

Causality and Subjectivity in discourse and cognition; Evidence from (cross-)linguistic analyses, acquisition and processing

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Today: Causal coherence

1. Could you turn on the lights? It is dark in here.
2. The neighbors are not at home. Their lights are out.
3. Jan turned on the lights. It was getting dark.
4. It was getting dark. The sun was setting.

All cases: $Q \leftarrow P$, and English *because* fits in

Difference:	Report of external reality (4)
	Explanation (3)
versus	Reasoning (2), speech act (1)





Multi-domain theory (Sweetser 1990)

- Content domain (3,4)
- Epistemic domain (2)
- Speech act domain (1)

Choosing one word over another, closely related one, is an act of **linguistic categorization**

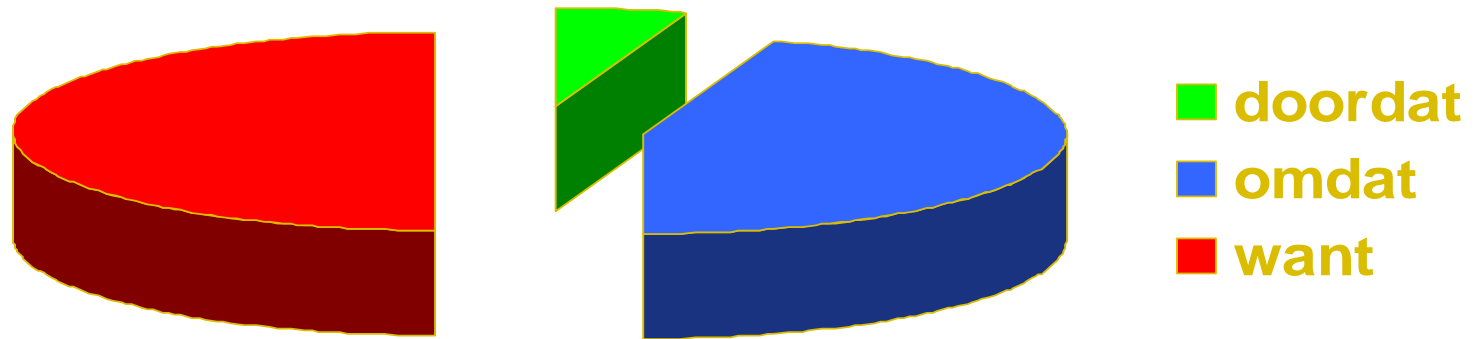
Causal connectives as linguistic markers of domains

Sanders & Sweetser (Eds). 2009, Mouton de Gruyter

Special issue *Journal of Pragmatics*, 2012)

Causal connectives as markers of linguistic categories

Dutch, backward



Dutch backward causal connectives as categorization markers

1. Could you turn on the lights, **want (since)** it's dark in here. Speech act domain: *Causality here&now*
2. The neighbors are not at home, **want (because)** their lights are out. Epistemic domain: *Conclusion*
3. Jan turned on the lights, **omdat (because, for the reason that)** it was getting dark. Content domain: *Volitional /intentional reason*
4. It was getting dark, **doordat (because of the fact that)** the sun was setting. Content domain: *Non-volitional cause consequence*



Subjectivity in causal connectives

(Langacker 1990; Pander Maat & Sanders 2000)

Subjective causal relation: originating from a *mind*:

- Epistemic reasoning or
- Expressing an intentional action

Subjectivity in terms of causality:

Subject's "mind" constructs causal relation

Subject is speaker-here-and-now or actor as
"Subject of consciousness"

Versus

In objective cases: Speaker reports causality



Backward causal connectives – other languages?

Objective

doordat
dadurch dass
because
parce que

youyu

Subjective

omdat
weil
because
parce que

want
weil (denn)
because (since)
car / puisque

yinwei
jiran

Stukker, Ninke & Ted Sanders, 2012. Subjectivity and prototype structure in causal connectives: a cross-linguistic perspective. *Journal of Pragmatics*, 44 (2), 169-190.

Li, Fang (2014). *Subjectivity in Mandarin Chinese: the meaning and use of causal connectives in written discourse*. Utrecht: LOT.

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Corpus studies on language use: written, spoken and chat (Sanders & Spooren, 2013, 2015)

Want is more subjective than *omdat*

1. Modality: *want* more judgments
2. Coherence relation: *want* more epistemic/speech act relations
3. Explicit coding of the SoC: *want* more implicit (which is more Subjective, cf. Langacker, 1990)
4. Conceptualizers: *want* mostly 1st (I) person

All statistically significant differences



Prototypical want

Judgement S1, epistemic, 1st person
implicit SoC

dat is gewoon krankzinnig. **WANT** als hij uhm mensen goed inschat moet ie ook weten dat ik m'n uiterste best doe om dat zo snel mogelijk voor elkaar te krijgen.

“that is simply insane. **Because** if he is such a good judge of character than he should also know that I am doing my very best to take care of that as soon as possible.”



Prototypical omdat

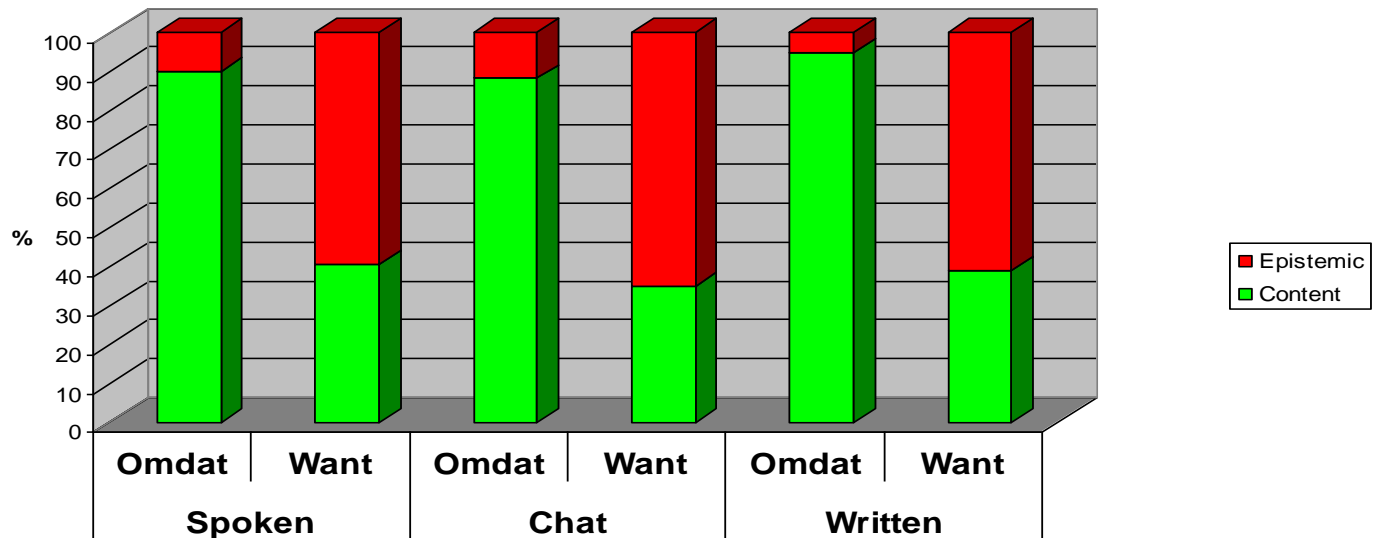
- Non-Judgement S1, content, less 1st person and more explicit SoC
- uhm niemand had zin om te lezen OMDAT lezen altijd een must was.
- ‘uhm nobody felt like reading BECAUSE reading had always been obligatory’



Connective use in three media

Sanders & Spooren (2015)

Type of relation in spoken, chat and written data, by connective





**If Causality and Subjectivity
are cognitive categories,**

**they should provide insight into the learning
and interpretation of causal connectives and
relations**

Acquisition:

What is the order of acquisition?

Processing:

What happens during on-line processing?



The Acquisition of Connectives

*'Kim is a girl. **And** you are a boy' (2;1)*

*'yes we first went to granny **and then** we had spaghetti (2;3)*

Patricia sometimes goes to Spain, **because** her father lives there.

*'Could you give me that broom, **because** I am not ready here' (3;10)*

*'Not so loud, **because** otherwise I can't work.'* (4;9)

Bloom et al. 1991; Clark & Clark, 1977; Evers-Vermeul & Sanders, J of Child Language 2009; Spooren & Sanders, J of Pragmatics 2008; Evers-Vermeul & Sanders, J. of Pragmatics 2011

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The acquisition of connectives (1)

Basic categories (additive/temporal/causal)
Clearly play a role in acquisition:

- Order of first emergence:
Additive < Temporal < Causal: English, Dutch
and / en < *then / toen* < *because / want*
- Increasing complexity (e.g. P&Q vs. P→Q)
- Complexity sets the pace; Ever since Clark & Clark, 1977; Bloom et al. 1980, 1991;
- Spooren & Sanders, Jnl of Pragmatics 2008
- Evers-Vermeul & Sanders, *Journal of Child Language*, 2009



The acquisition of connectives (2)

The other prominent distinction:

Objective
out there
in the world



< **Subjective**
vs **speaker's reasoning**



1. "*Patricia sometimes goes to Spain, because (**omdat**) her father lives there*"
2. "*I don't like Sesame Street very much anymore. **Because** (**want**) I'm too old for that now.*"

Corpus-based and experimental acquisition studies show:

- **Objective (Content) < Subjective (Epistemic)**
- Evers-Vermeul & Sanders, *Journal of Pragmatics*, 2011
- Van Veen (2011), dissertation
- Zufferey, Sanders & Mak (2015), *Int.Rev. of Pragm.*: further cross-linguistic comparison

Causal connectives in Processing

- Many processing studies have shown how adding a connective or a cue phrase speeds up processing
- He was too late at work. He missed his train.
- He was too late at work **because** he missed his train.
- Processing instruction: **because** tells you the cause follows (it is not a contrast or an addition, or...)
- **Integration effect:** easier to integrate upcoming information
- Experimental results from reading times, eye tracking
- Millis & Just 1994; Cozijn, 2000; Noordman & Vonk, 1997; 1998; Sanders & Noordman, 2000; and many others, Van Silfhout, Evers-Vermeul & Sanders, 2015 for various coherence signals



Metaphor of traffic signs....





Because



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How about differences in subjectivity in markers, and their role in processing?

Because

Because



Causal connectives in Processing

- But how about “subtle distinctions” like **Objective** vs. **Subjective**?
- Initial work on English coherence relations:
Traxler et al., 1997ab
- Work from our lab on causal connectives:
Canestrelli, Mak & Sanders, in *Language and Cognitive Processes*, 2013;
and 2016, to appear



Processing: eye-tracking experiments (1)

What kind of processing instructions do objective **omdat** vs. subjective **want** give?

Hypothesis 1: Dutch **want** introduces Subjectivity → triggers interpretation from the perspective of a Speaker, of an epistemic “mental space” of Speaker / author
This process requires additional cognitive resources → longer processing times

Hypothesis 2:
want has similar function as epistemic markers such as “probably”
or “According to Peter” →
*Earlier presence of such markers should eliminate longer processing times after **want***

Canestrelli, Mak & Sanders, in *Language and Cognitive Processes*, 2013



Processing: eye-tracking experiments (2)

Processing of second sentence

1. Objective (content)

Hanneke was out of breath,

omdat ze vier trappen was afgerend om de post te halen.
OMDAT she four stairs has ran down to the mail get.

2. Subjective (epistemic)

Hanneke was in a hurry,

want ze was vier trappen afgerend om de post te halen.
WANT she has four stairs ran down to the mail get.

3. Subjective + epistemic marker

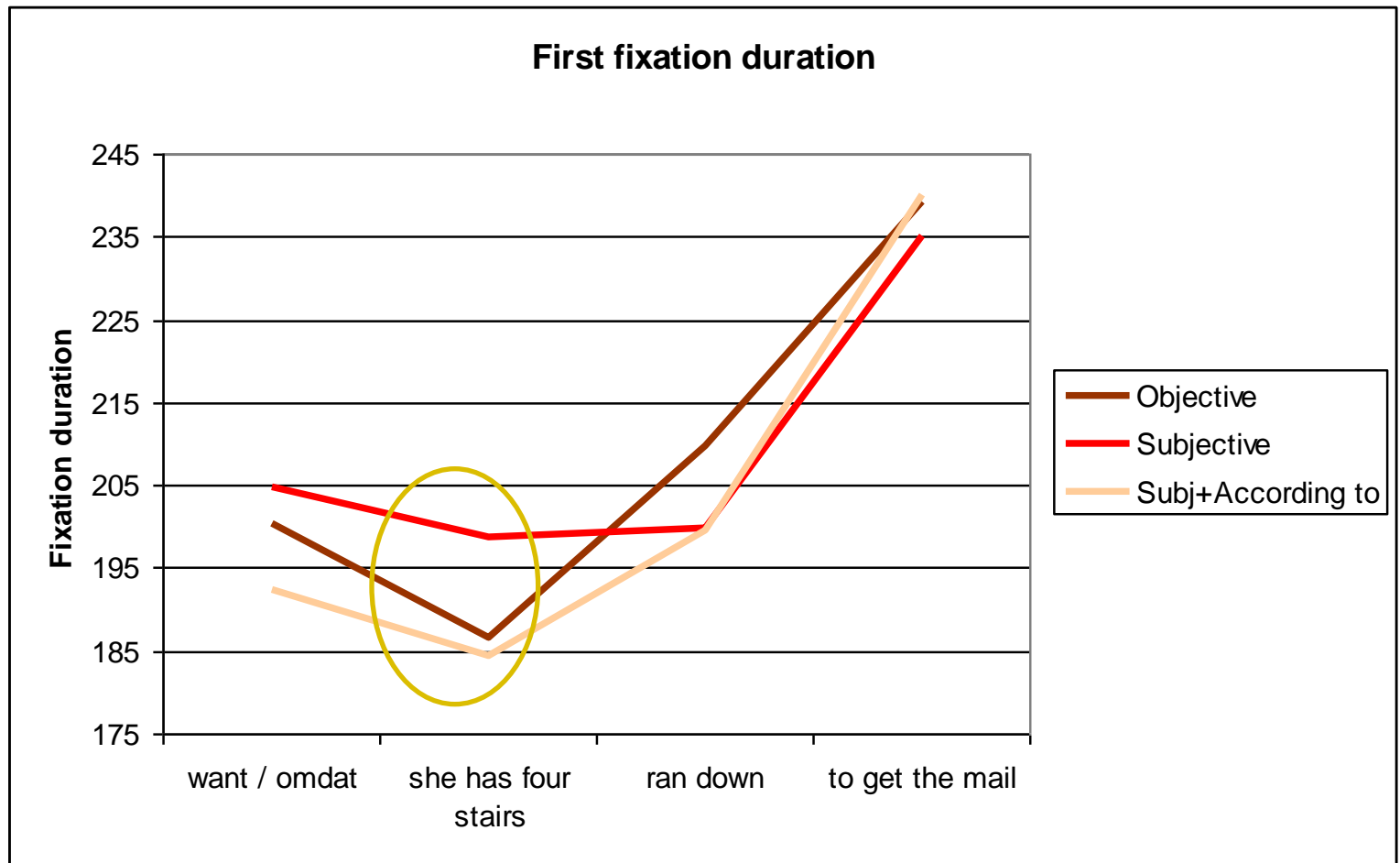
According to Peter *Hanneke was in a hurry,*

want ze was vier trappen afgerend om de post te halen.
WANT she has four stairs ran down to the mail get.

Canestrelli, Mak & Sanders, in *Language and Cognitive Processes*,
2013



Results eye-tracking experiments



Conclusions on processing causal relations

We observed effects immediately after the connective:
evidence for connectives as processing instructions

- **Subjective** (epistemic) causality is harder to process than **objective** (content) causality
- But this difference disappears when the proposition is explicitly embedded in an epistemic space, connected to an embedded speaker: **According to Peter**
- We are only beginning to understand how this works, and how various factors contribute to the actual processing and representation of everyday narratives, which is much more complex...
- Sanders, Sanders & Sweetser (2009, 2012) on **Perspective, free indirect speech, mental spaces theory**





Conclusion: Taking the cognitive stance seriously

- **Challenge:** how to investigate claims about cognitive reality of conceptual categories empirically
- Evidence should preferably come from different angles
- **Converging evidence**
- Our case in point: causal coherence in discourse
 - Theoretical analysis + corpus analysis + acquisition studies + processing studies
 - This shows the cognitive reality of the conceptual categories Causality and Subjectivity at the discourse level
- More work needed and under way!
 - More cross-linguistic comparison: Cost-Textlink
 - More, less-related languages



Joint work

- Anneloes Canestrelli (now elsewhere)
 - Jacqueline Evers-Vermeul
 - Jet Hoek
 - Pim Mak
 - Ninke Stukker (now Groningen)
 - Rosie van Veen (now elsewhere)
 - Yipu Wei
-
- José Sanders (Nijmegen)
 - Merel Scholman (Saarbrücken)
 - Wilbert Spooren (Nijmegen)
 - Eve Sweetser (Berkeley)
 - Sandrine Zufferey (Fribourg)





...more complicated in narratives:

SoC is not always first person....

*The neighbors were not at home, **WANT** their lights were out.*

Past tense: Unspecified observing SoC saw that? →

(Jan (SoC) looked around the corner)

*The neighbors were not at home, **WANT** their lights were out.*

Soc blends with Speaker: Shared responsibility for construal of causal relation - an important function in narrative

Can explain specific effects of perspective: *Free Indirect Speech*: “seeing through another’s eyes”.

J. Sanders, T. Sanders & Sweetser, *Jnl. of pragm.* 2012



Finally

- Methodology of converging evidence:
- Theory, corpus analysis, acquisition, processing and representation
- Study of small words provides answers to big questions in language and cognition
- Regarding Coherence, Causality and Cognitive Complexity
- At the discourse level.

