

# Getting to the Bottom of Syntactic Priming - Which Structures Can be Primed?

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## The Nature of Syntactic Priming

The phenomenon that people tend to reuse sentence structures they have produced or comprehended before (*syntactic priming*, Bock, 1986) contributes to the understanding of how mental linguistic representations are structured and gives evidence for the relevance of syntactic structures in the brain. However:

- Is syntactic priming **purely syntactic**?
- **Which syntactic information** exactly is primable?

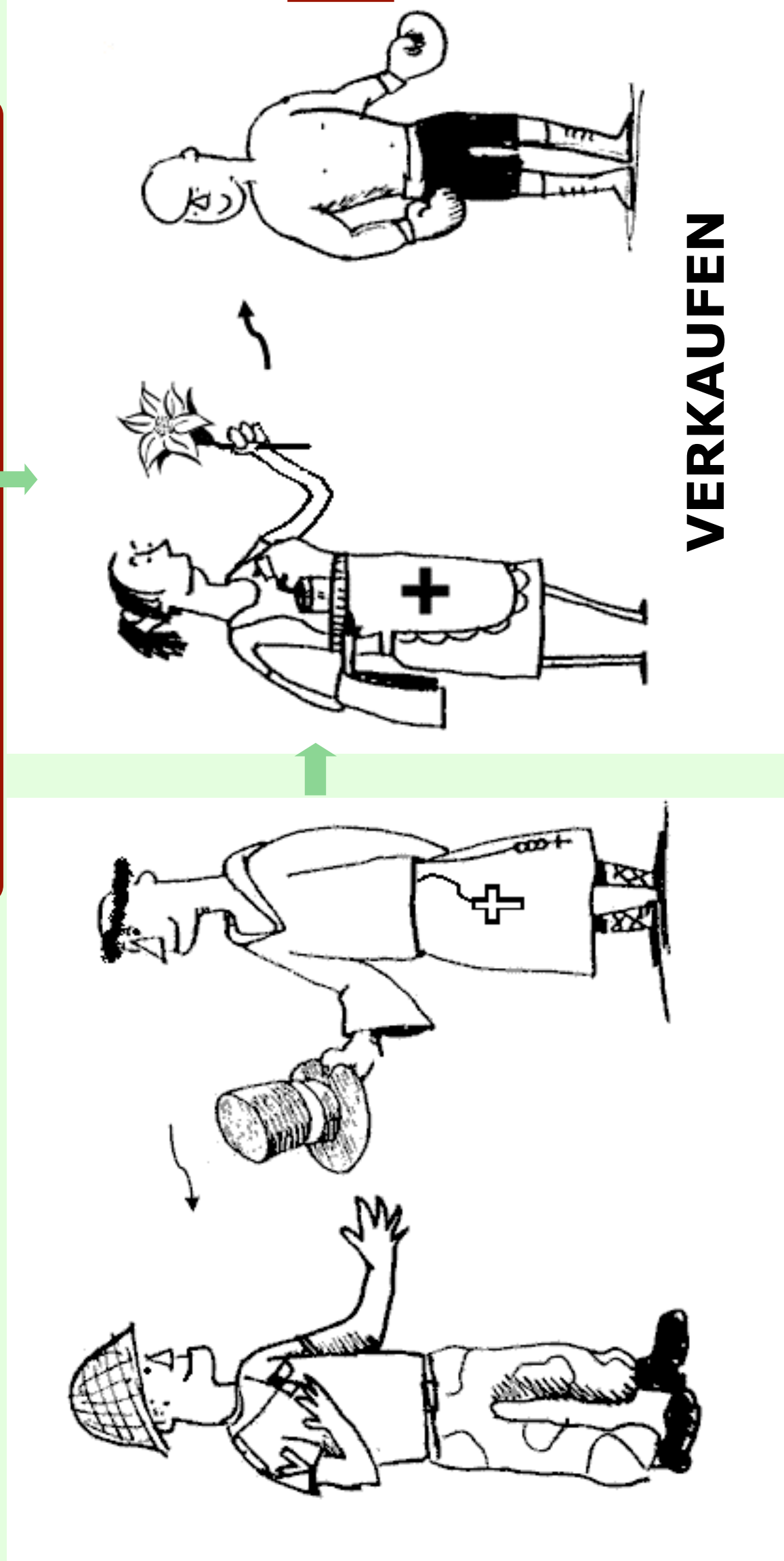
In *word order priming* (Hartsuiker & Westenberg, 2000), for example, do speakers construct ordered representations using syntactic categories or thematic roles (Chang et al., 2003)?

- 1X4 (DO/DOsh/PO/base) Repeated Measures
- Design
- Prime Task: Sentence-Picture Match
- Target Task: Picture Description
- Repeated Verbs between Primes and Targets
- N=32

1. **Read** prime sentence (e.g., 1-4)

2. **Decide** whether the picture matches the sentence

3. **Describe** another picture



Do people tend to use the structure of the prime sentences for the description?

## Experiment 2

To determine whether the word order priming effect in our study was due to the order of animate and inanimate referents, we conducted a second experiment (N=28) with the same design (except some necessary minor changes). This time, however, **all referents in the primes were animate** and only DO and DOsh primes were used.

## Rationale

We tested whether there is a **word order priming** effect for the postverbal objects in German

- **Double Object** sentences (DO, 1) and
- **Shifted Double Object** (DOsh, 2) sentences

Do DO and DOsh sentences prime themselves versus each other? In **DO**, the dative recipient precedes the accusative theme; In **DOsh**, the theme precedes the recipient. Both objects, however, are nominal phrases.

Secondly, we investigated the interplay between **DOsh** and **PO** (Prepositional Object Construction, 3) – do they prime each other because they share the **order of thematic roles** (here: theme-recipient)?

## Results Experiment 1 - Yes they do!

- Significant **priming effects for PO versus DO** (77.72% DO after DO vs. 43.48% DO after PO and 35.87% PO after PO vs. 8.70% PO after DO)

- **DO primed DO** significantly better than DOsh primed DO (77.72% vs. 63.59%)

- **DOsh primed DOsh** marginally significantly better than DO primed DOsh (19.02% vs. 11.96%;  $ps = .082$  &  $.086$ )

- PO did not prime DOsh significantly better than DO primed DOsh (16.30% vs. 11.96%)

- DOsh did not prime PO significantly better than DO primed PO (13.59% vs. 8.70%)

## Results Experiment 2

- Results similar to those of Exp. 1

- **DO primed DO** more than DOsh did (95.54% vs. 91.37%;  $ps = .036$  &  $.066$ )

- **DOsh primed DOsh** more than DO did (7.44% vs. 3.57%;  $ps = .03$  &  $.057$ )

## Design

- (1) Er schickt der Tante die Karte. (DO)  
'He sends the aunt(dat) the postcard(acc)'
- (2) Er schickt die Karte der Tante. (DOsh)  
'He sends the postcard(acc) the aunt(dat)'
- (3) Er schickt die Karte an die Tante. (PO)  
'He sends the postcard(acc) to the aunt(acc)'
- (4) Die Ballerina weint. (Baseline)  
'The ballerina cries'

## Discussion Experiment 1

- DO and DOsh prime themselves and not each other despite having the **same syntactic categories** (NP-NP)
- What could have caused the effect? Maybe **the order of the animate and the inanimate referent** (Bock et al., 1992)?
- Influence of PO and DOsh on each other weak - possibly a priming effect for the order of thematic roles could not work against the phrase structure mismatch of PO (NP-NP) and DOsh (NP-PP)

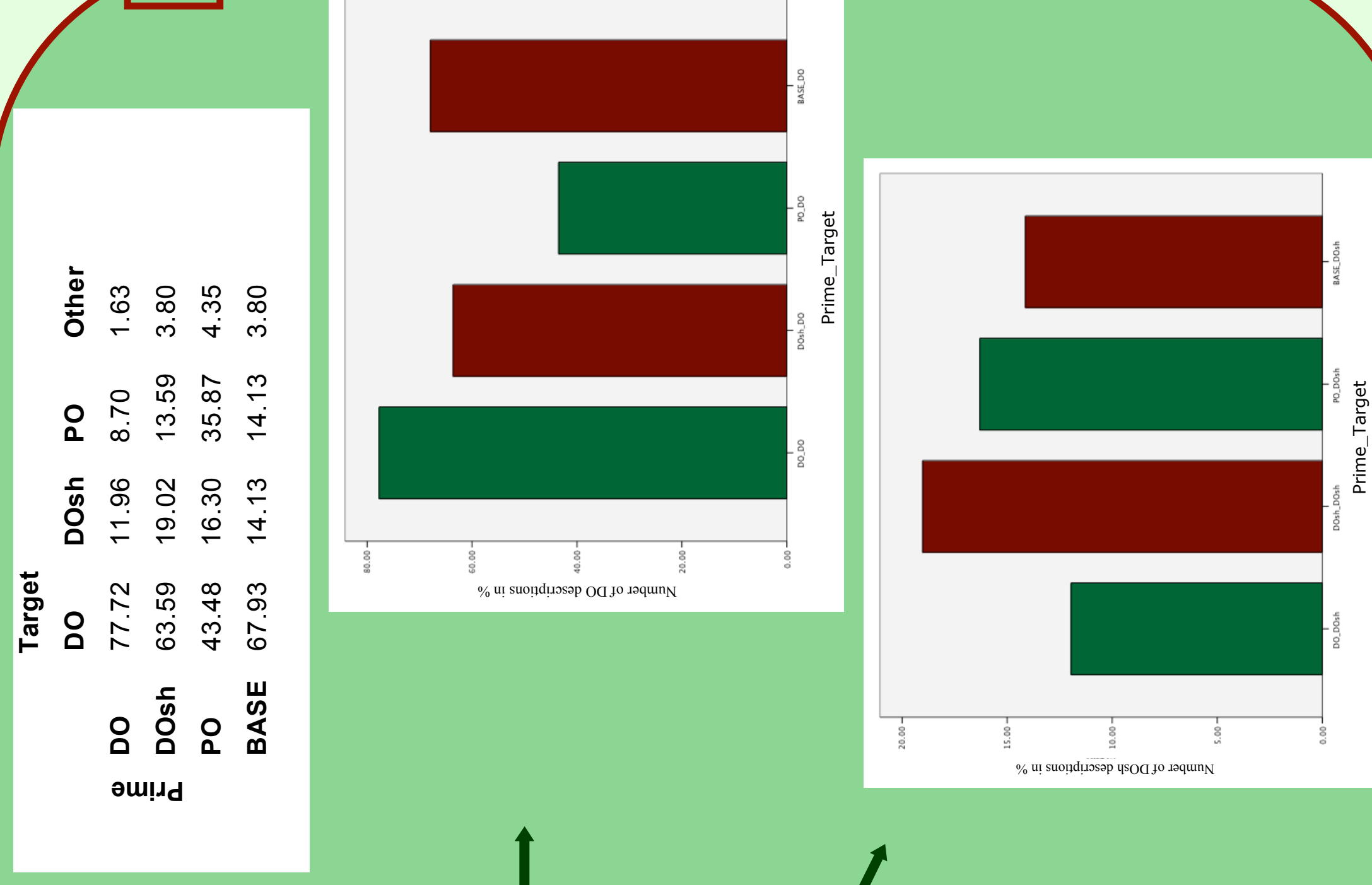
## Summary and Discussion

Both experiments revealed word order priming effects which can be due neither to the order of syntactic categories (or parts of speech) (Exp. 1&2) nor to the order of the animate and the inanimate referent (Exp. 2).

**What caused the effect?** A reasonable explanation is that the primed information was **the order of thematic roles**: theme-recipient versus recipient-theme (Chang et al., 2003). However, some other factors cannot be excluded (e.g., the order of syntactic functions or cases).

## Implications for Language Production Models

The finding that DO and DOsh do not prime each other do not provide evidence for the existence of a functional level representation or a hierarchical level representation since DO and DOsh are equal with regard to their grammatical functions and hierarchy relations. However, it is still possible that these priming effects occurred but were overridden by another word order priming effect (the order of thematic roles).



## References

- Bock, J. K. (1986). Syntactic persistence in language production. *Cognitive Psychology*, 18, 355-387.  
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