

The placement of bare plural subjects in Dutch*

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1. Introduction

Although subjects in Dutch normally occur in preverbal position, it is not uncommon for bare plural subjects to occur in postverbal position. In this paper we will show that this variation results from two conflicting preferences. Firstly, we will briefly introduce why subjects are preferred in preverbal position and relate this preference to topic characteristics. Secondly, we will argue that for bare plural subjects this results in a conflict of preferences in word order. To test this explanation and to investigate whether the word order preferences are subject to changes in iconicity of topic-focus structure, we will present two production studies (Section 3 and 4). Finally, we will draw some conclusions (Section 5).

2. Bare plural subjects in Dutch

In the production of ordinary Dutch subject-predicate constructions, there is a general preference to place the subject sentence-initially, which is termed the *Subject First* preference (Bock et al 1985; Lamers 2007). Thus, in Dutch the unmarked position for a subject is the preverbal position, while a postverbal position is marked.¹ In addition, it is very common to start a sentence with the topic (De Swart & De Hoop 2000). Fortunately, subjects are good topics, as they often indicate what the sentence is about. Hence, in many cases topic and subject are both in preverbal position. For example, sentence (1) is about *Piet* 'Pete', which is also the subject.

- (1) Piet draagt een hoed.
Pete wears a hat
'Pete wears a hat.'

The constituent *een hoed* ‘a hat’, on the other hand, is in focus, providing new information. The general tendency that topics precede focussed constituents in sentences might be ascribed to iconicity: what is uttered first in the sentence is older information than what is uttered later (De Swart & De Hoop 2000).

Next to being a subject, being definite also qualifies for being a good topic, since topics usually have specific referents. On the other hand, indefinite plural NPs, or *bare plurals*, are bad topics, since they are unable to quantify over individuals (Carlson 1977; Dayal 2003). Therefore, they lack a specific interpretation. Consequently, a conflict arises in the placement of a bare plural subject, because as a subject it favours the sentence-initial position, but lacking prototypical topic characteristics (i.e. non-referentiality) it is a worse candidate for this position. Indeed, bare plural subjects in Dutch are commonly found in postverbal position as well. This is the standard focus position, i.e. the place where new information is usually expressed. An example of a bare plural subject in postverbal position is given in (2).

- (2) In mijn soep zwemmen vliegen.
 in my soup swim flies
 ‘Flies are swimming in my soup.’

The bare plural subject *vliegen* ‘flies’ is in focus, and can only be interpreted existentially here. That is, the flies were not introduced earlier in the discourse, nor is there reference to any particular flies. This is the unmarked interpretation for an indefinite (Van der Does & De Hoop 1998).

- (3) Kabouters wonen in paddenstoelen.
 gnomes live in mushrooms
 ‘Gnomes live in mushrooms.’

In (3), the subject *kabouters* ‘gnomes’ is clearly the topic of the sentence. Still, as a bare plural it cannot refer to any specific gnomes, hence the sentence is preferably read as a general statement about gnomes. Farkas & De Swart (2006) argue that in order to receive a generic interpretation, bare plurals need to be bound by an external generic operator that allows quantification over individuals. Compared to a non-quantificational existential interpretation, a quantificational, generic interpretation requires a more complex construction. Hence, a type shift to a generic interpretation can be considered a costly operation in terms of language processing (cf. Carlson 1977; Partee 1987). Based on these arguments, we argue that a sentence with a bare plural in the preverbal standard topic position is marked, making the postverbal position the preferred position.

Consequently, bare plural *subjects* in postverbal position have an unmarked interpretation, but a marked position. This is in contrast with the correspondence in

markedness of interpretation and position that is found for definite subjects, i.e. a preverbal position combined with a referential interpretation. The examples in (4), all with the same predicate but with a different word order, illustrate this. (4a) has the bare plural subject in standard subject position, which is not preferred for bare plurals, initiating a type shift to a marked meaning. In (4b), the bare plural subject is not in the unmarked subject position, but receives an interpretation that is unmarked for a bare plural. For definite subjects, the sentence in (4c) has both the unmarked word order and the unmarked meaning, with a definite subject in preverbal, standard topic position. Clearly, the sentence in (4d), with the subject in postverbal position, is less common, although it might be used in a contrastive context (cf. Choi 1996).

- (4) a. Kinderen spelen in de tuin.
 children play in the garden
 ‘Children play in the garden.’
 b. In de tuin spelen kinderen.
 in the garden play children
 ‘Children are playing in the garden.’
 c. De kinderen spelen in de tuin.
 the children play in the garden
 ‘The children are playing in the garden.’
 d. In de tuin spelen de kinderen.
 in the garden play the children
 ‘In the garden, the children are playing.’

Notoriously, if the subject is a bare plural, one preference is fulfilled, while the other remains unsatisfied. The preference for a less costly unmarked interpretation that results in sentences with the bare plural subject in postverbal position can explain the variation in word order for bare plural subjects. Since for definite subjects there is no such conflict between preferences, there is no a priori reason why they should be placed in postverbal position.

To test whether a difference in word order preferences between sentences with bare plural and definite subjects can be found in production, a drag-and-drop production study was carried out.² In a controlled set-up of this kind, it is possible to measure the amount of variation in the placement of bare plural subjects (i.e. either pre- or postverbally), and thus the strength of the conflicting preferences. For definite subjects no variation in placement is predicted.

In addition, we investigated whether word order preferences were influenced by context-affecting information structure, such as a focus question. If such a question addresses the subject of the sentence, the subject is *in focus*. Hence, an answer with the subject in postverbal focus position is expected. Such a word order, however, violates the Subject First preference. In contrast, in the answer to a

question addressing another constituent than the subject (e.g. a locative PP such as in (4)), the addressed constituent is *in focus*, forcing the subject into the preferred preverbal position. For bare plurals this results in a complex type shift.

However, it can also be argued that in natural language, a sufficient answer to the question would be one containing the new information only (see e.g. Merchant 2004). Although in our experiment participants had to answer in complete sentences, the tendency for short answers might affect the word order pattern (i.e. where-questions would be answered with the PP, and who-questions with the subject). A second drag-and-drop experiment was carried out to investigate the effect of information structure.

3. Two production studies

3.1 Experiment 1

Method (experiment 1)

Participants

Sixteen native speakers of Dutch (9 male; mean age 22.5 years) participated in the experiment. They had normal or corrected to normal vision, and no neurological disabilities. They had enough experience with computers to perform the drag-and-drop task without any problems.

Materials

In the drag-and-drop experiment, 28 sets of stimuli pairs were constructed. Each stimulus contained a plural intransitive verb, a locative PP, and a bare or a definite plural animate NP, forming the two conditions.³ To prevent an order effect, the NP and the PP were presented in two different orders on the computer screen: the PP above the NP, or vice versa, as is illustrated in Table 1.

Table 1. Overview of the two conditions (bare or definite) in two presentation orders of experiment 1 (BP = bare plural NP; DefP = definite plural NP).

Plural NPs	Order of Presentation	
	PP-NP	NP-PP
BP	in de tuin (in the garden)	kinderen (children)
	kinderen (children)	in de tuin (in the garden)
DefPspelen (play).....spelen (play).....
	in de tuin (in de garden)	de kinderen (the children)
	de kinderen (the children)	in de tuin (in the garden)
spelen (play).....spelen (play).....

Two lists were formed, with from each set an item with the bare NP and one with the definite NP. Care was taken that the order of the NP and the PP of these two items was different and that each order occurred equally often on a given list. Each list was divided into two blocks of 44 items, in such a way that items from the same set were kept as far apart from each other as possible. A total of 40 filler items unrelated to the experimental items were added to each list.

Procedure

The participants were tested individually in a room, where they were seated in front of a computer monitor. Participants were instructed to build a grammatically correct Dutch sentence by dragging one of the two phrases at the top of the screen to one of the slots on either side of the verb, using the mouse. Each block started with the text *Let op! Het gaat nu beginnen!* ('Attention! The test will start now!') appearing on the screen. Next, an asterisk (*) appeared for 800 ms in the middle of the screen. Then, at the same position a verb appeared with dotted lines on both sides to indicate the pre- and postverbal slots. After 1,500 ms, the NP and the PP appeared in the upper part of the screen, positioned right above each other.⁴ Participants could then drag one of the phrases to one of the slots. As soon as this was done, the other phrase automatically moved to the empty slot, forming a sentence. An asterisk appeared on the screen before the next item started. A participant had 6,000 ms to complete a sentence. The only way in which an item could be skipped was by exceeding the time limit. Once the participant had inserted a phrase into a slot, no further corrections were possible.

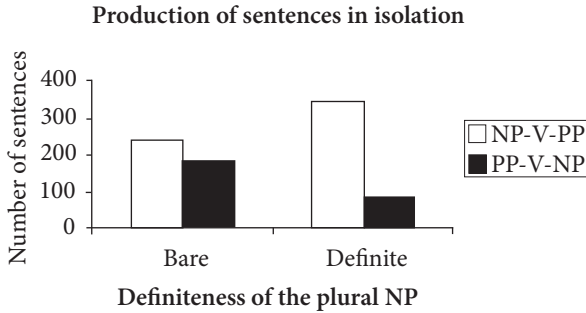
To check whether participants were performing the task attentively, some of the filler items were followed by a word in capitals immediately after a sentence was formed. Participants had to indicate whether the word had occurred in the sentence they just built by clicking on either the *ja* 'yes' or *nee* 'no' box on the screen. These items will be referred to as response items. The stimuli were presented in white on a black screen, using the software program *Presentation* (Neurobehavioral Systems). A single experiment consisted of 2 blocks, separated by a short pause.⁵ Each experiment was introduced with a practice block of 14 items that were similar to the items in the experimental blocks. It took approximately 15 minutes to complete the experiment.

Results (experiment 1)

The data of one participant were excluded from the analysis, due to an overall bias for placing the top constituent in the left slot, which was not present in the data of all other participants. 5 items were excluded since the participants in question exceeded the time limit. All but one of the response items were answered correctly, indicating that all participants paid attention to the task.

Table 2. Production of the two different word orders in experiment 1 for two types of NP (bare plural, definite plural) (N=15).

Condition	Produced word order		TOTAL
	NP-V-PP	PP-V-NP	
Bare plural	240	178	418
Definite plural	338	79	417
TOTAL	578	257	835

**Figure 1.** Total numbers of produced sentences in experiment 1 with the subject in preverbal or postverbal position per NP type (bare plural, definite plural).

As can be seen in Table 2 and Figure 1, participants produced more sentences with a subject in preverbal position (NP-first) than in postverbal position (PP-first) for both NP types, but with a smaller difference between the two word orders for bare plurals (DefP: 338 NP-first sentences vs. 79 PP-first sentences; BP: 240 NP-first sentences vs. 178 PP-first sentences). A repeated measurement ANOVA was performed on percentages of NP-first sentences with NP type (bare, definite) as the within subject factor and List as the between factor for the F1-analysis, and with NP type (bare, definite) as the within item factor and Item group as the between factor for the F2-analysis. NP type turned out to be significant ($F_1 = 9,374$; $p = ,011$; $F_2 = 60,042$; $p < ,001$). The results will be discussed in Section 4.

3.2 Experiment 2

Method (experiment 2)

Participants

Participants were the same as in experiment 1.

Materials

The set-up of experiment 2 was the same as that of experiment 1, with an added question that appeared on the screen before the stimulus appeared. This question was either a *who*-question or a *where*-question.⁶ This resulted in a 2 by 2 design with two types of questions and two types of subject NPs (bare and definite). There were 28 sets of four stimuli. As in experiment 1, the order in which the PP and the NP were presented differed, as is illustrated in Table 3. Two lists were formed, with from each set two items with the bare NP and two with the definite NP. In each of these item pairs, one item was preceded by a *where*-question and the other by a *who*-question. Care was taken that the order of the NP and the PP of the 4 items was different and that each order occurred equally often on a given list. Each list was divided into 4 blocks of 44 items, in such a way that items from the same set were kept as far apart from each other as possible. A total of 76 filler items unrelated to the experimental items were added to each list, including 12 response items.

Procedure

The procedure for experiment 2 was very similar to that of experiment 1. Here we will only report the differences. In experiment 2 each item was preceded by a question that appeared on the screen. Next, after 1,500 ms, the verb with the dotted lines and the two phrases appeared on the screen. The participant's task was to form a plausible answer to the question. It took participants approximately 25 minutes to complete the experiment, including a practice block of 14 items.

Table 3. Overview of the four conditions with two types of question (*where*, *who*) and two different NPs in two different orders of presentation in experiment 2 (BP = bare plural NP; DefP = definite plural NP).

Question Type	Plural NPs	Order of presentation	
Where/	BP/	PP	NP
Who	DefNP	NP	PP
		in de tuin (in the garden)	kinderen (children)
		kinderen (children)	in de tuin (in the garden)
Example		Wie spelen in de tuin? (Who are playing in the garden?)	Wie spelen in de tuin? (Who are playing in the garden?)
	spelen (play).....spelen (play).....

Results (experiment 2)

All 16 participants were included in the analysis of the data, with only one unscorable experimental item. All but one of the response items were answered correctly, indicating that all participants paid attention to the task.

As can be seen in Table 4 and Figure 2, a similar preference to put the NP in first position, irrespective of definiteness, is observed as in experiment 1. However, in contrast to the findings in experiment 1, no clear difference in the production of PP-first word orders between bare and definite NPs was visible. Yet, there seems to be a difference in the number of PP-first sentences depending on the type of question, with a higher proportion of PP-initial sentences following a where-question than a who-question (262 vs. 156, respectively, bare and definite combined). In contrast to our predictions, we found a lower number of NP-initial sentences following where-questions as compared to sentences following who-questions (634 vs. 739, respectively). Moreover, we found only 156 PP-initial sentences following a who-question, and 262 following a where-question (Table 4).

A repeated measurement ANOVA was carried out on percentages of NP-first sentences with NP type (bare, definite) and Question type (where, who) as the within subject factors and List as the between factor for the F1-analysis, and with NP type (bare, definite) and Question type (where, who) as the within factors and Item group as the between factor for the F2-analysis. No significant effects were found.

Table 4. Production of the two different word orders in experiment 2 for two types of NP and with two types of preceding questions (N = 16).

Question Type	Condition	Produced word order		TOTAL
		NP-V-PP	PP-V-NP	
Where	Bare plural	311	137	448
	Definite plural	323	125	448
Who	Bare plural	374	74	448
	Definite plural	365	82	447
	TOTAL	1373	418	1791

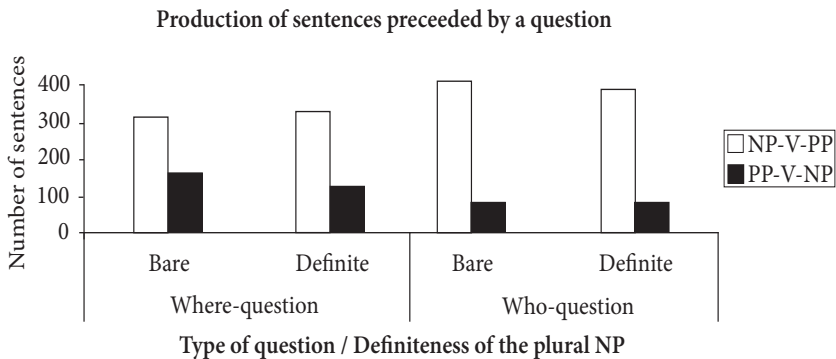


Figure 2. Total numbers of productions of the two different word orders in experiment 2 for the two types of NP (bare plural, definite plural) and with two types of preceding questions (where-question, who-question).

Because Figure 2 shows a clear difference in the proportions of NP-first and PP-first sentences between where- and who-questions, we took a closer look at the data of individual participants. The pattern of two participants deviated from the rest. In contrast to the general pattern of a higher proportion of PP-first sentences after where-questions, these showed a higher proportion of PP-first sentences after who-questions. A repeated measurement ANOVA on the data of the group of participants with the general pattern, as shown in Table 5 and Figure 3, showed a significant effect of Question type ($F_1 = 4,703$; $p = ,055$; $F_2 = 352,841$; $p < ,001$) but not of NP type. No interactions were found.

In sum, the results of the second experiment showed a strong preference for subject-initial sentences. Additionally, the effect of NP type found in experiment 1 disappeared. After more detailed inspection of the data, a general pattern was detected with significantly more PP-initial sentences produced after where-questions than after who-questions by most participants.

Table 5. Production of the two different word orders in experiment 2 for two types of NP and with two types of preceding questions, only considering participants who showed the general pattern ($N = 14$).

Question Type	Condition	Produced word order		
		NP-V-PP	PP-V-NP	TOTAL
Where	Bare plural	261	131	392
	Definite plural	270	122	392
Who	Bare plural	368	24	392
	Definite plural	368	23	391
	TOTAL	1267	300	1567

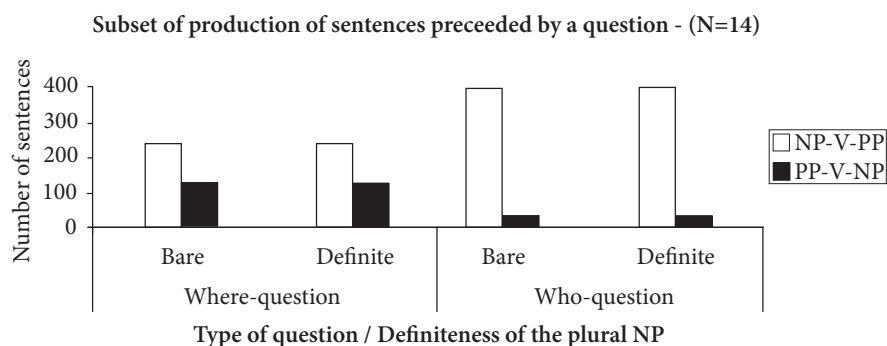


Figure 3. Total numbers of productions of the two different word orders in experiment 2 for the two types of NP (bare plural, definite plural) and with two types of preceding questions (where-question, who-question) from a subset of the data ($N=14$).

4. Discussion of the results of the drag-and-drop experiments

The two drag-and-drop studies showed a strong preference for subject-initial sentences in Dutch, for both definite and bare NPs. As expected, in isolation (experiment 1) this preference was stronger for definite NPs than for bare NPs, indicating a tendency to avoid bare plurals in topic position. It was argued that in postverbal position, bare plurals are normally assigned an unmarked (i.e. existential) interpretation, while in preverbal position a type shift to a more complex generic reading is required. Although this resulted in more sentences with the subject in postverbal position as compared to sentences with definite subjects, the Subject First preference remains.

In the second experiment we see the role of information structure, which was manipulated by the addition of a focus question. It was argued that by manipulating the influence of information structure, the pattern would be different from the first study, where no context was provided. More specifically, assuming that the iconicity of topic-focus structure holds, it was expected that in the answer to a focus question, new information would be placed in postverbal position.

Although we did indeed find a different pattern in the second experiment, participants did not follow the expected standard topic-focus construction. In contrast, the new information that was asked for in the question was preferably placed in sentence-initial position, as was predicted by our alternative explanation. As stated in Section 2, the word order in the answers might have been affected by the tendency to provide new information only and to leave out all redundant information. Finding a higher proportion of PP-initial sentences for the where-question than for the who-question corroborates this tendency. However, since NP-initial sentences were far more frequent in both conditions, the effect is not as strong as the Subject First preference, but strong enough to overcome the effect of subject definiteness and iconicity of topic-focus structure.

5. Conclusion

In this paper, we have argued that Dutch imposes conflicting requirements on bare plural subjects. On the one hand, there is a general Subject First preference. On the other hand, there is a preference for bare plural subjects to avoid the preverbal position, where a type shift to a marked generic reading is required. This was corroborated by the results of experiment 1, which showed significantly more postverbal occurrences of bare plural subjects than definite plural subjects, despite an overall Subject First preference. We take these findings as support for our explanation that the conflict in preferences may be held responsible for the variation

in word order that is observed in sentences with bare plural subjects. The results of experiment 2 show that the differences in the position of bare and definite plural subjects can be leveled out by manipulating topic-focus structure. Given that new information is generally placed in focus position, we predicted that the answer to a focus question will occur in postverbal position. However, in general, participants produced significantly more cases with the new information in preverbal position. This suggests that participants provided the new information in their answers as soon as possible, before the information that is redundant. As experiment 2 shows, this preference often overrides the iconicity of topic and focus.

In sum, although iconicity of information structure and the related avoidance of bare plurals in sentence-initial position may constitute genuine constraints on language production, this paper shows that these preferences are far from absolute, and that other preferences, such as Subject First and the tendency to answer focus questions with focussed information, can diminish their effects.

Notes

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1. Because Dutch is a V2-language, the finite verb is assumed to surface in C_0 position in main clauses, leaving the Spec-CP position as the only possible preverbal position for the subject. Since the Spec-CP position is the first position of a sentence, no other element can precede this position in Dutch main clauses.
2. A drag-and-drop task of the kind used here makes it possible to limit variation in the produced structures. The use of a time limit and the impossibility of correcting one's answers keeps participants from endless pondering. Note that we did not carry out a corpus study, since it would be impossible to control the context in which sentences with plural subjects occur.
3. Care was taken that stimuli did not include *kind-level predicates* (i.e. predicates that can only take kinds as their subjects (e.g. 'to be extinct')) to make sure that bare plurals were ambiguous between generic and existential readings (Carlson 1977; Dayal 2003; Farkas & De Swart 2006).
4. The filler items were presented in a similar way as the experimental items.
5. There was no fixed time for this pause. As soon as the participant indicated that he or she was ready to go on, the next block was started.
6. No inanimate NPs were included in the experimental material, because this would lead to the inclusion of what-questions. In Dutch, as in English, what-questions cannot refer to plural NPs (e.g. What are in the cupboard?); at best, they are considered to be awkward (Coppen, Haeseryn & De Vriend 2002).

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