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Synchronic and diachronic variation in Germanic gender agreement

Kraaikamp, M.

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Chapter III

Semantic gender agreement: Dutch and German compared*

Abstract

This study compares pronominal gender agreement in Dutch and German. Pronouns do not always agree with the gender of their antecedent: instead of agreeing with the lexical gender of the noun, they show semantic gender agreement. This is known to occur with human referents in both Dutch and German. In Dutch, pronouns can agree semantically with non-human referents as well, based on their degree of individuation. This type of agreement has been found in several Germanic varieties. It has been suggested for Dutch that this type of agreement resulted from the loss of the three-way nominal gender system. However, it has not been systematically investigated to what extent this type of agreement also exists in Germanic varieties that still distinguish three nominal genders, such as German. This chapter presents the results of a pronoun elicitation experiment conducted both in Dutch and in German, testing pronominal reference to non-human referents with varying degrees of individuation. Two types of pronominal reference were tested: anaphoric and deictic reference. The results show that semantic agreement based on individuation occurs in both languages, in particular with animals, abstracts and masses. Semantic agreement is more frequent in deictic reference than in anaphoric reference in both languages. The languages differ with respect to the total frequency of semantic agreement, which is significantly higher in Dutch. This difference may be explained by the reduced visibility of lexical gender in Dutch compared to German. The findings suggest that semantic agreement based on individuation is a shared Germanic feature and that the difference between Dutch and German with respect to this kind of agreement is mainly one of degree.

1. Introduction

This study compares pronominal gender agreement in Dutch and German. Both languages inherited a gender system from Proto-Germanic in which each noun has a

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CHAPTER III

lexically stored gender. German nouns are either neuter, masculine or feminine. Dutch nouns are neuter or common, a conflation of former masculine and feminine gender. These genders are marked on determiners, attributive adjectives and pronouns. Pronouns, however, do not always agree with the lexical gender of their antecedent noun. This can occur when the lexical gender of the noun conflicts with the semantics of the referent. Such a conflict exists, for instance, when a neuter noun refers to a human being, such as the noun *meisje* ‘girl’ in Dutch or *Mädchen* ‘girl’ in German (Corbett 1991: 228). With such nouns, pronouns show variation between two types of agreement: agreement with the gender of the antecedent, henceforth called ‘lexical gender agreement’, and agreement with the properties of the referent, henceforth called ‘semantic gender agreement’. Examples of this variation are shown in (1) and (2) for Dutch and German respectively (example (2) for German is from Corbett 1991: 228):

- (1) Kijk dat **meisje**, hoe goed **ze/het** tennis speelt.
look DEM.N girl(N) how well 3SG.F/3SG.N tennis plays
‘Look at this girl, how well she plays tennis.’

- (2) Schau dir dieses **Mädchen** an, wie gut **sie/es** Tennis
look you DEM.N girl(N) at how well 3SG.F/3SG.N tennis
spielt.
plays

‘Look at this girl, how well she plays tennis.’

In example (1) and (2), the determiner necessarily agrees with the neuter gender of the nouns *meisje* and *Mädchen*, but the personal pronoun can be either neuter or feminine, the latter agreeing with the sex of the referent. Cross-linguistically, it is not uncommon for pronouns to show semantic gender agreement, while adnominal elements agree with the lexical gender of the noun. This is captured in Corbett’s (1979) Agreement Hierarchy, in which the likelihood of showing either lexical or semantic gender agreement differs per agreement target. Adnominal elements, such

as determiners and attributive adjectives, are most likely to agree with the lexical gender of the noun, while personal pronouns have the highest likelihood of showing semantic gender agreement.

Dutch and German seem to differ with respect to the frequency of semantic agreement in the pronoun. With a neuter noun referring to a female person, as in example (1) and (2), neuter and feminine agreement are equally likely in German (Braun & Haig 2010), while feminine agreement is strongly preferred over neuter agreement in Dutch (Haeseryn et al. 1997: §5.1.2).

In Dutch, semantic agreement does not only occur with human referents, but with inanimate referents as well (Van Haeringen 1936, 1951, Fletcher 1987, Audring 2006, 2009). This agreement is based on the degree of individuation of the referent. Masculine/common gender pronouns tend to be used for individuated referents, such as a concrete object, while neuter pronouns tend to be used for non-individuated referents, such as a mass. Examples of this are shown in (3) and (4) below (from the *Corpus Gesproken Nederlands* ‘Corpus of Spoken Dutch’, from Audring 2006):

- (3) Moet je nog wat informatie over dat **boek** hebben?
 need you more some information about DEM.N book(N) have

Dan moet 'k 'm nog niet gaan inleveren.
 then should I 3SG.M yet not go return

‘Do you need some more information about that book? Then I shouldn’t return it yet.’

- (4) 't zit toch ook bij **olijfolie** wel een beetje in
 it is in.fact also with olive.oil(C) PRT a bit about

hoe 't geconserveerd wordt.
 how 3SG.N preserved is

‘In fact also with olive oil, it matters how it is preserved.’

CHAPTER III

While the antecedent *boek* ‘book’ in (3) is neuter, the personal pronoun is masculine. Conversely in (4), the antecedent *olijfolie* ‘olive oil’ is common gender and the personal pronoun is neuter.

Audring (2009) describes this semantic agreement pattern of Dutch pronouns on the basis of the Individuation Hierarchy, shown in (5).¹

(5) The Individuation Hierarchy and Dutch pronouns (adapted from Audring 2009: 127)

human	>	animal	>	object / bounded abstract	>	specific mass	>	unbounded abstract / unspec. mass
(girl)		(horse)		(book) / (question)		(my tea)		(love) / (snow)
<i>fem./masc.</i>				<i>masculine</i>				<i>neuter</i>
<i>common</i>				<i>common</i>				

The degree of individuation of entities decreases from left to right on the hierarchy. Entities with a high degree of individuation have a clearly bounded shape, are countable and have specific characteristics. Entities with a low degree of individuation have unclear boundaries, are uncountable and have less specific characteristics. Humans have the highest degree of individuation, followed by animals. Next are objects, such as a book or a table, and bounded abstracts, such as a problem or a question. Less individuated entities are specific masses, which are specific instantiations of masses, such as this soup or my tea. Unbounded abstracts, such as pain or love, and unspecific masses, such as honey or snow, have the lowest degree of individuation.

¹ Several slightly different versions of the Individuation Hierarchy exist in the literature. The hierarchy presented here is from Audring (2009: 127) and is based on the distinctions she found to be relevant in her corpus study of spoken Dutch. This is an adapted version of Sasse’s (1993: 659) Continuum of Individuality. In Sasse’s hierarchy, bounded and unbounded abstracts form a single category of abstracts between concrete objects and masses, and specific and unspecific masses are not distinguished. Although concrete objects may be considered more individuated than bounded abstracts, these two categories are grouped together on Audring’s (2009) hierarchy, because bounded referents were often ambiguous between a concrete and abstract interpretation in her corpus. Whether or not objects and bounded abstracts should be considered distinct categories on the hierarchy could therefore not be determined on the basis of her corpus data.

In her study of Dutch spoken language in the *Corpus Gesproken Nederlands* ('Corpus of Spoken Dutch'), Audring found that, when personal and demonstrative pronouns do not agree with the gender of the antecedent noun, the masculine personal pronouns (*hij/hem*, 'he/him') and common demonstrative pronouns (*die, deze*, 'that, this') are used for (male) humans, animals, objects and bounded abstracts. The neuter personal pronoun (*het*, 'it') and demonstrative pronouns (*dat, dit*, 'that, this') are used for specific masses, unbounded abstracts and unspecific masses.

This type of semantic agreement occurs in 65% of the cases in which the lexical gender of the noun conflicts with the degree of individuation of the referent, so with neuter nouns referring to individuated entities and with common nouns referring to non-individuated entities. The frequency with which semantic agreement occurs differs per semantic category. It is highest with referents at the ends of the Individuation Hierarchy, those referents for which the potential conflict between semantic and lexical gender is the largest (Audring 2009: 167-168).

Semantic agreement based on individuation has not only been found in Dutch, but in other Germanic varieties as well. It occurs in West Jutland Danish (Ringgaard 1973), Helgoland Frisian (Wahrig-Burfeind 1989), and in English dialects, in particular West Somerset English (Siemund 2002, 2008). The semantic use of neuter with referents of low individuation has also been found in City Frisian (Wahrig-Burfeind 1989) and in Flemish (De Vos 2009, De Vos & De Vogelaer 2011, De Vogelaer & De Sutter 2011). A similar phenomenon with respect to the use of neuter has been found in the Scandinavian standard languages, Danish, Norwegian and Swedish, which show semantic neuter agreement in the predicative adjective (Braunmüller 2000, Enger 2004, 2013).

What most of these varieties have in common is that the original Germanic three-way nominal gender system is no longer intact. West Jutland Danish and the English dialects have lost lexical nominal gender completely. Dutch, Frisian, Danish and Swedish have conflated masculine and feminine gender and distinguish two nominal genders, common and neuter. Norwegian, with two standard varieties, partly lost the three-gender system: while Norwegian Nynorsk distinguishes three genders, Norwegian Bokmål has conflated masculine and feminine gender and

CHAPTER III

distinguishes common and neuter nouns.² In Flemish, the distinction between masculine and feminine nouns is in the process of disappearing, as it is only marginally marked in the noun phrase in certain dialects.

Audring (2006, 2009) suggests for Dutch that agreement based on individuation has developed in response to the loss of the three-way gender distinction. The conflation of masculine and feminine nominal gender created a mismatch in Dutch between the nominal genders (common and neuter) and the genders of the personal pronoun (masculine, feminine, neuter). This created uncertainty regarding pronominal agreement with former masculine and feminine nouns, which has led to a reinterpretation of the pronouns in semantic terms. The loss of the distinction between masculine and feminine nouns is also proposed as the cause for semantic agreement in Flemish by De Vos (2009), De Vos & De Vogelaer (2011), and De Vogelaer & De Sutter (2011).

However, the fact that agreement based on individuation is found in several Germanic varieties suggests that it may not have developed newly and independently in each variety. The association between the genders and individuation could be a shared Germanic feature. There are in fact indications that the original Proto-Indo-European genders were associated with different degrees of individuation (Leiss 2000, Matasović 2004, Luraghi 2011). Therefore, the observed semantic agreement in present-day Germanic varieties may be an increased surfacing of a tendency that was already present before the nominal gender systems of these varieties changed. If that is the case, semantic agreement based on individuation may also exist in Germanic languages that still fully distinguish three nominal genders, such as German.

Audring (2009: 193) in fact already notes that semantic agreement with inanimate referents is not impossible in German. Based on personal judgement, she observes that neuter pronouns could be used with non-neuter nouns when the

² Norwegian Nynorsk is a somewhat exceptional standard variety. Nynorsk (also *Landsmål*) was created in the middle of the 19th century by the linguist and poet Ivar Aasen as a new, supposedly more genuine standard language in opposition to *Bokmål* (then called *Riksmål*). That Nynorsk has the more archaic three gender system is due to the fact that the variety was created on the basis of a selection of Norwegian dialects which still have three genders (Braunmüller 2000: 25-26).

referent has a low degree of individuation. She provides the following constructed examples:

- (6) a. **Kartoffelsuppe?** Ja **das** esse ich gern.
 potato soup(F) yes DEM.N eat I with.pleasure
 ‘Potato soup? Yes, I like to eat that.’
- b. Sie mag keinen **Jazz**, aber ihr Freund hört **das** immer.
 she likes no.M.SG jazz(M) but her friend listens DEM.N always
 ‘She doesn’t like jazz, but her boyfriend listens to it all the time.’

If Audring’s observation is correct, it suggests that the difference between German and Dutch with respect to semantic agreement is not absolute but rather one of degree. Semantic agreement may exist with referents on the outer ends of the Individuation Hierarchy in German, humans at the left end and unbounded abstracts and masses at the right – those referents for which semantic agreement is the most frequent in Dutch as well.

This study investigates if, and to what extent, semantic gender agreement based on individuation exists in German as well as in Dutch. To compare the two languages, pronominal agreement with non-human referents is tested in both languages by means of a pronoun elicitation experiment. It is expected that the same kind of semantic agreement occurs in German as in Dutch: masculine pronouns are used with referents that have a high degree of individuation, in particular, animals, objects and bounded abstracts, and neuter pronouns are used with referents that have a low degree of individuation, in particular, unbounded abstracts and masses. The two languages are expected to differ in the frequency of semantic agreement. Semantic agreement is expected to be less frequent in German than in Dutch.

As semantic agreement may be low frequent in German, the experiment was designed to test two types of pronominal reference, anaphoric and deictic reference. Most studies on pronominal agreement focus only on anaphoric reference (see references above). However, semantic agreement may surface more easily in deictic reference than in anaphoric reference. While anaphoric reference involves a nominal antecedent, as in all the examples above, there is no nominal antecedent in deictic

CHAPTER III

reference. Instead, the pronoun refers to the referent directly, as in an utterance like 'Look, it is moving'. This is possible when a speaker and addressee are in the same space and are focussed on the same referent. Corbett (1991: 243-244) notes that in deictic reference, pronouns tend to agree with an implicit noun that describes the referent, usually a basic-level term. If there is a conflict between the lexical gender of the noun and the referent, it may be easier to escape the gender of the implicit noun in deictic reference than it is to escape the gender of the explicit noun in anaphoric reference. Therefore, it is expected that semantic agreement is more frequent in deictic reference than in anaphoric reference in both German and Dutch.

This chapter is organised as follows. The details of the experiment are described in the following section. The results of the experiment are presented in Section 3, followed by a discussion of the findings in Section 4. Section 5 concludes this chapter.

2. Method

2.1. Design

A pronoun elicitation experiment was conducted in which subjects were presented with sentences containing gaps where a pronoun should be used. The test was presented via a presentation on a laptop. In order to make the responses as spontaneous as possible, the subjects had to respond orally. They were instructed to read the sentences out loud and fill in the blank spots while reading. The test sentences were constructed in such a way that a personal pronoun was most likely to be used. The test contained filler sentences with blank spots where a particular conjunction should be used. Two different parts of the test were designed to test pronominal agreement in anaphoric reference and in deictic reference. In the anaphoric reference test, subjects had to insert a pronoun that refers to a nominal antecedent in the preceding sentence, as in (7) below. In the deictic reference test, subjects had to insert a pronoun that refers to a referent presented on a picture, as in (8) below.

(7) Examples anaphoric reference test

Dutch

Er valt hier veel regen. Om kosten te besparen vangen we ... hierin op. Op die manier kan ... later in plaats van leidingwater gebruikt worden.

‘There is a lot of rain here. To save costs, we catch ... in this. That way ... can be used later instead of tap water.’

German

Furcht hat evolutionsgeschichtlich eine wichtige Funktion. Menschen und Tiere erfahren ..., um eventuelle Gefahren abzuwenden. Deshalb dient ... als eine Warnung für Gefahr und Risiko.

‘Fear has an important function from an evolutionary perspective. Humans and animals experience ... to avoid potential dangers. Thus, ... serves as a warning for danger and risk.’

(8) Examples deictic reference test



Dutch

Kijk. Ik heb ... vandaag vers van de koe gemolken. De houdbaarheid is kort, maar vers heeft ... de beste smaak.

‘Look. I milked ... fresh from the cow today. The shelf life is short, but ... has the best taste fresh.’

CHAPTER III

German

Guck mal. Ich habe ... heute frisch von der Kuh gemolken. Die Haltbarkeit ist kurz, aber so hat ... den besten Geschmack.

‘Look. I milked ... fresh from the cow today. The shelf life is short, but ... has the best taste fresh.’

For every test item, both a subject and an object pronoun was elicited. The sentence containing the antecedent, or the phrase pointing out the referent, was followed by a sentence in which a subject pronoun was missing and a sentence in which an object pronoun was missing. The order of these sentences varied systematically so that for each semantic category both the order subject-object and object-subject occurred. This was done in order to control for a potential difference between subject and object pronouns in their propensity towards semantic agreement. Whether or not there is a difference between subject and object pronouns was not a research question in this experiment.³

2.2. Test items

The tests contained referents from different semantic categories in terms of their degree of individuation: animals, objects, bounded abstracts, unbounded abstracts

³ The literature is inconclusive on the question whether subject and object pronouns have different agreement preferences. Audring (2009: 163) found a higher frequency of semantic agreement with subject personal pronouns than with object personal pronouns in her corpus study of spoken Northern Dutch. However, De Vos & De Vogelaer (2011: 253) did not find a difference between subject and object personal pronouns in their questionnaire study of Flemish. Both subject and object pronouns were included in the present study to control for a potential effect. The test was not designed to answer the question whether or not there is a difference between subject and object pronouns. The test has the subject and object pronoun occur sequentially with the same antecedent, which is not a circumstance in which a difference is most likely to surface. The results indeed show no significant difference between subject and object pronouns for Dutch ($\chi^2(1) = 0.619, p = 0.431$), but a significant difference was found for German, with subject pronouns showing slightly more semantic agreement than object pronouns ($\chi^2(1) = 4.649, p = 0.031$).

and (unspecific) masses.⁴ The deictic reference test did not contain abstract referents, only animals, objects and masses, since abstract referents cannot be clearly represented visually. The test items that were used in the deictic test were pictures of referents for which no more than one plausible basic-level term exists.

The test items are nouns that have a gender that conflicts with the degree of individuation of the referent. Neuter nouns were therefore used for animals, objects and bounded abstracts (referents with a high degree of individuation). For unbounded abstracts and masses (referents with a low degree of individuation), common gender nouns were used in the Dutch test and masculine nouns in the German test. As there were no specific expectations for feminine gender with inanimate referents, feminine nouns were tested separately for all semantic categories in the German test. This means that the German test was longer than the Dutch test.

Tables 1 and 2 show the test items that were used in the Dutch test. The anaphoric reference test consisted of ten test items, two items per semantic category. The deictic reference test contained eleven test items, three to four test items per semantic category. Originally, the test contained twelve test items, but one item had to be deleted, because more than one basic-level term exists for it.⁵

⁴ The specificity of the masses is not identical in the anaphoric and deictic test. The mass nouns used in the anaphoric test are unspecific masses, as they all occur without a determiner. The specificity of the masses displayed in the deictic reference test is more subject to interpretation of the viewer. However, it could be said that their display alone makes them specific instantiations of masses.

⁵ The deleted item was a picture of a bathtub, which may be referred to either by the neuter noun *bad* 'bath' or the common noun *badkuip* 'bath tub'.

CHAPTER III

Table 1. Test items Dutch anaphoric reference test

semantic category	gender noun	items
animal	neuter	<i>varken</i> ‘pig’ <i>paard</i> ‘horse’
object	neuter	<i>aquarium</i> ‘aquarium’ <i>bed</i> ‘bed’
bounded abstract	neuter	<i>antwoord</i> ‘answer’ <i>probleem</i> ‘problem’
unbounded abstract	common	<i>liefde</i> ‘love’ <i>jaloerie</i> ‘jealousy’
mass	common	<i>sneeuw</i> ‘snow’ <i>regen</i> ‘rain’

Table 2. Test items Dutch deictic reference test

semantic category	gender noun	items (implicit nouns)
animal	neuter	<i>nijlpaard</i> ‘hippopotamus’ <i>schaap</i> ‘sheep’ <i>zeepaardje</i> ‘sea horse’ <i>lieveheersbeestje</i> ‘ladybird’
object	neuter	<i>boek</i> ‘book’ <i>ei</i> ‘egg’ <i>kussen</i> ‘cushion’
mass	common	<i>honing</i> ‘honey’ <i>soep</i> ‘soup’ <i>thee</i> ‘tea’ <i>melk</i> ‘milk’

Tables 3 and 4 show the test items that were used in the German test. The anaphoric reference test contained twenty test items, four items per semantic category. The deictic test contained twenty-one test items, six to eight items per semantic category. The deictic test originally contained twenty-four test items. Three items were deleted, because more than one basic-level term exists for them.⁶

Table 3. Test items German anaphoric reference test

semantic category	gender noun	items
animal	neuter	<i>Schwein</i> 'pig' <i>Pferd</i> 'horse'
	feminine	<i>Maus</i> 'mouse' <i>Grille</i> 'cricket'
object	neuter	<i>Klavier</i> 'piano' <i>Bett</i> 'bed'
	feminine	<i>Kerze</i> 'candle' <i>Lampe</i> 'lamp'
bounded abstract	neuter	<i>Wahlergebnis</i> 'election results' <i>Problem</i> 'problem'
	feminine	<i>Antwort</i> 'answer' <i>Frage</i> 'question'
unbounded abstract	masculine	<i>Stolz</i> 'pride' <i>Neid</i> 'envy'
	feminine	<i>Liebe</i> 'love' <i>Furcht</i> 'fear'
mass	masculine	<i>Schnee</i> 'snow' <i>Regen</i> 'rain'
	feminine	<i>Erde</i> 'soil' <i>Tinte</i> 'ink'

⁶ The deleted items were a picture of a crocodile, which may be referred to either by the noun *Krokodil* [N] or *Alligator* [M], a picture of a bathtub, which can be referred to by *Bad* [N] or *Badewanne* [F], and a picture of a long sock, which can be referred to by *Socke* [N] or *Strumpf* [M].

Table 4. Test items German deictic reference test

semantic category	gender noun	items (implicit noun)
animal	neuter	<i>Kamel</i> 'camel' <i>Schaf</i> 'sheep' <i>Chamäleon</i> 'chameleon'
	feminine	<i>Gans</i> 'goose' <i>Ameise</i> 'ant' <i>Fliege</i> 'fly' <i>Spinne</i> 'spider'
object	neuter	<i>Buch</i> 'book' <i>Ei</i> 'egg' <i>Kissen</i> 'cushion'
	feminine	<i>Gitarre</i> 'guitar' <i>Trompete</i> 'Trumpet' <i>Gabel</i> 'fork'
mass	masculine	<i>Honig</i> 'honey' <i>Tee</i> 'tea' <i>Teig</i> 'dough' <i>Reis</i> 'rice'
	feminine	<i>Wolle</i> 'wool' <i>Suppe</i> 'soup' <i>Farbe</i> 'paint' <i>Milch</i> 'milk'

2.2. Participants

Twenty native speakers of Dutch and twenty native speakers of German were tested. The Dutch test participants were native speakers of Dutch living in the Randstad area. They were all students in higher education, mostly at the University of Amsterdam. Students of Dutch linguistics were not included. Their ages ranged between 21 and 27, with an average age of 23. The German test participants were students in higher education as well, mostly at the Radboud University Nijmegen. Their ages ranged between 19 and 27, with an average age of 22. They were all native speakers of German from the area North Rhine-Westphalia.

3. Results

3.1. The results of the Dutch test

The results of the anaphoric reference test for Dutch are presented in Table 5 below. The table shows the proportion of masculine, feminine and neuter pronouns used with each semantic category. The table does not distinguish the types of pronouns that were used. The large majority of the pronouns used are personal pronouns (93%, 371/400), but some demonstratives were used as well (7.3%, 29/400). These are all neuter demonstrative pronouns, used by several participants and with various test items.

Table 5. Results anaphoric reference test Dutch. Gender of pronouns used per semantic category.

semantic category	noun gender	pronoun gender		
		<i>masculine</i>	<i>feminine</i>	<i>neuter</i>
animal	neuter	53/80 66%	1/80 1.3%	26/80 33%
object	neuter	10/80 13%	0/80 0%	70/80 88%
bounded abstract	neuter	1/80 1.3%	0/80 0%	79/80 99%
unbounded abstract	common	0/80 0%	1/80 1.3%	79/80 99%
mass	common	1/80 1.3%	0/80 0%	79/80 99%

Deviations from the gender of the antecedent are found with all semantic categories. With animals, pronouns often switch to masculine gender. Masculine pronouns are used with objects as well, but not as often as with animals. Examples of these switches to masculine gender are shown in (9) and (10) below.

CHAPTER III

- (9) *Dit **varken**[N] moet goed vetgemest zijn. Pas dan kan **hij**[M] naar de slacht gaan. Ik denk dat we **hem**[M] nog even een paar weken moeten houden.*
‘This pig has to be fattened up well. Only then can it go to the butcher. I think that we’ll have to keep it for a few more weeks.’
- (10) *Dit **aquarium**[N] heb ik onlangs aangeschaft. Eigenlijk is **hij**[M] te groot om in de woonkamer te staan. Ik heb **hem**[M] echter wel nodig voor mijn tropische vissen.*
‘I recently purchased this aquarium. It is actually too big to fit into the living room. However, I do need it for my tropical fishes.’

With bounded abstracts, pronouns mostly agree with the lexical gender of the noun, with only one switch to masculine gender. The results for unbounded abstracts and masses are particularly remarkable. Pronouns switch to neuter gender in almost all of the cases with these referents. Examples of such switches to neuter are shown in (11) and (12) below.

- (11) *Aan **liefde**[C] worden verschillende definities gegeven. Volgens de neurologie ontstaat **het**[N] door een chemische reactie in de hersenen. We kunnen **het**[N] echter ook zien als een maatschappelijk en cultureel fenomeen.*
‘Love is given different definitions. According to neurology, it arises from a chemical reaction in the brain. But we can consider it a societal and cultural phenomenon as well.’
- (12) *Er valt hier veel **regen**[C]. Om kosten te besparen vangen we **het**[N] hierin op. Op die manier kan **het**[N] later in plaats van leidingwater gebruikt worden.*
‘There is a lot of rain here. To save costs, we catch it in this. That way it can be used later instead of tap water.’

Figure 1 displays the results as proportions of lexical gender agreement versus non-lexical, or semantic, gender agreement, with either masculine, feminine or neuter pronouns. The use of masculine or feminine pronouns with common nouns and the use of neuter pronouns with neuter nouns are counted as lexical agreement.⁷

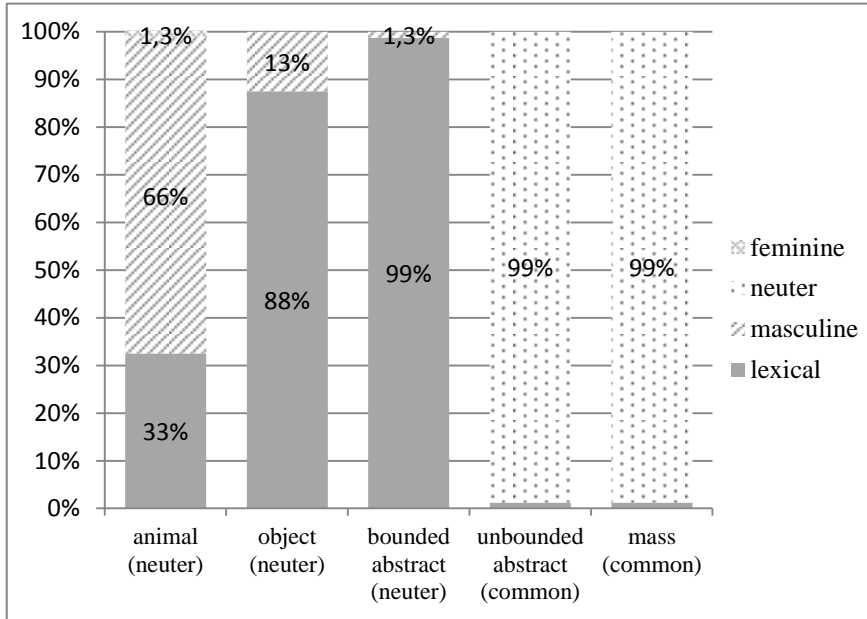


Figure 1. Results anaphoric reference test Dutch. Percentage of lexical gender agreement and semantic gender agreement with masculine, feminine, or neuter pronouns per semantic category.

The total proportion of semantic agreement with anaphoric reference is 56% (223/400). The proportion of semantic agreement differs per semantic category. A significant association exists between the semantic category and the type of agreement, lexical or semantic ($\chi^2(4) = 281.38, p < 0.001$).

⁷ While the label lexical gender agreement indicates that there is agreement with the lexical gender of the noun, it is not excluded that the agreement is semantically motivated at the same time. The other way around, deviations from lexical gender are not necessarily all semantically motivated. Some may be slips-of-the-tongue. It is the robustness of the pattern of deviations that decides whether they are likely to be semantically motivated.

CHAPTER III

Table 6 below shows the results of the deictic reference test for Dutch. As in the anaphoric reference test, mostly personal pronouns were used (91%, 399/439), but some demonstrative pronouns were used as well (9.1%, 40/439), by several participants and with various test items. These include common and neuter demonstratives, which is why the table includes an extra column for common gender pronouns.

Table 6. Results deictic reference test Dutch. Gender of pronouns used per semantic category. Missing/irrelevant responses have been left out.

semantic category	noun gender	pronoun gender			
		<i>masculine</i>	<i>feminine</i>	<i>common</i>	<i>neuter</i>
animal	neuter	110/159 69%	10/159 6.3%	5/159 3.1%	34/159 21%
object	neuter	19/120 16%	0/120 0%	4/120 3.3%	97/120 81%
mass	common	9/160 5.6%	0/160 0%	0/160 0%	151/160 94%

The agreement pattern is similar to the pattern found in the anaphoric reference test. With animals, there is semantic agreement with masculine pronouns and sometimes with feminine pronouns. With objects, switches to masculine gender occur as well, but less often. Masses receive the most semantic agreement: they receive neuter pronouns in the large majority of cases.

Figure 2 shows the proportions of lexical gender agreement versus semantic gender agreement for each semantic category.

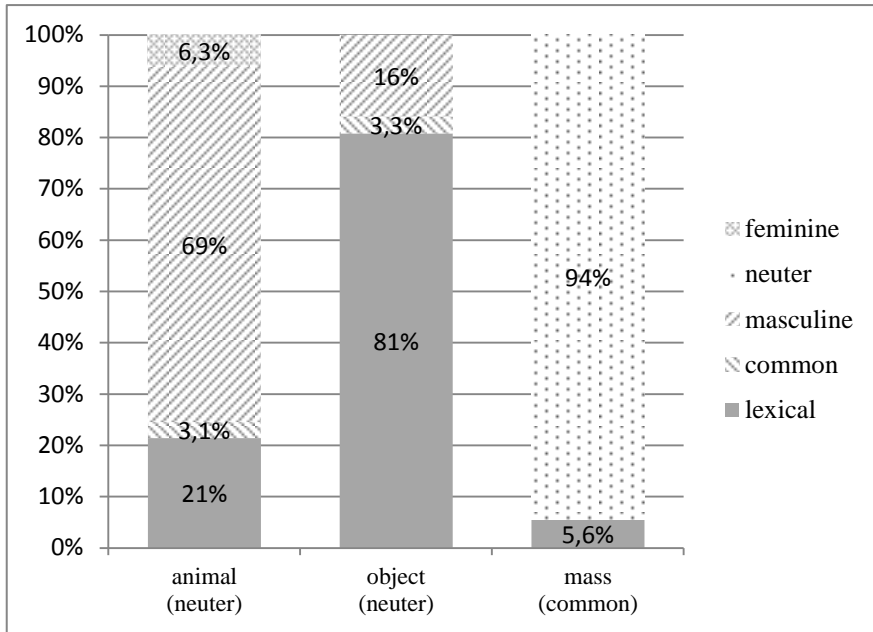


Figure 2. Results deictic reference test Dutch. Percentage of lexical gender agreement and semantic gender agreement with either masculine, feminine, common, or neuter pronouns per semantic category.

As in the anaphoric reference test, the proportion of semantic agreement differs significantly between the semantic categories ($\chi^2 (2) = 191.24, p < 0.001$).

The total proportion of semantic agreement with deictic reference is 68% (299/439). This is slightly higher than the ratio found with anaphoric reference. With anaphoric reference, semantic agreement with animals, objects and masses – excluding the categories of abstracts for fair comparison –, is 60% (143/240). The difference between anaphoric and deictic reference is statistically significant ($\chi^2 (1) = 4.96, p = 0.026$).

CHAPTER III

3.2. The results of the German test

The results of the anaphoric reference test for German are shown in Table 7 below. The table shows the proportion of masculine, feminine and neuter pronouns used with each semantic category. As in the Dutch tests, mostly personal pronouns were used (98%, 780/797), but some demonstratives were used as well (2.1%, 17/797). These include feminine and neuter demonstrative pronouns, used by several participants and with various test items.

Table 7. Results anaphoric reference test German. Gender of pronouns used with each semantic category. Missing/irrelevant responses have been left out.

semantic category	noun gender	pronoun gender		
		<i>masculine</i>	<i>feminine</i>	<i>neuter</i>
animal	neuter	2/80 2.5%	0/80 0%	78/80 97.5%
	feminine	1/78 1.3%	76/78 97.44%	1/78 1.3%
object	neuter	0/80 0%	0/80 0%	80/80 100%
	feminine	0/80 0%	80/80 100%	0/80 0%
bounded abstract	neuter	0/80 0%	12/80 15%	68/80 85%
	feminine	1/79 1.3%	67/79 84%	11/79 14%
unbounded abstract	masculine	44/80 55%	10/80 13%	26/80 33%
	feminine	0/80 0%	78/80 98%	2/80 2.5%
mass	masculine	74/80 93%	3/80 3.8%	3/80 3.8%
	feminine	0/80 0%	64/80 80%	16/80 20%

The results of the German test show that there are less deviations from lexical gender than in Dutch, but gender switches occur in German as well. With animals, three switches to masculine gender occur, and one switch to neuter. There are no switches with objects. An example of a switch to masculine gender with an animal is shown in (13) below.

- (13) *Dieses **Pferd**[N] ist genau gut für mich. Ich denke, dass ich **ihn**[M] wohl in meinem Anhänger mitnehmen kann. Wie viel soll **er**[M] ungefähr kosten?*
 ‘This horse is just right for me. I think I can take it (lit. him) with me in my trailer. About how much does it cost?’

As in Dutch, switches are mainly found with abstracts and masses. Most of these switches are to neuter gender. Switches to neuter are also found with bounded abstracts, contrary to expectation. Examples of the switches to neuter are shown (14), (15) and (16) below, with a bounded abstract, an unbounded abstract and a mass referent respectively.

- (14) *Ihre **Antwort**[F] konnte nicht von jedermann verstanden werden. Vielleicht kann **es**[N] noch einmal wiederholt werden. Könnte der Sprecher **es**[N] bitte lauter und langsamer aussprechen?*
 ‘Your answer could not be heard by everyone. Perhaps it can be repeated once more. Could the speaker please articulate it louder and more slowly?’
- (15) ***Stolz**[M] ist sehr interessant. Man kann sagen, dass **es**[N] der Gewissheit entspringt, etwas Besonderes geleistet zu haben. Man trifft **es**[N] in allen menschlichen Kulturen an.*
 ‘Pride is very interesting. One can say that it arises from knowing to have achieved something special. One encounters it in all human cultures.’

CHAPTER III

- (16) *Wir müssen zuerst **Erde**[F] entsorgen. Ich hoffe, dass **es**[N] mit einem mal transportiert werden kann. Werden wir **es**[N] ins Auto einladen oder einen Container bestellen?*

‘We have to dispose of soil first. I hope that it can be transported in one go. Shall we load it into the car or order a container?’

Besides switches to neuter gender, switches to feminine gender occur, mainly with bounded and unbounded abstracts. Examples of these switches to feminine are shown in (17) and (18) below, with a bounded and unbounded abstract respectively.

- (17) *Das aktuelle **Wahlergebnis**[N] ist laut vieler Politiker sehr unglaubwürdig. Darum plädieren die Oppositionsparteien darauf, dass **sie**[F] aufgehoben werden soll. Sie können **sie**[F] keineswegs akzeptieren.*

‘The current election result is very unreliable according to many politicians. Therefore, the opposition parties argue that it (lit. she) is annulled. They cannot accept it (lit. her) by any means.’

- (18) ***Stolz**[M] ist sehr interessant. Man kann sagen, dass **sie**[F] der Gewissheit entspringt, etwas Besonderes geleistet zu haben. Man trifft **sie**[F] in allen menschlichen Kulturen an.*

‘Pride is very interesting. One can say that it (lit. she) arises from knowing to have achieved something special. One encounters it (lit. her) in all human cultures.’

The agreement behaviour with masculine and neuter nouns on the one hand and feminine nouns on the other hand is similar for animals and objects, but some noteworthy differences are found with abstracts and masses. With abstracts, these differences appear to follow from the observed agreement pattern with these referents. The data show a tendency towards both neuter and feminine agreement with abstract referents. With bounded abstracts, neuter nouns receive switches to feminine gender, and feminine nouns receive switches to neuter gender. In line with this, masculine nouns receive switches to both neuter and feminine gender with unbounded abstracts, and feminine nouns receive very few switches. With masses,

the different results for masculine and feminine nouns are more elusive. There are switches to neuter with both genders, but these occur more often with feminine nouns than with masculine nouns.

Figure 3 displays the results as percentages of lexical gender agreement versus semantic gender agreement per semantic category.

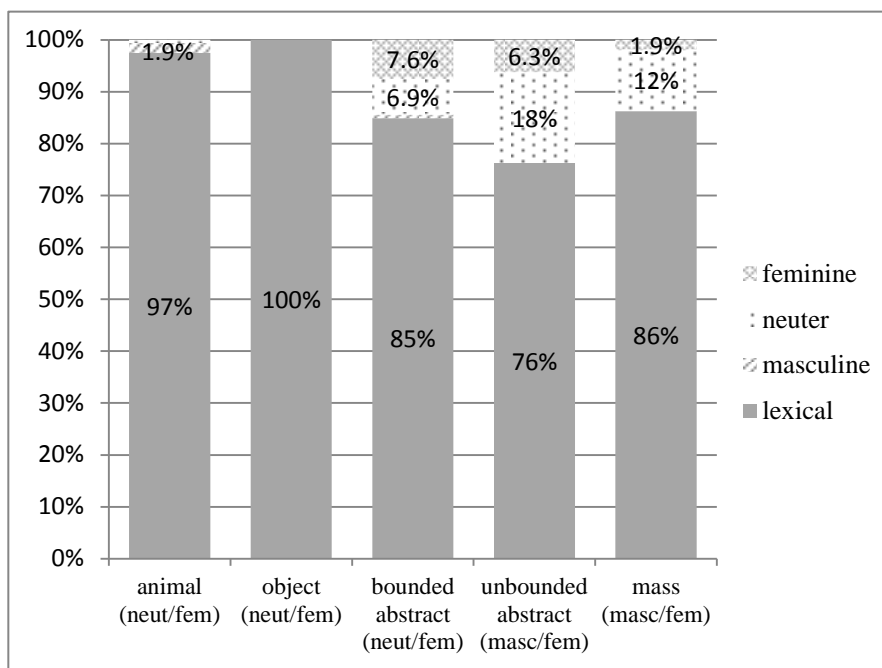


Figure 3. Results anaphoric reference test German. Percentage of lexical gender agreement and semantic gender agreement with masculine, feminine, or neuter pronouns per semantic category.

The total proportion of semantic agreement with anaphoric reference is 11% (88/797). The proportion of semantic agreement differs significantly between the semantic categories ($\chi^2(4) = 61.67, p < 0.001$).

CHAPTER III

Table 8 shows the results of the deictic reference test for German. The large majority of the pronouns used are personal pronouns (99%, 829/840), but some demonstratives were used as well (1.3%, 11/840). These include demonstrative pronouns of all three genders, used by several participants and with various test items.

Table 8. Results deictic reference test German. Gender of pronouns used with each semantic category.

semantic category	noun gender	pronoun gender		
		<i>masculine</i>	<i>feminine</i>	<i>neuter</i>
animal	neuter	24/120 20%	1/120 0.83%	95/120 79%
	feminine	2/160 1.3%	148/160 93%	10/160 6.3%
object	neuter	0/120 0%	0/120 0%	120/120 100%
	feminine	0/120 0%	108/120 90%	12/120 10%
mass	masculine	129/160 81%	0/160 0%	31/160 19%
	feminine	0/160 0%	131/160 82%	29/160 18 %

In the deictic test, semantic agreement is more pronounced than in the anaphoric test. Particularly with animals, a considerable number of switches to masculine gender now occur with neuter nouns. There are fewer switches with feminine nouns with animals. With masses, switches to neuter occur with both masculine and feminine nouns. Some unexpected switches to neuter occur with feminine nouns with animals and objects.

Figure 4 displays the results of the deictic test as percentages of lexical gender agreement versus semantic gender agreement with either masculine, feminine or neuter pronouns.

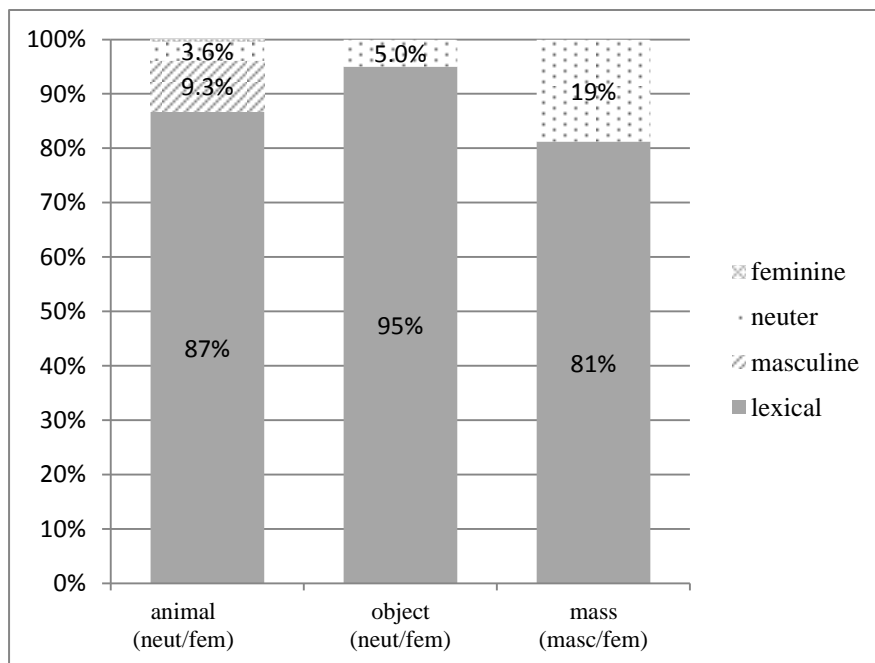


Figure 4. Results deictic reference test German. Percentage of lexical gender agreement and semantic gender agreement with masculine, feminine, or neuter pronouns per semantic category.

The proportion of semantic agreement differs significantly between the semantic categories ($\chi^2(2) = 22.98, p < 0.001$).

The total proportion of semantic agreement with deictic reference is 13% (109/840). With anaphoric reference, the proportion of semantic agreement with animals, objects and masses – excluding the categories of abstracts – is lower, 5.4% (26/478). This difference between deictic and anaphoric reference is statistically significant ($\chi^2(1) = 18.82, p < 0.001$).

Semantic agreement is overall much more frequent in Dutch than in German. In the anaphoric and deictic reference test together, a total of 62% (522/839) switches were found for Dutch and 12% (197/1637) for German. This difference is statistically significant ($\chi^2(1) = 677.91, p < 0.001$).

4. Discussion

The research question for this study was if, and to what extent, semantic gender agreement based on individuation exists in German as well as in Dutch. It was expected that the same kind of semantic agreement can be found in both languages, with masculine pronouns being used for referents with a high degree of individuation and neuter pronouns being used for referents with a low degree of individuation. Semantic agreement was expected to be more frequent in Dutch than in German, and more frequent in deictic reference than in anaphoric reference in both languages.

Semantic agreement based on individuation was found in both Dutch and German, but the frequency with which it occurs is much lower in German than in Dutch. In both languages, there is a tendency to use masculine pronouns with animals, referents that have a high degree of individuation, and neuter pronouns with unbounded abstracts and masses, referents that have a low degree of individuation. A tendency to switch to masculine gender with objects was only found in Dutch. A tendency to switch to feminine gender with abstract referents was only found in German.

The results for Dutch are in line with the previous findings by Audring (2009), discussed in Section 2. As in Audring's corpus data, the total proportion of semantic agreement is substantial and it varies for the different semantic categories on the Individuation Hierarchy, with most semantic agreement occurring with referents at the ends of the hierarchy, animals on the left and unbounded abstracts/masses on the right.

The almost exclusive semantic neuter agreement in Dutch with unbounded abstracts and masses is particularly remarkable. This type of semantic agreement occurs most frequently in German as well. The result shows that semantic agreement is clearly preferred over lexical agreement with these referents in Dutch, if not the norm. The proportion of semantic agreement found in this experiment, 99% in anaphoric reference, is even higher than the one found in the spoken language corpus by Audring (2009), who found a proportion of 88% semantic agreement with unbounded abstracts/masses. A variety of factors could be responsible for this. One of them concerns the items included in this category in the two studies. The corpus contains a large variety of mass referents, including less prototypical ones such as

apparatuur ‘equipment’, whereas only very prototypical members of the category ‘mass’, viz. substances and liquids, were used in this experiment. It is possible that there is a higher propensity for semantic agreement with masses of this kind than with less prototypical ones.

Semantic masculine agreement with objects is less frequent in Dutch (13% in anaphoric reference and 19% in deictic reference), and this type of agreement does not occur at all in German. Semantic agreement based on a high degree of individuation occurs only with animals in German. Even with animals, it is rarely seen in the anaphoric reference test, but it occurs more frequently in deictic reference (20% masculine agreement with neuter nouns). German behaves the same as Flemish in this respect. In a questionnaire study on pronominal agreement in Flemish, De Vos (2009) did not find semantic masculine agreement with objects either, while she did find semantic masculine agreement with animals and semantic neuter agreement with abstracts and masses.

Bounded abstracts receive next to no semantic agreement in the Dutch test. In Audring’s (2009) corpus study, bounded abstracts were not analysed separately from objects. The two categories were grouped together in her study, because it was often impossible to distinguish between a concrete and an abstract interpretation of bounded referents in the corpus. Therefore it could not be determined whether objects and bounded abstracts are treated differently in pronominalization. In this experiment, the test items (*antwoord* ‘answer’ and *probleem* ‘problem’) were unambiguously abstract in the given context. The results of this study suggests that bounded abstracts and objects are in fact not treated alike. While gender switches to masculine occur with objects, these switches hardly ever occur with bounded abstracts.

The low number of switches with bounded abstracts can be explained in two different ways. In the first place, bounded abstracts form a true middle category in terms of individuation. Their countability makes them individuated, like objects, but their abstractness gives them a low degree of individuation, and makes them more like other, unbounded, abstracts. Because of this ambivalent nature of bounded abstracts, the lexical gender of the noun, common or neuter, may never be strongly conflicting with them. Another possible explanation for the low number of switches is that bounded abstracts are in fact conceived of more as referents with a low degree

CHAPTER III

of individuation than as referents with a high degree of individuation. If that is the case, the neuter gender of the test items is perfectly compatible with bounded abstracts and there is no reason to switch gender. The results of a follow-up pilot study based on the present findings (Oomen 2015) point towards this second explanation. As in the present study, switches to masculine gender hardly ever occur with neuter nouns referring to bounded abstracts, but switches to neuter gender with common nouns occur frequently. This outcome is in line with the results for bounded abstracts in the German test. No switches to masculine gender were found with bounded abstracts in German either, but switches to neuter did occur (14% switches to neuter with the feminine test items). This suggests that bounded abstracts pattern with lowly individuated referents rather than with referents of high individuation in both German and Dutch.

Abstracts in German do not only receive semantic agreement with neuter pronouns, but also with feminine pronouns. This pattern is not found for Dutch, where a feminine pronoun was used with an unbounded abstract only once. It is interesting to find an association between feminine gender and abstract referents, since feminine gender and the meaning abstract are historically connected. Although the exact development of the third, feminine, gender in Proto-Indo-European is debated, it is widely accepted that there is a connection between feminine gender and the notion abstract (see, for instance, Luraghi 2009).⁸ This association between feminine gender and the meaning abstract still exists in the German lexicon today, as the suffixes that derive abstract nouns, *-ung*, *-heit*, *-keit*, *-(at)ion*), are all still feminine in German (Vogel 2000: 466). Perhaps the existence of many feminine abstract nouns supports the connection between feminine gender and the meaning abstract in German. In that case, the absence of semantic feminine agreement with abstracts in Dutch may be explained by the fact that Dutch no longer has feminine nominal gender.

Although semantic feminine agreement with abstract referents was not found for Dutch, it is interesting to note that semantic feminine agreement is known to exist with collective referents in Dutch, particularly in the possessive pronoun. Haeseryn et al. (2007: §5.5.4) observe that the feminine possessive pronoun *haar*

⁸ There is great body of research on how feminine gender developed in Proto-Indo-European. For an overview, see, for instance, Ledo-Lemos 2003.

'her' is used with collective nouns, such as *regering* 'government' or *unie* 'union', mainly in written and/or formal language. Importantly, this occurs not only with common gender nouns – in which case it could be agreement with the historical feminine gender of the noun – but with neuter nouns as well, such as *kabinet* 'cabinet' or *volk* 'people'. As collective referents have a higher degree of abstractness than individuals, one may consider this semantic agreement to be the same type of agreement as the semantic feminine agreement with abstract referents found for German. However, Flemish data suggest that this is not the case. De Vos (2009) tested pronominal agreement with both abstract and collective referents in Flemish, and while she found semantic feminine agreement with collective referents, she did not find semantic feminine agreement with abstract referents. This suggests that the two types of feminine agreement are not the same. This is in line with the analysis of semantic feminine agreement in Dutch by Van der Sijs (2003). She relates this agreement to the historical semantic ambiguity of the pronoun *haar*, which used to function both as the third person singular feminine possessive ('her') and the third person plural possessive for all genders ('their'). Van der Sijs argues that the use of the pronoun *haar* with collective nouns is semantic plural agreement. If this is the case, semantic feminine agreement with collective nouns in Dutch is – at least originally – based on the conceptual plurality of the collective referent, not its abstractness.

Some switches in the German test were unexpected. A small number of switches to neuter were found with animals and objects. This could suggest that there is a tendency to switch to neuter with all semantic categories in German. However, there may be a different explanation for these switches. It should be noted that the unexpected switches to neuter were found almost exclusively in the deictic reference test – it occurs only once in the anaphoric test. With the deictic test, it cannot be excluded that some participants had a different implicit antecedent in mind than the one intended. Considering the test items involved, this is not entirely unlikely. With the pictures of objects, the switches to neuter gender occur with the items *Gitarre* 'guitar' and *Trompete* 'trumpet'. It is possible that the neuter noun *Instrument* 'instrument' has played a role with these test items. With the pictures of animals, the items *Gans* 'goose', *Ameise* 'ant' and *Fliege* 'fly' received switches to neuter. With these items, the neuter noun *Tier* 'animal' may have played a role, or in

CHAPTER III

the case of *Ameise* ‘ant’ and *Fliege* ‘fly’, the neuter noun *Insekt* ‘insect’. It is also noteworthy that only one participant is responsible for most of these neuter agreements with animals. Only the item *Ameise* ‘ant’, which may be the least recognizable species, received a neuter pronoun from three different participants.

The inclusion of feminine test items for all semantic categories in the German test reveal some differences in the switch ratio with feminine nouns on the one hand and masculine and neuter nouns on the other hand. With animals, there are fewer switches with feminine nouns than with neuter nouns. With feminine nouns, there are hardly any switches (and most of them are unexpected switches to neuter, as discussed above). This suggests that feminine gender is not perceived as conflicting with animals, at least not to the same extent that neuter gender is. With unbounded abstracts, there are also hardly any switches with feminine nouns, while there are many switches with masculine nouns. Considering that switches *towards* feminine gender are also found with these referents (as discussed above), this difference can be explained by semantic compatibility of feminine gender with abstracts. With masses, the opposite pattern is observed: there are more switches with feminine nouns than with masculine nouns. This difference is less readily explained. It is only observed in the anaphoric reference test. In the deictic test, masculine and feminine nouns receive a similar switch ratio with masses. Possibly, the difference in the anaphoric is caused by differences between individual test items/sentences.

For future study, it would be worthwhile to replicate this experiment with more test items, and to test agreement with nouns of each gender for all semantic categories. The present experiment was not set up in this way, because this would make the test too long. However, it would be worthwhile to replicate the experiment with additional test items for certain semantic categories in particular. For Dutch, testing agreement with both neuter and common gender nouns would be relevant for bounded abstracts in particular, in order to confirm the idea that bounded abstracts pattern with referents of low individuation and are more likely to receive switches to neuter gender than to masculine gender. For German, testing agreement not only with neuter and feminine nouns but also with masculine nouns would be relevant for animals and objects, to investigate the possibility that there is a tendency to switch to neuter gender with these referents, besides the observed tendency to use masculine gender.

While German and Dutch show partially similar semantic agreement patterns, semantic agreement is overall significantly more frequent in Dutch. This difference could be related to the differences between the nominal gender systems of German and Dutch in two ways. First, the conflation of masculine and feminine nominal gender could play a role, as suggested by Audring (2006, 2009), De Vos (2009), De Vos & De Vogelaer (2011) and De Vogelaer & De Sutter (2011). Uncertainty about agreement with common gender nouns, whether they should be pronominalized by a masculine or a feminine pronoun, may cause speakers to rely on semantic rather than lexical agreement in Dutch. However, this explanation only applies to agreement with common gender nouns. It does not immediately explain semantic agreement with neuter nouns, for which no uncertainty exists. Nevertheless, it is conceivable that an increased tendency to agree semantically with common gender nouns causes an overall increase of semantic agreement, with neuter nouns as well.

Another factor that could explain the difference between German and Dutch is the general visibility of lexical gender in the two languages, as proposed in Kraaikamp 2012. This factor is related to the loss of the masculine-feminine distinction, but it is not the same. As Dutch lost the distinctive marking for masculine and feminine gender in adnominal elements, leading to the conflation of these two genders, it also lost gender marking entirely in some adnominal elements. This general loss of gender marking in the noun phrase may play a role in the increased frequency of semantic agreement in Dutch as well. Unlike German, Dutch no longer shows gender agreement in the indefinite article and in almost all of the possessive determiners, with the exception of the first person plural (common *onze* versus neuter *ons* ‘our’). This has not led to a loss of knowledge about the lexical gender of nouns, as happened with masculine and feminine gender. After all, speakers of Dutch can still distinguish common and neuter nouns, reliably expressing these genders on the remaining adnominal agreement targets. However, the loss of adnominal gender markers has left Dutch with a lower visibility of lexical gender in general. The adnominal elements that no longer mark gender in Dutch all still mark gender in German. There could be a relation between the frequency of lexical gender marking in the noun phrase and the likelihood of semantic instead of lexical gender agreement in the pronoun. The higher proportion of semantic

CHAPTER III

agreement in Dutch may be explained by the lower salience of lexical gender in the Dutch noun phrase compared to German.

With respect to anaphoric and deictic reference, it was found that semantic agreement occurs more often in deictic reference, as was expected. The absence of an explicit linguistic antecedent, with a competing lexical gender, in deictic reference can explain this difference. This relates to the factor of the general visibility of lexical gender discussed above. The finding that semantic agreement is more frequent in deictic reference lends support to the idea that the frequency of semantic agreement is connected with the salience of lexical gender, with semantic agreement surfacing more easily when lexical gender is less visible.

5. Conclusion

The findings presented in this chapter confirm that pronouns in Dutch can agree semantically based on the degree of individuation of the referent, and they show that this type of agreement also exists in German. There is a tendency to use masculine pronouns with animals and neuter pronouns with unbounded abstracts and masses in both languages. This finding supports the idea that agreement based on individuation is a shared Germanic feature. As expected, the frequency of semantic agreement is higher in deictic reference than in anaphoric reference, which is explained by the fact that there is no explicit nominal antecedent in deictic reference. Differences between Dutch and German were found as well. Semantic agreement of masculine pronouns with objects was found only in Dutch and semantic agreement of feminine pronouns with abstract referents was found only in German. The most apparent difference between the two languages is that semantic agreement is significantly more frequent in Dutch than in German, which may be explained by the reduced visibility of lexical gender in Dutch compared to German.