

The acquisition of grammatical gender in bilingual child acquisition of Dutch (by older Moroccan and Turkish children)

The definite determiner, attributive adjective and
relative pronoun

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1. Introduction

Experimental results have revealed that monolingual acquisition of neuter gender of the Dutch definite determiner is a long-lasting process in the sense that children do not acquire a target grammar until a very advanced age (cf. Bol & Kuiken 1988; De Houwer & Gillis 1998). (Nominal) gender in Dutch can be analyzed as an [uninterpretable] feature, whose default value is [common]. This gender feature has to combine with the [+singular] number feature and the [interpretable] [+definite] feature in order to realize morphologically the specific value [neuter] on the definite determiner. By means of experimental results, Van der Velde (2004) has demonstrated that until the age of 6, monolinguals overgeneralize the definite determiner *de* (required by common nouns in adult grammar) and use it incorrectly with neuter nouns that require the definite determiner *het*. Van der Velde assumes that children first adopt the un(der)specified, default value for the gender feature, i.e. common. It is only later that the children incrementally acquire the specific value [neuter] and correctly produce the definite determiner *het* when it is required.

Importantly, we know from the literature that when monolingual children have problems acquiring a certain phenomenon, we can be sure that bilingual children are to be expected to encounter even larger problems. Indeed, experimental results by Hulk & Cornips (2006a,b) demonstrate that children, although growing up bilingually from birth (cf. Meisel 1989, Müller & Hulk 2001), show severe difficulties regarding the acquisition of neuter gender of the definite determiner; that is, they only correctly produce *het* in 32% of the expected cases when they are between 9;3 and 10;5 years old.

This paper will develop the experimental research by Hulk & Cornips (2006a, b) by focusing on three specific research questions: (i) do bilingual children raised in ethnic minority communities reveal a fossilization effect; that is, do they reveal a permanent qualitative difference compared to their monolingual peers? (ii) is there evidence of cross-linguistic influence of the other language in acquiring grammatical gender in Dutch? and (iii) do attributive adjectives and relative pronouns regarding gender agreement with the head noun reveal the same difficulties as found with respect to the acquisition of neuter gender of the definite determiner?

This paper is organized as follows. In the first part we describe our subjects, design and methodology. In the second part we will focus exclusively on the results of the acquisition of the gender of the definite determiner. In the main part of this paper, we will compare the results for determiner–noun agreement to attributive adjective–noun and relative pronoun–noun agreement. We subsequently address a possible fossilization effect, cross-linguistic influence and animacy effect. The last section will be devoted to a conclusion.

2. The current study: Choice of subjects and test design

In order to examine whether bilingual children reveal a fossilization effect, we selected 30 older children, varying in age between 10;5 and 12;11 years old who all attend one primary school in Rotterdam located in an ethnic minority neighbourhood. Further, in order to study a potential cross-linguistic influence, the design was careful to include two groups of bilingual children whose other language instantiates a gender distinction in its noun/determiner system (Moroccan-Arabic and/or Berber) or not (Turkish) (cf. Hawkins & Franceschina 2004). Therefore, the group of 30 children was made up of (i) 13 bilingual children from Turkish descent, (ii) 12 bilingual children from Moroccan descent speaking Berber and/or Moroccan-Arabic and 5 Dutch monolinguals as a control group. Finally, we obtained a language profile of the children that informed us not only about competences in and preferences for languages spoken in the home environment but also about the language(s) spoken to and by parents, older and younger siblings, grandparents and friends.

We designed three (picture) completion task experiments that enable us to investigate the correct use of definite determiners, attributive adjectives and relative pronouns, with respect to common and neuter test items. The outcomes of the tests were recorded on DAT-tape and transcribed and analyzed in CHAT and CLAN, which are parts of the child language analysis program CHILDES.

2.1 Test design

We developed three separate (picture) completion task tests in order to elicit production data concerning the gender agreement between articles, adjectives and relative pronouns with the head noun. For each phenomenon, the subjects were asked to use 24 singular nouns, divided into 12 common and 12 neuter nouns (depending on the test, 2 or 4 nouns were chosen as practice items). In order to gain more insight into whether the children make a selection between a common and neuter noun on the basis of its semantic content, we selected the condition [\pm animate] (8 animate and 16 inanimate nouns):

Table 1. The test items [neuter, \pm animate] and [common, \pm animate]

neuter				common			
animate		inanimate		animate		inanimate	
meisje	'girl'	potlood	'pencil'	jongen	'boy'	pot	'pot'
paard	'horse'	mes	'knife'	hond	'dog'	lepel	'spoon'
konijn	'rabbit'	glas	'glass'	vrouw	'woman'	sleutel	'key'
schaap	'sheep'	brood	'bread'	man	'man'	schaar	'scissors'
		boek	'book'			steen	'stone'
		bord	'plate'			pan	'pan'
		touw	'rope'			beker	'mug'
		schrift	'notebook'			schoen	'shoe'

The tests had the following format:

Test 1 — the definite determiner (based on Blom in press)¹

A picture shows two objects: a white arrow points at one of the two, a black arrow points at the other. The investigator (I) introduces both objects and asks the child (C) to form a sentence. The test format requires the child to complete the sentence with a common or neuter noun preceded by a definite determiner:

- I: *Hier zien we een vork en een sok.*
 'Here we see a fork and a sock.'
- C: *De witte pijl wijst naar de vork en de zwarte pijl wijst naar de sok.*
 'The white arrow points at the fork and the black arrow points at the sock'

Test 2 — the attributive adjective (based on Blom in press)

In Dutch, attributive adjective agreement always requires a schwa (+e), except with nouns that are [indefinite, singular, neuter]. Only in this context is the bare adjective grammatical. We elicited adjective inflection using a picture showing two objects that look similar but differ in one aspect. The investigator (I) asks the child (C) to name both objects. The test format requires the child to complete

the sentence with a common or neuter noun preceded by an indefinite article and attributive adjective. There is no gender distinction on the Dutch singular indefinite article, which is *een* for both neuter and common nouns:

- I: *Op dit plaatje zien we twee vorken, dit is een...*
 'In this picture we see two forks, this is a'
 C: *...kleine vork.*
 'small fork'
 I: *en dat is een...*
 'and that is a'
 C: *...grote vork.*
 'big fork'

Test 3 — the relative pronoun

Relative pronouns in Dutch only vary in form according to the gender of the antecedent noun that is [\pm definite, singular]. The relative pronoun *die* is required if the antecedent has common gender, relative pronoun *dat* if the antecedent has neuter gender. The test has the following format: a picture shows an object in relation to another object. The investigator (I) asks the child (C) to finish the sentence with a relative clause headed by a relative pronoun. The sentence offered requires the child to complete it with a relative pronoun *die* or *dat* according to the gender of the antecedent noun:

- I: *Hier zie je een vork op tafel liggen, dus dit is een vork...*
 'Here you see a fork on the table, so this is a fork'
 C: *...die op tafel ligt.*
 'which is on the table'

Let us now turn to the results regarding the bilingual acquisition of grammatical gender in Dutch. We first discuss the definite determiner — noun agreement.

3. Bilingual acquisition of grammatical gender in Dutch

3.1 Definite determiner: Fossilization?

The results regarding the (in)correct use of the definite determiners *de* and *het* are presented in Table 2 below. Since we know from previous experimental research that children experience difficulties in acquisition of the neuter gender of the Dutch definite determiner (see introduction), we expect them to produce a higher correct score of the common determiner *de* than the neuter determiner *het*. This expectation is borne out for both the monolingual and bilingual children. However, Table 2 also reveals that the monolingual children

do not produce a 100% correct score for the definite determiner *de* (83.3%). Further, the bilingual children show a serious delay compared to the monolingual children, especially with respect to the correct use of the definite determiner *het* (42.01% versus 68.8%, respectively). Note that the percentage of correct use of *het* is below chance level.

Table 2. The production of the definite determiner (test 1) by the monolingual (n = 4) and Turkish/Moroccan children (n = 24) (target in grey)

age 10;5–12;11	determiner			
	monolingual children		bilingual children	
RESPONSE	<i>de</i>	<i>het</i>	<i>de</i>	<i>het</i>
NEUTER N	18.7% 9/48	68.8% 33/48	48.96% 141/288	42.01% 121/288
COMMON N	83.3% 40/48	4.2% 2/48	68.75% 198/288	23.61% 68/288

It is likely that the bilingual children in this experiment “fossilize” with respect to the acquisition of the neuter definite determine since they are already relatively old, namely between 10;5 and 12;11 years (cf. Hulk & Cornips 2006a, b). However, only if we were to follow these children longitudinally would we be able to conclude that the results in Table 2 display their ultimate attainment. A possible explanation for the delay may be that the bilingual children at this age still assume a default value for the gender feature, i.e. [common], and that they have not acquired the specific value [neuter] yet. If this explanation is on the right track, it is expected that the bilinguals exclusively reveal an overuse of one form of the determiner, namely *de* in just one direction. In contrast to younger Moroccan and Turkish 2L1/L2 children (see Hulk & Cornips 2006a, b), this expectation is not borne out. Table 2 reveals that the bilinguals use both *de* and *het* with common items (incorrect use of *het*: 23.61%) and neuter ones (incorrect *de*: 48.96%). Therefore, another explanation may be pursued, e.g. the one proposed by Hawkins & Franceschina (2004:183–184). If we follow their analysis, we may assume that the bilingual children have to a certain extent established that Dutch nouns fall into two classes because they use both forms of the definite determiners with common and neuter nouns. Thus, a process of lexical learning of the gender feature of the noun takes place in their emergent grammars. From the experiment, we are unable to establish how their assignment of Dutch nouns in two classes takes place, for instance, on some (morpho-) phonological or semantic conditions (cf. below, §3.4). Let us now compare the results concerning the determiner–noun agreement with adjective–noun and pronoun–noun agreement.

3.2 Determiner–noun, adjective–noun and relative pronoun–noun gender agreement

Monolinguals

The experimental results for determiner–noun, adjective–noun and relative pronoun–noun gender agreement by the monolingual children are presented in Table 3. At all levels, the monolinguals perform much better on common nouns than on neuter ones. Both common and neuter nouns show the correct form of the definite determiner above chance level.

Table 3. Monolingual results for the determiner *de/het*, adjective *+e/Ø* and relative pronoun *die/dat* ($n = 4$; target in grey)

age	determiner		adjective		relative pronoun	
	<i>de</i>	<i>het</i>	<i>+e</i>	\emptyset	<i>die</i>	<i>dat</i>
10;5–12;11						
NEUTER	18.7% 9/48	68.8% 33/48	48.9% 47/96	48.9% 47/96	77.1% 37/48	22.9% 11/48
COMMON	83.3% 40/48	4.2% 2/48	98.9% 95/96	1.1% 1/96	87.5% 42/48	12.5% 6/48

There is also a certain hierarchical order between the different agreement phenomena and this hierarchy is different for common and neuter nouns with respect to the order of the definite determiner. In the case of neuter nouns, the children show the highest accuracy for the definite determiner *het*, whereas in case of common nouns they display the lowest accuracy for the definite determiner *de* in relation to the attributive adjective (*+e*) and the relative pronoun (*die*). The orders presented below reveal that in case of D–N agreement the children are aware that Dutch nouns belong to two different classes, witness their morphological spell-out on the definite article as *de* or *het* above level of chance:

Table 4. Dutch monolinguals: Hierarchical order between agreement phenomena.

	Definite determiner	Adjective	Relative pronoun	
COMMON	83.3%	98.9%	87%	adj>rel>det
NEUTER	68.8%	48.9%	22.9%	det>adj>rel

Bilinguals

The experimental results for determiner–noun, adjective–noun and relative pronoun–noun gender agreement by the bilingual children are presented in Table 5.

Table 5. Bilingual results for the determiner *de/het*, adjective *+e/Ø* and relative pronoun *die/dat* (n = 24; target in grey)

age	determiner		adjective		relative pronoun	
	<i>de</i>	<i>het</i>	<i>+e</i>	<i>Ø</i>	<i>die</i>	<i>dat</i>
10;5–12;11						
NEUTER	48.9%	42%	71%	26.9%	85.4%	11.8%
	141/288	121/288	409/576	155/576	247/288	34/288
COMMON	68.7%	23.6%	88%	7.9%	88.1%	9%
	198/288	68/288	507/576	46/576	254/288	26/288

With the exception of the correct use of the relative pronoun *die*, the bilinguals are systematically less accurate at all levels than the monolinguals. This signals a serious delay.

The results in Table 5 were tested by a multivariate analysis.² There are two significant effects and one significant interaction effect: (i) there is a very strong gender effect of .821, (ii) there is a small effect of .358 for type of agreement between determiner–noun, adjective–noun and relative pronoun–noun, and (iii) there is a significant interaction effect between gender and type of agreement of .236. With respect to (i) and (iii), the bilinguals correspond to the monolinguals in that they perform significantly better on common than on neuter items at all levels. Importantly, the small effect mentioned in (ii) provides us with evidence that there is hardly any correlation between the different types of agreement. This corresponds to the observation mentioned above that determiners and pronouns are not treated alike, although both are functional elements with a morphological spell-out.

Finally, the order of target-like performance is again: determiner–adjective–relative pronoun for neuter and adjective/ relative pronoun–determiner in case of common nouns:³

Table 6. Bilinguals: Hierarchical order between agreement phenomena

	Definite determiner	Adjective	Relative pronoun	
COMMON	68.7%	88%	88.1%	adj=rel>det
NEUTER	42%	26.9%	11.8%	det>adj>rel

Two observations are crucial. The first is that the different types of agreement hardly show any correlation and the second is the different position of the definite determiner in the hierarchy with respect to common and neuter nouns relative to adjective and relative pronoun. Thus, the hierarchy reveals that structural configurations bring about different gender accuracies. The determiner, being the head, needs to agree syntactically more than the adjective and the relative pronoun, bringing about two morphological forms (*de* and *het*)

according to the gender of the noun. The determiner differs from the adjective and relative pronoun in that it shows no overgeneralization in just one direction as the latter do. The latter — the adjective and relative pronoun — show overgeneralization of one form, i.e. the common one, in just one direction. This holds to a greater extent for the relative pronoun than the attributive adjective, witness the percentages of the correct neuter adjective and relative pronoun forms of 26.9% and 11.8%, respectively (see also §3.3).

All in all, it is likely that in the case of the definite determiner the children have established that D as a head has an uninterpretable gender feature, i.e. there is a checking relation between the inherent [common/neuter] feature of N checking the uninterpretable gender feature of D. However, the children have problems with its correct morphological spell-out as *het* and *de* on the definite determiner (probably due to processing problems, see Hulk & Cornips 2006a,b). On the other hand, the children almost exclusively produce the default common form *+e* and *die* for the adjective and relative pronoun, respectively. This may be due to their different structural configurations.

3.3 Cross-linguistic effects

Let us now address the question of whether the other language of the children instantiating a gender distinction in its noun/determiner system (Moroccan-Arabic and/or Berber) or not (Turkish) has an influence on the acquisition of grammatical gender in Dutch. In Cornips & Hulk (in press) it is argued that the acquisition of grammatical gender in Dutch is only favoured if the other language has a gender feature showing structural and morphological overlap with Dutch.

Table 7 presents the results of the Moroccan and Turkish children. These results were tested by a multivariate analysis.

Table 7. Results for the determiner, adjective and relative pronoun by the Moroccan and Turkish children (n = 24; target in grey)

age		determiner		adjective		relative pronoun	
10;5–12;11		<i>de</i>	<i>het</i>	<i>+e</i>	Ø	<i>die</i>	<i>dat</i>
Moroccan	NEUTER	50.69%	41.67%	70.14%	27.78%	77.08%	20.14%
n = 12		73/144	60/144	202/288	80/288	111/144	29/144
Turk		47.22%	42.36%	71.88%	26.04%	94.44%	3.47%
n = 12		68/144	61/144	207/288	78/288	136/144	5/144
Moroccan	COMMON	69.44%	25.69%	85.76%	9.03%	79.17%	15.2%
n = 12		100/144	37/144	247/288	26/288	114/144	22/144
Turk		68.06%	21.53%	90.28%	6.94%	97.22%	2.78%
n = 12		98/144	31/144	260/288	20/288	140/144	4/144

The multivariate analysis shows that there are no significant effects for any of the three types of agreement phenomena as dependent variables (there are also no interaction effects with other independent variables). However, the Moroccan and Turkish children differ within the category relative pronoun–noun agreement. The Moroccan children reveal almost similar results as the monolingual children presented in Table 3. We examined this category in more detail by dividing the group of Moroccan and Turkish children into two subgroups, namely a subgroup where the child receives Dutch input from at least one member of his family, but not necessarily his parent(s) (but from his sibling(s)) and a subgroup where the child receives Dutch input from at least one parent. Within each subgroup, an ‘early’ acquirer is assumed to receive substantial Dutch input from birth onwards and a ‘late’ acquirer is assumed to receive little Dutch input from birth onwards (see van der Hoek 2005 for extensive discussion). When we compare the results of the four groups of Moroccan children (one family member versus one parent and ‘early’ versus ‘late’ acquirer) with the four groups of Turkish children within the class of determiner–noun, adjective–noun and relative pronoun–noun gender agreement, three significant differences were found within the level of the relative pronoun only ($p < .001$ Fisher Exact Test).

With respect to COMMON nouns:

- i. Under the condition of little input, the ‘early’ Turkish children show more correct use of the relative pronoun *die* than the ‘early’ Moroccan children;
- ii. Under the condition of substantial input, the ‘late’ Turkish children show more correct use of the relative pronoun *die* than the ‘late’ Moroccan children.

With respect to NEUTER nouns:

Under the condition of substantial input, the ‘late’ Moroccan children show more correct use of the relative pronoun *dat* than the ‘late’ Turkish children.

Taken together, the Moroccan bilinguals, unlike the Turkish, reveal a similar accuracy as the Dutch monolingual children with respect to neuter gender. At least, it is certain for the Turkish children that the form *die* is the common default form. Further research has to show whether this is due to cross-linguistic influence of Berber/Moroccan-Arabic versus Turkish.⁴

3.4 Animacy-effect

Monolinguals

A possibly significant animacy effect gives us more insight into the question of whether the children make a distinction on the basis of a specific semantic distinction with respect to correct gender assignment. The monolingual children, however, do not reveal any evidence for such a condition:

Table 8. Monolingual results for correct gender agreement — determiner, adjective and relative pronoun — concerning the conditions \pm animate ($n=4$; target in grey)

age 10;5–12;11	determiner <i>de</i> versus <i>het</i>		adjective <i>+e</i> versus \emptyset		relative pronoun <i>die</i> versus <i>dat</i>	
	correct	gender error	correct	gender error	correct	gender error
animate	71.88% 23/32	12.5% 4/32	71.88% 46/64	26.56% 17/64	62.50% 20/32	37.5% 12/32
inanimate	78.13% 50/64	10.94% 7/64	75% 96/128	24.22% 31/128	51.56% 33/64	48.44% 31/64

Bilinguals

Table 9 below displays the results of the bilingual children. Unlike the monolinguals, they reveal a significantly different result for gender accuracy throughout all levels between animate and inanimate nouns (multivariate analysis displays a main effect of .358). Thus, the children use correct forms (determiner *de/het*, adjective *+e*/ \emptyset and relative pronoun *die/dat*) significantly more with animate than with inanimate nouns. It is important to point out that they do not distinguish common from neuter nouns on the basis of the property \pm animate.

Table 9. Bilingual results for correct gender agreement — determiner, adjective and relative pronoun — concerning the conditions \pm animate ($n=24$; target in grey)

age 10;5–12;11	determiner <i>de</i> versus <i>het</i>		adjective <i>+e</i> versus \emptyset		relative pronoun <i>die</i> versus <i>dat</i>	
	correct	gender error	correct	gender error	correct	gender error
animate	61.46% 118/192	30.21% 58/192	62.50% 240/384	32.55% 125/384	51.56% 99/192	46.35% 89/192
inanimate	52.34% 201/384	39.32% 151/384	54.95% 422/768	42.97% 330/768	49.22% 189/384	47.92% 184/384

Further research is needed with respect to the question whether correct gender assignment, depending on the animacy of the noun, is related to a lexical learning effect.⁵ It is clear that the monolinguals and bilinguals differ in this respect.

4. Conclusion

In this paper we have addressed three specific research questions: (i) do Moroccan and Turkish children reveal a fossilization effect? (ii) is there evidence of cross-linguistic influence of the other language? and (iii) do we find any evidence that these bilingual children have established that Dutch has an uninterpretable gender feature (cf. Hawkins & Franceschina 2004)?

Our experimental research demonstrates that, with the exception of the relative pronoun *die*, Moroccan and Turkish bilingual children reveal a serious delay compared to their Dutch peers e.g. a lower accuracy of the right form concerning the acquisition of grammatical gender at all levels examined; that is, determiner–noun, adjective–noun and relative pronoun–noun agreement. But, it is important to keep in mind that the monolingual children also do not reveal a full correct score on all three types of agreement. With respect to the second question, we did not find any difference at the overall level for cross-linguistic influence, although the Moroccan children performed significantly better than the Turkish children on the correct form of the relative pronoun agreeing with the antecedent noun having [neuter] gender. Finally, we found that the targetlike performance declines through the three environments tested (determiner–adjective–relative pronoun) with neuter-related phenomena and that these three environments only display a very weak correlation. This hierarchy reveals that structural configurations bring about different gender accuracies. The determiner, being the head, needs to agree syntactically more than the adjective and the relative pronoun, bringing about two morphological forms according to the gender of the noun. In contrast, the adjective and relative pronoun show overgeneralization in just one direction. We assume that in the case of the definite determiner the children have established that the head has an uninterpretable gender feature, i.e. there is a checking relation between the inherent [common/neuter] feature of N checking the uninterpretable gender feature of D. However, children encounter problems with its correct morphological spell-out as *het* and *de* on the definite determiner. On the other hand, it is assumed that children at this age still adopt the default common forms *+e* and *die* for the adjective and relative pronoun, respectively.

Notes

1. With many thanks to Elma Blom for sharing test 1 & 2 with us (see Blom in press). Note that our test differs from hers in that we have added 8 inanimate nouns.
2. We thank Hans Van de Velde so much for performing a multivariate analysis on our data.

3. It is important to note that at the level of the individual the correct use of the definite determiner *het* for neuter nouns does not imply a correct use of the bare adjective and/or the pronoun *dat*.
4. Berber and Moroccan Arabic have a Dutch-like relative pronoun/clause strategy whereas this is not the case for Turkish.
5. Further research is also needed to find out whether this significant factor is in fact due to a frequency-effect.

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