

# The impact of patient animacy and patient position on German syntax: Evidence from a psycholinguistic experiment on sentence production

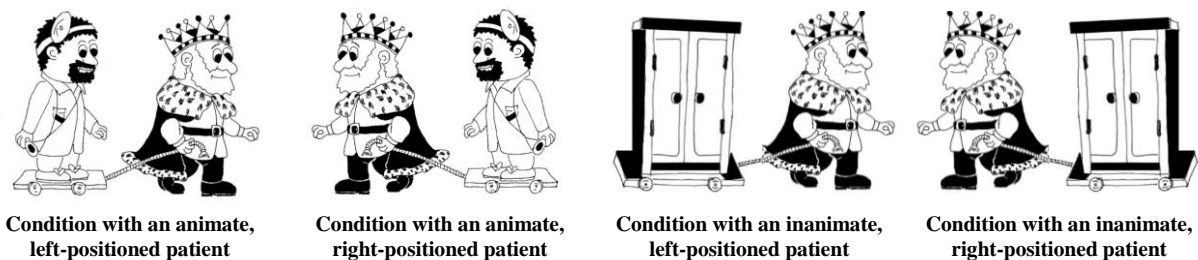
Sabine Reuters, Sarah Dolscheid, Yulia Esaulova and Martina Penke  
*University of Cologne*

## Background:

In order to facilitate communication, speakers have the option to choose between diverse syntactic alternatives (Myachykov, Garrod & Scheepers 2010: 53). The first picture in Figure 1, for instance, can be described by a German active sentence (*Der König zieht den Arzt* - *The king pulls the doctor*), a passive sentence (*Der Arzt wird vom König gezogen* - *The doctor is pulled by the king*) or a topicalization (*Den Arzt zieht der König* - *The doctor [ACC], the king [NOM] pulls*).

There has been substantial evidence that syntactic choices can be influenced by certain pro-minence-lending features. Studies have e.g. shown that higher-ranked referents on the animacy hierarchy scale are preferably chosen as sentential subject or realized in an earlier clause position leading to the production of passive sentences or object topicalizations (Prat Sala & Branigan, 2000; Van Nice & Dietrich, 2003). At the same time, drawing and reaction time experiments have proven that people seem to represent actions in a left to right directionality, with agents located on the left and patients on the right (e.g. Chatterjee, Southwood & Basili-co, 1999).

Figure 1



## Aim of Study:

Our goals were: (i) to test how the interaction of patient animacy and patient position determines the selection of syntactic structures and (ii) to investigate in how far these factors affect speech onset times in German sentence production. Since both voice alternations and object topicalizations are feasible options in German, the study also offers the possibility to disentangle whether animate or left referents are realized as sentence-initial subjects or sentence-initial objects.

## Method:

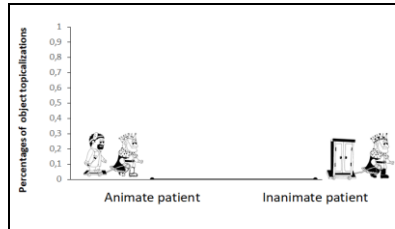
We conducted a sentence production experiment with 30 monolingual German participants who were asked to describe simple black-and-white drawings depicting diverse interactions in a single sentence. The different conditions are shown in Figure 1. All nouns were controlled for word length, word form frequency and grammatical gender. Verbs were controlled for their occurrence in passive voice. In terms of visual aspects, we also controlled referent size and referent colour.

## Results:

As figure 2 illustrates, object topicalizations did not occur at all throughout the experiment. However, a two-way repeated measures ANOVA revealed a significant main effect of patient animacy on the production of passive sentences ( $F_1(1, 29) = 6.16, p = .019, F_2(1, 14) = 28.62, p = <.001$ ) meaning that in the conditions with an animate patient significantly more passive

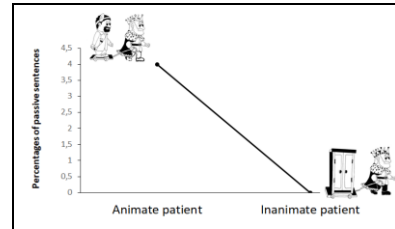
sentences were produced than in the conditions with an inanimate patient (see figure 3). In addition, the ANOVA yielded a significant main effect of patient position on speech onset times ( $F_1(1, 29) = 7.26, p = .012, F_2(1, 14) = 12.10, p = .004$ ) indicating that speech onset times were much slower for stimuli with a left-positioned patient compared to stimuli with a right-positioned patient (see figure 4).

Figure 2



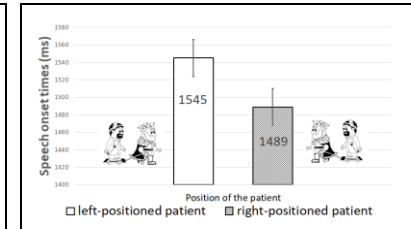
Topicalizations

Figure 3



Passives

Figure 4



Actives

### Discussion:

Stimuli with animate patients lead to a higher number of passive sentences compared to pictures with an inanimate patient. Since no topicalizations occurred at all, the results of our study also suggest that animate nouns rather occur as sentence-initial subjects than as sentence-initial objects.

The slower reaction times for stimuli with a left-positioned patient indicate higher processing costs for this stimulus type in comparison to stimuli with right-positioned patients. This may be due to participants' reading habits. Since reading orientation in German goes from left to right the pictures in which the more prominent left position is not filled by the more prominent agent but by the less prominent patient lead to higher cognitive costs in planning the utterance. Further studies investigating the interaction of animacy and attention and testing languages with another reading direction are in preparation.

### References:

- Chatterjee, A., Southwood, M., & Basilico, D. (1999). Verbs, events and spatial representations. *Neuropsychologia*, 37, 395–402.
- Myachykov, A., Garrod, S., & Scheepers, C. (2010). Perceptual priming of structural choice during English and Finnish sentence production. In R. Mishra & N. Srinivasan (eds.), *Language and Cognition: State of the Art* (pp. 54–72). Munich: Lincom.
- Prat-Sala, M., & Branigan, H. (2000). Discourse constraints on syntactic processing in language production: a cross-linguistic study in English and Spanish. *Journal of Memory and Language*, 42, 168–182.
- Van Nice, K., & Dietrich, R. (2003). Animacy effects in language production: From mental model to formulator. In H. Härtl & H. Tappe (eds.), *Mediating between concepts and grammar* (pp. 101–117). Berlin: de Gruyter.