

## Discourse expectations affect pronoun use in Dutch

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Listeners' expectations about what the speaker will mention next influence their interpretation of pronouns. An important question is whether speakers take such expectations into account when choosing whether to use a pronoun. One hypothesis is that speakers use a pronoun when the referent is already expected by the listener. When the speaker continues with a less predictable referent, she will signal this by choosing a more elaborate expression. Current evidence for this hypothesis is mixed (cf. Fukumura & Van Gompel, 2010; Rosa & Arnold, 2017), and primarily based on English. In addition, a referent's predictability has mostly been assessed based on verb biases, in which certain thematic roles (such as Goals) are more likely to be mentioned next. However, predictability may more fundamentally be related to event structure and coherence relations (e.g. Kehler & Rohde, 2013).

The present study investigates the effect of discourse expectations on the choice of a referring expression independently of thematic role, by manipulating event structure directly. In addition, it focuses on Dutch, which offers more referential options than English, such as the use of demonstrative pronouns for less topical referents (Kaiser, 2011). We conducted two web-based written continuation experiments, in which participants typed a suitable continuation to a context sentence, starting with the connective *vervolgens* 'subsequently'. The context sentences contained Source-Goal and Agent-Patient verbs and two same-gender referents. The verbs had an NP2 next-mention bias when combined with an Occasion or Result coherence relation (Kehler & Rohde, 2013), as established by previous research (e.g. Commandeur, 2010). We then manipulated this bias by including certain adverbs: In one condition, we inserted an adverb expressing unintentionality (e.g. *per ongeluk* 'by accident'), which was expected to increase references to the person that acted unintentionally (i.e. the Source/Agent character; Cheng, 2016). In a second condition, we inserted the adverb *eerst* 'first', which was expected to induce a Parallel coherence relation, and more continuations with the subject (NP1). A third condition included an adverb that was not expected to change the next-mention bias, such as *meteen* 'right away'. An example of each condition is given in (1). To be able to disentangle thematic role effects from grammatical function effects, we also created Goal-Source and passive Agent-Patient sentences.

- (1) Neutral: *De boerin belde meteen de vroedvrouw. Vervolgens ...*  
'The farmer's wife called the midwife right away. Next ...'  
Unintent.: *De boerin belde per ongeluk de vroedvrouw. Vervolgens ...*  
'The farmer's wife called the midwife by accident. Next ...'  
First: *De boerin belde eerst de vroedvrouw. Vervolgens ...*  
'The farmer's wife first called the midwife. Next ...'

In Experiment 1, we tested whether these manipulations affected the next-mention bias. Participants (N=48) were free to write continuations in any way they wanted, without time constraints. The results showed a significant interaction between First vs. Neutral adverb and thematic role order (logit mixed effects analysis;  $p < .05$ ): In the canonical (Source-Goal, Agent-Patient) orders, participants showed a Source/Agent (i.e. subject) bias in the First condition (see Figure 1). In the non-canonical (Goal-Source, Patient-Agent) orders, there was an overall stronger Goal/Patient (i.e. subject) bias, but no significant effect of adverb. The difference between unintentionality and neutral adverbs was not significant, so we removed the Unintentionality condition from Experiment 2. There was no significant difference between Source-Goal and Agent-Patient verbs.

In Experiment 2, we investigated whether the next-mention biases affected pronoun use. Either NP1 or NP2 was underlined, and participants (N=52) had to start their continuation with this NP. The results showed a significant interaction between adverb and thematic role on the proportion of pronouns excluding demonstratives ( $p < .01$ ), with more pronouns for Source/Agent and fewer pronouns for Goal/Patient referents in the First than in the Neutral condition (see Figure 2).

Together, these results suggest that discourse expectations play a role in the choice for a personal pronoun in Dutch, beyond thematic-role biases, in line with the idea that speakers use pronouns for more predictable referents. Such effects may be more easily detectable in a language that has different types of anaphoric pronouns, or when predictability is detached from thematic roles. An open question, however, is whether the biases reflect the predictability of the referent, or of the entire event.

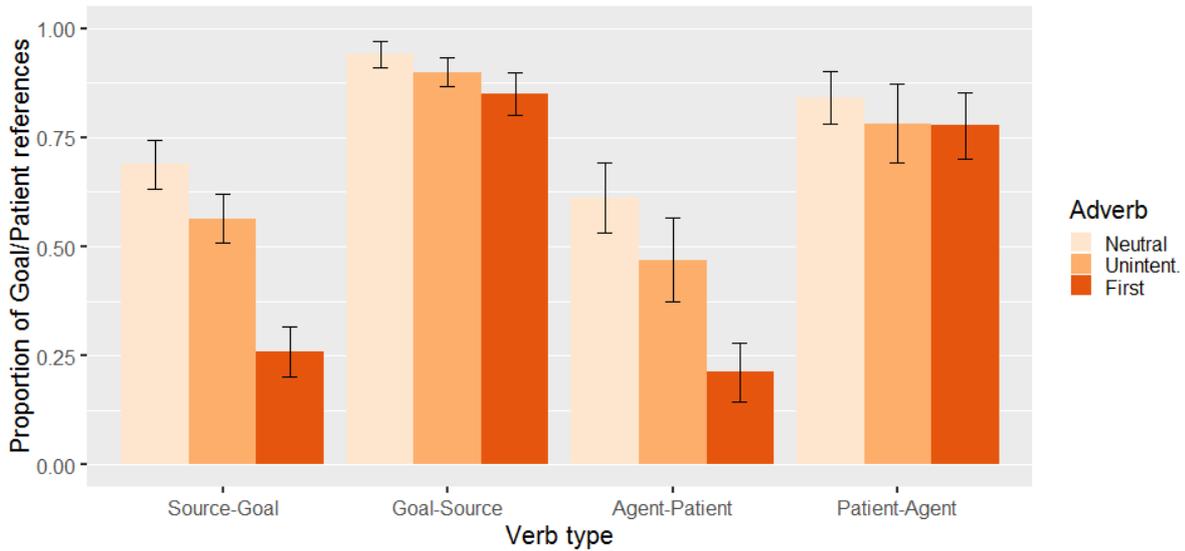


Figure 1. The proportion of Goal/Patient references after Source-Goal and Agent-Patient verbs, including their reversed orders, by type of adverb.

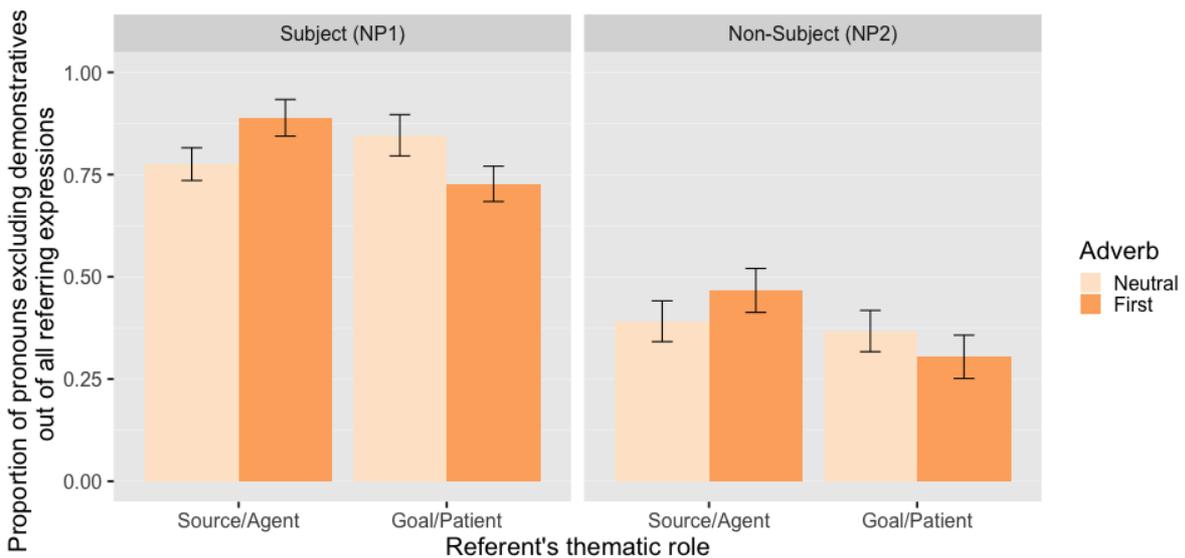


Figure 2. Proportion of pronouns (excluding demonstratives) out of all referring expressions, by adverb and the referent's thematic role and grammatical function.

## References

- Cheng, W. (2016). *Implicit Causality And Consequentiality In Native And Non-Native Coreference Processing*. Doctoral dissertation, University of South Carolina.
- Commandeur, E. (2010). *Implicit causality and implicit consequentiality in language comprehension*. Tilburg University.
- Fukumura, K., & Van Gompel, R. P. (2010). Choosing anaphoric expressions: Do people take into account likelihood of reference? *Journal of Memory and Language*, 62(1), 52–66.
- Kaiser, E. (2011). Salience and contrast effects in reference resolution: The interpretation of Dutch pronouns and demonstratives. *Language and Cognitive Processes*, 26(10), 1587–1624.
- Kehler, A., & Rohde, H. (2013). A probabilistic reconciliation of coherence-driven and centering-driven theories of pronoun interpretation. *Theoretical Linguistics*, 39(1–2), 1–37.
- Rosa, E. C., & Arnold, J. E. (2017). Predictability affects production: Thematic roles can affect reference form selection. *Journal of Memory and Language*, 94, 43–60.