Subjectivity in causal connectives: An empirical study of language in use*

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Abstract

The linguistic categories apparent in people's everyday language use provide us with interesting insights into the working of the mind. In this article we study the way in which Dutch speakers categorize causally related events by expressing them with the connectives dus *'so' or* daarom *'that's why'. These two connectives both express volitional and epistemic causal coherence relations. Their overlapping contexts of use raise the question of why two separate, highly grammaticalized linguistic items exist to express similar relationships. We propose an analysis of these connectives, clarifying their similarities and differences, in terms of subjectivity: the amount of speaker involvement. Empirical support for this analysis is presented from corpus studies and experiments in which language users were asked to state their preference for one of the connectives in contexts displaying different degrees of subjectivity.*

Keywords: *coherence; coherence relations; connectives; categorization; causality; subjectivity.*

1. On causal connectives and coherence

1.1. *Language in use at the discourse level*

Human beings categorize the world around them, and usually they do so unconsciously. The linguistic categories apparent in people's everyday language use provide us with many interesting insights into the working of the mind (see, for instance, Lakoff 1987, Lakoff and Johnson 1999). In this article we study one specific type of linguistic categorization: the way in which Dutch speakers categorize causally related events by expressing them with the connectives *dus* or *daarom*. These two Dutch causal connectives at first sight show much overlap in meaning and use, which

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raises the question why two separate, highly grammaticalized linguistic items exist to express similar causal relationships. We propose an analysis of these connectives, clarifying their similarities and differences. Since we feel that theoretical ideas on language in use should ideally be tested empirically, we present support for our proposal from corpus studies and experiments.

Our particular interest in studying connectives springs from the view that the grounding of language in discourse is central to any functional account of language (Langacker 2001). After all, language users communicate through discourse. A crucial characteristic of discourse is that it shows coherence. One fundamental type of coherence is that of causality: people can connect discourse segments by a causal relationship of some kind, as in (1a). Although coherence is generally considered a cognitive phenomenon, relatively independent of the exact linguistic realization in the discourse itself, both linguists and psycholinguists assume that connectives have the function of signaling relationships between discourse segments, thereby "instructing" interlocutors to construct a coherence relation between two clauses (see, among others, Gernsbacher and Givón 1995; Noordman and Vonk 1997; Sanders and Spooren 2001), as in (1b).

(1) a. The neighbors suddenly left for Paris last Friday. They are not at home.
    b. The neighbors suddenly left for Paris last Friday. So they are not at home.

Here, the connective *so* signals that the situation reported in the second segment (S2) is the result of the situation reported in the first segment (S1). When language users want to relate two discourse segments in a causal way, they can use causal connectives like English *because*, *so*, and *since*, or lexical cue phrases like English *as a result*, *that's why*, and *on the grounds that*. Although all these linguistic means may express causality in one way or another, it is clear that they cannot be used interchangeably. In English, it is perfectly fine to use *As a result* / *That's why* / *So* to connect the segments of (1), see (1c), but it is impossible to use *As a result* to connect the segments of (2). (This impossibility is expressed by the symbol #, which signals an uninterpretable sequence; this symbol should not be confused with *, which signals an ungrammatical sequence.) Also, it is at least doubtful whether *That's why* could be used in (2), as indicated by the ?, whereas *So* would fit neatly.

(1) c. The neighbors suddenly left for Paris last Friday. *As a result* / *That's why* / *So* they are not at home.

(2) The lights in the neighbors' living room are out. *#As a result / ?That's why / So* they are not at home.

Hence, there are restrictions on the use of a cue phrase and connectives. Since Halliday and Hasan (1976), it has repeatedly been argued that the lexicon of connectives and cue phrases is ordered according to the type of relation they can express (e.g., Knott and Dale 1994; Knott 2001; Knott and Sanders 1998; Pander Maat 1998, 1999). For instance, temporal connectives can be distinguished from causal connectives. Yet, as the examples (1) and (2) show, the restrictions on the use of connectives and cue phrases also hold within the class of causal relations as such—not all causal markers express the same type of causal relation. How then, can these restrictions be described?

1.2. *Three Dutch causal connectives*

In earlier work (Pander Maat and Sanders 1995, 1996, 2000) we have focused on the meaning and use of three Dutch causal connectives: *daardoor*, *daarom*, and *dus*. All three connectives express causality in a "forward" direction, that is, cause precedes consequence. These connectives are the most frequently used ones of that type (Uit Den Bogaart 1975). They can best be translated in English by means of the phrases we used in examples (1) and (2): *daardoor* is similar to *as a result / as a consequence*, *daarom* can best be translated as *that's why*, and *dus* is quite similar to *so*. In (3) and (4) we have translated the examples (1) and (2) into Dutch. English translations follow the Dutch examples.

(3) *Ze zijn afgelopen vrijdag plotseling naar Parijs vertrokken*. Daardoor/ Daarom/Dus *zijn de buren niet thuis*.
'They suddenly left for Paris last Friday. *As a result / That's why/ So* the neighbors are not at home.'

(4) *Het licht in de woonkamer is uit*. #Daardoor/?Daarom/Dus *zijn de buren niet thuis*.
'The lights in their living room are out. *#As a result / ?That's why/ So* the neighbors are not at home.'

All three connectives fit in (3), although they do express different relations. *Daardoor* expresses a simple *cause–consequence* relation in which the second segment (S2) might even be an unforeseen outcome of the first segment (S1) ("They had to go to Paris"); with *daarom* the sequence can be interpreted as a so-called volitional relation in which the first segment

contains the reason for an intentional action in the second segment (''Going to Paris is their reason for leaving home''); and with *dus*, the second segment is a conclusion based on the first (''I conclude they are not there on the grounds that (I know) they had to leave''). In (4), which can only be interpreted as a conclusion, *dus* fits in very well, whereas *daardoor* leads to an unacceptable sequence and *daarom* is at least odd (indicated by a question mark).

Now, the differences between the three connectives seem to overlap with distinctions put forward in recently developed theoretical proposals. For instance, several discourse theories distinguish between *semantic* and *pragmatic* coherence relations and connectives (van Dijk 1977; Sanders et al. 1993), linguists studying adverbial clauses distinguish between *content* and *epistemic* layers of meaning (see Kortmann 1997 for an overview), and Sweetser (1990) introduced a three-level approach to account for differences in the meaning and use of connectives: the *content*, *epistemic*, and *speech-act* domains. This type of functionally and cognitively oriented approach seemed attractive and promising for the three Dutch causal connectives as well, especially because of the parallelism between classifications of relations and connectives, which at first glance seem to show many similarities (Sanders 1997a).

In recent years we have investigated the relationship between the three causal connectives, and the types of relations they can express in an empirical way, by studying corpora of modern Dutch newspapers. Corpus studies yielded the following characterization of the three connectives in terms of the relations they can and actually do express:

i. *daardoor* can only express relations of the *content nonvolitional* type;
ii. *dus* can express *content volitional*, *epistemic*, summary, and paraphrase relations, but not *content nonvolitional* relations. It most often expresses epistemic relations;
iii. *daarom* can express *content* and *epistemic* relations. It most often expresses volitional relations.

These results imply that only the use and meaning of *daardoor* can be described in terms of relational domains (like Sweetser's) or be characterized in terms of the semantic or pragmatic types of coherence relation they can express (Sanders et al. 1993). However, even in that case we need the additional parameter of *volitionality—daardoor* is restricted to the content domain, more specifically to relations of the nonvolitional content type. In addition, the difference between *daarom* and *dus* is difficult to describe in terms of domains. Although their frequencies in volitional and epistemic relations differ, *dus* and *daarom* regularly express both kinds of relations.

2. Subjectivity in coherence relations and connectives

Because we want to take seriously the idea that actual language use provides indications of the way in which speakers make conceptual categorizations, the question now is: what is it that "epistemic" causality has in common with "volitional" causality, so that speakers of Dutch easily use the same vocabulary to express these two relation types, but not to express relations of nonvolitional causality? In Pander Maat and Sanders (2000) and Pander Maat and Degand (in this issue) we have developed an alternative conceptualization that captures the nature of the contrast between nonvolitional and the other causal relations. This conceptualization is based on subjectivity. We will only summarize this approach here.

2.1. *Subjectivity*

What epistemicity and volitionality have in common is that both crucially involve an animate subject, a person, whose intentionality is conceptualized as the ultimate source of the causal event, be it an act of reasoning or some "real-world" activity. This seems to be a very fundamental distinction: the one between events ultimately originating from some *mind*, versus events that originate from nonintentional causes; between causes that are crucially located in a *subject of consciousness*, and those that are located in the inanimate, outside world. This distinction is so fundamental that it shows up in similar ways at different linguistic levels, and is often the only one marked explicitly by means of some linguistic form (Verhagen 1995, and other contributions to Stein and Wright 1995).

The notion of *subjectivity* is useful in accounting for this idea. Every linguistic utterance can be connected to the point of view of some "subject", or better, *subject of consciousness* (or SOC). Often, the subject in question is the speaker. Consider the following sentences:

(5) The neighbors are probably in Paris.
(6) I think the neighbors are in Paris.
(7) The neighbors are in Paris.

Langacker (1990), who applies the notion of subjectivity to several linguistic phenomena, distinguishes between three situations (see Pit 1997), exemplified by (5) to (7).[1] First, the *ground*—the term he uses to refer to the speech event, its participants, and its immediate circumstances—may be entirely external to the semantics of the utterance. This situation is exemplified by (7), where no subject of consciousness seems present.[2] Second, the ground may be included in the scope of predication as an

offstage, unprofiled reference point. This is the case when deictics like *yesterday*, *tomorrow*, etc. are used. Another example is (5), in which the modal adverb *probably* invokes the present speaker as the source of the probability judgement. Third, the ground may be put onstage, as in (6). In this case, the ground is more or less "objectified", that is, it is made part of the situation referred to in the utterance.

The subject of consciousness can also be someone other than present speaker, see (8), where Eva is the subject of consciousness. In other words: the information in (8) is perspectivized (J. Sanders and Spooren 1997).

(8) Eva wants to go to Paris.

Normally, perspectivization requires indicators like verbs of cognition, perception, and evaluation, such as *want* in (8), as has been shown in recent cognitive linguistic work on perspective and mental spaces (Fauconnier 1994; Fauconnier and Sweetser 1996; Sanders and Redeker 1996).

2.2. *Subjectivity in causal relations: The difference between* dus *and* daarom*?*

Returning to the causal connections, we can characterize them by means of their relation to a subject of consciousness and the identity of this subject. In the nonvolitional *daardoor* case, example (9), there is no subject of consciousness present because the causality is located outside of this subject of consciousness, in the outside world. This case exemplifies a minimal degree of subjective involvement. Both in the epistemic case (10) and in the volitional case (11), a subject of consciousness can be identified, and these can either be the current speaker, as in the a cases, or someone else, as in the b cases.

(9) *Er was een lawine geweest op Roger's pass*. Daardoor *was de weg geblokkeerd.*
'There had been an avalanche at Roger's pass. *As a result*, the road was blocked.'

(10) a. *Het waren grote grijze vogels, die veel lawaai maakten*. Daarom/ Dus *moeten het kraanvogels geweest zijn*.
'They were large, grey birds that made a lot noise. *That's why* / *So* it must have been cranes.'[3]

b. *Het waren grote grijze vogels, die veel lawaai maakten*. Daarom/ Dus *weet Daan zeker dat het kraanvogels geweest zijn*.
'They were large, grey birds that made a lot noise. *That's why* / *So* Daan is convinced they must have been cranes.'

(11) a. *Het was zes uur*. Dus *ik ging naar huis*.
'It was six o'clock. *So* I went home.'

b. *Het was zes uur*. Daarom/Dus *ging Arthur naar huis*.
'It was six o'clock. *That's why* / *So* Arthur went home.'

What epistemic and volitional relations have in common is the presence of a subject of consciousness. This is either the actor choosing a certain course of action (the second segment) for a reason referred to in the first, or a concluder inferring a certain conclusion (the second segment) on the basis of the first. A difference between epistemic and volitional relations is that the typical volitional subject of consciousness is explicitly realized, while epistemic subjects of consciousness often remain implicit. In these cases (see 10a) the subject of consciousness is by default assumed to be the speaker.

Our corpus studies have shown that, though *dus* and *daarom* both may express both kinds of relations, *dus* most often expresses epistemic relations, while *daarom* most often expresses volitional relations. Our claim is that this difference can be explained by a difference in the degree of speaker subjectivity encoded by the two connectives. By this we mean the involvement of the speaker in the interpretation of the relation as an unprofiled reference point. As we see it, *dus* expresses a higher degree of speaker subjectivity than *daarom*.

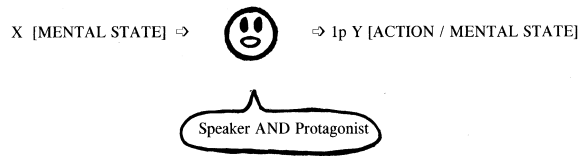
We have tested this idea in a corpus of newspaper texts (Pander Maat and Sanders 2000). Our first hypothesis runs as follows:

1. *The SOC–speaker distance hypothesis*: In *dus*-fragments, the distance between the subject of consciousness and the speaker is smaller than in *daarom*-fragments, that is, *dus*-fragments more often have speaker–subjects of consciousness than do *daarom*-fragments, regardless of the relation expressed.

The typical configuration for first-person fragments like (11a) can be schematically presented as in Figure 1: speaker, protagonist and subject of consciousness are identical. Moreover, all three have full mental access to the causal event expressed in the discourse, i.e., both to the situations described in the two segments and to the *reason* relation connecting them. In other words, speaker and protagonist are identical, and as a result there is a high amount of speaker involvement. As we will show, this configuration of *full transparency* can be contrasted with less transparent configurations, induced by the use of third instead of first-person protagonists. Furthermore, the type of configuration will be shown to vary systematically with the type of connective used.

Our subjectivity account entails ideas about the perspective present in third-person *daarom* and *dus*-fragments. Reconsider example (11b). There are two possible interpretations of this example. In the first one, Arthur

S_1, connective, S_2



Legend: 1p first-person marker
S_1 first segment
S_2 second segment
X conceptual representation corresponding to S_1
Y conceptual representation plus possible resultant action corresponding to S_2
⇨ the causal relation

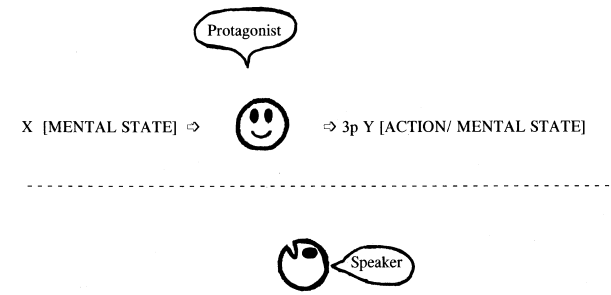
Figure 1. *Maximal speaker involvement through speaker-protagonist identity, as in example (11a)*

leaves as a result of his perception of the time; for instance, he really has to go home, otherwise he will be late for the guests that he is expecting. Under this interpretation, Arthur is the subject of consciousness. The speaker is not involved in the causal relation as such: her role is confined to reporting what goes on. This interpretation is presented in Figure 2, and, as we will argue, *daarom* / *that's why* fits better than *dus*/*so* here.

Crucial to the second interpretation is that the speaker is able to infer that Arthur has gone home, quite apart from the question of whether Arthur has consciously decided to leave or not. Under this interpretation, the speaker is the subject of consciousness, because it is not so much Arthur's decision as her conclusion that is being presented. Hence, this is a case of high speaker involvement. The configuration that fits this interpretation is presented in Figure 3.

If the segments in example (11b) are connected by *dus*, the second interpretation (speaker = SOC; Figure 3) is preferred, because *dus* encodes a preference for construing the causal relation from the speaker's point of view. If we want listeners to construct an interpretation in which Arthur is the subject of consciousness (Figure 2), and still use *dus*, we need to mark the first segment as being presented from the perspective of the nondefault subject of consciousness: the third-person actor, *not* the speaker, see (11c). In this way, the nondefault subject of consciousness becomes more salient. It is because of this explicit marking that the third person is available as a subject of consciousness and in this way the default preference for speaker-SOC (speaker as subject of consciousness) can be overridden, even though a speaker-centered interpretation of (11c) cannot be completely ruled out.

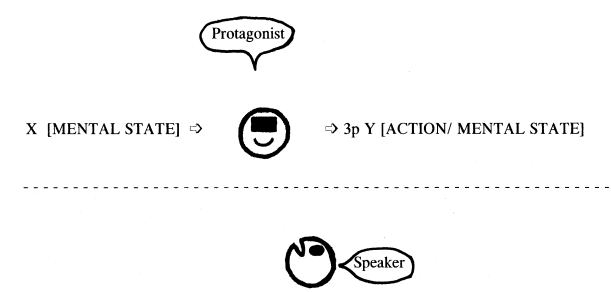
S_1, connective, S_2



Legend: 3p third-person marker
S_1 first segment
S_2 second segment
X conceptual representation corresponding to S_1
Y conceptual representation plus possible resultant action corresponding to S_2
⇨ the causal relation

Figure 2. *Minimal speaker involvement, as in the first interpretation of example (11b)*

S_1, connective, S_2



Legend: 3p third-person marker
S_1 first segment
S_2 second segment
X conceptual representation corresponding to S_1
Y conceptual representation plus possible resultant action corresponding to S_2; protagonist possibly unaware of the causal link
⇨ the causal relation

Figure 3. *High speaker involvement, as in the second interpretation of example (11b)*

(11) c. *Arthur zag dat het zes uur was.* Dus *hij ging naar huis.*
'Arthur saw it was six o'clock. *So* he went home.'

Although the resulting interpretation also shows high speaker involvement, it is not identical to the one presented in Figure 1, since in (11c) the

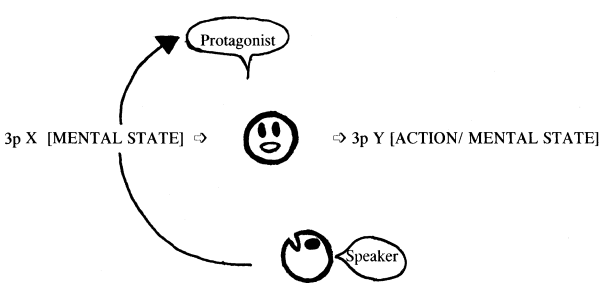
speaker is more than just an external reporter of the causal event. By contrast, the speaker is presented as taking the protagonists' perspective on the causal relation. This configuration is sketched in Figure 4.

A default speaker perspective does not exist for *daarom* connections, which are considered to be less subjective, that is they tend to be interpreted in terms of the configuration of Figure 2. Therefore, *daarom* does not need this explicit marking of nonspeaker subjects of consciousness in S1.

Now that we have explained the differences in involvement between the different configurations, it should also be clear that the figures were *not* presented in the order of subjectivity or involvement. After all, Figure 2 shows minimal involvement and subjectivity (the speaker only reports a causal relation in the world), whereas Figure 1 shows maximal speaker involvement and subjectivity (the speaker herself is responsible for the causal relation, either by a conclusion or by a volitional action in segment 2). In between are Figures 3 (high involvement, but the protagonist is not aware of the causal relation) and 4 (high involvement by empathy with the protagonist who is aware of the causal relation).

One obvious way to test these predictions on differences in subjectivity is to formulate them in text-analytical terms, as we have done in the following. For the moment, we confine ourselves to third-person fragments. Here is the second hypothesis we tested.

S_1, connective, S_2



Legend: 3p third-person marker
S_1 first segment
S_2 second segment
X conceptual representation corresponding to S_1
Y conceptual representation plus possible resultant action corresponding to S_2
⇨ the causal relation

Figure 4. *High involvement through speaker-protagonist empathy, as in example (11c)*

2. *The marked third person–SOC hypothesis*: In third-person *dus*-fragments, the first segment will more often be marked for the perspective of the third-person subject of consciousness than in third-person *daarom*-fragments.

The results of our corpus studies can be summarized as follows. With regard to the subject of consciousness–speaker distance we found that *dus* often accompanies segments with speaker subjects of consciousness, while *daarom* typically accompanies third-person nominal subjects of consciousness (Pander Maat and Sanders 2000: Tables 2 and 3). In addition, the *marked third person–SOC hypothesis* was supported for the volitional corpus (Pander Maat and Sanders 2000: Table 1), but could not be tested for epistemic relations, because no third-person epistemic relations with *dus* were found at all.

3. Experimental tests of the subjectivity account

If our subjectivity account of the difference between *dus* and *daarom* is indeed valid, language users should see them as different categories. Therefore, they should be able to systematically differentiate between the two. For this reason, we have tested our account in another way—by asking language users for their intuitions. An additional advantage of this methodology is that it allows us to test intuitions on discourse fragments that do not occur in corpora, such as third-person epistemic relations with *dus*.

3.1. *Experiment 1: Judging volitional relations*

Pursuing the idea that the difference between *dus* and *daarom* is determined by subjectivity, that is by the presence of a subject of consciousness and its distance from the speaker, we have designed an experimental set-up in which this idea could be put to the test. We constructed discourse fragments with sentence pairs that could be connected by *dus* and *daarom*. Subjects were asked to state their preference for one of the connectives.

The first experiment concerned volitional relations. The goal of the experiment was to find out whether language users more often choose *dus* when speaker–subject of consciousness distance is small and a non-speaker subject of consciousness has been marked in the preceding utterance. Two independent variables were included:

1. Actor identity in S2: first-person versus third-person actor in S1, where the third-person actor was always indicated with a name instead of a pronoun, in order to create optimal distance from the speaker;

2. Source in S1: actor or other (i.e., non-actor).

The combination of the two variables resulted in four experimental conditions:

i. S1: other source; S2: first-person actor
ii. S1: actor source; S2: first-person actor
iii. S1: other source; S2: third-person actor
iv. S1: actor source; S2: third-person actor

Two hypotheses were tested.

H1: *The SOC–speaker distance hypothesis*. Subjects more often choose *dus* in the fragments with first-person actors in the second segment than in fragments with third-person actors in this segment.

H2: *The marked third person–SOC hypothesis*. In third-person fragments, subjects more often choose *dus* in fragments in which the third-person actor is source in the first segment than they do in fragments in which the first segment has another source. This is because non-speaker subjects of consciousness need to be marked in the first segment, that is they need to be made contextually salient in the preceding utterances, in order for *dus* to be appropriate. By contrast, this marking is not necessary for *daarom*-fragments, because *daarom* does not encode a preference for speaker–subjects of consciousness.

For first-person fragments we do not expect the source in the first segment to affect the appropriateness of *dus* and *daarom*. This is because the first segment will be considered as presented from the perspective of the speaker anyway, regardless of its source. The general principle behind this assumption is that, until further notice, all information presented by the speaker is mentally accessible for the speaker, cf. Fauconnier's *Base Space* (Fauconnier 1994; Sanders and Redeker 1996). Hence, when a third-person source presents information on which the speaker bases an action, this information will appear in the speaker's perspective as well.

Since we expect the source variable to have influence only in the third-person fragments, we expect to find a statistical interaction between our two independent variables.

3.1.1. *Method*

Materials. Four versions of twelve text fragments were constructed. The versions varied with respect to the two independent variables: source in the first segment and actor identity in the second. The combination of

the two variables results in four experimental variants, illustrated in example (12).

(12) a. [S1: non-actor source (*Name*); S2: first person]
Het KNMI heeft voorspeld dat het 10 graden gaat vriezen vandaag.
Ik ga daarom/dus *niet mee wandelen*.

'The weather forecaster predicted that there will be 10 degrees of frost.
I will *daarom*/*dus* not come for a walk.'

b. [S1: actor source; S2: first person]
Ik heb gehoord dat het 10 graden gaat vriezen vandaag.
Ik ga daarom/dus *niet mee wandelen*.

'I heard that there will be 10 degrees of frost.
I will *daarom*/*dus* not come for a walk.'

c. [S1: non-actor source (*Name*); S2: *Name*]
Het KNMI heeft voorspeld dat het 10 graden gaat vriezen vandaag.
Willem gaat daarom/dus *niet mee wandelen*.

'The weatherman forecasted that there will be 10 degrees of frost.
Willem will *daarom*/*dus* not come for a walk.'

d. [S1: actor source; S2: *Name*]
Willem heeft gehoord dat het 10 graden gaat vriezen vandaag.
Willem gaat daarom/dus *niet mee wandelen*.

'Willem heard that there will be 10 degrees of frost.
Willem will *daarom*/*dus* not come for a walk.'

There were fifteen filler items, similar to the experimental items but requiring judgements on other connectives, i.e., eight *doordat–omdat* 'as a consequence – because' items and seven *bovendien–daarnaast* 'furthermore–also' items.

The two experimental factors, each with two levels, yielded four experimental conditions. Four sets of experimental texts were constructed. Each set consisted of 27 fragments. Each set contains all four conditions. In the first set, the first item appeared in the first condition, the second item in the second condition, etc. In the second set, the first item appeared in the second condition, the second item in the third condition, etc. Filler items were inserted between different experimental items. Three sets of texts were presented to 26 subjects, a fourth set was presented to 27 subjects.

Procedure. The experiment was conducted group-wise in class rooms. It started with a written instruction. Subjects were asked to consider the fragments carefully. They were informed that there were two alternatives for each last sentence of a fragment and that the alternatives varied in the different use of a ''connecting word''.

They were asked to fill in the multiple-choice question following each fragment, and to follow their own judgement on which of the two candidate sentences ''sounds best to you''. They were to judge each fragment on a three-point scale. They could choose three multiple-choice options: (1) in my opinion, *dus* fits better here; (2) in my opinion, *daarom* fits better here; or a third option, (3) in my opinion both *dus* and *daarom* are possible.

Subjects. One hundred and five students of the Faculty of Arts at Utrecht University participated in partial fulfillment of a course requirement.

3.1.2. *Results*

The raw scores and proportions are summarized in Table 1. In this table responses are summarized over individual items by conditions.

To investigate whether there was an interaction between the two factors of source and actor identity, a loglinear analysis was carried out. This analysis was used because it not only produces estimates of main effects but also of interaction effects in nonparametrical data.[4] Statistical analysis showed a main effect for both manipulated factors. That is, subjects choose *dus* more often with first-person actors than with third-person actors. (See note 4, Table [i], where model 4 fits significantly better than model 3.) This finding is illustrated in the items in (13), in which the mean proportions for the three alternatives are presented in parentheses in the second segments. Compare especially (13a) and (13b) versus (13c) and (13d).

Additionally, subjects choose *dus* more often when the source in the first segment is the actor. (In note 4, Table [i], model 3 fits significantly better

Table 1. *Experiment 1: Volitional relations—raw scores and row proportions for* dus*, ''both can be used'', and* daarom *in four conditions, determined by factors ''source in S1'' and ''actor identity'' in S2*

	dus	both	*daarom*
S1: other source (*Name*); S2: *I*	76 (.24)	68 (.22)	170 (.54)
S1: actor is source; S2: *I*	63 (.20)	79 (.25)	173 (.55)
S1: other source (*Name*); S2: *Name*	27 (.09)	38 (.12)	249 (.79)
S1: actor is source; S2: *Name*	51 (.16)	68 (.22)	195 (.62)

than model 2.) This last effect, however, is qualified by an interaction effect. It does not apply equally to both levels of the variable actor identity; it is entirely due to the items with third-person actors, which explains why (in note 4, Table [i]) model 5 fits better than model 4. That is, in the first-person fragments (a) and (b), the appropriateness of *dus* is not affected by the perspective in the first segment, while it *is* affected in the third-person fragments (c) and (d). In fragment (c), the absence of a marker leads to fewer choices for *dus* and "both".

(13) a. [S1: non-actor source; S2: *I*]
De dokter zegt dat regelmatig sporten een probaat middel is tegen stress.
Ik sla daarom / "both" /dus *nooit een tennisavond over.*

'The doctor says that exercising regularly is an approved remedy against stress.
Dus (.24) / "Both" (.22) / *Daarom* (.54) I never miss an evening of tennis.'

b. [S1: actor is source; S2: *I*]
Voor mij is regelmatig sporten een probaat middel tegen stress.
Ik sla daarom/dus *nooit een tennisavond over.*

'For me, regular exercise is an approved remedy against stress.
Dus (.20) / "Both" (.25) / *Daarom* (.55) I never miss an evening of tennis.'

c. [S1: non-actor source; S2: *Name*]
De dokter zegt dat regelmatig sporten een probaat middel is tegen stress.
Eva slaat daarom/dus *nooit een tennisavond over.*

'The doctor says that regular exercise is an approved remedy against stress.
Dus (.09) / "Both" (.12) / *Daarom* (.79) Eva never misses an evening of tennis.'

d. [S1: actor is source; S2: *Name*]
Voor Eva is regelmatig sporten een probaat middel tegen stress.
Eva slaat daarom/dus *nooit een tennisavond over.*

'For Eva, regular exercise is an approved remedy against stress.
Dus (.16) / "Both" (.22) / *Daarom* (.62) Eva never misses an evening of tennis.'

These results clearly confirm the SOC–speaker distance hypothesis. As for the marked third person–SOC hypothesis, our expectation was

confirmed that in first-person fragments, the information from a non-actor source cannot retrospectively be viewed in the speaker perspective, so that *dus* is still more or less appropriate. However, the appropriateness of *dus* decreases in the case of non-actor sources in third-person fragments, since in these cases the information from the first segment is harder to incorporate in the actor perspective. That is, when both the non-actor in the first segment and the actor in the second are third persons, their two perspectives exclude each other, so that the relation can not be interpreted as being produced within a single subject of consciousness.

3.2. *Experiment 2: Epistemic relations*

The ideas pursued in the first experiment are identical to the ones aimed at in the second experiment, the only difference being that we are now dealing with epistemic relations. This implies that the role of the actor in the volitional relation is replaced by that of the concluder in the case of the epistemic relation.

Three hypotheses were tested, the first two identical to those for volitional relations in experiment 1.

H1: *The SOC–speaker distance hypothesis*. Subjects more often choose *dus* in the fragments with first-person concluders in the second segment than in fragments with third-person concluders in this segment.

H2: *The marked third person–SOC hypothesis*. In third-person fragments, subjects more often choose *dus* in fragments in which the third-person concluder is source in the first segment than they do in fragments in which the first segment has another source.

For the epistemic experiment we have added a third hypothesis. Language users are faced with a fundamental choice in formulating first-person conclusions: do they explicitly mention the concluder (e.g., *I think*, *I suppose*, *I suspect*, *in my view*, *I am convinced*, *I expect*) or do they leave the concluder implicit, for instance by the use of modal verbs (*must*), modal adverbs (*surely*), evaluative adjectives (*good*, *worthwhile*) or a combination (*probably will*). Examples (14a) and (14b) contain an explicit first-person marker, examples (15a) and (15b) an implicit one.

Let us recall that *dus* is hypothesized to encode a high degree of speaker subjectivity. Langacker (1990) has demonstrated that subjectivity is maximal when the concluder is construed as an offstage reference point, that is, when she or he is absent from the proposition. Hence, we expect *dus* to be more appropriate in implicit fragments (such as [15]) than in explicit fragments (such as [14]).

H3: *Implicit speaker hypothesis*. Subjects more often choose *dus* in fragments where the speaker-concluder remains implicit than in fragments where he or she is mentioned explicitly.

3.2.1. *Method*

Materials. Four versions of sixteen text fragments were used. For eight fragments the first-person version was explicit (see example [14]), for the other eight it was implicit (see example [15]).

(14) a. [S1: non-concluder source; S2: *I*; explicit speaker]
Mijn broer zag gisteravond nog geen licht branden in het huis van de buren.
Ik denk daarom/"both"/dus *dat ze nog niet terug zijn van vakantie.*

'Yesterday evening my brother did not see any lights burning in our neighbors' house.
Daarom/"both"/*Dus* I think that they haven't returned from their holiday yet.'

b. [S1: concluder source; S2: *I*; explicit speaker]
Ik zag gisteravond nog steeds geen licht branden in het huis van de buren.
Ik denk daarom/"both"/dus *dat ze nog niet terug zijn van vakantie.*

'Yesterday evening I did not see any lights burning in our neighbors' house.
Daarom/"Both"/*Dus* I think that they haven't returned from their holiday yet.'

c. [S1: non-concluder source; S2: *Name*]
Dirk's broer Alex zag gisteravond nog steeds geen licht branden in het huis van de buren.
Dirk denkt daarom/"both"/dus *dat ze nog niet terug zijn van vakantie.*

'Yesterday evening Dirk's brother Alex did not see any lights burning in our neighbors' house.
Daarom/"Both"/*Dus* Dirk thinks that they haven't returned from their holiday yet.'

d. [S1: concluder source; S2: *Name*]
Alex zag nog steeds geen licht branden in het huis van de buren.
Hij denkt daarom/"both"/dus *dat ze nog niet terug zijn van vakantie.*

'Yesterday evening Alex did not see any lights burning in our neighbors' house.
Daarom/"Both"/*Dus* he thinks that they haven't returned from their holiday yet.'

(15) a. [S1: non-concluder source; S2: *I*; implicit speaker]
De deskundigen in Voetbal International *vinden dat Frankrijk een heel evenwichtig elftal heeft*.
Frankrijk zal daarom/"both"/dus *wel wereldkampioen worden*.
'The experts interviewed in the magazine *Soccer International* think that France has a well-balanced team.
Daarom/"Both"/*Dus* France will probably win the World Championship.'

b. [S1: concluder source; S2: *I*; implicit speaker]
Frankrijk heeft een heel evenwichtig elftal.
Frankrijk zal daarom/"both"/dus *wel wereldkampioen worden*.

'France has a well-balanced team.
Daarom/"Both"/*Dus* France will probably win the World Championship.'

c. [S1: non-concluder source; S2: nominal phrase]
De deskundigen in Voetbal International *vinden dat Frankrijk een heel evenwichtig elftal heeft*.
Veel van mijn collega's denken dat Frankrijk daarom/"both"/dus *wel wereldkampioen zal worden*.

'The experts interviewed in the magazine *Soccer International* think that France has a well-balanced team.
Daarom/"Both"/*Dus* a lot of my colleagues think that France will probably win the World Championship.'

d. [S1: concluder source; S2: nominal phrase]
Veel van mijn collega's vinden dat Frankrijk een heel evenwichtig elftal heeft.
Ze denken dat Frankrijk daarom/"both"/dus *wel wereldkampioen zal worden*.

'A lot of my colleagues think that France has a well-balanced team.
Daarom/"Both"/*Dus* a lot of my colleagues think that France will probably win the World Championship.'

3.2.2. *Method*

Materials. Four versions of sixteen text fragments were constructed. The versions varied with respect to the three independent variables: source in

the first segment, concluder identity in the second segment, and speaker realization in the second segment. The last variable is only productive in first-person fragments. The combination of the three variables results in six experimental variants, illustrated in the preceding examples.

The procedure was identical to that in experiment 1.

Subjects. Eighty-four students of the Faculty of Arts at Utrecht University participated in partial fulfillment of a course requirement.

3.2.3. *Results*

The mean scores for each condition are presented in Table 2. In this table responses are summarized over individual items by conditions. Data were analyzed in a similar way to experiment 1.[5] Statistical analysis indicated that only one factor showed a main effect: "concluder identity in S2". As the raw scores in Table 2 show, this effect consists of a sharp reduction in the number of *dus* choices when the concluder in the second segment is referred to by name. Source in the first segment barely affects subjects' preferences for *dus* or *daarom*. Here, the marked third-person hypothesis is not supported, whereas the SOC–speaker distance hypothesis is.

Table 2. *Experiment 2: Epistemic relations—raw scores and row proportions for* dus, *"both can be used", and* daarom *in four conditions, determined by factors "source in S1" and "concluder identity" in S2*

	dus	both	*daarom*
S1: non-concluder source; S2: *I*	144 (.44)	63 (.19)	124 (.37)
S1: concluder is source; S2: *I*	167 (.50)	55 (.17)	109 (.33)
S1: non-concluder source; S2: *Name*	58 (.18)	50 (.15)	223 (.67)
S1: concluder is source; S2: *Name*	66 (.20)	38 (.11)	228 (.69)

Table 3. *Experiment 2: Epistemic relations—raw scores and row proportions for* dus, *"both can be used", and* daarom *in four conditions, determined by factors "source in S1" and "implicit/explicit speaker-concluder (SC)" in S2*

	dus	both	*Daarom*
S1: non-concluder source; S2: implicit SC	92 (.56)	37 (.22)	36 (.22)
S1: concluder is source; S2: implicit SC	101 (.61)	28 (.17)	36 (.22)
S1: non-concluder source; S2: explicit SC	52 (.31)	26 (.16)	88 (.53)
S1: concluder is source; S2: explicit SC	66 (.40)	27 (.16)	73 (.44)

The implicit speaker hypothesis required a second loglinear analysis, for which only half of the data set served as input, i.e., those cases in which the speaker was identical to the concluder in the second segment.[6]

Statistical analysis indicated that the implicit speaker hypothesis is supported by these results. For implicit speaker-concluders, *dus* is clearly preferred over *daarom*, while the reverse is true for explicit speakers.

3.3. *Discussion of the experimental results*

On the whole, the results of experiments 1 and 2 show that *dus* fits better in epistemic relations than it does in volitional relations, but even in epistemic relations it is only preferred to *daarom* in implicit first-person (*I*) variants. *Daarom* is preferred to *dus* in all other cases. We found similar results in corpus studies.

If we take a more precise look at the testing of the hypotheses, we can say that the SOC–speaker distance hypothesis is supported by the data, whereas the marked third person–SOC hypothesis shows mixed results. The strong support for the first hypothesis shows that, although *daarom* and *dus* can both express epistemic and volitional causal relations, there is also a clear difference between the two connectives: *dus* fits better when the distance between the speaker and the actor/concluder is small, i.e., when they are identical, *daarom* fits better as the distance between the speaker and the textual protagonist increases. In line with this is the support for the implicit speaker hypothesis in epistemic relations. In the case of implicit speaker/concluders, the distance is smallest and the preference for *dus* is greatest.

However, there are still some unsettled issues. With respect to the marked third person–SOC hypothesis, there is a discrepancy between the results of the epistemic and the volitional study, in that *dus* is disfavoured in third-person fragments with non-actor sources for volitional relations, while it *does* appear possible to employ *dus* in the same context with epistemic relations (third-person fragments with non-concluder sources).

4. Conclusion

This study provides further evidence for the relevance of the notion of subjectivity in explaining a systematic difference in the lexicon of Dutch causal connectives, i.e., *dus* versus *daarom*. We have proposed considering the difference between the connectives in terms of subjectivity, or, more precisely, in terms of the degree of implicit involvement of the speaker in the construction of the causal relation. In this subjectivity account, the connectives can be characterized as follows. In relations expressed by *daarom* 'that's why', there is a certain distance between the speaker and the

subject of consciousness, whereas in the case of *dus* 'so', this distance is small or even absent, as in the case where the speaker and subject of consciousness are identical.

In earlier studies, we have shown that this approach accounts for the actual distribution of the connectives in newspaper corpora (Pander Maat and Sanders 2000). In the current study, we tested such an approach in judging experiments. The results indicate that Dutch speakers show clear patterns of preference when asked to choose the best fitting forward causal connective in natural discourse fragments. *Dus* is considered more appropriate when the distance between the speaker and the actor/concluder is small, in fact the two can even be identical. *Daarom* fits better when the distance between speaker and the textual protagonist is increased. In line with this is the support we found for the implicit speaker hypothesis in epistemic relations. In the case of implicit speaker/concluders, the distance between the subject of consciousness and the speaker is smallest and the preference for *dus* at a maximum.

The experimental results also specifically confirm that subjectivity rather than domain specificity (as derived from Sweetser 1990, see section 1) determines the choice of *dus* versus *daarom*. *Dus* is not more appropriate in epistemic relations in general; it only fits better in the case of first-person subjects of consciousness. In other words, SOC–speaker distance overrules domain differences. Moreover, the fact that *dus* is more appropriate in epistemic relations with implicit first-person concluders than in those with explicit first-person concluders cannot be explained in terms of domain differences.

One specific experimental result deserves some more discussion here. In line with our expectations, language users more often choose *dus* in third-person fragments in which the third-person actor was source in the first segment (see example [13c]), as compared to fragments in which this segment has another source (as in [13d]). However, contrary to our expectations, this effect was not repeated for epistemic relations; here, judges found that *dus* is equally appropriate in third-person fragments with a source (see [14c]) other than the concluder. How can this lack of preference be explained? It seems likely that in an epistemic relation one may take the perspective of the concluder anyway: both the conclusion and the premiss are situated exclusively within the mental domain of the concluder. By contrast, in volitional relations the reason for an action and the action itself may be viewed as facts which are accessible both from the perspective of an outside observer (such as the author) *and* from the perspective of the acting protagonist. For that reason, placing it firmly into the perspective of the protagonist does increase the appropriateness of *dus* in *volitional* fragments. By contrast, the *epistemic* relation is by its nature

a subjective phenomenon, because thoughts and conclusions cannot be observed by outsiders. Or, to use Fauconnier's (1994) concept of *space building*, epistemic relations strongly trigger *space building in retrospect* and volitional relations do not necessarily do so. *Dus* probably fits better in epistemic relations because these relations are of themselves more subjective. Volitional relations, however, are less inherently subjective, since an external reporter perspective is always conceivable; see also Pander Maat and Degand (this issue).

Analyzing discourse-structure phenomena is a major challenge for cognitive linguistics (Sanders 1997b), not only because the grounding of language in discourse is central to any functional account of language (Langacker 2001), but also because we have relatively little insight into the linguistic principles underlying discourse structure. In this article, we have taken up this challenge by investigating crucial discourse elements: causal connectives. Even though we have only studied two Dutch causal connectives, it has become clear that the theoretical notion of subjectivity provides insight in the categories underlying discourse phenomena such as these in a way that promises to be applicable to other connectives as well. The discussion of subjectivity also seems to open the way to an approach in terms of mental spaces, along the lines of Fauconnier and Sweetser (1996) and Dancygier and Sweetser (2000).

We expect this type of account to be fruitful for other analyses at the discourse level, just like we hope the methodology of "converging evidence"—theoretical analysis, corpus studies, and experiments—to be stimulating for the further study of language in use.

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Notes

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1. The literature review presented here is somewhat selective. We are aware that in the field of literary stylistics, for instance, there is much work on focalization, subjectification, and

perspective, by Genette and Fludernik, for instance. However, we focus on the linguistic approaches here (cf. also J. Sanders and Spooren 1997).

2. In fact the ground is nearly always involved in the semantics of tense, because tense contains an orientation of the moment of speaking with regard to an external event. However, in this article we confine our use of the notion of subjectivity to the epistemic responsibility of the speaker for her statements.
3. In this article we have translated *daarom* as 'that's why'. We are aware of the fact that *that's why* can reintroduce "discourse-old" information. In this respect it differs from *daarom*, which needs a rather special contrastive accent on the first syllable to be used in this way. In more general terms, matters of information structure do not bear directly on the subjectivity approach as developed here, and hence we will not discuss them here.
4. The likelihood ratio, which indicates the goodness of fit of the model with the data is G^2 (Pearson's has better distributional properties for small samples, because it is based on the Poisson distribution rather than on the normal distribution. G^2 is asymptotically (χ^2 distributed (Fienberg 1980). Table (i) shows the fit of the *x* different logit-models, in which the first model contains C (all cells are equal in frequency), the second the connective (CON), the source in the first segment, and actor identity in the second (S2). The second model assumes that all cells with the same connective are equal, all cells with an identical source in the first segment are equal, and that all cells with an identical actor in the second segment are equal. The third model introduces the first interaction term: connective by source in the first segment. Here, it is assumed that all cells characterized by an identical combination of values of the connective and source variable are equal. Hence, the model assumes that differences in choice of connective depend on the first segment. The fourth model adds a second interaction term: connective by actor identity in the second segment. Finally, the fifth model adds the last interaction term: connective by source in the first segment by actor identity in the second. (Note that only this last interaction term can be compared to what is generally referred to as an "interaction" in other statistical techniques, e.g., analysis of variance.) The fifth model, which includes all parameters, fits perfectly.

Table (i).

Model	G^2	df	*p*
1. C	513.17	11	< .001
2. C + CON + S1 + S2	61.81	7	< .001
3. C + CON + S1 + S2 + con.s1	51.28	5	< .001
4. C + CON + S1 + S2 + con.s1 + con.s2	14.23	3	< .01
5. C + CON + S1 + S2 + con.s1 + con.s2 + con.s1.s2	–	–	

Table (ii).

Model	G^2	df	*p*	Conclusion
1–2	451.40	4	< .001	Reject 1
2–3	10.54	2	< .01	Reject 2
3–4	37.05	2	< .001	Reject 3
4–5	14.23	3	< .01	Reject 4, accept 5

In Table (ii) the goodness of fit with the data is compared; it is computed how much better one model fits the data than another.

5. Table (iii) shows the fit of the *x* different logit-models, in which the first model contains C (all cells are equal in frequency), the second the connective (CON), the source in the first segment (S1) and concluder identity in the second segment (S2). The second model assumes that all cells with the same connective are equal, all cells with an identical source in the first segment are equal, and that all cells with an identical concluder in the second segment are equal. The third model introduces the first interaction term: connective by source in the first segment. Here, it is assumed that all cells characterized by an identical combination of values for the connective and source variables are equal. Hence, the model assumes that differences in choice of connective depend on the first segment. The fourth model adds a second interaction term: connective by concluder identity in the second segment. Because the fourth model fitted the data in a satisfactory way, no additional models were included in the analysis.

   In Table (iv) the goodness of fit with the data is compared; it is computed how much better one model fits the data than another.

Table (iii).

Model	G^2	df	*p*
1. C	434.49	11	< .001
2. C + CON + S1 + S2	163.58	7	< .001
3. C + CON + S1 + S2 + con.s1	159.28	5	< .001
4. C + CON + S1 + S2 + con.s1 + con.s2	1.12	3	n.s.

Table (iv).

Model	G^2	df	*p*	Conclusion
1–2	270.09	4	< .001	Reject 1
2–3	4.30	2	n.s.	Reject 2
3–4	158.2	2	< .001	Reject 3, accept 4

6. See tables (v) and (vi).

Table (v).

Model	G^2	df	*p*
1. C	138.94	11	< .001
2. C + CON + S1 + S2	54.21	7	< .001
3. C + CON + S1 + S2 + con.s1	52.29	5	< .001
4. C + CON + S1 + S2 + con.s1 + con.s2	2.26	3	n.s.

Table (vi).

Model	G^2	df	*p*	Conclusion
1–2	84.73	4	< .001	Reject 1
2–3	1.92	2	n.s.	Reject 2
3–4	50.02	2	< .001	Reject 3, accept 4

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