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DOI

[10.1075/ttwia.53.11zek](https://doi.org/10.1075/ttwia.53.11zek)

Publication date

1995

Published in

Toegepaste Taalwetenschap in Artikelen

[Link to publication](#)

Citation for published version (APA):

Zekhnini, A., & Hulstijn, J. H. (1995). An experimental study on the learning of arbitrary and non-arbitrary gender of pseudo Dutch nouns by nonnative and native speakers of Dutch. *Toegepaste Taalwetenschap in Artikelen*, 53, 121-136. <https://doi.org/10.1075/ttwia.53.11zek>

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AN EXPERIMENTAL STUDY ON THE LEARNING OF ARBITRARY AND NON-ARBITRARY GENDER OF PSEUDO DUTCH NOUNS BY NONNATIVE AND NATIVE SPEAKERS OF DUTCH

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Introduction

There has been some debate in the recent literature concerning the question of whether, and to what extent, noun gender attribution in languages such as French, German and Dutch can be formulated in terms of semantic or morphonological rules, in terms of competing semantic and morphonological cues, or only in terms of arbitrary idiosyncratic features. Consequently, opinions differ on the question how the process of gender learning by native and nonnative learners of such languages has to be explained. In one view (Carroll, 1989), French L1 learners encode noun gender as an inherent feature of the noun in an obligatory fashion. English learners of French, however, learn nouns as words distinct from their determiners.

Carroll (1989) claims "that the gender distinction is not learned during primary acquisition. Rather, it is simply available to be used if a language requires it. This claim is consistent with the general absence of error in gender attribution during the early stages of French acquisition." (p.556/557)

Furthermore, Carroll claims "that the gender feature is a *defining* feature of the noun class. When the child recognizes that the same phonological sequence is showing up over and over again as the initial part of the noun, he or she will extract it from the underlying phonological representation. (...) Once these lexemes [un, une, le, la, mon, ma etc] are independently represented, the universally available gender feature relevant to defining the noun class in the morphosyntactic lexicon will simply be triggered. At that point, *no* nominal expression can be lexically encoded without a gender feature. This follows because the gender feature is part of the specification of what a noun is." (571/572)

In summary (p.580/581), Carroll makes the following claims:

- Gender features are defining features of the nominal class and hence appear as such in every lexical entry of a nominal category (nouns and nominal suffixes).
- Children learning French as their L1 therefore do not make systematic developmental gender errors.
- Anglophone children acquiring French through immersion programs do not demonstrate anything resembling native-speaker competence. They

transfer their noun category - crucially without an inherent gender feature to the task of acquiring new words.

Carroll, however, does not mention the following point, which, in our view needs to be made in order to render more complete the picture of what gender learning is: Once learners have learnt to reserve a place for the gender feature, the place must be filled with a value, which in French is either male or female. Setting the gender value has to be done for each noun individually. The value can be predicted on the basis of rules or cues (nonarbitrary assignment of the value) for a number of nouns but cannot be predicted for other nouns (arbitrary assignment).

We argue that the learning of arbitrary values is equally difficult (or easy) for young native speakers, older native speakers, and nonnative speakers. However, the learning of nonarbitrary values is easier for older native speakers, since they have already acquired many nouns from which rules or cues can be derived.

We will report on two learning experiments in which adult nonnative and native speakers of Dutch had to learn pseudo Dutch nouns. We attempted to falsify one of Carroll's claims, by providing evidence for the claim that nonnative and native speakers alike would have equal difficulty in learning arbitrary noun gender attributions (Exp. 1), but that native speakers would have less difficulty than nonnative speakers in learning less arbitrary gender attributions (Exp. 2).

First, however, let us briefly give some information about Dutch noun gender. Dutch originally had three gender classes: masculine, feminine and neuter. Modern Dutch, however, has two classes: a combined masculine and feminine class (these nouns take the definite article "de"), and a neuter class (nouns taking the definite article "het"). From now on, we will refer to these two classes as DE-nouns and HET-nouns.

Part 1. The acquisition of arbitrary gender specifications

In part one of our study we tested the hypothesis that there are no differences between native and nonnative speakers in learning Dutch pseudo nouns with arbitrary gender. The pilot study aimed at selecting 8 pseudo nouns with arbitrary gender. These nouns were then used in learning experiment 1.

Pilot 1

Elicitation of native speaker intuitions on the gender of 25 pseudo nouns. Our expectation is that native speakers will assign gender on basis of the fonologic cues when these are present in a pseudo noun. These cues are to be generated from rhymes and onsets traceable in the Dutch language.

Method

Subjects

28 native speakers (non-language university students)

Materials and procedure

Subjects received a list of 75 nouns (50 existing nouns + 25 pseudo nouns, in random order). They were instructed to write DE or HET before each noun. Ten minutes were allowed for the completion of this task. We selected 25 monosyllabic pseudo (but possible) nouns with varying onsets and rhymes. Some of these words rhymed with more DE-words than HET-words, some with more HET-words than DE-words, and some with about the same number of DE- as HET-words. For example, there are 8 nouns (in Martin, 1978) rhyming on the pseudo word "nerk", four HET words and four DE words. Our prediction was that subjects would respond with about 50% DE and 50% HET. Furthermore, there are 5 nouns (in Martin, 1978) rhyming on the pseudo word "luif", all DE words. Our prediction therefore was that subjects give DE responses only. In summary, we predicted that native speaker intuitions would correspond with tendencies found among rhyming existing nouns.

Results

The Pearson correlation between expected and obtained proportions of DE/HET responses was .76 ($df = 23$). We selected 8 nouns whose obtained DE proportions were closest to the 50% mark (ranging between 33 and 67%): *nerk*, *flond*, *loor*, *spam*, *glak*, *zweil*, *floom*, and *speg*, for use in Experiment 1.

Experiment 1

In this experiment native and nonnative speakers had to learn the 8 monosyllabic pseudo nouns with arbitrary gender that had been selected in pilot study 1. We hypothesized that native and nonnatives will have equal difficulty in learning the arbitrary gender assignments of these hitherto new nouns (pseudo nouns).

Subjects

Seventy individuals who were paid for their participation.

- * 35 native speakers (non-language university students);
- * 35 intermediate and advanced nonnative speakers (preparing for Dutch language university entry examinations), mostly with non-European first languages.

Task and materials

A concept-learning task was used under joint visual and auditory presentation. The experimental session consisted of 8 learning + testing phases, followed by two unexpected extra tests (tests 9 and 10). Subjects had to

discover how eight names (pseudo nouns) relate to eight visual concepts. Four names referred to an object, four names referred to a location.

The visual stimuli were 16 line-drawings, photographed and mounted on slides. The four objects were crossed with the four locations, yielding 16 object-location instances (see Figure 1). The auditory stimuli for all 16 instances were constructed as follows:

DE/HET + [object noun] + "is op" + DE/HET + [location noun]

The apparatus used for the joint exposure of the visual and auditory stimuli was a Bell & Howell RM 850 random-access tape-slide projector, which incorporates a built-in cassette player and a microprocessor, controlling slide selection.

Of the eight nouns selected in Pilot 1, four were used as referring to an object and four as referring to a location. Of each of these two sets of four nouns, two were assigned the DE article and two the HET article:

Object nouns:	<i>de nerk</i>	Location nouns:	<i>de glak</i>
	<i>de flond</i>		<i>de zweil</i>
	<i>het loor</i>		<i>het floom</i>
	<i>het spam</i>		<i>het spæg</i>

Figure 1: The four objects (left column) crossed with the four locations (top row), yielding 16 combinations (cells)

Procedure and instructions

Subjects participated in small groups (between 5 and 8 subjects at a time). They were told that they are participating in a concept-learning experiment involving the processing of unknown language. They were also informed about the learning and testing phases in each session. The experiment consists of eight sessions.

In the 8 learning and testing phases, only 8 of the 16 object-location instances were presented and tested. They were chosen such that two consecutive instances always shared either their object or their location to facilitate the learning task (numbers 1 through 8 in Figure 1). The eight learning-testing phases each began with a different instance (with 8, 3, 7, 2, 6, 5, 4, 1 respectively). By way of example, here are the auditory stimuli in learning phase 1:

<i>Het loor</i>	<i>is op</i>	<i>de glak.</i>
<i>De nerk</i>	<i>is op</i>	<i>de glak.</i>
<i>De nerk</i>	<i>is op</i>	<i>de zweil.</i>
<i>De flond</i>	<i>is op</i>	<i>de zweil.</i>
<i>De flond</i>	<i>is op</i>	<i>het floom.</i>
<i>Het spam</i>	<i>is op</i>	<i>het floom.</i>
<i>Het spam</i>	<i>is op</i>	<i>het speg.</i>
<i>Het loor</i>	<i>is op</i>	<i>het speg.</i>

Immediately after testing phase 8, subjects were given two unexpected additional tests. Test 9 involved the 8 remaining instances, not presented in the preceding 8 learning-testing phases (numbers 9 through 16 in Figure 1). The pictures were shown (the order of presentation was 11, 15, 9, 12, 14, 16, 10, 13) and subjects were required to write down the corresponding sentences. Thus, test 9 purported to measure to what extent subjects were able to transfer the acquired knowledge (instances 1-8) to new instances (9-16). Finally, in test 10, subjects were shown the pictures of the four objects and the four locations separately. They were required to write down the name preceded by the article DE or HET.

It was in test 10 only that subjects' attention was drawn to the article. In the 8 testing-learning phase sessions, their attention had been drawn only to the names (nouns). Thus, the learning task was designed as a task which purported to bring about an incidental learning behaviour, in that subjects' attention was focused on the names (nouns) themselves rather than on their accompanying articles.

Scoring procedures

For each subject and for each test, the responses were coded as follows:

- noun correct
- noun incorrect or absent
- noun correct and article correct
- noun correct but article incorrect or absent

Since we were not interested in spelling, the following spellings were coded as being correct:

- *nerk, nerck*
- *flond, flont, vlond, vlont*
- *loor*
- *spam*
- *glak, glack*
- *zwijl, zweil, swijl, sweil*
- *floom, vloom*
- *speg, spech*

Results

We first present the results of the final three tests (8-10), since they were administered after the eight learning phases, and thereby represent the learning outcome.

Table 1: *Correct noun forms with correct article: Means and standard deviations*

	Native speakers N = 35	Nonnative speakers N = 35	t-test (df = 68)
Test 8 Max = 16	13.9 (2.5)	12.6 (3.9)	1.57 NS
Test 9 Max = 16	13.4 (3.2)	11.8 (3.8)	1.82 NS
Test 10 Max = 8	6.7 (1.4)	6.4 (1.6)	0.60 NS

Test 8 elicited subjects' best performance since that test measured the exact instances which had been presented and tested in the previous eight learning/testing sessions.

Figure 2 presents the learning curves of correct nouns with correct articles from Test 3 through Test 8 (performance in Tests 1 and 2 was too poor to be informative).

Figure 2

Error analyses

Error analyses (Chi-square tests) on the responses in tests 8, 9, and 10 were conducted to assess

- to what extent the eight nouns (without their articles) were successfully learned by natives and nonnatives;
- to what extent gender errors (wrong articles when nouns were correct) differed among the eight pseudo words by natives and nonnatives.

The results of the error analyses can be summarized as follows: In test 8, the nouns 'floom' and 'flond' had been learned less well than the other nouns. This was true for natives and nonnatives alike. Perhaps subjects were confused by the identical onsets of these nouns (although the nouns 'spam' and 'spieg', also with identical onsets, were not mixed up). In tests 9 and 10, however, no significant differences were found among the 8 nouns.

There were no significant differences among the 8 nouns in terms of article errors in test 8. However, in test 9 significantly fewer article errors were obtained for the noun 'nerk' than for the other nouns; in test 10, fewer article errors than average were obtained for 'nerk' and more than average for 'flond'. In none of the three tests (8, 9, and 10), however, the article-error pattern of natives differed from that of nonnatives.

Summary and Conclusions

In experiment 1, eight monosyllabic pseudo nouns with arbitrary gender were taught to native and nonnative speakers. The hypothesis was that native and nonnatives would have equal difficulty in learning these arbitrary gender assignments. This hypothesis was supported: although natives learned the nouns somewhat more quickly than the nonnatives, their ultimate performance did not differ from that of the natives (i.e. in tests 8, 9, and 10): no significant differences were found between natives and nonnatives

- in the mean number of nouns learned,
- in the mean number of gender errors,
- in the distribution of noun form errors among the 8 target words;
- in the distribution of gender errors among the 8 target words.

We draw the following two conclusions from Experiment 1:

1. Contrary to Carroll's claim, native speakers do sometimes make article errors, i.e. they do not always encode the article (gender feature) of new nouns immediately and flawlessly together with the noun forms themselves, at least not in the case of Dutch native speakers learning pseudo monosyllabic nouns whose gender cannot be predicted on the basis of morphological, phonological or semantic rules or statistical cues.
2. With such nouns, gender acquisition is equally difficult (or easy) for native and nonnative speakers.

Part 2. The acquisition of nonarbitrary and arbitrary gender specifications

In study 2, we aimed at testing the following hypotheses:

- H1 Native speakers will learn the articles of pseudo nouns whose gender can be predicted on the basis of morphological or phonological statistical cues (i.e. nonarbitrary gender) more quickly than the articles of pseudo nouns whose gender cannot be predicted on the basis of any rule or cue (arbitrary gender).
- H2 For nonnative speakers, however, the difference in learning difficulty between nonarbitrary and arbitrary gender will be less pronounced than for native speakers, since nonnative speakers have taken in smaller amounts of input and have acquired smaller vocabularies and are therefore less susceptible to statistical tendencies (caused by rules or cues) than native speakers.

Pilot 2

The pilot study aimed at selecting 8 pseudo nouns with arbitrary gender. These nouns were then used in learning experiment 2.

Elicitation of native speaker intuitions on the gender of 18 pseudo nouns

Method

Subjects

41 native speakers (non-language university students) participated in this pilot study.

Materials and procedure

List of 68 nouns (50 existing nouns + 18 pseudo nouns, in random order). Subjects were instructed to write DE or HET before each noun. Ten minutes were allowed for the completion of this task.

Eighteen pseudo nouns were used:

- 8 twosyllabic nouns whose gender can be predicted on the basis of morphological or phonological cues;
 - 2 twosyllabic nouns ending on *-ing*
 - 2 twosyllabic nouns ending on *-de*
 - 2 twosyllabic nouns beginning with *be-*
 - 2 twosyllabic nouns beginning with *ont-*
- 10 monosyllabic nouns, whose gender is (4 nouns) or is not (6 nouns) cued (and therefore can or cannot be predicted) by rhyming existing words.

Results

Our expectancies were confirmed

- in the case of 7 out of the 8 twosyllabic words;
- in the case of 3 out of the 4 monosyllabic words with a preponderance of rhyming DE words;
- in the case of 5 out of the 6 words without a preponderance of rhyming DE or HET words.

From these 18 pseudo nouns the best ones (in terms of native speakers' intuitions confirming our predictions) were selected for use in Experiment 2. See Table 2

Table 2: Target words selected for Experiment 2

Target Word	Prediction	Cue
<i>zing</i>	DE	Strong morphological/phonological cue
<i>node</i>	DE	Strong phonological cue (53 out of 53 twosyllabic nouns on <i>-de</i> have DE)
<i>bevrog</i>	HET	Strong morphological/phonological cue (45 out of 49 twosyllabic nouns beginning with <i>be-</i> have HET)
<i>ontgref</i>	HET	Moderate morphological cue (7 out of 8 twosyllabic nouns beginning with <i>ont-</i> have HET)
<i>doon</i>	DE	Moderate phonological cue (7 out of 8 rhyming words have DE)
<i>weur</i>	DE	Moderate phonological cue (7 out of 7 rhyming words have DE)
<i>schak</i>	DE/HET	No cue (of 14 rhyming words 7 have DE and 7 have HET)
<i>jeer</i>	DE/HET	No cue (of 14 rhyming words 8 have DE and 6 have HET)

Discussion

-ING: all nouns with the affix *-ing* have DE-gender. There are innumerable nouns with this *-ing* affix, of which 164 twosyllabic nouns ending on *-ring*, of which 7 on *-ering*. (Note. In the case of a handful of *-ing* nouns, the ending *-ing* is not an affix (bound morpheme) but part of the noun root.)

-DE: all twosyllabic nouns ending on the unstressed syllable *-de* are DE words. This ending is not an affix (bound morpheme). There are 53 twosyllabic nouns ending on *-de* (40 frequent and 13 infrequent), 6 of which ending on *-ode* (5 frequent nouns and one rare noun).

BE-: There are 49 twosyllabic nouns beginning with the unstressed syllable *be-*, 45 HET nouns and 4 DE nouns. These 4 DE nouns are not related to (derived or converted from) corresponding verbs. Most of the 45 HET nouns, however, have been derived (or converted) from verbs beginning with *be-*. Not all verbs beginning with *be-* have been derived from verbs without *be-*. Hence the status of *be-* as an affix (derivational morpheme) is debatable.

ONT-: There are 8 twosyllabic nouns beginning with unstressed *ont-*, 7 HET words and one DE word. All these 8 nouns have been derived (or converted) from verbs beginning with *ont-*. All these verbs beginning with *ont-* have been derived from verbs without *ont-*. Therefore, *ont-* can be considered to be an affix.

Experiment 2

In this experiment native and nonnative speakers had to learn the 8 pseudo nouns that had been selected in pilot study 2. We hypothesized that native and nonnatives will have equal difficulty in learning the arbitrary gender assignments of these hitherto new nouns (pseudo nouns), but that natives would have less difficulty than nonnatives in learning the non-arbitrary ones. Subjects were taught four twosyllabic and four monosyllabic pseudo nouns whose gender

- could be predicted on the basis of phonological or morphological cues (in the case of the 4 twosyllabic nouns);
- could be predicted on the basis of phonological rhyming cues (in the case of two monosyllabic nouns);
- could not be predicted on the basis of any cues (in the case of two monosyllabic nouns).

Method

Subjects

Fifty seven individuals participated in this experiment:

- * 29 native speakers (non-language university students);
- * 28 intermediate and advanced nonnative speakers (preparing for Dutch language university entry examinations), mostly with non-European first languages. Subjects were paid for their participation.

Task and procedures were identical to the task and the procedures in experiment 1.

Materials

The same pictures were used as in Experiment 1. However, a new recording was made of the audiotape, replacing the 8 target words of Experiment 1 by the 8 target words of Experiment 2.

Results

We present the results of Experiment 2 in terms of proportions of errors made during the entire experiment (tests 1 through 10), as these data are most relevant to our hypotheses. Tables 3 and 4 give these proportions; error proportions are graphically displayed in Figure 3. Table 5 provides the same data as Table 3 but rank ordered in terms of increasing error proportions.

Table 3: Mean proportions of gender errors during experiment 2 (tests 1 through 10)

	Natives N = 29	Nonnatives N = 28	t-tests
Nonarbitrary gender			
<i>de zering</i>	00	08	*
<i>de node</i>	01	05	NS
<i>het bevrog</i>	03	18	**
<i>het ontgref</i>	03	20	**
<i>de doon</i>	03	06	NS
<i>de weur</i>	11	18	NS
Arbitrary gender			
<i>het schak</i>	08	31	**
<i>het jeer</i>	23	25	NS
All target words	07	16	**

Table 4: Mean proportions of gender errors during experiment 2 (tests 1 through 10)

	Natives N = 29	Nonnatives N = 28	t-tests
All four DE words	04	09	NS
All four HET words	09	23	**
All four twosyllabic words	02	13	**
All four mono-syllabic words	11	20	**
All eight target words	07	16	**

Figure 3

Table 5: Rank orders of difficulty in experiment 2 in mean percentages of gender errors

Natives	Nonnatives
00 <i>zering</i>	05 <i>node</i>
01 <i>node</i>	05 <i>doon</i>
	08 <i>zering</i>
03 <i>bevrog</i>	
03 <i>doon</i>	17 <i>weur</i>
03 <i>ontgref</i>	18 <i>bevrog</i>
	19 <i>ontgref</i>
08 <i>schak</i>	
	25 <i>jeer</i>
11 <i>weur</i>	
	31 <i>schak</i>
23 <i>jeer</i>	

*) Identical rank orders were obtained (a) when absolute numbers of gender errors were calculated and (b) when the number of subjects who committed at least one gender error on the word concerned were calculated.

The following Manova's were conducted

1. Manova on mean percentages of gender errors in all 10 tests by Group (natives vs nonnatives), with repeated measures on the 8 target words.

Results: a main Group effect ($F = 14.83$; $df = 1,44$; $p < .001$), a main Target Word effect ($F = 8.67$; $df = 7,308$; $p < .001$), but no significant Group x Target Word interaction.

2. A Manova on mean percentages of gender errors in all 10 tests by Group (natives vs nonnatives), with repeated measures on the following four pairs of target words: 1 + 2, 3 + 4, 5 + 6, and 7 + 8.

Results: a main Group effect ($F = 14.83$; $df = 1,44$; $p < .001$), a main effect for Word Pairs ($F = 13.79$; $df = 3,132$; $p < .001$), but no significant Group x Word Pair interaction.

3. A Manova on mean percentages of gender errors in all 10 tests by group (natives vs nonnatives), with repeated measures on Gender (the 4 DE words against the four HET words).

Results: a main Group effect ($F = 14.83$; $df = 1,44$; $p < .001$), a main Gender effect ($F = 20.70$; $df = 1,44$; $p < .001$), but no significant Group x Gender interaction.

4. A Manova on mean percentages of gender errors in all 10 tests by Group (natives vs nonnatives), with repeated measures on Syllabicity (the four two-syllabic against the four monosyllabic words).

Results: a main Group effect ($F = 14.83$; $df = 1,44$; $p < .001$), a main Syllabicity effect ($F = 15.14$; $df = 1,44$; $p < .001$), but no significant Group x Syllabicity interaction.

Summary of the results of Experiment 2

The first hypothesis (H1) was largely supported:

- Natives hardly made any gender errors with 5 out of 6 nouns with non-arbitrary gender;
- Nonnatives made substantially and significantly more gender errors with the 2 arbitrary nouns than with the 6 nonarbitrary nouns;

Within the group of 6 nouns with nonarbitrary gender cues no clear differences were found between the 3 nouns with *strong* gender cues (stemming from gangs of more than 45 similar nouns) and the 3 nouns with *moderate* gender cues (stemming from gangs of only 7 or 8 similar nouns).

The second hypothesis (H2) was also largely supported. Although the 2 nouns with arbitrary gender generated more errors than the 6 nouns with nonarbitrary gender, the differences are less pronounced as in the case of the Nonnatives, since three of the six nonarbitrary nouns still generated a considerable number of errors. The error pattern cannot be explained in terms of the cue type (gang size, morphological or phonological nature, number of syllables).

Conclusions

1. Contrary to what one might expect on the basis of Carroll (1989), native speakers of Dutch do make gender errors when learning new words in their native language. Hence it is not the case that they automatically and without failure encode the gender feature upon the first few encounters with new nouns.
2. When learning new nouns in their native language, native speakers of Dutch make fewer gender errors learning nouns with nonarbitrary gender than when learning nouns with arbitrary gender.
3. Native speakers of Dutch are superior to nonnative speakers of Dutch only when learning the gender of nouns with nonarbitrary gender. They are not superior, however, when learning nouns with arbitrary gender.

Speculations and questions for further research

The results of this study suggest that there does not appear to be a fundamental difference in the way nonnatives and natives process new linguistic materials as far as noun gender is concerned. To the extent that we found a difference between nonnatives and natives, namely in the errors made with nonarbitrary gender, the difference is not a fundamental one. It only reflects the fact that adult natives have had much more input than nonnatives and that therefore they have accumulated stronger gender cues. Both groups have passed the moment that they discovered that nouns in the Dutch language must be coded for gender and both groups are subject to the same cumulative cues emanating from the input with which they have been confronted. Natives have undergone this influence for a longer period than nonnatives. To the extent that gender is nonarbitrary then, gender cues are stronger for natives than for nonnatives (i.e. nonnatives at an intermediate level of L2 proficiency). To the extent that gender is arbitrary, however, it poses an equally difficult (or easy) learning problem for natives as for nonnatives.

How can the fact that natives did not perform errorless be reconciled with the common belief, as expressed in Carroll (1989), that small children learning their mother tongue seem to have no problems at all learning gender values, once they have discovered that nouns must be obligatory specified for gender? On first glance, it seems that children indeed do not make many gender errors. We wonder however, to what extent this is true. Most words are learned between the ages of six and sixteen, when children go to school and become acquainted with large numbers of new concepts and their word forms. Few studies give figures of gender errors (errors of incorrect articles and other determiners) elicited of children in this age range. Furthermore, to our knowledge no studies have investigated the correctness or incorrectness of article use *when nouns were produced for the first time*. Thus, when a study found that children made very few noun gender errors (wrong article or determiner use), the question still remains whether, for each child and for each individual word elicited, there may have been an initial period prior to the moment of elicitation, that the gender value had not yet well been encoded in the mental lexicon (Corbett, 1991; de Houwer, 1987; Mills, 1986).

Let us speculate for a moment that L1 acquisition studies would indisputably demonstrate that small children learn arbitrary noun gender values without difficulty (i.e. hardly making production errors with articles and demonstratives), how would we explain the difference between their ease of learning arbitrary, non-semantic, formal features and the difficulty with which adults (natives and nonnatives alike) appear to learn such features (cf. Andersson, 1992; MacWhinney, 1989; Magnan, 1983; Rogers, 1987; Sokolik & Smith, 1992; Taraban, McDonald & MacWhinney, 1989)? What we had to explain then is a difference not between first and second language learning but a difference between younger and older learners (as far as arbitrary, non-semantic, formal features are concerned). Might that be a matter of mnemonic rather than of linguistic abilities? Do young children perceive, encode and retain verbal, formal, non-semantic information in a different way than adults?

Such speculations and questions clearly call for further research into the learning of arbitrary lexical features by younger versus older and native versus nonnative individuals. The results of the present study suggest that the differences between native and nonnative learners may not be fundamentally different. More research is needed into the question whether there are fundamental learning differences between young children and adults.

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