyond that of the other factors. This explains the lack of tight correlation between factor weights and the number of errors.

++Insert Table 1 here++

The factor weights indicate the extent to which each combination of variables favors or disfavors errors. Weights of +.100 and greater indicate factors that favor errors (i.e. deviation from prescriptive norms), while weights of -.100 and lower indicate factors that disfavor errors. Weights between +.100 and -.100 are generally thought to be negligible in that they indicate no strong influence in either direction. Factor weights farther from zero indicate stronger influences than those closer to zero.^x

A number of conclusions may be drawn from these data. The first is that hermaphroditic nouns, regardless of their frequency, tended to induce more erroneous responses (from the point of view of the Spanish Academy's rules) than regular nouns or high frequency transvestite nouns. Since our measure of what is erroneous is based on prescriptive grammar, this means that the subjects were least likely to conform to prescriptive norms for the gender inflection of modifiers of hermaphroditic nouns. This confirms the tendency noted in the data found on the Internet (see Section 1). The fact that low frequency transvestite words such as *teorema* 'theorem' and *crucigrama* 'crossword puzzle' also favored errors may indicate that these words may have been unknown or unclear to some of the subjects, or at least that limited experience with these words has not given them a clear notion of which gender modifiers they take. In other words, limited exposure to these words may have not provided enough tokens and collocations for the speaker to make strong connections between these nouns and their modifiers.

Another tendency manifest in the data is for correct constructions such as *posible fusión completa* 'possible complete fusion' not to induce errors. On the other hand, incorrect

constructions such as *posible fusión completo* were likely to be erroneously judged as correct.

However, prescriptively incorrect constructions containing hermaphroditic nouns such as *el peor ancla* were most likely to be marked as correct. Again, this suggests that gender agreement for hermaphroditic nouns is less likely to follow prescriptive rules than other types of nouns, although a significant number of incorrect constructions with transvestite and regular nouns were erroneously judged to be correct as well. Of course, some errors are due to subjects' meaning to press one key but pressing the other one by mistake, but we assume that such errors would be equally distributed among the test items.

As far as the position of the inflected modifier is concerned, inflected modifiers that preceded the noun as in *otro/a diafragma eficaz* 'another efficient diaphragm' were more likely to produce errors than constructions in which the inflected modifier followed as in *tradicional idioma amazónico/a* 'traditional Amazonian language.' Constructions containing inflected modifiers that followed the nouns, on the other hand, were least likely to induce errors. The tendency toward more errors on preposed modifiers versus postposed modifiers is most pronounced among the constructions with hermaphroditic nouns.

4. Conclusions. In traditional models of grammar, gender is considered to be an inherent property of nouns that is manifested in the shape of agreeing modifiers. If a given noun is entered in the mental lexicon with a consistent gender specification (either masculine or feminine in the case of Spanish)^{xi} the expectation is that it will consistently control the same type of gender agreement with all modifiers. We have shown that gender agreement in Spanish is more fluid than a rule-based model would predict. In particular, agreement with preposed and postposed

modifiers may follow different patterns. Our experimental results are consistent with our findings from searches of electronic corpora and other sources. All the evidence shows that Spanish speakers display considerable variation or insecurity in the gender of modifiers preceding *agua*-type nouns, but usually not regarding the gender of following modifiers. These facts are compatible with the hypothesis that speakers store phrasal tokens and employ analogy with stored exemplars to interpret or produce novel utterances (Bybee 1988, 2006, Bybee and Eddington 2006, Eddington 2004, Skousen 1989, 1992).

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Appendix

Frequency data from the Google search (March 2007)

el asta	68500	la asta	1390	los astas	131	las astas	97700
un asta	28800	una asta	560	unos astas	0	unas astas	526
ningún asta	6	ninguna asta	201	ningunos astas	0	ningunas astas	1
ese asta	381	esa asta	294	esos astas	0	esas astas	175
aquel asta	25	aquella asta	40	aquellos astas	3	aquellas astas	19
mucho asta	1340	mucha asta	56	muchos astas	1	muchas astas	109
tanto asta	763	tanta asta	5	tantos astas	0	tantas astas	29
nuestro asta	32	nuestra asta	40	nuestros astas	0	nuestras astas	23
poco asta	1190	poca asta	21	pocos astas	0	pocas astas	3
otro asta	1120	otra asta	583	otros astas	0	otras astas	43
mismo asta	1150	misma asta	247	mismos astas	4	mismas astas	15
				varios astas	0	varias astas	129
el agua	1770000	la agua	90500	los aguas	737	las aguas	1320000
un agua	293000	una agua	35500	unos aguas	76	unas aguas	42600
ningún agua	765	ninguna agua	1440	ningunos aguas	3	ningunas aguas	49
ese agua	60200	esa agua	145000	esos aguas	16	esas aguas	120000
aquel agua	602	aquella agua	15400	aquellos aguas	30	aquellas aguas	36900
mucho agua	54800	mucha agua	463000	muchos aguas	50	muchas aguas	40600
tanto agua	909	tanta agua	91800	tantos aguas	14	tantas aguas	906
nuestro agua	1380	nuestra agua	47500	nuestros aguas	29	nuestras aguas	94100
poco agua	35700	poca agua	141000	pocos aguas	0	pocas aguas	693
otro agua	1440	otra agua	14800	otros aguas	282	otras aguas	49400
mismo agua	16300	misma agua	46500	mismos aguas	50	mismas aguas	27800
				varios aguas	109	varias aguas	853
el águila	810000	la águila	13100	los águilas	19100	las águilas	784000
un águila	247000	una águila	20300	unos águilas	286	unas águilas	1480
ningún águila	187	ninguna águila	48	ningunos águilas	2	ningunas águilas	23
ese águila	1060	esa águila	1270	esos águilas	89	esas águilas	1130
aquel águila	242	aquella águila	426	aquellos águilas	9	aquellas águilas	146
mucho águila	73	mucha águila	25	muchos águilas	59	muchas águilas	319
tanto águila	265	tanta águila	27	tantos águilas	9	tantas águilas	30
nuestro águila	447	nuestra águila	1310	nuestros águilas	37	nuestras águilas	900
poco águila	34	poca águila	2	pocos águilas	5	pocas águilas	76
otro águila	352	otra águila	1110	otros águilas	136	otras águilas	558
mismo águila	277	misma águila	204	mismos águilas	11	mismas águilas	318
				varios águilas	17	varias águilas	183
el ala	819000	la ala	51300	los alas	10700	las alas	1150000
un ala	232000	una ala	29000	unos alas	75	unas alas	74300
ningún ala	266	ninguna ala	299	ningunos alas	0	ningunas alas	205

ese ala	1310	esa ala	621	esos alas	30	esas alas	16000
aquel ala	240	aquella ala	318	aquellos alas	10	aquellas alas	1210
mucho ala	738	mucha ala	351	muchos alas	137	muchas alas	18200
tanto ala	1400	tanta ala	177	tantos alas	2	tantas alas	854
nuestro ala	438	nuestra ala	754	nuestros alas	73	nuestras alas	25200
poco ala	1180	poca ala	234	pocos alas	7	pocas alas	146
otro ala	617	otra ala	17700	otros alas	120	otras alas	535
mismo ala	1310	misma ala	1040	mismos alas	53	mismas alas	1170
				varios alas	29	varias alas	866
el alma	1430000	la alma	39900	los almas	1370	las alma	1430
un alma	1070000	una alma	71500	unos almas	59	unas almas	20
ningún alma	12300	ninguna alma	675	ningunos almas	0	ningunas almas	0
ese alma	15900	esa alma	53200	esos almas	28	esas almas	41
aquel alma	1460	aquella alma	20200	aquellos almas	17	aquellas almas	12
mucho alma	620	mucha alma	558	muchos almas	74	muchas almas	56
tanto alma	859	tanta alma	1370	tantos almas	9	tantas almas	61
nuestro alma	976	nuestra alma	384000	nuestros almas	60	nuestras almas	493
poco alma	489	poca alma	1260	pocos almas	6	pocas almas	1
otro alma	1220	otra alma	30000	otros almas	141	otras almas	93
mismo alma	1390	misma alma	40600	mismos almas	91	mismas almas	9
				varios almas	139	varias almas	18
el ansia	392000	la ansia	9960	los ansias	389	las ansias	354000
un ansia	75700	una ansia	897	unos ansias	528	unas ansias	17300
ningún ansia	228	ninguna ansia	228	ningunos ansias	2	ningunas ansias	23
ese ansia	10400	esa ansia	12400	esos ansias	13	esas ansias	20700
aquel ansia	199	aquella ansia	340	aquellos ansias	3	aquellas ansias	620
mucho ansia	300	mucha ansia	544	muchos ansias	427	muchas ansias	24300
tanto ansia	972	tanta ansia	9590	tantos ansias	12	tantas ansias	12400
nuestro ansia	300	nuestra ansia	851	nuestros ansias	28	nuestras ansias	29100
poco ansia	47	poca ansia	51	pocos ansias	0	pocas ansias	250
otro ansia	66	otra ansia	116	otros ansias	9	otras ansias	320
mismo ansia	631	misma ansia	1310	mismos ansias	7	mismas ansias	732
				varios ansias	1	varias ansias	2
el arca	563000	la arca	12400	los arcas	235	las arcas	911000
un arca	71700	una arca	9320	unos arcas	8	unas arcas	1380
ningún arca	654	ninguna arca	377	ningunos arcas	0	ningunas arcas	0
ese arca	536	esa arca	953	esos arcas	3	esas arcas	360
aquel arca	95	aquella arca	371	aquellos arcas	2	aquellas arcas	74
mucho arca	5	mucha arca	2	muchos arcas	18	muchas arcas	97
tanto arca	46	tanta arca	5	tantos arcas	0	tantas arcas	16
nuestro arca	33	nuestra arca	482	nuestros arcas	4	nuestras arcas	833
poco arca	4	poca arca	2	pocos arcas	1	pocas arcas	15
otro arca	542	otra arca	396	otros arcas	3	otras arcas	243
mismo arca	85	misma arca	256	mismos arcas	0	mismas arcas	241
				varios arcas	4	varias arcas	102

el área	1620000	la área	375000	los áreas	24800	las áreas	1390000
un área	1230000	una área	603000	unos áreas	28	unas áreas	49800
ningún área	33200	ninguna área	23000	ningunos áreas	14	ningunas áreas	148
ese área	73300	esa área	543000	esos áreas	91	esas áreas	325000
aquel área	709	aquella área	21600	aquellos áreas	122	aquellas áreas	469000
mucho área	134	mucha área	1290	muchos áreas	239	muchas áreas	304000
tanto área	515	tanta área	1020	tantos áreas	3	tantas áreas	16400
nuestro área	30700	nuestra área	300000	nuestros áreas	127	nuestras áreas	139000
poco área	87	poca área	1140	pocos áreas	27	pocas áreas	46400
otro área	22200	otra área	373000	otros áreas	813	otras áreas	1110000
mismo área	61900	misma área	376000	mismos áreas	117	mismas áreas	69200
				varios áreas	604	varias áreas	333000
el arpa	177000	la arpa	809	los arpas	49	las arpas	17400
un arpa	42800	una arpa	671	unos arpas	0	unas arpas	68
ningún arpa	24	ninguna arpa	5	ningunos arpas	0	ningunas arpas	2
ese arpa	150	esa arpa	481	esos arpas	1	esas arpas	70
aquel arpa	16	aquella arpa	44	aquellos arpas	0	aquellas arpas	4
mucho arpa	6	mucha arpa	8	muchos arpas	0	muchas arpas	60
tanto arpa	21	tanta arpa	5	tantos arpas	0	tantas arpas	9
nuestro arpa	6	nuestra arpa	58	nuestros arpas	0	nuestras arpas	672
poco arpa	3	poca arpa	0	pocos arpas	0	pocas arpas	2
otro arpa	9	otra arpa	85	otros arpas	4	otras arpas	21
mismo arpa	24	misma arpa	34	mismos arpas	0	mismas arpas	6
				varios arpas	17800	varias arpas	22
el ancla	184000	la ancla	1370	los anclas	634	las anclas	63900
un ancla	90000	una ancla	766	unos anclas	8	unas anclas	1070
ningún ancla	100	ninguna ancla	65	ningunos anclas	0	ningunas anclas	1
ese ancla	421	esa ancla	545	esos anclas	10	esas anclas	227
aquel ancla	25	aquella ancla	41	aquellos anclas	0	aquellas anclas	27
mucho ancla	2	mucha ancla	8	muchos anclas	5	muchas anclas	165
tanto ancla	58	tanta ancla	29	tantos anclas	9	tantas anclas	153
nuestro ancla	46	nuestra ancla	419	nuestros anclas	9	nuestras anclas	221
poco ancla	5	poca ancla	0	pocos anclas	0	pocas anclas	25
otro ancla	102	otra ancla	539	otros anclas	20	otras anclas	119
mismo ancla	28	misma ancla	29	mismos anclas	1	mismas anclas	8
				varios anclas	23	varias anclas	272
el alga	48700	la alga	980	los algas	411	las algas	322000
un alga	43900	una alga	899	unos algas	6	unas algas	749
ningún alga	73	ninguna alga	139	ningunos algas	0	ningunas algas	9
ese alga	402	esa alga	1080	esos algas	0	esas algas	1510
aquel alga	2	aquella alga	32	aquellos algas	1	aquellas algas	145
mucho alga	12	mucha alga	1060	muchos algas	10	muchas algas	594
tanto alga	4	tanta alga	339	tantos algas	0	tantas algas	515
nuestro alga	1	nuestra alga	14	nuestros algas	0	nuestras algas	110
poco alga	18	poca alga	153	pocos algas	3	pocas algas	610
otro alga	64	otra alga	672	otros algas	51	otras algas	9720

mismo alga	34	misma alga	128	mismos algas	2	mismas algas	256
				varios algas	3	varias algas	345
el arma	1150000	la arma	61400	los armas	34800	las armas	1340000
un arma	1240000	una arma	183000	unos armas	25	unas armas	39000
ningún arma	38600	ninguna arma	17300	ningunos armas	62	ningunas armas	332
ese arma	15600	esa arma	52600	esos armas	519	esas armas	129000
aquel arma	990	aquella arma	1440	aquellos armas	5	aquellas armas	13100
mucho arma	53	mucha arma	373	muchos armas	118	muchas armas	41600
tanto arma	437	tanta arma	960	tantos armas	19	tantas armas	14000
nuestro arma	1230	nuestra arma	33500	nuestros armas	103	nuestras armas	92600
poco arma	77	poca arma	73	pocos armas	32	pocas armas	19000
otro arma	611	otra arma	62600	otros armas	429	otras armas	153000
mismo arma	555	misma arma	27500	mismos armas	118	mismas armas	71100
				varios armas	204	varias armas	36600
el asa	112000	la asa	20500	los asas	1160	las asas	79600
un asa	73000	una asa	16300	unos asas	42	unas asas	1400
ningún asa	52	ninguna asa	39	ningunos asas	0	ningunas asas	0
ese asa	433	esa asa	222	esos asas	7	esas asas	270
aquel asa	12	aquella asa	18	aquellos asas	0	aquellas asas	25
mucho asa	42	mucha asa	17	muchos asas	4	muchas asas	190
tanto asa	88	tanta asa	3	tantos asas	0	tantas asas	25
nuestro asa	2	nuestra asa	31	nuestros asas	3	nuestras asas	17
poco asa	88	poca asa	0	pocos asas	5	pocas asas	15
otro asa	350	otra asa	319	otros asas	19	otras asas	117
mismo asa	81	misma asa	147	mismos asas	2	mismas asas	50
				varios asas	8	varias asas	187
el aspa	29400	la aspa	1440	los aspas	59	las aspas	86200
un aspa	51000	una aspa	554	unos aspas	2	unas aspas	677
ningún aspa	16	ninguna aspa	19	ningunos aspas	0	ningunas aspas	0
ese aspa	127	esa aspa	150	esos aspas	0	esas aspas	504
aquel aspa	14	aquella aspa	11	aquellos aspas	0	aquellas aspas	45
mucho aspa	7	mucha aspa	3	muchos aspas	0	muchas aspas	132
tanto aspa	17	tanta aspa	74	tantos aspas	0	tantas aspas	40
nuestro aspa	0	nuestra aspa	9	nuestros aspas	0	nuestras aspas	33
poco aspa	2	poca aspa	9	pocos aspas	0	pocas aspas	28
otro aspa	51	otra aspa	78	otros aspas	1	otras aspas	27
mismo aspa	19	misma aspa	109	mismos aspas	0	mismas aspas	52
				varios aspas	0	varias aspas	180
el ascua	44200	la ascua	407	los ascuas	12	las ascuas	25500
un ascua	9670	una ascua	965	unos ascuas	0	unas ascuas	464
ningún ascua	26	ninguna ascua	5	ningunos ascuas	0	ningunas ascuas	0
ese ascua	33	esa ascua	27	esos ascuas	0	esas ascuas	224
aquel ascua	10	aquella ascua	40	aquellos ascuas	0	aquellas ascuas	70
mucho ascua	0	mucha ascua	1	muchos ascuas	0	muchas ascuas	58

tanto ascua	6	tanta ascua	6	tantos ascuas	0	tantas ascuas	21
nuestro ascua	0	nuestra ascua	19	nuestros ascuas	0	nuestras ascuas	32
poco ascua	0	poca ascua	4	pocos ascuas	1	pocas ascuas	34
otro ascua	1	otra ascua	15	otros ascuas	0	otras ascuas	8
mismo ascua	0	misma ascua	10	mismos ascuas	0	mismas ascuas	22
				varios ascuas	1	varias ascuas	2
el aula	1190000	la aula	32400	los aulas	538	las aulas	1170000
un aula	705000	una aula	77000	unos aulas	3	unas aulas	12200
ningún aula	1130	ninguna aula	281	ningunos aulas	0	ningunas aulas	8
ese aula	1470	esa aula	759	esos aulas	5	esas aulas	13100
aquel aula	384	aquella aula	1030	aquellos aulas	2	aquellas aulas	623
mucho aula	10	mucha aula	8	muchos aulas	51	muchas aulas	9550
tanto aula	28	tanta aula	11	tantos aulas	1	tantas aulas	375
nuestro aula	1200	nuestra aula	24400	nuestros aulas	44	nuestras aulas	147000
poco aula	6	poca aula	19	pocos aulas	3	pocas aulas	613
otro aula	1150	otra aula	10200	otros aulas	54	otras aulas	20100
mismo aula	995	misma aula	29000	mismos aulas	6	mismas aulas	10400
				varios aulas	16	varias aulas	19600
el haba	20100	la haba	104000	los habas	314	las habas	108000
un haba	631	una haba	528	unos habas	4	unas habas	1150
ningún haba	4	ninguna haba	9	ningunos habas	1	ningunas habas	16
ese haba	9	esa haba	33	esos habas	0	esas habas	387
aquel haba	1	aquella haba	3	aquellos habas	0	aquellas habas	20
mucho haba	8	mucha haba	12	muchos habas	0	muchas habas	251
tanto haba	63	tanta haba	3	tantos habas	0	tantas habas	65
nuestro haba	1	nuestra haba	16	nuestros habas	2	nuestras habas	90
poco haba	16	poca haba	14	pocos habas	0	pocas habas	43
otro haba	14	otra haba	109	otros habas	3	otras habas	113
mismo haba	60	misma haba	38	mismos habas	0	mismas habas	441
				varios habas	35	varias habas	10
el hacha	299000	la hacha	931	los hachas	1160	las hachas	53100
un hacha	219000	una hacha	21900	unos hachas	2330	unas hachas	1070
ningún hacha	534	ninguna hacha	147	ningunos hachas	2	ningunas hachas	0
ese hacha	1150	esa hacha	1170	esos hachas	112	esas hachas	514
aquel hacha	397	aquella hacha	294	aquellos hachas	0	aquellas hachas	33
mucho hacha	17	mucha hacha	13	muchos hachas	7	muchas hachas	272
tanto hacha	16	tanta hacha	37	tantos hachas	15	tantas hachas	112
nuestro hacha	31	nuestra hacha	124	nuestros hachas	9	nuestras hachas	396
poco hacha	11	poca hacha	1	pocos hachas	11	pocas hachas	44
otro hacha	382	otra hacha	532	otros hachas	54	otras hachas	70
mismo hacha	240	misma hacha	216	mismos hachas	6	mismas hachas	38
				varios hachas	11	varias hachas	362
el hambre	1190000	la hambre	29700	los hambres	1380	las hambres	14700
un hambre	119000	una hambre	691	unos hambres	199	unas hambres	235
ningún hambre	109	ninguna hambre	243	ningunos hambres	0	ningunas hambres	0

ese hambre	802	esa hambre	11400	esos hambres	37	esas hambres	202
aquel hambre	238	aquella hambre	201	aquellos hambres	26	aquellas hambres	24
mucho hambre	13900	mucha hambre	142000	muchos hambres	68	muchas hambres	639
tanto hambre	635	tanta hambre	41600	tantos hambres	30	tantas hambres	177
nuestro hambre	1340	nuestra hambre	13700	nuestros hambres	2	nuestras hambres	296
poco hambre	414	poca hambre	1310	pocos hambres	7	pocas hambres	8
otro hambre	247	otra hambre	587	otros hambres	28	otras hambres	209
mismo hambre	1330	misma hambre	1380	mismos hambres	20	mismas hambres	18
				varios hambres	6	varias hambres	12
el álgebra	149000	la álgebra	695	los álgebras	19	las álgebras	9490
un álgebra	16700	una álgebra	704	unos álgebras	0	unas álgebras	2
ningún álgebra	1	ninguna álgebra	7	ningunos álgebras	0	ningunas álgebras	0
ese álgebra	53	esa álgebra	124	esos álgebras	0	esas álgebras	27
aquel álgebra	9	aquella álgebra	3	aquellos álgebras	0	aquellas álgebras	26
mucho álgebra	39	mucha álgebra	156	muchos álgebras	0	muchas álgebras	2
tanto álgebra	72	tanta álgebra	57	tantos álgebras	0	tantas álgebras	23
nuestro álgebra	20	nuestra álgebra	66	nuestros álgebras	0	nuestras álgebras	6
poco álgebra	86	poca álgebra	45	pocos álgebras	0	pocas álgebras	0
otro álgebra	18	otra álgebra	64	otros álgebras	0	otras álgebras	141
mismo álgebra	47	misma álgebra	110	mismos álgebras	0	mismas álgebras	0
				varios álgebras	0	varias álgebras	7
el alba	825000	la alba	20900	los albas	20900	las albas	10700
un alba	21800	una alba	1100	unos albas	5	unas albas	88
ningún alba	74	ninguna alba	18	ningunos albas	0	ningunas albas	0
ese alba	300	esa alba	549	esos albas	8	esas albas	37
aquel alba	205	aquella alba	122	aquellos albas	0	aquellas albas	40
mucho alba	415	mucha alba	27	muchos albas	6	muchas albas	96
tanto alba	353	tanta alba	7	tantos albas	16	tantas albas	26
nuestro alba	231	nuestra alba	215	nuestros albas	2	nuestras albas	42
poco alba	41	poca alba	0	pocos albas	0	pocas albas	7
otro alba	90	otra alba	290	otros albas	202	otras albas	57
mismo alba	149	misma alba	72	mismos albas	3	mismas albas	0
				varios albas	0	varias albas	6
el acta	1170000	la acta	89400	los actas	790	las actas	1160000
un acta	1180000	una acta	138000	unos actas	12	unas actas	13700
ningún acta	10700	ninguna acta	679	ningunos actas	0	ningunas actas	0
ese acta	944	esa acta	32400	esos actas	8	esas actas	21900
aquel acta	185	aquella acta	578	aquellos actas	4	aquellas actas	830
mucho acta	12	mucha acta	5	muchos actas	5	muchas actas	1380
tanto acta	104	tanta acta	11	tantos actas	1	tantas actas	684
nuestro acta	128	nuestra acta	1140	nuestros actas	3	nuestras actas	744
poco acta	9	poca acta	3	pocos actas	0	pocas actas	391
otro acta	318	otra acta	11600	otros actas	147	otras actas	9870
mismo acta	548	misma acta	46500	mismos actas	73	mismas actas	12000
				varios actas	152	varias actas	9340

el anca	15600	la anca	692	los ancas	82	las ancas	50300
un anca	400	una anca	270	unos ancas	1	unas ancas	1070
ningún anca	0	ninguna anca	0	ningunos ancas	0	ningunas ancas	0
ese anca	7	esa anca	3	esos ancas	0	esas ancas	157
aquel anca	0	aquella anca	0	aquellos ancas	0	aquellas ancas	30
mucho anca	0	mucha anca	0	muchos ancas	0	muchas ancas	2
tanto anca	6	tanta anca	3	tantos ancas	0	tantas ancas	2
nuestro anca	0	nuestra anca	4	nuestros ancas	0	nuestras ancas	20
poco anca	2	poca anca	5	pocos ancas	0	pocas ancas	15
otro anca	2	otra anca	6	otros ancas	2	otras ancas	11
mismo anca	5	misma anca	0	mismos ancas	0	mismas ancas	13
				varios ancas	2	varias ancas	2
el aura	334000	la aura	771	los auras	336	las auras	30800
un aura	183000	una aura	17100	unos auras	2	unas auras	168
ningún aura	96	ninguna aura	148	ningunos auras	0	ningunas auras	0
ese aura	12400	esa aura	12000	esos auras	1	esas auras	677
aquel aura	232	aquella aura	650	aquellos auras	0	aquellas auras	20
mucho aura	118	mucha aura	163	muchos auras	2	muchas auras	212
tanto aura	106	tanta aura	61	tantos auras	0	tantas auras	44
nuestro aura	566	nuestra aura	669	nuestros auras	30	nuestras auras	863
poco aura	23	poca aura	30	pocos auras	0	pocas auras	7
otro aura	159	otra aura	345	otros auras	4	otras auras	289
mismo aura	349	misma aura	749	mismos auras	0	mismas auras	68
				varios auras	2	varias auras	89

Test items (prescriptively incorrect versions)

Hermaphroditic, inflected adjective before noun, high frequency

El mejor arma

El dulce habla

Nuestro hambre constante

Mismo alma singular

El abundante agua

Hermaphroditic, inflected adjective before noun, low frequency

Tanto álgebra escolar

Otro hacha rural

El caliente ascua

Aquel arca doble

El peor ancla

Hermaphroditic, inflected adjective after noun, high frequency

Suave ala delicado

Fuerte ansia demoralizador

Artificial ave blanco

Principal área artístico

Enorme aula universitario

Hermaphroditic, inflected adjective after noun, low frequency

Original arpa clásico

Fascinante África negro

Noble águila volador

Tradicional haba delicioso

Gigante asta agudo

Transvestite, inflected adjective before noun, high frequency

Ese programa mundial

Misma problema moral

Mucha drama mental

La tema local

Tanta aroma especial

Transvestite, inflected adjective before noun, low frequency

Otra diagrama eficaz

Nuestra crucigrama infantil

Mucha visible eccema

Transvestite, inflected adjective after noun, high frequency

Posible lema absurda
 Cambiante clima mediterránea
 Tradicional idioma amazónica
 Mejor sistema educativa
 Cruel día sangrienta

Transvestite, inflected adjective after noun, low frequency
 Disfuncional diafragma dañada
 Razonable teorema matemática
 Inicial edema sistémica
 Principal enigma religiosa
 Urgente telegrama extranjera

Regular, inflected adjective before noun, high frequency
 Buena elemento visual
 El alegre canción
 Mucho carne tropical
 Mucha sentido común
 Aquel hermana menor

Regular, inflected adjective before noun, low frequency
 Mismo tuerca exterior
 Nuestro madrastra intolerable
 El inhospitable siberia
 Barato jeringuilla comercial
 Esa dinosaurio salvaje

Regular, inflected adjective after noun, high frequency
 Insuficiente dinero limpia
 Cruel desierto árida
 Noble montaña suizo
 Rural pueblo inglesa
 Feliz fiesta campesino

Regular, inflected adjective after noun, low frequency
 Transparente membrana humano
 Posible fusión completo
 Original suero médica
 Liberal estatuto danesa
 Leve avalancha aislado

Factor	Factor Weight	Raw number of errors
Noun Frequency by Noun Type		
High Frequency, Hermaphroditic	+.346	86
Low Frequency, Hermaphroditic	+.260	78
Low Frequency, Transvestite	+.162	47
Low Frequency, Regular	-.100	37
High Frequency, Transvestite	-.280	30
High Frequency, Regular	-.340	24
Grammatical Correctness by Noun Type		
Incorrect, Hermaphroditic	+.370	117
Incorrect, Transvestite	+.214	52
Incorrect, Regular	+.168	39
Correct, Regular	-.162	22
Correct, Transvestite	-.216	25
Correct, Hermaphroditic	-.366	47
Inflected Modifier Placement by Noun Type		
Before Noun, Hermaphroditic	+.368	114
Before Noun, Transvestite	+.110	38
Before Noun, Regular	+.048	35
After Noun, Transvestite	-.076	39
After Noun, Regular	-.120	26
After Noun, Hermaphroditic	-.310	50

Log likelihood = -635.330, $p = 0.008$, Total Chi-square = 20.7905, Chi-square per cell = 0.8663, Input 0.180

TABLE 1. Factor Weights Resulting from the Logistic Regression Analysis of the Experiment

- i The dictionary of the Spanish Academy lists three homonyms under *haz* with different etymologies. Only the third one, meaning ‘face’ is said to be feminine.
- ii Bruce Hayes’ QueryGoogle was of great help in carrying out these searches:
www.linguistics.ucla.edu/people/hayes/QueryGoogle
- iii Thanks to Justo Fernández López for pointing out this example.
- iv www.corpusdelespanol.org
- v With *hambre*, which has a more gender-ambiguous ending, there are a few examples of postposed masculine agreement: *un hambre bárbaro* ‘a barbarious hunger’, *un hambre leonino* ‘a lion-like hunger’, together with *tanto hambre* ‘so much hunger’, and *muchísimo hambre* ‘a lot of hunger’.
- vi Clearly, this is not a valid explanation; compare *el ama* ‘the landlady’ vs. *la ama* ‘s/he loves her’ (Harris 1987) as well as *la alta* ‘the tall one’, *conocida área* ‘known area’, and *absurda ansia* ‘absurd anxiety’ where exactly the same sequence /-a á-/ obtains as in the supposedly cacophonous examples.
- vii Exactly how the exemplars compete, are compared, and weighted differs from one algorithm to the next and is beyond the scope of the present paper. See Chandler (2002) for a discussion.
- viii A possible diachronic development is for an originally feminine noun of this class to settle on masculine agreement in the singular but not in the plural, as has happened with the noun *arte* (*el arte español* ‘Spanish art’ vs. *las bellas artes* ‘fine arts’).
- ix www.u.arizona.edu/~kforster/dmdx/dmdx.htm
- x GoldVarb actually gives factor weights that vary between one and zero. These have been converted into a +1 to -1 scale for ease of interpretation.
- xi [+f] or [-f] in Roca (1989) or in Harris (1991) marked or unmarked for the unary feature [f].